2nd International Conference on Contemporary Education, Social Sciences and Ecological Studies (CESSES 2019)

# The Development Logic of Macro Finance Theory and Its Enlightenment to the Design of Financial Course Content System

Xiuli Du School of Finance Nanjing University of Finance and Economics Nanjing, China

Abstract—The new situation of the development of the financial system after the global financial crisis has put forward new requirements for innovation in the traditional macro finance curriculum system. This paper combs the historical process of the integration of financial and macroeconomic analysis from the perspective of the history of economic analysis, pointing out that the traditional financial course content system lags behind the development of modern economic and financial systems and financial theory, and proposes to optimize traditional financial courses system to strengthen the content construction of macro finance courses.

Keywords—macro finance; financial intermediation; curriculum construction

# I. INTRODUCTION

After the global financial crisis in 2008, the new practice of modern macro-financial regulation and the revolutionary progress of macroeconomics and financial theory brought new opportunities and challenges to the teaching of finance at the undergraduate and graduate levels. From the perspective of discipline development, under the new situation, the important position of macro finance in the financial discipline system is more prominent and its content is richer. From the perspective of finance teaching design at undergraduate and graduate level, the view that finance is regarded as a passive role in macro-economic operation is not suitable for the practice of financial regulation.

This paper intends to discuss the nature of finance and how it works in the macro economy from the perspective of a history of economic analysis, combined with the progress of the theory of "information asymmetry". Specifically, the entire history of finance and macroeconomic analysis is divided into three parts: monetary economics; passive finance and macroeconomic analysis; active finance and macroeconomic analysis. On this basis, this paper suggests that the course content system of macro finance needs to be further optimized to form a holistic new content system.

# II. MONETARY ECONOMICS IGNORES THE BASIC FUNCTIONS OF FINANCE

Since the Great Depression, macroeconomists have already begun to realize the importance of finance. After the Great Depression, the greatest economist was Keynes. Until now, if macroeconomics is divided into two factions, it is still the Keynesian school and the neoclassical school. So far, economists have often returned to Adam Smith's thoughts and Keynes to develop "new" sources of thought from them.

Keynes proposed a grand model of income determination in The General Theory of Employment, Interest, and Money. The financial factor is one of the indispensable parts (although not at the center). The role of finance is mainly reflected in the formation of investment. Why? Here is what in Keynes's mind: the important factor in the investment of the real economy is the so-called "state of confidence". He further distinguishes two states of confidence (which, in modern economics, can be called beliefs). One is the confidence of the entrepreneur (the borrower) in the future profitability of the investment project, that is, the entrepreneur's belief; the other is the confidence that the lender has in providing financing, that is, the confidence of lending, or the confidence in the loan recovery on schedule. Keynes believes that the collapse of confidence (either one) will lead to a decline in output. Conversely, a return to prosperity in the economy requires two confidences to recover. The latter "confidence" is directly related to finance. The lender has the confidence to distribute the loan to the enterprise and form the investment of the enterprise.

The General Theory of Employment, Interest, and Money initiated the so-called macroeconomic analysis. Subsequent macroeconomic literature was developed based on the book. Among them, the most important representative is Hicks (1937). The IS-LM model of today's primary macro textbooks is the work of Hicks (1937). The IS-LM model has become one of the most important and convenient tools in macroeconomic analysis and policy development.

However, these macroeconomic analyses largely ignore the potential link between output and finance (credit market performance, credit conditions), and focus only on Keynes's other theory: theory of liquidity preference. The theory of liquidity preference discusses how the supply and demand of real money balances affect interest rates, which in turn affects investment. Keynesianism, represented by the IS-LM model, quickly became the most important policy guiding theory in the world after the war. Economists are almost entirely fascinated by the role of money, while the role of credit in the economy has long been neglected. So, Keynes is different from Keynesianism. Keynes emphasized the importance of the financial system, while Keynesianism only emphasized the role of money.

The subsequent rise of monetarism reinforced the importance of money. Fridman and Schwarz (1963) proposed the view that "the most important financial variable is the money supply", and you may even hear that the only thing that matters is the money supply. Soon, Sims invented the simplified VAR model in econometrics in the 1970s. Economists use the VAR simplified model of total economic output to support the importance of money from statistical evidence. This further reinforces the view that money supply is the most important financial variable. In summary, the theory of liquidity preference and the study of monetarism's time series have triggered the monetary obsessivecompulsive disorder in economics. The consequence of such disorder is that monetary quantity becomes the only recurring financial variable in the macroeconomic framework, completely forgetting that the financial system has a role to play.

