ATLANTIS PRESS
Advances in Economics, Business and Management Research, volume 70
International Conference on Economy, Management and Entrepreneurship（ICOEME 2018）

Broad Money Growth, Corporate Innovation Investment and Enterprise Technological Progress

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***Abstract*—Innovation investment and technological progress have always been the focus of academic circles. This study takes A-share listed companies as the research object, and examines the mechanism and effect of broad money growth, innovation investment and technological progress. The results of the study are as follows. Broad money growth affects the difficulty of corporate financing by affecting the scale of social financing, and the difficulty of corporate financing affects the innovation investment and technological progress of enterprises; broad money growth has positive incentive effect on enterprise innovation investment. Broad money growth has a promoting effect on technological progress of enterprises. Innovative investment has a significant supporting effect on technological progress of enterprises; there is a dynamic interaction between broad money growth, innovation investment and technological progress of enterprises, and there is an interaction between the three.**

Keywords—broad money growth; innovative investment; technological progress

I. INTRODUCTION

Under the combined effects of various factors such as technological factors, policy factors, and political factors, China's business environment has undergone profound changes. Chinese companies can no longer rely on imitation and cottage models to achieve enterprise survival and development. Enterprises are in technology and business. In the period of change, only by implementing scientific and technological innovation can we enhance the core competitiveness of enterprises and survive and develop in a highly competitive market. At the same time, under the background of the end of the current demographic dividend and the intensification of resources and environmental constraints, the Chinese economy has entered a new normal of medium and high-speed growth. The economy has shifted from high-speed growth to high-quality development. High-quality economic development requires technological innovation to support and enhance Productivity is the key to improving the quality of China's economic growth and promoting industrial upgrading. Therefore, enterprises can only enhance their core competitiveness by implementing technological innovation, and then they can survive and develop in a highly competitive market. The important way for enterprise technology innovation is enterprise innovation investment, and enterprise innovation investment enhances enterprises through knowledge and technology transformation. Productivity level. However, there are many research literatures on monetary policy and enterprise R&D investment, there are many research literatures on monetary policy and productivity, and there are many research literatures on R&D investment and technological progress, but the research conclusions are inconsistent. Especially in the process of China's economic transition, the mechanism and effect of monetary policy and innovation investment in technological progress have yet to be further researched. In addition, China's broad money growth has been rapid in the past 20 years, and whether broad money growth is an investment in innovation and technological progress. The impact has to be further explored. Therefore, this paper takes the internal and external factors that influence the technological progress of enterprises as the starting point, and examines the impact of broad money growth and innovation investment on technological progress of enterprises, and explores the interaction between broad money growth, innovation investment and technological progress. To a certain extent, it has made up for the gaps in relevant theoretical research, and also provided guidance and reference for the production and innovation practice of enterprises.

II. LITERATURE REVIEW

The relationship between monetary policy and corporate innovation investment has always been the focus of academic circles. The conclusions of the research have presented two opposite views. In the absence of credit constraints, the proportion of R&D investment in investment has a counter-cyclical characteristic (Aghion&Howitt, 2007), and the bank's support for R&D is continuously strengthened (Hall&Reenan, 2000), and credit rationing has significantly weakened the R&D investment intensity of enterprises. Tight monetary policy can indirectly affect micro-enterprise R&D investment behavior through accounting conservatism, and monetary policy shocks will have an impact on corporate R&D investment (Xie Qiaoqi, 2017) .

Technological advances have long attracted the attention of scholars at home and abroad, and domestic and foreign scholars often use the full factor productivity alternative technology advancement. Some scholars abroad have studied the relationship between monetary policy and total factor

productivity. These findings suggest that monetary policy does have an impact on total factor productivity growth. Monetary policy significantly affects total factor productivity growth (Clark, 1982), the shortage of funds makes resource allocation distortion and thus inhibits the improvement of productivity level. The US Federal Reserve System introduces the optimal monetary policy in the face of technological shocks (Gatti & Love, 2008), The appreciation of the real effective exchange rate of the Renminbi has contributed to China's industrial total factor productivity (Liu Ming, Li Xuesong, Sheng Ruxu, 2018).

