
Research on Financial Support for Innovation and Integration of Military and Civil Industries

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Abstract:

The development of military civilian integration can realize the cross domain allocation of financial resources and optimize the allocation efficiency of national financial resources. The theoretical explanation of military civilian integration is to lead the civilian with the military and promote the military with the civilian, which is conducive to the development of cutting-edge technology, the industrialization of cutting-edge technology and the diffusion of advanced technology. Promoting the army by the people is beneficial for military enterprises to make use of civilian technology, capital and market, play the role of scale economy, reduce costs and improve efficiency. The financing mode of military civilian industry integration includes industrial development fund, bank credit and asset-backed bond. The integration of military and civilian needs to establish the capital formation mechanism guided by the government and led by the market, the coordination mechanism of innovation subjects and the operation mechanism of innovation projects. From the experience of international military and civil industry integration and innovation, it is concluded that the financial support of China's military and civil industry integration and innovation needs to establish a diversified financing system in which the government guides market participation, and at the same time, to play an important role in Internet finance.

Keywords: Civil military integration. Innovation mechanism. Financial support.

The report of the 18th National Congress of the Communist Party of China emphasizes the deep military civilian integration, which is an important military industrial reform to achieve "made in China 2025". The 13th five year plan calls for financial innovation and supports military civilian integration projects. Military civilian integration refers to the opening of the closed and separated national defense industry and civil industry ^[1], so that the two can be organically combined to achieve interactive, compatible and integrated development ^[2].

Through the exchange of information, technology, capital, talent and education, military and civilian enterprises integrate resources, mechanisms and laws^[3], which can realize the optimal allocation of resources in the two systems^[4], promote the coordinated development of national defense technology and economic construction, and increase the dual effects of national defense construction and economic construction (Huang Chaofeng, 2013). At present, the military civilian integration has entered a multi field, all factor, deep-seated and high-efficiency stage of in-depth integration development^[4]. But in the process of military civilian integration, financial products and services are still scarce resources. The reason is that the military civilian integration project has the problems of Financial Exclusion, narrow financing channels, less financing tools, single investment channels^[5], low participation of private capital, large proportion of bank loans, excessive government financial investment and low degree of securitization^[6]. In addition, there are investment barriers and high financing costs of private equity transactions (Ross, 2006), which lead to insufficient effective capital supply^[7] and low investment efficiency. However, funds usually prefer industries with short time and quick effect, which results in more local investment and repeated investment, and lack of comprehensive investment fund platform (Lin Ying, 2017). Therefore, how to alleviate the financing constraints of military civilian integration is a problem that scholars are very concerned about. Based on this problem, this paper will conduct in-depth study.

I. CROSS DOMAIN ALLOCATION OF FINANCIAL RESOURCES FOR THE INTEGRATED DEVELOPMENT OF MILITARY AND CIVIL INDUSTRIES

In the integration of military and civilian industries, "Military" refers to national defense construction, and "civilian" refers to economic construction. The state will allocate limited financial resources to national defense construction and economic construction. The purpose of economic construction is to realize fiscal revenue by turning in taxes, while the purpose of national defense construction is to provide security for economic construction. Although they have different missions, national defense construction and economic construction are closely related in many fields. For example, the industrial system, R&D technology, public service, public security, personnel training, network security and other aspects of national defense construction are inseparable from economic construction. Military civilian integration can realize cross domain allocation of financial resources.

The allocation of national financial resources can be divided into three levels: first, the initial allocation of national defense and economic construction. The limitation of financial resources determines that the initial allocation is a relationship of one ebb and another. The second level is the internal distribution of national defense construction and economic construction. In order to achieve scientific and technological innovation and enhance national defense capacity, the limited financial funds should be allocated to all internal departments for national defense construction, while in economic construction, the limited financial funds should be allocated to all departments and fields to promote scientific and technological

innovation, economic coordination and healthy development, so as to enhance people's well-being and turn in more Taxes. The third level is the allocation between the two systems of national defense construction and economic construction, that is, military civilian integration. Economic construction obtains financial funds from the state, but with the development of economy, it returns to the state in the form of tax revenue. It is a two-way capital flow, which forms a virtuous cycle and sustainable development of national financial allocation and revenue. National defense construction also obtains a large amount of financial funds from the state, and it improves national defense capacity and protects economic development. However, it is only a one-way capital supply. If we want to achieve the two-way capital flow of the increase of national defense construction financial allocation and revenue, we need to carry out military civilian integration. The sharing of technology, capital, information and talents within the two systems can realize the social allocation of cross domain resources, reduce the cost of national defense construction, improve the scientific and technological capacity of civil enterprises, optimize the allocation of resources, and adjust the possible shortage and surplus of resources allocation in the initial resource allocation link of national defense construction and economic construction. In essence, military civilian integration is the resource sharing, information exchange, capability sharing, dynamic evolution and coordinated development of the two systems.