In fact, money is just a medium of exchange and a medium for trading other commodities. However, only the medium of exchange may not realize the inter-temporal allocation of funds, that is, financial transactions may not be realized, and funds may not be transferred from savers to project investors in the real economy. As Keynes emphasized in *The General Theory of Employment, Interest, and Money*, the confidence of lenders cannot be ignored. Once you ignore this financial transaction, you almost ignore the entire financial transaction.

# III. A CONVERGENCE OF FINANCE AND MACROECONOMIC ANALYSIS AND ITS FAILURE

Gurley and Shaw (1955) made an early attempt to introduce financial factors into macroeconomic analysis. It is because of their work that the relationship between financial factors and the real economy has once again entered the research field of economists after Keynes. Their theory focuses on financial intermediation, and in particular emphasizes the role of financial intermediation in credit supply (rather than the role of money supply). Financial intermediation and the financial system promote the flow of loanable funds from savers to investors. The role of financial intermediaries in achieving effective "cross-time trade" is an important factor in determining the overall economic activity. In other words, they redefined the transition from saving to investment, which was ignored by the mainstream.

Gurley and Shaw pointed out that the real economic environment is different from that of the Arrow-Debreu world, and they also proposed illuminating insights. However, they cannot "normalize" (or "normalize") what they mean by "the world", and thus cannot rigorously argue their point, at least not as well "formalized" as the MM theorem, which emphasizes financial (structural) irrelevance. This is an important reason why Gurley and Shaw's ideas failed to further promote the development of new theories.

This deficiency of Gurley and Shaw then coincided with a "macroeconomic methodological revolution" in the 1970s. This methodological revolution laid the foundation for current economics: the work or literature that contributed to it seemed to be mostly models, not written descriptions like Keynes's or Gurley's and Shaw's. It can be said that the construction of the model has become the mainstream of modern economics research, and the normative model language is the main language of economist communication. In the end, Gurley and Shaw's ideas failed to get the recognition and attention from the mainstream of macroeconomics earlier. This revolution has created obstacles to the introduction of financial factors in macroeconomic analysis.

In fact, finance mainly involves the lender's confidence in the borrower, and describes confidence from the basis of optimization, and then introduces financial factors into a strict model framework. At that time (even after a long period of time), it was almost an impossible task, or a daunting task (the author will focus on how this problem is ultimately solved later). Therefore, the development of economics in this period was mainly to ignore the monetary economics of finance and the so-called neoclassical finance in the world of Arrow-Debreu.

# IV. THE CONVERGENCE OF FINANCE AND MACROECONOMICS: BASED ON THE PERSPECTIVE OF INFORMATION ASYMMETRY

The development of macroeconomics has gone through Keynesianism, monetarism, rational expectation schools, real business cycle theory and new Keynesianism, all of which are not concerned with financial structure. The breakthrough of this limitation appeared after the theory of information asymmetry was proposed. After analyzing the phenomenon of information asymmetry and its impact on economic man's behavior in economics, the relationship between finance and real economy is analyzed in depth, so that finance is gradually integrated into macroeconomic analysis.

Keynes pointed out that the realization of financial transactions depends on the lender's confidence in the borrower (the confidence to return the loan and interest). How to analyze this confidence? Why sometimes a lack of confidence can prevents a win-win deal? What are the obstacles that hinder financial transactions? What is the root cause of the lack of confidence? That is the information asymmetry between the parties. Simply, the so-called information has more information, while the other party does not. The theory of information asymmetry is to study the impact of information asymmetry on transactions. Akerlof (1969) proposed the market for lemons, which for the first time revealed that the information asymmetry between the

buyers and sellers on product quality would lead to market function failure or even no transaction at all (adverse selection). This is a revolutionary breakthrough in economics. Because, since Adam Smith, the "invisible hand" has been a basic tenet of economics: the invisible hand can achieve effective allocation of resources. However, Akerlof points to the concept of market failure. The key hypothesis of information asymmetry provides a solid argument for market failure. Since then, economics (whether micro or macro) has entered a new era.

