Research on the Supervision Path of Financial Institutions Accessing Central Bank Credit System from the Perspective of Data Governance

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Abstract. In 2006, the national unified enterprise and individual credit information basic database led by the Central bank was completed and successfully connected nationwide. In recent years, the number of access institutions of the credit investigation system has increased, the scope of coverage is wider, the included information has increased rapidly, and the number of data inquiries has become increasingly large. According to the “Central Bank Credit System Construction Report”, the access institutions of the central bank include banking financial institutions, small loan companies, housing provident fund management centers, insurance companies, trust and investment companies, financial asset management companies, financing guarantee companies and other institutions. Among them, financial institutions account for a large proportion of the access institutions of the central bank, but so far there is no unified standard for the pre-conditions and follow-up management of the access of financial institutions to the credit investigation system. With the increasing importance of credit investigation system, it is necessary to regulate and supervise the financial institutions it connects to. Therefore, this paper studies the path of access of financial institutions to the Central bank's credit investigation system. On the one hand, it is convenient for the central bank to carry out systematic management of access financial institutions, and on the other hand, it can improve the integrity and accuracy of credit information of the central bank's credit investigation system. This paper holds that the supervision of big data on the access of financial institutions to the credit investigation system should, on the one hand, improve the legal basis of big data credit investigation, formulate unified data collection standards for access institutions, and on the other hand, formulate unified data preservation and processing rules, and refine data application rules after access. As the largest credit information platform in China, the central bank credit information system plays an important role in improving our country's credit information system.

Keywords. Data Governance, Financial Institution, Credit Investigation System, Supervision Mechanism

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1. Introduction

As the core system of China's credit investigation industry, the financial credit information basic data system established in 2006 has become the largest credit investigation system in the world. With the improvement of the financial order and the rapid development of economy, the demand for credit investigation is more and more great whether individuals or enterprises. By the end of August 2018, the database had established unified credit files for 25.42 million enterprises and other organizations and 970 million natural persons, ranking first in the number of inquiries among credit investigation systems in the world. The credit investigation platform of the Central bank plays an important role in reducing the information asymmetry among various subjects. Only the information provided by the access institution is true when tracing the source, the information queried by enterprises or individuals is true and accurate, so as to maximize the utility of the credit investigation system.

The Regulations on the Administration of Credit Investigation Industry promulgated and implemented in 2013 stipulate that financial institutions engaged in credit business should provide credit information to the basic database of financial credit information in accordance with the regulations, but for financial institutions not engaged in credit business, there is no clear requirement that they must access the credit investigation system. At the same time, there are no clear provisions on the identification standards of financial institutions accessing the credit investigation system. From the perspective of current credit investigation supervision laws, there is no relevant regulation on credit investigation information access agencies, which is mainly reflected in the following aspects: First of all, article 2 of the regulations on the management of credit reporting industry although stipulate the scope of these regulations is engaged in the credit business and its related activities, the credit business here, refers to enterprises, institutions and other organizations (hereinafter generally referred to as the enterprises) credit information collection, collation, storage, processing, and to supply information users, not to clear the related business. [2]As specified in article 5 of the agency who is in accordance with the law, business credit reporting agencies are set up in accordance with the law, business credit reporting agencies, credit business regulation, supervision and management, and other legal liability clause regulation object are agency engaged in the business of credit reporting, Aiming at the data collection behavior of data companies of credit investigation agencies, “Credit investigation industry Management Regulation” does not have the explicit clause stipulation. Secondly, the data collection scope of credit information access agencies can only rely on relevant provisions of the Network Security Law and the General Provisions of Civil Law on information collection. However, due to the different ways and uses of data collection, it is difficult to effectively regulate credit information access agencies. Therefore, although the subsequent Measures for the Management of Credit Investigation Agencies and Norms for the Information Security of Credit Investigation Agencies supplement the Regulations on the Management of Credit Investigation Industry, the problems in the above two aspects are still not clear. It is particularly important for the supervision of financial institutions that access the credit investigation system.