If the separation of military and civilian is made, i.e. national defense construction and economic construction are closed and isolated from each other, and the two major fields are independently developed and innovated with the limited financial funds allocated by the government, so as to build national defense and develop economy, the elements such as capital and talents cannot interact and flow, the military cannot introduce the funds, technologies and talents of the civilian, and the R&D achievements and military industrial production of the military cannot be applied to "civilian". This will lead to high cost, low efficiency and weak national defense capacity of national defense construction. At present, China's surrounding areas are still not peaceful, such as the South China Sea issue and Taiwan issue. More financial resources need to be invested in national defense construction. However, there is still a gap between China's economic development level and developed countries, and financial resources are limited. This will lead to excessive allocation of national defense construction, resulting in "siphon effect". Therefore, the social resources allocated for economic construction are relatively insufficient, which restrains economic construction and innovation development, erodes economic growth, and forms a vicious circle of "excessive investment in national defense → insufficient economic construction → shrinking real economy → slowing down economic growth", that is, militarization. The disintegration of the Soviet Union is the reason.

Military civilian integration can effectively solve the problem of excessive allocation of national defense resources. If the national defense resources are over allocated, they can be re allocated to the economic field or serve the economic construction through the infiltration of civil military integration. Similarly, civil military integration can also effectively solve the problem of insufficient investment in national defense construction, which will achieve the

optimal allocation of resources in the whole society. By breaking the wall, the national defense construction will change from "grabbing type" to "integrating type". The "integrating type" national defense construction can make better use of resource conversion mechanism and war mobilization capacity, and enhance national defense construction and national defense capacity^[8].

The integration of military and civilian needs to create a market mechanism, relax factor control, break institutional barriers, enable the technology, talents, information and capital of national defense construction system to exert greater energy and produce greater benefits, raise the water level of "reservoir" of production factors such as resources, capacity, innovation and capital, and "Irrigate" economic construction, so as to realize mutual nourishment of economic construction and national defense construction. Raise the water level of each "reservoir" together, carry out two-way flow of resources, and produce greater comprehensive benefits. On the one hand, military civilian integration can reduce the waste of resources, realize the sharing, intercommunication and co construction of general talents, technology, information, resources and industrial system, achieve one investment and two incomes, avoid repeated investment and reduce the waste of resources. On the other hand, in-depth military civilian integration can realize the optimal allocation of element resources, enhance the military civilian innovation ability, and achieve the effect of " $1 + 1 > 2$ ", so as to create more new products, technologies and industries, and form more advanced productivity and stronger combat effectiveness.

II. THEORETICAL EXPLANATION OF MILITARY CIVILIAN INTEGRATION

Deep military civilian integration can form a pattern of "military leads the civilian" and "civilian promotes the military", which not only promotes the development of military industry, but also speeds up the upgrading of the technology level of civil industry.

2.1 Military Leads the Civilian

The advanced technology of military industry can promote the development of civil industry and form new industry, new technology and new products.

First, develop cutting-edge technologies. The R&D of cutting-edge technology is very difficult, the demand for capital is large, the cycle is long, the rate of return on investment is low, and there is a great risk of failure. Private enterprises do not have the ability of risk bearing and R&D, and also lack the enthusiasm of R&D. even if the R&D is successful, because of the spillover effect of technology, it is easy to be imitated, and the resource allocation is exclusive. If investors invest a lot of R&D funds, and the R&D income is shared by others, they are unwilling to invest, resulting in insufficient investment and market failure. If the country can not master the cutting-edge technology and major technology, the military development will inevitably be in a backward state, unable to guarantee national security and economic development. Investment in military enterprises not only promotes the development of cutting-edge technology, but also promotes the improvement of civil technology and social welfare.