Financial transactions are about future transactions. In this transaction, the problem of information asymmetry is most prominent. Therefore, the theory of information asymmetry is widely used in finance. For example, Jaffee and Russell (1976), Stiglitz and Weiss (1981) both use information asymmetry to explain the so-called credit rationing phenomenon, that is, banks with large fortune do not lend it to certain companies, even if they are willing to pay higher interest rates.

Many studies on the issue of information asymmetry have pointed out that: First, the information asymmetry leads to the "too low" amount of borrowing; second, the amount of equilibrium borrowing is more sensitive to exogenous disturbances (relative more sensitive to the interpretation of traditional theories). For example, Mankiw (1986) explains how small increases in risk-free interest rates (controlled by the central bank) can reduce the amount of borrowing and even lead to market collapse due to information asymmetry. The intrinsic mechanism is the deterioration of the adverse selection problem caused by the information asymmetry. The lemon problem not only affects the debt market, but also affects the equity market. For example, Meyer et al (1984), Greenwald, Stiglitz and Weiss (1984) pointed out that investors' information asymmetry on corporate value limits the ability of companies to issue new shares. Because external investors need to consider whether the IPO is a reasonable financing requirement or a reasonable need for risk diversification, or trying to cover up the "bad" assets of the company itself (such as companies which were on the verge of collapse).

They are collectively referred to as financial information asymmetry theory. This theory provides a basic way for people to analyze a fundamental problem, the impact of information asymmetry on financial transactions.

How does a rational financial transaction pair sign such a contract and complete the transaction? This is a very important question! This, in effect, is to abandon the assumption that interest rates are freely determined by market supply and demand, and return to a more basic situation: interest rates are mutually agreed, and the "heterogeneity" of the transaction subject is introduced. Townsend (1979) answered the optimal contractual issue of financing. Starting from the information asymmetry between the two parties, he derived the basic characteristics of the financial contract of rational people based on the hypothesis of rational people. Townsend (1979) pointed out that due to the "incentive problem" caused by information asymmetry, the financing cost of an enterprise includes an additional

"status verification cost", regardless of the financing method (debt, equity, hybrid, intermediary letter of credit and other forms of financial contracts). Further analysis pointed out that the basic influencing factors of this additional financing cost (interest rate) include the company's balance sheet status, net assets status and so on. Thus, interest rates are not determined solely by the exogenous monetary, but by the firm or the real economy itself. Meanwhile, what exists in the market is not a single interest rate, but different interest rates faced by different enterprises.

At this point, the relationship between finance and the real economy, which has been a major and historically ambiguous issue since Keynes, has finally returned to the mainstream of research, and the two have achieved the integration on the basis of optimization. Once back in the mainstream of economics, the relationship between finance and the real economy attracted economists' attention again and became one of the fastest growing and most successful fields of macroeconomics. Some of the important contributions are:

Bernanke and Gertler (1986, 1988) pointed out that the market equilibrium level of corporate investment depends on the balance sheet status of the company (the ratio of net assets to liabilities). One limitation of this model is that it only gives qualitative predictions about macroeconomic output changes, and does not give quantitative predictions and explanations like real economic cycle models. BGG (1999) further elaborated the work of BG1988 on the basis of individual optimization, that is, BG1988 was a theory with less solid micro basis, while BGG fully met the requirements of macroeconomics methodology after the 1970s and established on micro basis. And this is a quantitative model that simulates how much economic fluctuations, such as how many percentage points, can be caused by financial factors after the economy is subjected to exogenous shocks. Kiyotaki and Moore (1997) show how the amount of credit in the economy, or the amount of credit that can be achieved, changes.

According to the above theory, all these financial contracts may have transaction difficulties and even collapse. When the problem of information asymmetry is serious, when the original factors to alleviate the problem of information asymmetry are weakened, the transaction of these financial contracts will be difficult. At this time, the effective allocation of economic resources cannot be realized. The financing costs of enterprises will increase or even increase sharply regardless of the form of financing, which will force enterprises to reduce investment and generate overall economic fluctuations or turbulence. In a word, from the perspective of information asymmetry, the convergence of finance and macroeconomics can be seen as the real attention paid by economists to the role of finance in macro economy since the great depression.

# V. THE LEADING ROLE OF FINANCE IN THE ECONOMY — ANALYSIS OF FINANCIAL INTERMEDIARY BEHAVIOR

Since the Great Depression, mankind has made great progress in understanding economics and finance, but the financial crisis is still coming. The economics community has neither predicted the crisis nor explained the phenomena in the crisis. This shows that economists and policy makers still cannot effectively manage this huge economic system, or they have not fully realized what new changes have taken place in this complex economic and financial system.