With the continuous breakthrough of big data technology, big data technology has been gradually applied to various fields. In the field of credit investigation, big data technology will have a transformative impact on the collection, sharing, processing and other processes of credit investigation data. Such as central bank credit to use big data
technology will be tens of thousands of Banks and financial institutions through the non-contact way data acquisition, processing, processing, lead to credit model has great changes, and at present our country with the “regulations on the administration of credit reporting industry” as the main content of credit investigation supervision system is not a response for large data reference model relating to the cause has certain regulatory gaps, Thus, the new credit investigation status quo can not be effectively regulated.

2. The necessity of supervision of the financial institutions accessing the credit system is analyzed

2.1. Game analysis of regulatory agency and access institution

As there is a regulatory Information asymmetry between the financial institutions (hereinafter referred to as access institutions) and the regulators (hereinafter referred to as regulators) that have access to the credit checking system (hereinafter referred to as the access institutions), [3] the People's Bank of China (hereinafter referred to as the credit checking industry supervision and administration department under the State Council) and its local agencies to supervise and manage the credit checking and credit checking industry in accordance with the law, the latter can not know whether the evaluation information submitted by access agencies before access to the credit system is true and accurate. So access agencies inevitably have an “Opportunistic tendency” to submit information that benefits them. Suppose the probability that the access institution submits inaccurate information is $h$, The benefit of submitting this untrue information is $R$, If it is found that the submitted information is not true and can not access the credit information system received for the loss is $C_0$. So the expected return of the access institution is $E(R) = (1-h)R - hC_0$. When $E(R) > 0$, The access institution will submit the untrue information in the information evaluation stage before accessing the credit information system because of its profit, otherwise, it will submit the true information. The illegal income $R$ can be calculated by financial institution's accounting report under the condition of stable market. Therefore, when financial institutions access the credit system to submit false information and the resulting benefits $E(R)$ mainly depends on the false information submitted by the probability of detection and the cost of $C_0$. And these two variables depend on the degree of perfection of the laws and the degree of Investigation $F$. Because the more perfect the system in the case of the act will be more likely to be investigated, so $\frac{\partial h}{\partial h} > 0$. The greater the penalty, the higher the cost of doing that, so $\frac{\partial C_0}{\partial h} > 0$. Imperfect laws or small penalties will cause financial access institutions to take opportunistic actions and reduce the overall welfare of the society.
Because access agencies want high returns, they game the Regulators. Suppose regulators have two strategies: Due Diligence and non-due diligence; and financial institutions have two strategies: The Truth and the untruth of the information they submit. Table 2-1 summarizes the payment matrices for different pure strategy combinations. Assuming that \( a \) is the social benefit of the regulator (i.e., the people's Bank of China and its affiliates) in the event that \( a \) submits true information to the financial institution, that is, the cost of access to the institution is \( a \). \( c \) is the due diligence cost of the regulator, \( F \) is the penalty if the financial institution is found to have submitted false information, and \( C < a + F \). Under this assumption, there is no pure strategic Nash equilibrium, and the two sides adopt mixed strategies according to each other's gains to use the overall welfare of the society.

Table 2-1. access institutions and regulators of the regulatory game matrix

<table>
<thead>
<tr>
<th>Regulators</th>
<th>Access mechanism</th>
<th>Real(O)</th>
<th>Not Real(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due Diligence (D)</td>
<td>((a-C+F,-a-F))</td>
<td>((a-C,-a))</td>
<td></td>
</tr>
<tr>
<td>No Due Diligence (N)</td>
<td>((0,0))</td>
<td>((a,-a))</td>
<td></td>
</tr>
</tbody>
</table>

Suppose that the probability that the regulator does its due diligence is \( p \), the probability that it does not do its due diligence is \( 1-p \), and the probability that the access agency chooses to submit true information is \( q \). The probability of obeying the law is \( 1-q \). Given \( q \), the expected returns of the regulator choosing due diligence and not due diligence are:

\[
\pi_0 = (a-C+F)q + (a-C)(1-p) = qF + a-C \\
\pi_0 = qa + a(1-q) = a(1-q)
\]