Second, the industrialization of cutting-edge technology. China has been listed in the Paris

Coordinating Committee and the Wassenaar agreement countries with arms and dual-use sensitive technology export embargo. Even for non sensitive technology, if China can't produce it, western countries will also charge high prices. Some neck technology seriously restricts the development of China's cutting-edge technology. Although military enterprises can invest in R&D regardless of cost and cost, the limited resources will inevitably weaken the R&D investment of other cutting-edge technologies, resulting in the overall backward cutting-edge technology. Military enterprises introduce technology and capital from private enterprises, and apply advanced technology to civil field, which not only improves civil technology and promotes the industrialization of cutting-edge technology, but also solves the shortcomings of small production volume, no scale effect and cost advantage of military enterprises.

Third, the diffusion of advanced technology. If military technology only serves military enterprises and is used to produce military products, it will cause huge waste of resources, high cost of research and development, and overburden of national financial burden. More than 30% of the fiscal revenue of the former Soviet Union was used for military R&D and production, but military hegemony did not apply military technology to civil industry, which restricted the development of national economy (Jin Yinan, 2014). If a technology is applied to multiple fields or manufactured multiple products, the value of the technology will rise, the unit cost of new products will fall, and the civil industry will develop rapidly. For example, 90% of the technology of Boeing 707 civil airliner comes from B-52 strategic bomber and KC-135 air refueling aircraft (jinyinan, 2014).

2.2 Civilian Promotes the Military

Civil technology and funds are used for military production, overcoming the uneconomical defects of military production scale, reducing unit production costs and improving production efficiency.

First, the civil industry provides supporting production for the military industry. Modern industry is a multi symbiotic ecosystem. A product is composed of numerous parts, an enterprise is a part of the upstream and downstream industrial chain, and an industry is associated with many industries. Military products are more complex, involving a wide range of parts, even screws have thousands of categories, but the number of military enterprises is small, and the industry field involved is narrow. Civil enterprises can provide military enterprises with raw materials, spare parts, testing instruments, production equipment, and assist military production, which not only provides production profits for private enterprises, but also solves the problem of uneconomical production scope of military industry. The design and production of military industry system in developed countries is composed of main contractor, sub contractor and parts supplier.

Second, reduce costs and improve efficiency. Modern industrial system is modular and standardized production. Standardized production makes large-scale production possible, because machines can produce the same parts, and large-scale production improves production efficiency. Modularization divides the complex system into small modules and transforms the complex production into simple production, which deepens the social division of labor and is

conducive to parallel production and parallel operation. However, due to the small demand for military products, large-scale production cannot be carried out, which limits the cost reduction and efficiency improvement. Due to the large number of civil industry enterprises and large social demand, in order to improve product competitiveness, enterprises will continue to innovate process and management methods. Through the integration of military and civilian, the procurement of non military enterprise products shortens the R&D industrialization cycle, reduces production costs and improves production efficiency.

Third, improve the technical level of the military industry. First, military enterprises have a small number of production and are not competitive. They can only do their best in a limited field. They purchase raw materials and spare parts of civil enterprises with advanced technology and maintain a high level of technology in each link of the value chain of military products. Second, the success of R&D of advanced technology has great uncertainty, high trial and error cost and strong contingency, while the number of military enterprises is small, so they do not have trial and error advantage. Private enterprises have fierce competition. They need to keep trial and error to obtain technology leadership. Purchasing private products and parts can integrate cutting-edge technology into military products. Third, massive data is the basis for the development of artificial intelligence. There are many customers of private products, so it is beneficial to improve the level of artificial intelligence of military products to integrate the military with the civilian.