Where is the problem of economics? Prior to the crisis, macroeconomics literature with financial frictions was studied. For example, the BGG model of the masters in this area pointed out that information asymmetry leads to insufficient effective credit. However, a careful analysis reveals that BGG emphasizes the credit constraints faced by non-financial sector borrowers, that is, the information asymmetry faced by ordinary corporate financing. However, the role of financial intermediation in the economy is treated as a veil, and it is not important and does not appear in the model.

After the global financial crisis, the economics community made reflections. A mainstream trend in the current economics world is that economists should pay more attention to the role of financial intermediation. In particular, financial intermediation should be raised to an independent level. Economics after the crisis quickly gained new research progress. In this new development, research on information asymmetry remains at the core. However, economists found that information asymmetry can not only hinder the borrowing process in the non-financial sector, but also affect the access to funds of the credit supply sector, namely the financial sector, and thus affect the ability of financial sector to provide funds to the real economy. The information asymmetry in the financial intermediation sector is one of the key ways to understand the financial bubble or the credit bubble.

Credit, to a borrower, is to take tomorrow's money and use it today. As for consumer credit, it is to take "tomorrow's income" to consume today. As for corporate credit, that is to invest today with "tomorrow's output". Therefore, credit is taking things from tomorrow to spend or invest today. But what are the characteristics of "things of tomorrow"? The characteristic of "things of tomorrow" is that it may not exist at all or that one part of it cannot be achieved. Taking the non-existent tomorrow to consume today is excessive consumption, while taking today to invest is excessive investment, which will eventually cause waste. That is to say, finance is not an effective mechanism for inter-temporal allocation of resources. Such overdraft for the future will also have the next step. When there is a large-scale breach of contract, the confidence of financial transactions will soon be swept away, the information asymmetry will worsen, and financial transactions will tend to stagnate. This means that even a reasonable allocation of resources across the period cannot be achieved, so there is a situation in which companies in the society cannot maintain normal investment levels, and economic recession and depression have followed.

As a result, the total amount of credit itself may incur excessive prosperity and collapse. So what is the cause of excessive prosperity and collapse of credit? There are at least two explanations for this problem. One is the interpretation of behavioral finance (not discussed in this article), and the other explanation is that financial intermediaries play a key role. The entire economy can be divided into three sectors: the family sector that provides funding, the corporate sector that has borrowing needs for funds, and the third sector that is the financial intermediation sector (primarily financial intermediaries or financial institutions).

One of the essential functions of financial intermediation is to discover the "real" income of tomorrow. Because it can discover "real" future income, or more precisely, it can have a reasonable estimate of the risk of future income, financial transactions can be successfully concluded on the basis of risk and return, directing capital flow to the most efficient uses. Gertler and Kiyotaki (2011, 2015) applied the agency problem caused by information asymmetry to the analysis of financial intermediation behavior, and studied the role of financial intermediation in credit cycle fluctuation or excessive credit boom and collapse. Adrian and Shin (2014) argue that financial intermediation is the driver of the boombust cycle, not just a negative actor.

Nowadays, research in this area has gradually become one of the most important research directions of macro finance. Without further discussion, let's just go back and see what progress the introduction of financial intermediation into macroeconomic analysis means.

Before the global financial crisis, mainstream economics only recognized the role of financial products (e.g., stocks, bonds, debts, etc.) in the inter-temporal allocation of resources in financial transactions. However, all financial products (neither simple nor complex forms of financial contracts), no matter existing old products or innovative products, can be regarded as products "produced" by financial intermediaries. Just as a garment factory produces clothes, financial intermediaries launch financial products. The purpose of this product is to achieve effective intertemporal allocation of resources. Thus, if the service system fails, the financial transaction will not be completed. Therefore, the role of financial intermediation must be valued to truly explain the role of finance in macroeconomic cycle volatility.

The analysis of financial intermediation behavior is of great significance. For the macro level, it is related to how to regulate the financial system and achieve macroeconomic stability, while for China, it is related to the construction of China's financial system. The construction of China's financial system is just in its infancy. From a micro point of view, the behavior of financial intermediaries is related to the price of financial assets, the individual investment income and the innovative design of financial products.

