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Credit development strategy of China's banking industry to the electric power industry

Yitong Niu[1*], Linqian Jiao[2], Andrei Korneev[1]
[1] Faculty of Electrical Engineering, Belarusian-Russian University, Mogilev, Belarus
[2] Northeast Forestry University, Harbin, Heilongjiang, China

*Corresponding author: itong_niu@163.com

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Abstract
With the increase of harmful substances and greenhouse gases that need to be discharged from the traditional thermal power in industrial production in China, the phenomenon of climate warming is becoming more and more prominent. Clean energy will continue to increase in China's future energy consumption structure and market share, hydropower, nuclear power, and other energy as China's main clean energy, the future in China still has a huge market development and use of space. The new policies further adopted by the central bank of China include: continuously optimizing the structure of reasonable credit fund allocation and risk fund application for electric power enterprises to enhance the return rate of assets of electric power enterprises; continuously supporting the development of smart grid and strengthening the linkage between network and electric power; reasonably and categorically guiding the source of clean utilization of electric power, actively supporting large hydropower generation and solar and nuclear power generation, and investing funds in a controlled manner to support large thermal power generation, promote the upgrading of the thermal power generation industry structure, cautiously guide funds into large biomass power generation, wind power generation and small and medium-sized micro-hydro power, strictly control small and medium-sized thermal power, as soon as possible to withdraw from the implementation of the national preferential policies for small and medium-sized power industry management system, energy conservation and reduction of harmful emissions of environmental gases of enterprises is not possible to meet the standards and there are financial risks business efficiency situation Small and medium-sized electric power enterprises that continue to seriously deteriorate.

Keywords: Bank credit policy, New energy generation, Installed capacity

1. Introduction

1.1. Use of word-processing software

The growth rate of China's electricity demand has been highly positively correlated with the growth rate of its GDP. 2006-2018, China's total electricity production and electricity demand have been in a tight balance of high growth, but the growth rate does not match the demand: before 2006, China's electricity demand peaked at a serious shortage of available electricity compared with its electricity demand [1]. In 2006, China further increased its direct investment support for the power industry, and the growth rate of the total installed power capacity of the national power grid peaked at about 20.6%; in 2007, along with the adjustment of the national power macro policy and the increasing effect of electricity control, the growth rate of the total installed power capacity of the national power grid also increased slightly; in 2008-2009, the growth rate of the total installed

power capacity of the national power grid increased slightly. In 2008-2009, due to the serious impact of the global economic and financial crisis, the growth rate of China's real economy gradually slowed down and weakened, and the growth rate of domestic electricity demand slowed down and declined significantly; in 2010-2011, with the policy promoting the recovery of China's real economy, the growth rate of domestic real electricity consumption gradually began to pick up; in 2012, the growth rate of electricity consumption gradually began to pick up. In 2012, with the slowdown of China's real economy, the growth rate of domestic electricity generation and actual electricity consumption both slowed down and decreased significantly; in 2015, the growth rate of electricity generation and actual electricity consumption continued to decrease significantly and rapidly became a new low point in China's economic history; from 2016 to 2019, with the gradual slowdown and rebound of the domestic electricity market and other external factors, the growth rate of domestic electricity demand will continue to decrease. Under the influence of various comprehensive external factors such as the gradual slowdown and rebound of the domestic electricity market, the overall economic operation of China's physical electricity market has gradually stabilized, and the growth rates of both total domestic electricity generation demand and international electricity demand have steadily slowed down and rebounded [2].

2. Commercial banks' guidelines for credit investment in the power industry

The overall development trend in 2019 is good, and is expected to maintain a certain growth rate in the future. According to the direction of China's macroeconomic policy guidance, the operating characteristics of each sub-sector, risk control characteristics and the direction of future business development, combined with the risk and return analysis of commercial banks' existing stock of loans to the power industry, the general principles of credit investment are determined as follows: continue to optimize the structure of credit placement and utilization to enhance the return on assets; continue to support the power grid and strengthen the network power linkage; categorize and guide the source of power Actively support large hydropower generation and nuclear power generation, support large thermal power generation in a measured manner, promote structural upgrading of thermal power generation, cautiously enter biomass power generation, wind power generation and small and medium-sized hydropower, strictly control small and medium-sized thermal power, and withdraw as soon as possible from power enterprises that do not meet the national power industry system policy, save energy and reduce harmful environmental emissions that do not meet the standards and have deteriorating financial and operational conditions.