When the expected returns of \( D \) and \( N \) are equal, the two strategies are in equilibrium. To solve is \( q = \frac{a-C}{a+F} \). If the access authority chooses to submit untrue information, the probability is less than \( \frac{a-C}{a+F} \). The best option for regulators is not to do their job; On the contrary, the best choice is due diligence; If the access authority chooses to submit untrue information, the probability is equal to \( \frac{a-C}{a+F} \). Regulators are free to do their job or not.

Given \( P \), the expected revenue of the access institution choosing to submit true information or untrue information is:

\[
\pi_a = (-a-F)p + 0(l-p) = -(a+F)p \\
\pi_o = -aq + a(l-1-p) = -a
\]

When the expected returns of \( B \) and \( O \) are equal, the two strategies are in equilibrium. To solve is \( q = \frac{a}{a-F} \). If the probability of the regulator doing its job is less than \( \frac{a}{a+F} \), \( \pi_a > \pi_o \). Such access agencies choose to submit untrue information; If the regulator is more likely to do its job than \( \frac{a}{a+F} \), \( \pi_a < \pi_o \). In this way, the access organization chooses to submit the true information. If the regulator's due diligence probability is equal to \( \frac{a}{a+F} \), The result of the access organization choosing to submit untrue information and true information is the same.

So the mixed strategy Nash equilibrium is \( q = \frac{a}{a+F} \), \( p = \frac{a}{a+F} \). We can see that this equilibrium depends on \( A, F, \) and \( C \). From the equilibrium expression, we can find that:

(1) If choose heavier penalties, regulators choose submit false credit information of probability and regulatory agencies dedicated probability will drop, but as regulators
tend to choose to submit their real credit information to the regulator to bring the increase of the social benefits of a, the probability of access agency submit real credit information will decline. The probability that regulators will do their job will increase. The conclusion shows that under certain conditions, increasing the penalty on access agencies to submit untrue credit information will make access agencies tend to submit true information in the short term, but this will make regulators tend to choose not to do their due diligence. So in the long run, it makes it more likely that access agencies will submit untrue information. Such results have done little to improve regulators' oversight.

(2) If the regulator chooses to increase the social benefits of supervision, in the short term, the access agency will tend to submit true credit information, and the regulator will also tend to choose due diligence; In the long run, the regulator's choice of due diligence will also encourage access institutions to submit true credit information, which will bring double incentive effect on the total regulatory utility. This has a positive effect on improving the supervision effect of regulatory agencies.

This game hypothesis shows that, compared with other regulatory measures, the best way to regulate the financial access institutions of credit investigation system is to improve the social benefits of regulatory institutions, which will achieve the best effect. Of course, this conclusion assumes that the regulator's utility benefit $A$ is not correlated with the penalty $F$, and that the regulator will find the information submitted by the access agency to be untrue if it chooses to do its job, but the reality is much more complicated. In a word, through the game analysis, it is found that: in an ideal situation, the optimal choice for increasing regulatory utility is to increase the regulatory utility benefits of regulatory agencies. Therefore, appropriate reward and punishment systems should be adopted for the regulators of regulatory agencies to ensure the maximization of regulatory utility from the institutional level.

2.2. The need for regulation of access agencies

- **It is conducive to the healthy development of the financial industry**
  Supervise financial institutions that access the credit investigation system, clarify pre-access review processes and standards, standardize post-access data use and processing rules, and ensure data use security. On the one hand, the information of the central bank's credit database is accurate, and the decision made by the information user based on the credit data will increase the utility of the subject. On the other hand, financial institutions themselves will also grasp the information of many enterprises, and regulate financial institutions, and also indirectly regulate the enterprises facing financial institutions, so as to optimize the market order. Based on the above two aspects, no matter for financial institutions, enterprises or investors will play a regulatory role. Therefore, it is beneficial to promote the healthy development of the financial industry to supervise the financial institutions that access the credit investigation system.