The relationship between R&D investment and productivity has long attracted the attention of scholars. At present, there are two main conclusions. First, R&D investment is conducive to improving productivity. One is that R&D investment does not necessarily promote the productivity improvement of enterprises, and even hinders them. R&D investment has a positive impact on Japanese manufacturing productivity (Goto&Suzuki, 1989), R&D investment directly or indirectly affects productivity through technological innovation and technology introduction (Kancs, 2016), 10% of R&D investment can bring about an increase of 1.6% (Bravo-Ortega&Mar ń,2011), R&D capital investment in high-tech enterprises not only promotes local technological progress, but also neighbors. Technological advances in the region have played a positive role (Zhao Kai, Wu Wanxi, Wang Ideal, 2017).

In summary, the existing research results reveal the impact of monetary policy on corporate innovation investment and technological progress from different perspectives, and also explain the impact of R&D investment on technological progress, but these research conclusions have not reached consensus. In reality, the relationship between monetary policy, innovation investment and technological progress is complex and changeable, and needs further study. In view of this, this paper explores the mechanism and effect of broad money growth on corporate innovation investment from the perspective of broad money growth, analyzes the mechanism and effect of innovation investment on enterprise technological progress, and explores broad money growth, innovation investment and technological progress. The relationship between the two.

III. Theoretical Analysis and Research Hypothesis

Since Keynes systematically expounded the effectiveness of monetary policy and established an analytical framework for monetary policy affecting corporate investment, different economic schools have explained the channel mechanism of monetary policy affecting corporate investment from different angles. Enterprise innovation investment is affected by enterprise expectations. In the initial stage of innovation investment, when financing is difficult or technology risk is very high, the company may choose to withdraw from research and development, which is equivalent to obtaining an exit option; when financing is difficult or technical risk is low At this time, the company may choose to continue to invest in innovation. At this time, the enterprise is equivalent to acquiring a call option; the enterprise innovation investment has a call option and an exit option, and all the options in the innovation stage can constitute a compound option. The adjustment of monetary policy to the economy is partly achieved by influencing public expectations. Especially when the economic balance is adjusted, the monetary policy has uncertainties and high variability in the direction of regulation. Sex and volatility often affect corporate innovation investment expectations. When the uncertainty of monetary policy is low, enterprises can form relatively stable expectations and make innovative investment decisions accordingly. When monetary policy is tightened, enterprises reduce the scale of innovation investment, and expand the scale of innovation investment when monetary policy is loose. When monetary policy has high uncertainty, enterprises cannot form stable expectations for the future. When faced with loose monetary policy, they are worried that monetary policy will be tightened in the future and cannot expand the scale of innovation investment rapidly, which weakens the investment in innovation of loose monetary policy. The promotion effect; when faced with tight monetary policy, it is worried that the future monetary policy will be loose and maintain the existing level of innovative investment. This expectation has somewhat inhibited the negative impact of monetary policy tightening on corporate innovation investment. Economic theory has pointed out that the transmission mechanism of monetary policy to the real economy is mainly realized through interest rate changes and credit rationing. Interest rate changes and credit rationing jointly determine the financing environment of enterprises. Monetary policy promotes enterprises by reducing the financing constraints of enterprises. Innovative investment. Enterprise R&D is a complex system engineering. Enterprise innovation requires a large amount of capital for long-term continuous investment. Insufficient funds often lead to the termination or failure of R&D. The adequacy of funds is the key to R&D activities. The funds for R&D investment of enterprises mainly come from internal financing, equity financing and debt financing. Since R&D investment is a long-term investment, it requires continuous investment by enterprises, while endogenous financing is easily affected by the volatility of corporate profits. Many enterprises rely on internal sources to support Enterprises implement long-term, high-input, high-risk innovation investment, and the use of equity financing has certain conditions. Many enterprises do not have the conditions for equity financing. Therefore, obtaining external financing support is one of the important sources of funds for enterprises to carry out innovative investment. . External financing is also vulnerable to monetary policy. When monetary policy tightens, the decrease in money supply leads to a decrease in bank liquidity, which increases the difficulty of financing innovative projects and external financing costs. As a result of the tightening of market liquidity, the guarantee capacity declines, further increasing the degree of financing constraints. In addition, when monetary policy shrinks, banks are more inclined to issue low-risk and short-term loan projects. Bank lending behavior conflicts with the long-term nature of corporate innovation investment. After the tightening of monetary policy led to a decrease in the money supply, the real interest rate of the market was raised,