3. Customer service strategy and its access criteria for the power industry in China for all sectors and subsidiaries of the power industry

3.1. Power grid industry

3.1.1. Customer Segmentation Strategy

Customers of the two major power grid group companies and other power grid group companies at the provincial level are defined as the first category of customers. Commercial banks should actively intervene in the first category of customers and provide other customers with a series of comprehensive financial service solutions including but not limited to investment project financing, trust product financing, bond product underwriting, short- and medium-term financing, etc., further strengthen the linkage with the grid and electricity finance, enhance the in-depth cooperation with the two major power grid group companies, and drive upstream and downstream related enterprises and customers' Funds settlement and associated customer funds collection.

The two major local power grid enterprise groups to their affiliated quality local power grid group subsidiaries at prefecture level or above, or quality provincial local power grid group subsidiaries with the same operating and management status as them; the two major power grid enterprise groups to their wholly-owned quality power supply enterprises of provincial quality power grid project operating enterprises or district-level quality power supply project operating enterprises for which they provide financing guarantees for quality power grid enterprises or projects. Subsidiaries of district-level quality power supply groups that are wholly owned by the two major local power grid enterprise groups to the provincial quality power grid project operating enterprises under their jurisdictions and have good net operating profits and positive net operating profits for three consecutive years. For the second category of customers, commercial banks should selectively allow them to participate in relevant power grid enterprises or projects and extend their credit financing business to the intermediate business of assets, liabilities and settlement to improve their comprehensive contribution.

The customers of other large power supply project financing enterprises are classified as the third category of customers. For the customers in the third category, the management institutions of commercial banks should adopt a prudent management and access financing attitude in a timely manner and intervene cautiously, with the following specific strategies: commercial banks shall not directly invest in loans that classify the project as the third category, and at the same time, they shall not directly intervene in large power supply project investment in administrative counties with underdeveloped economy, directly controlled by county-level people's governments or other social groups with state-owned capital, or other large power supply projects with serious losses. Enterprises are not allowed to intervene directly.

3.1.2. Criteria for project access

The first and second category companies are jointly responsible for the design, operation, and loan of new large-scale smart grid supporting projects across cities, mainly including UHV transmission and substation supporting projects, cross-city regional transmission and substation projects, and other transmission and substation projects for cross-city regional power transmission network infrastructure construction and rural grid transformation, regional grid interconnection projects, rural large-scale smart grid transformation and upgrading supporting projects. and other large smart grid infrastructure projects that rely on the key links of generation, transmission, and substation derived from UHV transmission and substation, etc. [3].

3.2. Theory/calculation

3.2.1. Customer segmentation strategy

The main shareholders of the holding company are the central enterprises and provincial power enterprise groups of the four major domestic power companies; the total designed installed capacity is not less than 1.2 million kilowatts, and the total designed installed capacity of the generating units accounts for more than 60% of the total designed installed capacity of the coal power enterprise; the enterprise's asset-liability ratio is less than or equal to 75%, and the last three years have not continuously achieved continuous profitability of large coal power enterprises. For such large customers, commercial banks can generally lend to the project by selecting high-quality enterprises for direct intervention, focusing on "large and small" projects, integrating of coal and power assets, and moderate direct intervention involving coal power We focus on projects that involve the upgrading of desulfurization and denitrification technologies of coal power enterprises and the transformation of large coal power projects, and on enhancing the bargaining power of enterprises by optimizing the asset guarantees of coal power enterprises.

The second category of investment customers: First, the representative requirements for shareholders of legal entities or holding companies are the same as those for the first category of investment customers; second, the evaluation criteria for the total installed capacity of thermal power generation.

- The total installed capacity of conventional large coal power cogeneration enterprises should generally be greater than or equal to 1.2 million kilowatts, and the installed capacity of thermal power generating units accounts for more than 60% of the installed scale of the total installed capacity of the coal power enterprise.
- Large cogeneration enterprises with a total installed capacity of not less than 600,000 kilowatts, and more than 300,000 kilowatts and the total installed capacity of thermal power generating units accounted for the total installed capacity of the coal power enterprises should generally be greater than 60%.
- The gearing ratio of large coal power enterprises should generally be less than or equal to 80%, and at the same time, no losses have been incurred for three consecutive years in the last three years. For such investment customers, commercial banks can generally consider selecting high-quality, low-cost large thermal power generation investment enterprises, and lend for short-term terms, and moderately intervene in expansion, renovation, and other new thermal power generation projects that are assessed to be feasible and can be further implemented with valid security conditions.

Thermal power generation enterprises that cannot meet the requirements of both Type I and Type II customers are defined as Type III customers on the premise that the total installed capacity must be greater than or equal to 300,000 kilowatts, the asset-to-liability ratio must be less than or equal to 85% in the last three years, and the net profit growth rate must be greater than or equal to 0 in the last three years. For such customers, commercial banks may choose to continue to maintain their existing stock of third-class credit products, optimize the structure of their credit business, refrain from adding new loans against pledges for commercial investment projects, prudently add new enterprise cash flow loans, choose to meet the demand for funds from third-class enterprises by selling third-class products through direct trade financing, adjust the way enterprises guarantee loans, and increase the proportion of loans against pledges.