- **It is conducive to promoting the healthy development of credit investigation industry**
  First of all, the regulation of access mechanism research can clear credit supervision and management departments of industry and its management object, management measures and management methods, to strengthen the management of credit market, to crack down on illegal information collection activities, creating a fair and reasonable competitive environment, maintain the good credit market order, standardize the healthy development of credit reporting industry. Secondly, the business
operation of the basic database of financial credit information should be standardized, so that it can further play the role of the national unified financial information platform and provide basic credit services. Credit investigation agencies can collect other credit information and provide diversified credit services. Finally, promote the formation of a rich and comprehensive credit investigation product system. [4] The relationship of rights and obligations among information providers, information users, credit investigation agencies and information subjects is established, which solves the problems of irregular information acquisition methods and “gray” information source channels that have plagued credit investigation agencies for a long time, and creates a good institutional environment for the development of credit investigation agencies.

- It is conducive to safeguarding the legitimate rights and interests of information subjects

The important value of personal information in marketing, product promotion and other aspects is becoming increasingly apparent. Illegal leakage and reselling of personal information occur from time to time, which seriously damages the legitimate rights and interests of citizens. The CPC Central Committee and The State Council attach great importance to this. In 2009, the Seventh Amendment to the Criminal Law was promulgated, clearly defining the reselling of personal information by relevant institutions and their staff as a crime. In 2012, the National People's Congress Standing Committee issued a Decision on Strengthening the Protection of Online Information, which also put forward new requirements for the protection of personal information. From the world's legislative experience, an important role of credit investigation legislation is to protect the rights and interests of the individual information subject. In the process of perfecting the subsequent information processing and application supervision of credit investigation access institutions, the protection of personal information will be strengthened. Therefore, the supervision of financial access institutions will improve the security of data after access and standardize the processing and use of data. The supervision of access institutions from this perspective is conducive to maintaining the legitimate rights and interests of information subjects.

3. Analysis of the main bottleneck in the supervision process of financial institutions accessing credit investigation system

3.1. The supply of legal basis for credit investigation supervision is insufficient

- Lack of legal basis for supervision of access institutions

Compared with the market-oriented multi-head supervision in the United States, the unified supervision in Europe and the government-oriented supervision mode in Asia, China adopts a centralized management mode, which is directly managed by the People's Bank of China.[5] The management of receiver institutions is a major content of the supervision of credit investigation industry. The construction of laws and regulations on credit investigation industry in China started relatively late. Before the promulgation of the Regulations on the Management of Credit Investigation Industry, the People's Bank of China mainly supervised the relevant institutions according to its own departmental rules.

First, legal. In 2015 through Amendment to Criminal Law (IX) to modify one of article two hundred and fifty-three, to sell to others, or to provide the behavior of the citizens' personal information do the penalties, and projects of judicial explanation of
Amendment to Criminal Law (IX) further defined the citizens to sell to others, or to provide credit information of sentencing standards.

Second, administrative regulations. In 2013, the Regulations officially came into effect, filling the gap in regulation and supervision of the credit investigation industry. In the form of administrative regulations, it was made clear that the People's Bank of China and its local offices should supervise the credit investigation industry according to law, providing a perfect legal basis for the People's Bank of China to perform its duties according to law, and China's credit investigation management system was gradually established.

Third, the level of departmental regulations. In 2005, the People's Bank of China formulated and implemented the Interim Measures on the Management of the Basic Database of Personal Credit Information (hereinafter referred to as the Measures), which detailed and stipulated the personal credit investigation business of commercial banks in terms of internal control system, data submission, user management, information inquiry and objection handling. In addition, Article 38 and Article 39 of the Measures provide for the punishment of violations of the above provisions, which are highly operable and still serve as the main basis for the supervision of credit investigation business of grassroots people's banks.