and the cost of capital increased, resulting in a negative return on the net present value of the corresponding R&D projects, which reduced investment opportunities and inhibited innovative investment behavior. Compared with traditional investment, enterprise innovation investment cycle is longer and uncertainty is higher. The net present value of innovative investment projects will be more sensitive to changes in real interest rates. External financing levels will directly or indirectly affect the company's innovation investment. China's bank loans are an important channel for external financing. The credit transmission mechanism affected by monetary policy to micro-enterprises can be seen that monetary policy directly affects the external financing level of enterprises through interest rate channels and bank credit channels. Enterprise R&D investment is subject to external financing levels, and external financing levels are affected by monetary policy. Whether it is a loose monetary policy or a tight monetary policy, broad money growth is an inevitable trend. Especially in the post-industrial era of China, the broad-based monetary growth will become faster and faster, and the broad-based monetary increment will become larger and larger. The flow of funds brought about by broad money growth will inevitably affect the innovation investment of enterprises. Based on the above analysis, this paper proposes hypothesis 1.

Hypothesis 1: Broad money growth has a positive effect on corporate innovation investment.

Technological innovation activities require a large amount of financial support. As a major driving force for technology R&D activities, it is difficult for companies that are out of the bank's external financing channels to raise funds for R&D activities in a short period of time. From a micro perspective, financing difficulties are a problem faced by many companies. Due to imperfect financial markets, it is difficult for companies to obtain external funds with normal financing capital, resulting in insufficient financing and difficulty in coping with changing market demands, making it possible to abandon the best investment opportunities in the course of business, thus affecting future business activities. Monetary policy will affect the financing constraints of enterprises through the micro level. The main transmission channels of monetary policy are interest rate transmission and credit transmission, and the impact of loose monetary policy on financing constraints is manifested through these two aspects. First, from the perspective of interest rates, the normal implementation of tight monetary policy has raised interest rates. For enterprises in the industry, this means an increase in financing costs, difficulties in borrowing funds, and further deterioration of financing constraints; When it is more relaxed, the interest rate level is lowered, and corporate financing is easier, which reduces the financing constraints faced by enterprises. Secondly, from the perspective of credit, the loose policy has eased the macro credit environment, thus alleviating the financing constraints. First, the bank loanable funds will increase with the implementation of loose monetary policy. With the expansion of monetary policy, bank preparation The increase in gold and bank deposits has increased the amount of funds available to banks, making it easier for companies in the industry to raise the required funds, ie financing constraints are alleviated; secondly, loose monetary policy from a balance sheet perspective Increasing interest rates, the company's net cash flow and equity prices have increased the possibility of adverse selection and moral hazard problems, making banks willing to lend, which has alleviated the financing constraints of enterprises in the industry. Due to the different nature of different industries, the financing constraints they face are different; the degree of financing constraints of the industry reflects the ability of enterprises in the industry to obtain financing from outside. In the incomplete financial market, due to the existence of information asymmetry, enterprises in the industry generally face financing constraints and limit their development. For industries that are subject to strong financing constraints, it is more difficult for enterprises in the industry to obtain external funds, and the financing costs are high. When funds are short, it is likely to abandon profitable investment opportunities, thereby distort resource allocation efficiency. Reduce productivity levels. If the financing constraints faced by the industry are alleviated, it will help to optimize the business behavior of each company in the industry and provide sufficient funds for its development to improve productivity. The loose monetary policy eased the financing constraints and promoted the productivity level. Under the background that China's broad money growth has become the norm, the rapid growth of broad money has brought about the expansion of social financing scale and the change of market loan interest rates. The expansion of social financing scale and changes in interest rates will often promote technological progress. Based on the above analysis, this paper proposes hypothesis 2.