3.2.2. Project access criteria

The following conditions must be met to finance new thermal power generation construction projects:

- The new project capital must be legally established and complete with relevant procedures, and the proportion of capital must be greater than 10% or equal to 20%.
- The coal consumption of new units for thermal power generation must fully comply with the national policy of special emission standards, the average annual time of units for thermal power generation must be greater than or equal to 5,000 hours, and must be equipped with simultaneous installation of dust removal, desulfurization, denitrification robots, and other facilities, for new thermal power generation projects in the national key emission control areas must be fully met in line with the national special coal consumption The relevant requirements of the emission standard limit value.

The maturity of loans for new projects must be less than or equal to 15 years in principle, and special emphasis must be placed on valid interests such as the right to income from electricity tariffs that can be pledged.

4. Discussion

4.1. Conventional hydropower customer classification strategy

- The main shareholders of China Power Holding Company are the four major central enterprises, such as China Power Group, and the central enterprises with abundant hydropower resources and high market share above the provincial level and local hydropower generation short-term financing enterprises above the provincial level and the scale [4].
- Total installed hydropower development capacity of 250,000 kilowatts (including) or more and the average annual installed hydropower generation capacity of a single station is greater than 50,000 kilowatts (including).
- Short-term financing enterprises with an asset-liability ratio less than or equal to 70% in the last three years and positive net profit in the last three years will intervene to meet the above two financing conditions at the same time to define customers as the first category of short-term financing customers. For such short-term financing customers, commercial banks and financial institutions should take the initiative to intervene to help corporate customers who meet the banking access and financing standards for new large-scale hydroelectric power generation construction projects and should provide short-term financing support products for corporate customers who have temporary capital needs such as unit maintenance, spare parts procurement and electricity bill settlement, as well as operational turnover business needs.
- The number of shareholders of the project financing enterprise and its holding company should be the same as the first type of financing customer.
- The total installed capacity of the enterprise's single station should be no less than 50,000 kilowatts (including), and the average monthly installed capacity of the single station is greater than 10,000 kilowatts (including) [5].

- The ratio of assets and liabilities of the project financing enterprise in the last three years should be less than 70%, and the net profit of the project financing enterprise in the last three consecutive years is greater than 0. All the project financing enterprises meeting the above financing conditions can be defined as the second type of financing customers, and for such financing customers, commercial banks can provide support for their under-construction projects with short and medium-term under-construction financing, and the interbank loans in the short-term financing of under-construction projects should account for less than 30%. The percentage of interbank loans in short-term financing for projects in progress should be less than 30%. Other conventional hydropower generation enterprises that do not meet the above requirements are defined as the third category of customers. For such customers, commercial banks should strictly prohibit the issuance of new project-based loans and cautiously intervene in new working capital loans.

4.2. Access criteria for conventional hydropower projects

Conventional hydropower mega-project construction must simultaneously meet the following conditions:

- mega-project investment project legal compliance conditions and procedures are complete.
- The proportion of the project's registered capital is greater than 20%.
- Large single project initial installed capacity in principle shall not be less than 2.5 million kilowatts, and the initial construction of large projects in principle, the total installed power generation capacity shall not be less than 5 million kilowatts.

Extra-large projects in principle, the loan procedures for megaprojects should not exceed 20 years. For mega hydropower projects that are part of the national key hydropower project planning and construction projects, the first phase of loan repayment is relatively stable, and the economic strength of the shareholders of the enterprise is strong, commercial banks can generally provide services to extend their loan terms.

4.3. Nuclear power industry

4.3.1. Customer segmentation strategy

For large nuclear power project development and investment enterprises such as China National Nuclear Corporation and China Guangnuclear Corporation, we should actively participate in the construction of national nuclear power development projects that are in line with national planning and development and have been approved by the central government; provide short-term direct financing services and products to meet the actual medium- and long-term operational working capital needs of nuclear power development enterprises to fully meet their daily needs; and extend or expand to the entire industrial chain such as nuclear fuel, nuclear machinery manufacturing, and other nuclear technology-related applications through business penetration [6]. Through horizontal business penetration, we can extend or expand to the entire industrial chain of nuclear fuel, nuclear machinery manufacturing, and other nuclear technology-related applications to meet the short- and medium-term operational working capital needs of small and medium-sized enterprises; we can also focus on the direct financing needs of enterprises, leverage the advantages of Chinese commercial banks in providing comprehensive financial services, and strive to obtain lead underwriters or other capital Qualifications to be attributed to the industry.