III. INNOVATION COORDINATION MECHANISM OF MILITARY CIVILIAN INDUSTRY INTEGRATION

3.1 Capital Formation Mechanism

Military civilian integration relies on the basic allocation of resources by the market. However, some military civilian integration projects have long R&D cycle, large capital demand and low return on investment. Private capital is unwilling to invest due to the consideration of income risk, which leads to the lack of financial support for projects with small investment income and large social income, resulting in market failure. At this time, the government should be the main body of resource allocation. The government has realized the social benefits of the civil military integration project through the financial investment, promoted the economic development, and recovered the project investment in the form of tax revenue. However, the scale of government financial funds is limited, which can not meet the funding needs of all civil military integration projects. Therefore, the market mechanism should play a major role in resource allocation. In the R&D stage of the military civilian integration project, the government provides certain policy support to the military civilian integration project through financial subsidies, tax preferences, interest subsidies and risk funds, shares the investment risk of private capital, corrects the income expectation, and guides the private capital to invest in the R&D of the military civilian integration project. In the design and finalization stage of the military civilian integration project, the market prospect is good and the market

demand is clear. The private capital has a high investment enthusiasm for profit motive. In this stage, the military civilian integration project can get the capital injection of venture capitalists, and the state will also provide loan support through policy finance. In the production stage of the military civilian integration project, the product sales market expands, bringing considerable profits and operating cash flow. The military civilian integration project can obtain a large number of bank loans, and can also carry out stock and bond financing in the capital market. The developed capital market improves the exit mechanism of venture capital. Personal capital can become the main body of civil military integration project by purchasing stocks and bonds^[9]. The military civilian integration project also needs to use supply chain finance to obtain financing through upstream and downstream industry chain guarantee, which not only reduces the bank credit risk, but also realizes the resource sharing and risk sharing of military civilian integration industry chain.

3.2 Innovation Mechanism

There is no enclosure for scientific research. Through scientific research, scientific discovery, technological innovation and technological invention are promoted, and industrial production and social progress are promoted. Therefore, there is no research boundary for national defense scientific research and civil scientific research in terms of research laws. The reason for the existence of national defense and civil boundaries is that scientific research achievements and innovative technologies have formed their respective boundaries because of different users, functions and value orientations. But for the scientific research products that can be used in both military and civilian markets, there should be no market boundary, which provides a connection for military civilian integration.

According to the theory of coordination, all parties need to match, complement each other, have the same goal and interact with each other. The coordination of military and civilian innovation is mainly to deal with the relationship between military and civilian participation and coordination, establish a coordination mechanism, and build a platform for collaborative innovation. High-tech enterprises, national defense science and technology institutions, universities and scientific research institutes are the main body of military civilian integration innovation. Because of the market demand and scientific development, they have formed the relationship of interest community and risk sharing, in which national defense research institutions play a role of link. In addition to pure military science and technology research and development, national defense science and technology institutions should also participate in the construction of military civilian integration innovation platform, focus on civil science and technology, dual-use market, integrate civil science and technology innovation with national defense science and technology innovation, and conduct two-way communication, that is, to introduce civil science and technology innovation into national defense science and technology development, and also to make national defense science and technology civilian. High tech enterprises are not only the main body of scientific and technological innovation, but also the main body of civil military integration of scientific and technological innovation application. Enterprises are the participants of market competition and have quick response ability to market

demand and customer experience. The commercial application of civil military integration of innovation needs the innovative initiative of entrepreneurs to solve. Entrepreneurs are the main body to evaluate market risks and promote the marketization of civil military integration of innovation.

3.3 Operation Mechanism

The operation mechanism of civil military integration collaborative innovation includes project management center, intellectual property management center, data management center, science and technology financial center.

(1) Project management center. The project management center is connected with the science and technology management departments of national defense and government, organizes science and technology experts to put forward the requirements and release of major science and technology projects of civil military integration, accepts the application, selection and approval of national defense scientific research institutions, university scientific research institutes and high-tech enterprises, the platform also has the ownership and disposal right of civil military integration scientific research achievements, and the income distribution right of R&D project achievements transformation. The project management center shall establish a project implementation and completion evaluation mechanism, give more project application and project approval opportunities to the scientific research team with good project completion, and improve the reward and punishment mechanism.

(2) Intellectual property management center. The military civilian integration innovation R&D project is related to the national innovation and development. It is necessary to strengthen the management of intellectual property, build intellectual property management center, management project intellectual property database, military civilian integration patent database, intellectual property listing and filing database, intellectual property evaluation database, intellectual property transaction database and intellectual property information database. It is also necessary to provide intellectual property consulting services for civil military integration projects, define the ownership relationship between inventors and intellectual property institutions, and increase the proportion of research and development revenue sharing of inventors, so as to stimulate innovation vitality.