Hypothesis 2: Broad money growth has a positive incentive effect on technological progress.

Innovation investment is the source of technological progress and technological innovation, and innovation investment is the key driving factor for successful innovation. Innovation investment is also an important way to promote scientific and technological progress. Innovation activities create and accumulate knowledge, promote product innovation and process innovation, thus providing continuous motivation and support for productivity improvement. Innovative investments not only generate new knowledge and information directly, but also enhance the ability of companies to absorb and learn existing knowledge and information, and promote the spillover of knowledge and technology. In order to absorb the use of external knowledge information, many companies continue to increase investment in innovation, strengthen internal technical capabilities, enable them to follow up on the latest technological changes in a timely manner, and promote the assimilation process of new technologies. Innovative investment is an important foundation for ensuring that companies become successful followers. Since innovation activities are a continuous process, it takes a certain amount of time from innovation investment to innovation output to enterprise efficiency improvement. When companies and entrepreneurs find that innovation inputs can generate benefits, they invest in innovation activities. The main form

of this income is the economic rent that can be obtained in an imperfectly competitive market. But because companies and entrepreneurs can't get all the benefits of their innovation investment, this will enable the next generation of innovation investors to be able to conduct research at a lower cost than their previous generation of innovation investors, so technology innovation can always Continue to drive productivity. Companies invest in innovation to stay ahead of the industry and get rents, but as they invest in innovation, they realize that their innovations will be replaced by future innovations that ultimately lead to productivity. improve. A perfect market environment usually enables the rational investment of innovation between industries to be rationally allocated, reduce the cost of the enterprise, and eliminate the inefficiency of the organization and management of the enterprise, thereby improving the productivity level and technical level of the enterprise. To what extent can innovation investment affect production efficiency and technological progress depends on two factors: First, the innovation efficiency within the enterprise, that is, the ability of enterprises to transform innovative investment into technological innovation; second, the intellectual property protection environment outside the enterprise That is, the technological innovation of protecting enterprises is not copied and imitated by competitors, and effectively enhances the competitiveness of enterprises. The extent to which technological innovation can function depends on the level of intellectual property protection in the environment in which the company operates. Only in an environment with better protection of property rights, technological innovation can really help enterprises gain competitive advantage, so that the input of the same resources can bring more operating income, that is, performance improvement and technological progress. Based on the above analysis, this paper proposes hypothesis 3.

Hypothesis 3: Innovative investment has a positive effect on the technological progress of enterprises.

IV. Research Design

A. Sample Selection and Data Source

This paper takes the 1997-2017 A-share listed companies as the research sample. The sample is filtered as follows: 1 Eliminate the missing data company; 2 Remove the special financial company; 3 Remove the data abnormal company; 4 Delete the insolvent, ST Company; 5 companies have been established for more than 3 years. After screening, there were 548 companies that met the sample conditions. The data used in this paper mainly comes from the CSMAR and CCER databases. The monetary policy data comes from the website of the People's Bank of China and the China Financial Statistical Yearbook. Data processing uses Stata 14.0 and Execl 2016.

B. Research Model Design

Based on the relevant experience of the existing literature, this paper will examine the basic econometric regression model of the impact of broad money growth on innovation investment as follows.

$$\begin{aligned} RD_{i,t} &= \mu_0 + \mu_1 MP_t + \mu_1 FC_{i,t-1} + \mu_2 Lev_{i,t-1} \\ &+ \mu_3 ROA_{i,t-1} + \mu_4 TQ_{i,t-1} + \mu_5 Size_{i,t-1} + \\ &\mu_6 Industry + \varepsilon \end{aligned} \quad \text{Model (1)}$$

Broad money growth uses M2 growth rate instead, Broad money growth is expressed in MP. Innovative investment is measured by the ratio of corporate R&D investment to corporate sales, Innovative investment is represented by RD. Financing constraints are measured by the proportion of long-term liabilities of enterprises to the original price of fixed assets, Financing constraints are expressed in FC. Return on assets is measured by net profit and average total assets, Return on assets is expressed in ROA. The gearing ratio is measured by the ratio of the total liabilities of the enterprise to the total assets, Asset-liability ratio is expressed in Lev. The size of the company is measured by the natural logarithm of the total assets, Enterprise size is represented by Size. Company uses I to represent. Year is denoted by t. Same as below.