4.3.2. Project access criteria

New nuclear power generation projects must meet and satisfy the following conditions:

- nuclear power generation project master plan should be strictly in line with the national requirements of the overall plan for the development of nuclear power generation, nuclear radiation, and nuclear waste disposal must be strictly in line with the standards.
- Nuclear power generation project feasibility study assessment report, environmental technology assessment, land, and other legal documents must be compliant with all the procedures, the proportion of capital is greater than 20%.

- New nuclear power generation units must strictly comply with the third generation of safe nuclear power technology standards [7].

Measures to guarantee loans to commercial banks must be strictly implemented.

4.4. Wind power industry

4.4.1. Customer segmentation strategy

For China's five major power companies and wind power enterprises belonging to the central control, commercial banks should actively enter, for the local power resources, high market share, the main business obvious provincial-level large power companies, commercial banks should be appropriate to enter. For individual, private, foreign-owned wind power enterprises, commercial banks should be cautious, and can only carry out low-risk non-medium and long-term credit business, and are not allowed to handle project loan business **Error! Reference source not found.**.

4.4.2. Project access criteria

Newly approved wind power projects must meet the basic conditions, including:

- the actual shareholding ratio of the project's registered capital is greater than 20%, the project has been approved by the National Energy Board of wind power projects, and the construction of power grid projects in the provinces with the approval of the construction planning table, feasibility study reports, environmental resource protection evaluation, grid access, etc., to comply with the regulations. And these belong to the offshore wind power class projects should also be obtained at the same time the relevant state departments of the sea wind power project pre-screening opinions **Error! Reference source not found.**.
- wind power projects to match the construction requirements of the offshore power grid projects to be used for offshore construction at the same time, the project is completed to meet the requirements of all wind power online, generator sets in certain conditions within the range of voltage dips and continuous operation time interval must have an effective guarantee does not affect the wind power off-grid continuous full-load operation conditions and capabilities **Error! Reference source not found.**.
- within a year, the unit under the conditions of continuous operation at full load, the number of hours of operation more than 2 000 (inclusive), for the use of sea wind power grid project tariff than 0.6 yuan / kWh countries and places, within a year, the unit under the conditions of continuous operation at full load, the number of hours of operation more than 1 800 (inclusive), offshore wind turbines, within a year, the unit under the conditions of continuous operation at full load, the number of hours of operation The number of hours exceeds 3 000 (inclusive) **Error! Reference source not found.**.
- Central enterprises or large power companies at the provincial level or above as the actual controller of the project.
- Project-based loans should have a loan term of fewer than 15 years, and the bank should obtain a pledge of the enterprise's power revenue rights or a guarantee from the enterprise's shareholders.

4.5. Biomass power industry

4.5.1. Customer Access Requirements

With the five major national power companies, central enterprises with operations in the biomass power generation industry as the ultimate controllers, or companies that have successfully gone public **Error! Reference source not found.**.

4.5.2. Project access criteria

The newly established biomass power generation project should meet the following requirements:

- The project should be authorized to sign the access of the department; the capital ratio cannot be less than 30%;

- the final controller of the project to meet the above enterprise access standards, at the same time, the final controller of the project to provide guarantees for the project;
- The project should adopt mature and perfect technology, have sufficient supply of biomass fuel, and the price of raw materials is in a reasonable range.

5. Risk warning and restructuring requirements

5.1. Asset quality classification to strengthen risk management and eliminate hidden risks of credit granting

Although the development and operation of the power industry around the world have been maintained in good condition, its various sub-regions of the power industry are also some constraints, commercial banks in the credit support for the power industry at the same time should also strengthen risk monitoring and early warning management, for those who do not comply with the national environmental protection policy, financial indicators appear early warning, there are potential risks of the enterprise, should take early repayment or refuse to loan measures and methods **Error! Reference source not found.**.

5.2. Gradually optimize the structure of credit products and focus on the liquidity management of credit assets

The policy-oriented commercial banks should give support to the medium and long-term loan varieties of the power industry characterized by: most of the loans have relatively long maturities and are secured by way of collateralized credit. The policy-oriented commercial banks and financial institutions should actively adjust the structure of their credit, focusing on the use of loans and loan maturity of a reasonable degree of matching and management of liquidity **Error! Reference source not found.**.

6. Summary

This paper introduces the current operation profile of China's power industry and analyzes the credit direction of China's banking industry for the renewable energy industry. It is concluded that the reform of the power system affects the financing demand, and the change of financial environment affects the supply of financial services, both of which together determine the future financial development of the power industry. Comprehensive judgment, the future financing characteristics of the industry are increased demand for financing, lower financing costs, diversification of financing tools.

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