(3) Data management center. Based on the scientific research management experience of National Defense Key Laboratory, regional national key laboratory, large-scale scientific research equipment and scientific and technological testing center, integrate scientific research facilities and establish a database of scientific research facilities. It is necessary to integrate military and civilian integration research teams, scientific and technological management personnel, scientific and technological R&D personnel in relevant fields, and build a talent database. Establish the database of military and civilian scientific and technological achievements, release the information of military and civilian integrated scientific and technological achievements, and realize information sharing.

(4) Technology finance center. We will adopt government and military initiatives to attract the participation of social capital and establish a science and technology financial center. The

government guides banks, fund companies, insurance companies, venture capital companies, guarantee companies, venture capital and angel investment to participate in the construction of science and technology finance platform through venture capital guiding fund, financial subsidy, tax preference, science and technology loan and government acquisition. The government should use Internet technology, improve the credit mechanism of commercial finance, provide financing facilities for civil military integration projects, and support scientific research and development projects, achievement transformation and industrialization.

IV. FINANCING MODE OF MILITARY CIVILIAN INDUSTRY INTEGRATION AND COLLABORATIVE INNOVATION

4.1 Industrial Development Fund

The fund is a combination of bonds and stocks, with a large scale of financing, which can achieve professional management, market operation, policy guidance, and increase the ability of financial capital to support the military civilian integration industry. According to the nature of the sponsors, it can be divided into national industrial fund, science and technology guidance fund, local and industrial fund. (1) National Industrial Fund. From the establishment of the national industrial fund in 2006 to 2016, more than 600 billion yuan has been raised, which has provided financing for the reform of state-owned enterprises, military industrial enterprises and the integration of military and civilian industries, optimized the selection of talent savings and the integration of military and civilian projects, increased the sources of funds for the projects, expanded the foundation of the integration of military and civilian industries, and promoted the transformation and upgrading of the integration of military and civilian industries. (2) Science and technology guidance fund. It is a special fund and investment fund for high-tech industry set up by the government with the participation of banks and capital markets, which is used to support the development of small and medium-sized science and technology enterprises and national key industries. The main models include Shanxi "guide fund + guarantee company", Nanjing "financial supermarket + bank enterprise connection", Guangdong "big data + intellectual property guarantee", Guangdong "EMC + supply chain finance". (3) Local and industry funds. Local and industry funds include provincial and municipal funds, military industry group funds and phased funds. Provincial and municipal funds are raised by the provinces and cities, with limited scale and strong regional characteristics. They are invested in the dual-use fields of infrastructure, advanced technology, and military civilian integration innovation demonstration areas, such as Guizhou military civilian integration industry development fund. The fund of military industry group is a fund set up by military enterprises to carry out joint-stock transformation, which aims to attract civil capital into national defense science and technology, and activate the stock assets of military industry. For example, Guohua military civilian integration industry development fund, science and technology stage fund is a fund set up for science and technology enterprises, whose financing difficulties are caused by asset light, long investment cycle and R&D risk. Their investment fields are limited and small,

so they cannot produce demonstration effect, such as Mianyang military civilian integration Achievement Transformation Fund.

4.2 Bank Credit

The degree of industrial capital convergence is the main index to measure the degree of military civilian integration. Bank is the main form of capital settlement in China. Bank credit is the main financing mode of military civilian industry integration innovation. The scale of bank credit financing is limited and the application procedures are complicated. In order to effectively support the national strategy of military civilian integration development, banks should innovate financial products and establish a green channel for credit approval. According to the characteristics of military civilian integration of science and technology industry, which is light in assets, high in risk and high in interest rate, it is necessary to establish a bank loan that is light in mortgage, heavy in credit, flexible in guarantee and preferential in interest rate, in line with the internal capital demand and development law of military civilian integration enterprises, innovate financial products and financial services, launch military civilian integration of R&D loan, financial single business and comprehensive financial products, and ease the difficulties in innovative financing of military civilian integration industry. Military civilian integration R&D loan refers to the low operating profit rate and high asset liability ratio of an enterprise due to market factors rather than its own factors (for example, the steel industry is in recession, which leads to the decline of enterprise profits and the deterioration of financial situation). The bank should reduce the credit level of an enterprise, adopt credit easing policies, and turn from Statement Review to evaluation of military civilian integration industry projects. If the product of the project has a wide range of dual-use, high precision of science and technology, strong innovation ability and good market prospect, the project credit loan should be carried out. Financing business, namely supply chain loan. The military civilian integration industry has a strong upstream and downstream business supply chain relationship. According to the reward and punishment mechanism of the credit platform of the people's Bank of China, as well as the strong credit accumulation and implementation function of the Internet, supply chain secured loans should be launched. Integrated financial products refer to the whole process of banking services innovation and construction of the civil military integration industry. Relying on Internet plus, energy and civil integration energy sales and Beidou navigation, banks should provide financial services such as Internet credit loan and oil shopping, modern logistics, corporate finance and so on, so as to connect the civil military integration industry. The green channel of credit approval refers to increasing the credit line, simplifying the approval process and improving the approval efficiency for the military civilian integration enterprises with strong technical strength, rapid sales growth and small financial risk.