Fourth, normative documents. In 2014, the Norms for User Management of Financial Credit Information Basic Database formulated by the People's Bank of China stipulated the general principles for user management of financial credit information basic database. The Notice of the People's Bank of China on Strengthening Credit Investigation and Compliance Management and the Notice of the People's Bank of China on Further Strengthening Credit Investigation and Information Security Management were issued in 2016 and 2018 respectively, making arrangements for credit investigation and compliance operation and strengthening credit investigation and information security management.

The supply of legal basis for big data credit investigation and supervision is insufficient

Although our country the credit reporting industry management ordinance provides the overall framework, the regulation of our country credit reporting industry “credit bureaus management method” “agency information security specification” and so on also on credit regulation for further refinement, but overall, the practice development of China's big data inquiry, in the law or insufficient supply, mainly manifested in the following aspects: First of all, the Regulations on the Administration of Credit Investigation Industry only specify the overall idea of credit investigation supervision from the aspects of credit investigation subject, scope and business rules, and lack the detailed provisions in the specific application. Second, the credit reporting industry management ordinance , credit bureaus management method, measures for the management of enterprise credit reporting agencies for the record and so on of the credit reporting industry has a clear regulatory focus always locate in organization regulation, emphasize strict access to credit bureaus, regulating the business of credit bureaus, and the violation of credit behavior, although such regulatory direction is beneficial to strictly control the inquiry, But it also brings some disadvantages. [5]For example, the Regulations on the Administration of Credit Investigation Industry clearly states that only credit investigation agencies can be engaged in credit investigation business. However, when the definition of credit investigation business is clearly defined, it is only identified as “the activity of collecting, sorting, saving and processing the credit information of enterprises, institutions and other organizations
and individual credit information, and providing it to information users”. As a result, market institutions try to avoid being called “credit investigation agency”, and only engage in substantive credit investigation in the name of “data/information service agency”, thus avoiding the strong supervision of credit investigation industry. Again, the regulations on the administration of credit reporting industry in the second chapter to specifically according to provisions of personal credit reporting and corporate credit reporting agency access standards, on the basis of the measures for the administration of the credit bureaus, enterprise credit reporting agencies for the record management method is to make more detailed provision for access to credit bureaus, but with one hundred rows of marketization of credit reporting for personal credit licence, in terms of personal credit, There will be a great difference between the central bank's personal credit investigation and the market's personal credit investigation. Traditional credit investigation regulations can not achieve the purpose of effective supervision by classifying it as personal credit investigation.

3.2. The supply of legal basis for big data credit investigation and supervision is insufficient

At present, the Internet and big data technology are leading the reform in the field of credit investigation. The demand for credit investigation at all levels shows a blowout growth, and information leakage cases occur frequently at home and abroad, which puts forward higher requirements for the credit investigation supervision of the People's Bank of China. Compared with the market-oriented multi-head supervision of the United States, the centralized supervision of Europe and the government-oriented supervision mode in Asia, our country adopts the centralized management mode, which is directly supervised by the people's Bank, and mainly adopts the supervision mode of on-site inspection and non-on-site supervision as auxiliary. Because the on-site supervision is the means of post-supervision, it can not realize the continuous supervision of the object of supervision. Strengthening the off-site supervision and realizing the continuous supervision of the supervision object through the prior supervision has become the urgent task of the current credit investigation management of the grass-roots central bank.

The lack of integrity and accuracy of data collection of access institutions is mainly reflected in the following two aspects:

(1) Insufficient support of background data. The core function of the off-site supervision system is to analyze and compare the data provided by the credit investigation center and the access institution on the basis of fully collecting all the off-site supervision index data, grasp the credit investigation behavior of all users of the access institution from the abnormal data, and find the risk points and suspected violations of the credit investigation business. Basis to effectively protect the credit information center of credit investigation database security and prevent data leak risk, strictly control the AD query related data application and use, provide only into the law enforcement agencies in inspection plan reference data query, data off-site supervisions system application has not been effectively support, affect the system function and application.