Based on the relevant experience of the existing literature, this paper will examine the basic econometric regression model of the impact of broad money growth on technological progress as follows.

$$\begin{aligned} TEP_{i,t} &= \beta_0 + \beta_1 MP_{t-1} + \beta_2 FC_{i,t-1} + \\ &\beta_3 MP_{t-1} \times FC_{i,t-1} + \beta_4 ROA_{i,t-1} \\ &+ \beta_5 Lev_{i,t-1} + \beta_6 Size_{i,t-1} + \beta_7 Year_{i,t-1} \\ &+ \beta_8 Industry_{i,t} + \varsigma_{i,t} \end{aligned} \quad \text{Model (2)}$$

Technology advancement replaces corporate total factor productivity. Technical progress is expressed in TEP. TEP=$Y_i / L_i^{\alpha} * K_i^{\beta}$,Where Y represents the business revenue, L means all employees in the company, K represents the net fixed assets of the enterprise at the end of the period.

Based on the relevant experience of the existing literature, this paper will examine the basic econometric regression model of the impact of innovation investment on technological progress as follows.

$$\begin{aligned} TEP_{i,t} &= \kappa_0 + \kappa_1 RD_{i,t-1} + \kappa_2 ROA_{i,t-1} \\ &++ \kappa_3 Lev_{i,t-1} + \kappa_4 Size_{i,t-1} + \kappa_5 FC_{i,t-1} \\ &+ \kappa_6 Year_{i,t-1} + \kappa_7 Industry_{i,t} + \xi_{i,t} \end{aligned} \quad \text{Model (3)}$$

V. Empirical Analysis

A. Descriptive Statistics and Analysis

"Table I" gives descriptive statistics for the main variables. It can be seen from the table that the average value of technological progress of enterprises is 0.147, the maximum value is 0.582, and the minimum value is 0.023, indicating that the technological progress of enterprises is quite different. The maximum value of innovation investment is 0.086, and the minimum value is 0.013, indicating that the sample companies have large differences in R&D investment. The maximum value of broad money growth rate is 0.298, and the minimum value is 0.081, indicating that the annual difference of broad money growth

rate is large. The maximum return on assets is 0.313, and the minimum value is -0.004, indicating that the sample companies' asset returns are quite different. The average asset-liability ratio is 0.582, the maximum value is 0.875, and the minimum value is 0.018, indicating that the sample company's asset-liability ratio is quite different.

TABLE I. DESCRIPTIVE STATISTICS OF MAIN VARIABLES

variable	Mean	Standard deviation	Maximum	Minimum
TEP	0.147	0.286	0.582	0.023
RD	0.024	0.017	0.086	0.013
MP	0.142	0.132	0.298	0.081
ROA	0.106	0.097	0.315	-0.007
Lev	0.586	0.488	0.879	0.015

B. Empirical Results and Analysis

"Table II" gives the estimation results of the model (1) using the fixed effect model. From the regression results in column (1) of "Table II", the estimation coefficient of broad money growth is significantly positive and significant at 5%. Broad money growth has a positive impact on corporate innovation investment. The regression coefficient of financing constraints is significantly negative, indicating that companies with high financing constraints may abandon profitable innovative investment opportunities. The coefficient of return on assets is significantly positive, indicating that companies with high levels of asset profitability have more funds for scale expansion, introduction of new production equipment and technology, etc., thereby enhancing the level of innovation investment. The coefficient of asset-liability ratio is significantly negative, indicating that higher corporate capital risks and instability will reduce the level of R&D investment. The coefficient of firm size is significantly positive, indicating that the larger the scale, the more capable the company is to increase the level of R&D investment by reducing the cost of production and sales through economies of scale. Hypothesis 1 is verified.