4.3 ABS

Asset backed securities (ABS) is a debt financing instrument issued by using the capital market, based on the expected cash flow of "asset pool" and the portfolio of assets as collateral. The transaction initiator "sells" the basic assets to the special purpose vehicle (SPV) for bankruptcy isolation between the issuer and SPV, which is issued and traded by SPV. In order

to reduce the issuing cost and attract more investors, the ABS issuer SPV will carry out credit enhancement on the bonds. Credit enhancement is not only a kind of credit guarantee, but also a risk sharing mechanism, whose corresponding risk is borne by the guarantee company and the sponsor of SPV respectively. ABS financing of military civilian integration industry not only solves the security leakage caused by equity financing of military industry, but also solves the problems of high cost, short term, small amount, poor liquidity and single financing means of bank loan financing. Increasing the financing proportion of ABS can effectively reduce the financing risk of military civilian integration industry. The focus of ABS financing is assets, bonds and international market. The government should encourage and support the listing of military civilian integration enterprises, carry out industry joint asset securitization, take advantage of China's technological and economic advantages in the world military industry system, enter the international capital market, increase the financing scale and the liquidity of bonds, so that the military civilian industry integration will get financial support from the international capital market. BT project financing can also be used for military civilian integration industry financing. In the major military development projects, the core and important part of the project adopts ABS financing, because ABS investors do not participate in the implementation process of the project, which can ensure the security of leakage of military projects. At the same time, for the open part of the project with low security requirements, BT financing can be used, which can realize the separation of the monetary value and the use function of military industrial products, and achieve the income sharing and risk sharing of the main body of military civilian integrated investment and financing.

V. INTERNATIONAL EXPERIENCE OF FINANCIAL SUPPORT FOR MILITARY CIVILIAN INDUSTRY INTEGRATION AND INNOVATION

5.1 American Experience

American civil military integration is a model of "market mechanism + government guidance". In the 1960s, the United States began to integrate the military and the civilian, and after the collapse of the Soviet Union, it launched in an all-round way. The U.S. defense budget is very large, and the fiscal deficit is serious. If the military and civilian are separated, the national finance will not be able to bear it. Therefore, the U.S. has reformed the military standards, introduced the market mechanism, adopted the acquisition system, and guided the private enterprises (actually, the consortia of large enterprises) to carry out military R&D and production. The developed capital market provides sufficient financial support for private enterprises to carry out military R&D and production. In the first 10 years of this century, Boeing, Raytheon and Sid Martin's capital market securities financing accounted for more than 95% of the total financing, of which bond financing accounted for more than 70%, and ABS accounted for more than 35% of the bond financing. ABS can broaden the financing channels, activate the stock assets, improve the quality of assets, optimize the financial situation and disperse the financial risks. In 2006 alone, Raytheon company has used ABS to finance 113

million US dollars. The U.S. government uses the "visible hand" to guide the market through acquisition, and makes full use of the "invisible hand" to absorb social capital through the capital market, which meets the needs of the industry and financing of military research and maintains the world's most powerful military hegemony.