(2) The authenticity of the data at the organization end is insufficient. The off-site supervision system accesses a large amount of high-frequency behavior data at the organization end, which is mainly submitted through the interface of the access organization pre-system. Since the People's Bank of China has not established a unified
3.3. Insufficient supervision of secure use of data after access

At present, the regulation of credit investigation focuses more on data collection and data use, and there are few provisions on data preservation and processing. Especially for data processing, problems in the application of big data technology are especially blank in supervision, which mainly include the following aspects: From the perspective of the preservation of credit information, only the "Network Security Law" Article 40 stipulates the "who collect, who is responsible for" principle, clear user information strict confidentiality obligation. Article 16 of the Regulations on the Administration of Credit Investigation Industry provides that credit investigation agencies have a 1035 year preservation period for bad information, the right to delete bad information and the right to explain information subject.

On the one hand, the preservation method has not changed with the characteristics of big data credit investigation, and it is still to cope with the limited data information in the traditional credit investigation mode. On the other hand, at present, the relevant credit investigation regulations, whether the preservation period or the deletion right, are only to the bad information of credit investigation institutions. Other government information and judicial information do not provide the corresponding preservation and update period. From the processing of credit information, the development of big data credit investigation, credit evaluation from the traditional artificial model to the introduction of algorithm model to process information data, is more efficient and intelligent. But whether for the traditional credit investigation or the processing of big data credit investigation mode, the relevant regulatory regulations in our country are not yet clearly stipulated. The processing standard and supervision depth of credit information data are insufficient, which are mainly reflected in the following two aspects:

First, data reporting standards are not uniform. In our credit investigation industry, only the central bank has data reporting standards, and there is no unified standard for social credit investigation agencies. The credit information processing in the big data credit information service is an independent system.

Secondly, credit evaluation methods are not unified. Different from the products of global credit investigation agencies, which mainly have credit investigation and credit report, characteristic variables and credit score, only the central bank of China uses credit report for credit investigation, and credit score is not open to the public for inquiry. Social credit investigation agencies develop relatively high credit scores and have less credit report and characteristic variables services. In big data credit information services, credit rating is mainly used and credit evaluation models are also different.

3.4. The practice of big data credit investigation and supervision for financial institutions is blank

With the rapid development of the Internet, huge changes have taken place in the volume of credit investigation data. For example, the credit investigation of the central
bank uses big data technology to collect, process and process tens of thousands of data from various banks and financial institutions in a non-contact way, resulting in huge changes in the credit investigation mode. At present, our credit investigation supervision system, mainly based on the Regulations on the Administration of credit Investigation Industry, has not responded to the big data investigation mode, which leads to certain regulatory gaps, thus failing to effectively regulate the new credit investigation status quo. Mainly in the following aspects:

First of all, for regulatory means, these methods for the traditional credit can play an effective role, but for large data inquiry, do not work, it is associated with the characteristics of large data inquiry of Internet, because of the large data inquiry is not as traditional credit reporting entity characteristic, the high and new technical, professional, let credit reporting data collection, processing, all present virtualization, diversified characteristics. At the same time, in the Internet environment, the use of high-tech means can do a lot of hidden work, new regulatory loopholes. As data collection becomes more and more dynamic and real-time, regular verification alone cannot verify the real situation, and it is often too late to really play a regulatory role.