"Table II" gives the estimated results of the model (2) using the fixed effect model. The regression coefficient of broad money growth is significantly positive, indicating that loose monetary policy can improve the technological progress of enterprises by alleviating the financing constraints of enterprises. The regression coefficient of financing constraints is significantly negative, indicating that companies with high financing constraints may abandon profitable investment opportunities and reduce the level of technological progress. The coefficient of return on assets is significantly positive, indicating that companies with high levels of asset profitability have more funds for scale expansion, introduction of new production equipment and technology, etc., thereby improving the technological progress of enterprises. The coefficient of asset-liability ratio is significantly negative, indicating that higher corporate capital risk and instability will reduce the level of technological progress of enterprises. The coefficient of enterprise scale is significantly positive, indicating that the larger the scale, the more capable the enterprise can improve the technological progress of the enterprise by reducing the cost of production and sales through economies of scale. Hypothesis 2 is verified.

"Table II" gives the estimated results of the model (3) using the fixed effect model. The regression coefficient of innovation investment is significantly positive, indicating that enterprise innovation investment can improve the independent innovation ability of enterprises and their own technical level. From the regression coefficient of the control variables, it is obvious that the return on assets has significantly promoted the technological progress of enterprises, and the asset-liability ratio has suppressed the technological progress of enterprises. The scale of enterprises has significantly promoted technological progress of enterprises. Hypothesis 3 is verified.

TABLE II. EMPIRICAL RESULTS OF BROAD MONEY GROWTH, INNOVATION INVESTMENT AND TECHNOLOGICAL PROGRESS

variable	Model (1)	Model (2)	Model (3)
MP	0.012*** (3.93)	0.082*** (3.89)	
RD			0.234*** (3.76)
FC	-0.011** (-3.24)	-0.058** (-4.96)	-0.088*** (-5.11)
ROA	0.014*** (3.45)	0.389*** (4.18)	0.085*** (3.92)
Lev	-0.057*** (-3.48)	-0.464*** (-4.54)	-0.377*** (-4.45)
Size	0.041** (3.91)	0.381** (3.95)	0.094** (4.98)
Constant	-0.062** (-3.97)	-0.332** (-3.53)	-0.581** (-3.98)
industry	controlled	controlled	controlled
years	controlled	controlled	controlled
Adjusted R^2	0.3181	0.3260	0.3170

[a.] Remarks: *, * * * respectively indicate that they are significant at 5 % and 1 %, and the of t statistic is shown in parentheses.

C. Further Examine the Interactive Effects of Broad Money Growth, Innovation Investment and Technological Progress

In order to test the dynamic interaction between broad money growth, innovation investment and technological progress, a panel vector autoregressive model is established based on the existing research results.

$$Y_{i,t} = \eta_0 + \eta_1 Y_{i,t-1} + \mathrm{F}_i + \mathrm{G}_i + \zeta_{it} \quad \text{Model (4)}$$

Among them, $Y_{i,t}$ represents the vector of the i-th enterprise consisting of endogenous variables in the t-th year, followed by technological progress, innovation investment and broad money growth. η is the regression coefficient, F_i is the fixed effect, G_i is the time effect, and ζ_{it} is the random disturbance term.

Before the panel vector autoregressive model estimation test, the TLC, RD, and MP were tested by LLC and ADF-Fisher. The test results showed a stationary sequence, and the panel cointegration test was carried out. The test results also showed broad money growth, innovation investment and technological progress. There is an equilibrium relationship

between them. The test results show that the regression analysis of panel data can be performed. This paper uses GMM analysis.

In the module 1 of "Table III", the enterprise technological progress is taken as the dependent variable. The analysis finds that the broad-term growth of the lone period and the innovation investment can improve the current level of technological progress, and the direct promotion of broad-based monetary growth to the technological progress of enterprises is higher than innovation. Investment directly contributes to the technological advancement of enterprises. In "Table II", Module 2, using broad money growth as a dependent variable, the technical progress and innovation investment in the first phase are positively correlated with broad money growth. The current broad money growth also depends on the previous broad money growth. In the module 3 of "Table IV", the innovation investment is taken as the dependent variable. The analysis shows that the technological progress of the enterprise with the lag phase 1 can promote the innovation investment of the current period. The broad money growth of the first phase will increase the level of innovation investment in the current period; the level of innovation investment in the current period Rely on the level of innovative investment in the previous period.