5.2 Japanese Experience

Japan is a typical policy financial support mode of "covering the military with the civilian". The government's military R&D expenditure is less than 1%, the total national R&D investment is only 20%, and the private enterprises have completed 80% of the national defense R&D projects. There are 2500 private military enterprises with 40000 employees, annual output value of military industry is 20 billion US dollars, and the military rate of civil advanced technology is high (zhouquan, 2018). Japan has built a leading national defense technology strength in the world mainly through military R&D of private enterprises, which mainly relies on the support of policy finance. Japan has cultivated a large number of well-known private military enterprises, such as Japan steel, Kawasaki heavy industry, Mitsubishi Heavy Industry, etc. through preferential tax policies and financial subsidies. In addition, a large number of small and medium-sized private military enterprises have been cultivated through policy finance, low interest loans, unsecured loans and other financial inclinations, and the equity and bond financing policies of small and medium-sized private enterprises have been facilitated, and various financing channels such as venture capital and lease financing have been developed to guide small and medium-sized private enterprises to carry out military research and development and production. Japan has also greatly improved its military research and production capacity by participating in international cooperation to introduce advanced military technology, such as the missile interception system of the United States and Japan, the joint R&D agreement between Ishikawa heavy industry and TD Company of the United States, and the F35 R&D.

5.3 Russian Experience

Russia is a typical "military before civilian" country. In the Soviet period, the United States and the Soviet Union competed for hegemony, the Soviet Union gave priority to the development of national defense construction, the economic construction served the national defense construction, the abnormal development of national industry, and finally led to the collapse of the Soviet Union. The priority given to military development has weakened Russia's economy both in the Soviet era and now. In order to solve the problem of military civilian separation in Russia, the Russian government actively launched the policy of military civilian transfer. The state immediately formulated the civil law of military civilian transfer in Russian Defense Industry, which requires providing financial support for military civilian transfer enterprises, setting up a professional bank to issue financial loans, and supervising the use of funds for military civilian transfer enterprises that have obtained government financial funds. The state-owned banks provide guarantee loans for military civilian integration projects and military civilian integration enterprises. Financial industry groups should be established to promote the self coordinated development of military research and development, production,

trade and finance of private enterprises. The establishment of the Export Bank of military industry serves the export of military products. The scale of Russia's international military trade is second only to that of the United States. A large number of arms export orders earn huge foreign exchange income for Russia and maintain the development of Russian military industry and military to civilian enterprises. The government should sign military orders with military and civilian enterprises, increase the share of private investment of military and civilian integration enterprises, promote the securitization of military and industrial enterprises, encourage the entry of foreign capital, and guide the participation of private capital. Technology development foundation, basic research foundation and science and technology small enterprise development foundation must be established to provide financial services for military civilian integration research projects^[10].

VI. FINANCIAL SUPPORT PATH FOR THE INTEGRATION AND INNOVATION OF MILITARY AND CIVIL INDUSTRIES

6.1 Improve the Fund Support System for the Integration of Military and Civil Industries

The military civilian integration financing system is composed of fund, bank loan and capital market. The current capital market in China is not perfect. Considering the income risk, the bank loan is not willing to issue loan during the R&D period of military civilian integration project, but the military civilian integration project needs financial support most at this stage. Compared with bank loans and securities financing, the fund platform is more active, which can mobilize and guide the participation of social capital, diversify the investors, guide the real economy more in line with the national industrial policy, and solve the problem of market failure. According to the nature of the sponsors, the fund can be divided into international cooperation fund, policy guarantee fund, industry investment fund and government guidance fund. According to the form of income, the fund can be divided into investment fund and public welfare fund. According to the investment mode, the fund can be divided into fund, loan, creditor's right and equity diversified investment fund, among which the industry fund jointly funded by the state, local government and investment institutions is an important financial tool for national defense construction and economic construction. It not only gives certain financial support to the military civilian integration project, but also supports small and medium-sized technology enterprises and promotes the real economic development of military civilian integration. The fund system not only supports the funding needs of civil military integration projects, improves the risk management capabilities of civil military integration projects and enterprises, but also guides social funds to participate in national defense construction, industrial development, infrastructure construction and personnel training construction, which expands the scale, scope and efficiency of civil military integration capital participation.