# VI. CONCLUSION

The essence of finance lies in the inter-temporal allocation of resources, and inter-temporal trading implies uncertainty and confidence in the future. Information asymmetry is at the core of all financial activities, and it serves as an important perspective for analyzing financial activities. The activities of financial intermediaries directly affect the supply of financial products, including the price and quantity of finance, and thus become an independent factor affecting the operation of the macro economy. The analysis of financial intermediation behavior from the perspective of information asymmetry is an important entry point to reveal the impact of financial impact on macroeconomic operations.

At present, the hysteresis of the design of the content system of finance course is manifested in the following aspects: firstly, in terms of the theme, it stays at the stage of monetary economics of macro finance and ignores the analysis of financial products, especially financial intermediary behaviors. Second, in terms of methods, it is still in the stage of neoclassical marginal analysis methodology, and there is still a lack of introduction to the theoretical tools and methods needed for economic behavior analysis from the perspective of information asymmetry. Third, in terms of the functional positioning of finance, it still stays in the passive role, but does not analyze the active role of finance and its impact on macro economy.

Therefore, in the course content design of finance, the course content structure should be optimized in several aspects. Firstly, the course content of mathematical model should be added to strengthen the cultivation of students' ability of formal expression and reasoning of economic problems. Secondly, the course content of contract theory and game theory with information asymmetry as the core should be supplemented to provide necessary analysis tools for students to analyze the essential characteristics of financial transactions. Thirdly, special courses on financial intermediation should be added to adapt to the latest development of the financial system, especially the role of financial intermediation in influencing the operation of macro-economy, and be placed at the core of the content of macro-finance courses.

In short, the design of the curriculum system of macro finance should adapt to the development of modern economic and financial system, meet the training objectives of finance major, and improve students' ability to analyze various financial phenomena and problems.

#### REFERENCES

- Sun Yi, Chen Luxi, Wang Chen. International Experience and Chinese Path of Teaching Material Construction for Postgraduates [J]. Academic Degrees & Graduate Education, 2018. (in Chinese)
- [2] Peng Jiangang, Zhou Hongwei, Zhou Xingjian. Exploration on the Reform of Postgraduate Training Mode of Finance Majors [J]. Academic Degrees & Graduate Education, 2006 (2): 26-28. (in Chinese)
- [3] Adrian T , Shin H S . Financial Intermediary Balance Sheet Management [J]. Staff Reports, 2014, 3(1).
- [4] Akerlof, George. The Market for Lemons: Quality Uncertainty and the Market Mechanism. Quarterly Journal of Economics 84 (August 1970), 488-500.
- [5] Bernanke, Ben S., Mark Gertler. Agency Costs, Collateral, and Business Fluctuations. National Bureau of Economic Research, Working Paper No. 2015, September 1986.
- [6] Bernanke, Ben S., Mark Gertler. Banking and Macroeconomic Equilibrium. In New Approaches to Monetary Economics, edited by

William A. Barnett and Kenneth Singleton, pp. 89-111. New York: Cambridge University Press, 1987.(a).

- [7] Friedman, Milton, Anna J. Schwartz. A Monetary History of The United States: 1867-1960. Princeton: Princeton University Press, 1963.
- [8] Gertler, M. and Kiyotaki, N. (2011) Financial Intermediation and Credit Policy in Business Cycle Analysis. In: Woodford, M. and Friedman, B.M., Eds., Handbook of Monetary Economics, Elsevier.
- [9] Greenwald, Bruce, Joseph E. Stiglitz. Information, Finance Constraints, and Business Fluctuations. Mimeo, Princeton University, 1986.
- [10] Gurley, John, Edward Shaw. Financial Aspects of Economic Development. American Economic Review 45 (September 1955), 515-38.
- [11] Hicks, John R. Mr. Keynes and the 'Classics': A Suggested Interpretation. Econometrica 5 (April 1937), 147-59.
- [12] Jaffee, Dwight, Thomas Russell. Imperfect Information, Uncertainty, and Credit Rationing. Quarterly Journal of Economics 90 (November 1976), 651-66.
- [13] Myers, Stewart C., N. S. Majluf. Corporate Financing and Investment Decisions when Firms Have Information that Investors Do Not Have. Journal of Financial Economics 13 (June 1984), 187-221.
- [14] Stiglitz, Joseph, and Andrew Weiss. Credit Rationing in Markets with Imperfect Information. American Economic Review 71 (June 1981) 393-410.