Secondly, from the perspective of liability system, Chapter VII of the “Regulations on the Administration of Credit Investigation Industry” makes it clear that credit investigation institutions and financial information basic database operating institutions shall be investigated for administrative and even criminal responsibilities if they violate the regulations, and at the same time, corresponding punishment provisions are made for information providers and information users who violate the agreement to use information. However, the responsibility of big data credit investigation designer and the responsibility of the subject of credit investigation is not mentioned. First, “Credit Investigation Industry Management Regulations” was produced in 2013, after the introduction of big data technology into credit investigation, it cannot be forward-looking; Second, the degree of responsibility of the subject and designer of the credit investigation needs some practice to regulate appropriately. With the continuous development of big data credit investigation, the responsibility of big data credit investigation designer and the punishment mechanism for trust-breaking of the subject need to be incorporated into the credit investigation legal liability system. On the one hand, with the development of big data technology becoming more and more intelligent, the accuracy of credit evaluation is still to be tested if there is no standard for the introduction of big data credit investigation and other technologies. On the other hand, with the more extensive application scenarios of credit investigation results of big data, trust-breaking people no longer rely solely on the Central bank's trust-breaking punishment database for identification, which may lead to the trust-breaking identification of information subject by other credit investigation agencies or even credit information service companies, which may affect the subject of credit investigation.

4. Suggestions on big data supervision of financial institutions' access to credit investigation system

4.1. We will improve the legal basis for big data credit investigation

- Accelerating the introduction of the Social Credit Law
  Credit is the most important legal basis in 2013 the State Council has issued the
“Regulations on the Administration of Credit Reporting Industry”; the central bank has issued “The Measures for the Administration of the Agency Regulatory Guidelines” and the central bank issued a series of notification, and about credit information is scattered in the “contract law”, “general civil law”, “the network safety” and so on, the lack of credit supervision legal system of the upper, Resulting in practice large data could not be in accordance with the credit information services exist, therefore, can draw lessons from the United States set the rules, “the fair credit reporting act”, strengthening protection of credit information from the agency and the user's responsibility and obligation, credit report purpose and consumer related legal aspects of rights and responsibilities, Accelerate the promulgation of the “Social Credit Law” leading credit investigation and credit supervision, establish a complete credit management framework system, and provide legal guarantee for the healthy development of credit investigation industry and the construction of a credit society. [6]Comb first, at present our country credit reporting relevant legal norms, analysis of each item of the scope of protection of the legal norms, permissions, each system has significance and value, at the same time, combined with the practice of big data inquiry development situation, consider the rationality and necessity of inquiry system, delete outdated and conflicting laws and regulations, formulate unified the “Social Credit Law”. Second, consider the connection between laws. On the one hand, we should consider the connection between the new law and the old law, and make clear provisions on retro activity and application scope. On the other hand, we should pay attention to the corresponding legal provisions of civil law, tort liability law, criminal law, administrative law, and relevant procedural law on the protection of the rights and interests of information subject, the principle of good faith, and the investigation of liability.

- Refine the “Regulations on the Administration of Credit Investigation Industry”

Is mainly embodied in the institutions supervision of credit reporting, in addition to the “Credit Reporting Industry Management Ordinance”, the bank has issued “The Measures For The Administration Of The Agency”. “The Agency Regulatory Guidelines”, and big data inquiry make inquiry will create new risks in business behavior, therefore, regulatory focus should be regulated to migration behavior regulation, The concept of osmotic behavior supervision is incorporated into the credit investigation field, the behavior regulation of credit investigation business is discussed from the main business links of big data credit investigation, and the supervision objects of credit investigation are expanded to adapt to the big data credit investigation.

Specifically, the first is to standardize the information collection network trace, and comply with the principle of “behavior trace, later check”. The second is to standardize the supervision of the entrance of the data center, set up a data quality evaluation system based on quantitative evaluation and source control, and supervise the user's qualification, authority, use mode and other aspects. Third, multiple indicators can be used to standardize the processing model and increase its credibility. For example, the result evaluation method can be adopted, repeated inspection can be used to urge it to complete the closed cycle by using historical credit data, and indicators such as realistic default rate and overdue rate can be set up to measure the validity and authenticity of the credit evaluation of the algorithm model. The algorithm model which has a large difference between the realistic standard achievement rate and the algorithm result of the model is eliminated. The development and listing of products should go through the application and approval process. At the approval stage, relevant departments should consider the realistic value, application prospect,
effectiveness and reality of products to decide whether to approve or not. If the approval is approved, relevant licenses should be issued. If the product is extremely defective, the application shall be rejected. Fifth, information disclosure is true and comprehensive. Adhere to the information subject oriented, urge big data credit investigation agencies to release relevant information on their official websites, WeChat official accounts or other public channels.