TABLE III. REGRESSION RESULTS OF BROAD MONEY GROWTH, INNOVATION INVESTMENT AND TECHNOLOGICAL PROGRESS

Module area	**Module one**	**Module two**	**Module three**
variable	*TEP*	*MP*	*RD*
sample	overall	overall	overall
$TEP_{i,t-1}$	0.522 (0.538)	0.583** (0.002)	0.037* (0.096)
$MP_{i,t-1}$	0.835* (0.037)	0.579* (0.011)	0.049* (0.018)
$RD_{i,t-1}$	0.726** (0.003)	0.570* (0.034)	0.571** (0.001)

D. Robustness Test

In order to test the robustness of the empirical results of this paper, this paper tries the following test: Firstly, the main business income is used to reduce the innovation investment; Secondly, the total factor productivity is the core test variable of this paper. This article refers to Wu Yanbing (2012). The ratio of operating income to number of employees is used as an alternative measure of productivity. The robustness test found that the main regression results were consistent with the empirical results above. The results of the robustness test are shown in "Table IV".

TABLE IV. RESULTS OF THE TEST OF ROBUSTNESS IN BROAD MONEY GROWTH, INNOVATION INVESTMENT AND TECHNOLOGICAL PROGRESS

variable	**Model(1)**	**Model(2)**	**Model(3)**
MP	0.021*** (3.92)	0.023*** (3.77)	
RD			0.061*** (3.88)
FC	-0.043** (-3.78)	-0.081** (-3.75)	-0.056*** (-4.32)
ROA	0.047*** (3.88)	0.089*** (3.65)	0.077*** (3.78)
Lev	-0.041*** (-3.36)	-0.082*** (-3.94)	-0.064*** (-3.32)
Size	0.016** (3.71)	0.072** (3.96)	0.022** (3.53)
Constant term	-0.034** (-3.89)	-0.062** (-3.91)	-0.061** (-3.35)
industry	commanded	commanded	commanded
years	commanded	commanded	commanded
Adjusted R^2	0.3114	0.3118	0.3143

a. Remarks: *, * * * respectively indicate that they are significant at 5 % and 1 %, and the of t statistic is shown in parentheses.

VI. CONCLUSION

This paper selects the enterprises listed on the Shanghai and Shenzhen A-shares from 1997 to 2017 as a research sample, and incorporates broad money growth, innovation investment and enterprise technological progress into the theoretical analysis framework, and empirically tests the mechanism and effect between the three. The conclusions of the study include four aspects: First, broad money growth is an important external influence factor of enterprise innovation investment. Broad money growth has an impact on corporate financing difficulty. Enterprise innovation investment is affected by corporate financing difficulty, so broad money growth It is the external indirect influence factor of enterprise innovation investment. Secondly, the technological progress of enterprises is influenced by enterprise innovation investment and human input. Broad money growth affects enterprise technological progress by influencing enterprise innovation investment, and broad money growth becomes an important external factor of enterprise technological progress. Thirdly, innovation investment is one of the important sources of technological progress of enterprises. Innovation investment is directly related to technological progress of enterprises. Fourth, there is a dynamic interaction between broad money growth, innovation investment and technological progress of enterprises.

ACKNOWLEDGEMENT

This paper belongs to the project of the Fund Project. Fund Project Type: “Fujian Province Social Science Planning Projects”;Fund project number:FJ2015C170;Fund Project Name: Study on the R&D investment effect of private enterprises under New Economic Norms.

This paper also belongs to the project of the Fund Project. Fund Project Type: “Fujian province Young and Middle-aged Teachers Education Scientific Research Project”;Fund project number:JAS150633; Fund Project Name: Study on

the Mechanism of New Economic Norms Influencing R&D Investment of Private Enterprises.

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