6.2 Deepening the Reform of the Integration and Innovation of Military and Civil Industries

To solve the financial exclusion of military civilian integration innovation, we need to improve corporate governance, improve the legal system, reasonable military price formation

mechanism, enhance the enthusiasm of social capital and bank funds to participate in military civilian integration projects, and the market must play a fundamental role in resource allocation. We must improve the governance structure of the group company. Through the company law to regulate the company's articles of association, the rights and obligations of parent and subsidiary companies, deepen the reform of mixed ownership of state-owned enterprises, introduce the supervision of major shareholders, develop the manager market, reduce administrative intervention, take the maximization of shareholders' interests as the goal, improve the executive compensation incentive contract, and reduce agency costs. We should improve the legal environment of civil military integration financing by referring to the U.S. National Defense appropriation law, national defense appropriation authorization law, contract competition law, national defense contract law, securities law and trust law. Replace the current financing administrative approval with legislation, improve the financing environment, let the market play a fundamental role in resource allocation, reduce rent-seeking behavior and free riding phenomenon in military civilian integration innovation, and strengthen the incentive and constraint mechanism of financial resource allocation. At the same time, we should reform the price mechanism of military products. Change the cost plus pricing model of military products. The original intention of the cost plus pricing model is to determine the sales price according to the cost, encourage the enterprises to carry out cost management and optimize resource allocation. However, a large number of scientific and technological innovations have been condensed in military civilian integration products. Many projects involve infrastructure construction and major national investment construction, with small micro income and large social income, which are not attractive for social capital participation. Therefore, social income pricing can be used to improve the rate of return on project investment, which is conducive to the project financing from the capital market.

6.3 Develop Diversified Financing System

We need to develop a diversified financing system for military civilian integration. The financial support for military civilian integration in the United States is mainly the market mechanism of "military civilian integration", which is the helpless choice of the United States' world hegemony but the lack of financial funds for national defense construction. The militarization of private enterprises leads to the government becoming the agent of the warlords of military industrial enterprises. The warlords participate in the redistribution of national income through military industrial orders, and the social benefits of military civilian integration projects are small. Restricted by the "Peace Constitution" after World War II, Japan adopts the strategy of "covering the military with the civilian" for military civilian integration. The national military enterprises are weak. 80% of the national defense research investment is undertaken by private enterprises. The government gives policy financial support to key military enterprises and small and medium-sized private military enterprises, and also provides them with direct and indirect financing facilities. Because of its weak financial infrastructure, backward economic development and insufficient financial resources, Russia adopts the military civilian integration strategy of "first military, then civilian". The main sources of funds

are financial funds and science and technology development funds. China's military construction takes "peace building" as its goal, and there is no military hegemony or plutocracy. It is a victimized and victorious country in World War II. It has a good environment for national defense construction, rapid economic development, and its national defense budget matches its economic development. Therefore, China should learn from the experience of military civilian integration financial support of other countries, build policy financial guidance, fund support, improve the commercial financial system such as bank credit, insurance and guarantee, develop capital market, improve market mechanism, encourage broad participation of social capital, and build a diversified military civilian integration strategy with Chinese characteristics.

6.4 Build an Internet Credit Platform

Every country attaches great importance to the innovation and development of civil military integration, and gives great policy financial support. As the main body of the innovation and development of civil military industry, according to the assumption of self-interest, enterprises may have agency costs in the application and implementation of civil military integration projects. The establishment of Internet credit platform can transform credit behavior into credit capital, and higher credit capital accumulation will obtain more project investment and policy financial support. At present, the Internet is very popular. All transactions of civil military integration enterprises will be recorded on the Internet. The national credit system can cooperate with Internet companies to establish a credit platform. The credit platform consists of four parts. One is the basic database of credit. Such as the application of civil military integration innovation projects, selection of evaluation experts, evaluation of innovation projects, project approval, evaluation of scientific research awards, use of funds and other databases. Second, credit rating platform. The evaluation platform reflects the implementation of civil military integration projects, mainly the transformation of scientific and technological achievements. Including new products, new patents, patent output, trademark licensing, licensing revenue, R&D funds, copyright and other market-oriented indicators. Third, credit guarantee platform. Make full use of the professionalism and independence of the third-party evaluation institutions, through project competition, project evaluation, selection mechanism, fair allocation of scientific research funds, and based on objective data, play an instrumental role in the performance of civil military integration projects. Fourth, the excitation platform. Establish a black and white list system for civil military integration projects. Enterprises with high credit scores should be given more project approval and financial support. Enterprises with poor credit scores should be strictly subject to project approval and improve the reward and punishment mechanism.

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