4.2. Establish unified data collection standards for access institutions

Meanwhile, the data of government functional departments, judicial organs, and financial institutions are disconnected. The big data credit investigation technology is higher than the general information subject cognition level. Therefore, the national unified credit collection standard should be defined by combining the characteristics of big data credit investigation, and ensure the regulation of technical black box.

First, make clear the scope of credit data. First, distinguish credit information from general credit information. Combined with international experience, the scope of credit information is still bounded by financial and credit information, and social information and travel information should not fall within the scope of credit information, which can only be identified as other information as a supplement to credit evaluation. At the same time, the scope and standard of the use of surrogate data can refer to the relevant provisions of the consultation draft of the Consumer Financial Protection Bureau (CFPB) on the inclusion of surrogate data in traditional credit scores, and the use of surrogate data is restricted. Second, from the perspective of data collection types, the United States pursues comprehensive information collection, including positive information and negative information. France collects only negative information. The collection of credit information in our country is still positive and negative information collection, and is also consistent with our national conditions, and should still be used.

Secondly, determine the data scope standard of big data credit investigation. First, for the collection of structural data and non-structural data, it is necessary to fully consider the characteristics of Internet credit investigation business in information collection, and include the credit related information retained on the Internet into the specification; Second, it is clear that big data credit investigation and collection data should be based on the principle of relevance, relevance and comprehensiveness of credit user data, and set relevance level standards and marketable data link standards.

Thirdly, different classification standards should be set up according to different data collection methods and different uses of credit products.

4.3. Formulate data preservation and processing rules for access institutions

China’s “Regulations on the Administration of Credit Investigation Industry” for data preservation, processing, compared with the provisions of data collection, use of sparse, for the type of data preservation, number of years, method, data technology processing model review, data submission method and so on need to be refined. Therefore, we should combine foreign experience to improve this and formulate data protection processing rules which conform to our national conditions.

First of all, in terms of data preservation, on the one hand, we should broaden the types of information, improve the retention period of all kinds of information, and set up the reconstruction right to delete or update it when it expires. We can learn from the United States “Fair Reporting Credit Act” for other information. On the other hand,
strenthen the construction of database information security, establish a special review institution, regularly review the level of data information security, improve the data preservation and query system, reduce the information leakage caused by the query data.

Secondly, data processing, one is the innovation of data to submit the form, the experience from abroad, Japan uses parallel query + data submitted, the consumer data industry association to design special data reporting standards, the innovation pattern data submitted to “submit” digital pilot, this can be for reference in our country. By setting up data reporting standards, innovating data reporting methods, standardizing data reporting behavior and reducing reporting risks; Second, strengthen the review of data technology model processing, bring big data credit investigation technology into the scope of credit investigation supervision, improve the prior registration system and operation review system of technology application, and engage in two routes of supervision: pre-technology access and process technology review; Three can be involved in the patent law in us patent object eligibility terms: “whether it's invention or any new and useful process, machine, product or material, or any new and useful improvements, comply with the conditions and requirements of this title, can get the patent, but belong to the judicial exception unless the laws of nature, physical phenomena and abstract concepts.” We will strengthen patent protection for big data credit investigation technologies.

4.4. Details the rules for applying data after access

At present, the application of information data is often applied to credit services, including credit reporting of government credit investigation agencies, credit scoring of market credit investigation agencies and credit information services of big data companies. The credit reporting industry management ordinance provides the information subject can query their own credit report information, personal information is subject to free access to my credit report, but with the development of one hundred lines of credit and big data credit information service on the market for the promotion of data application scope, should be combined with the foreign experience, to establish classification application data rules, specifically:

Firstly, distinguish the application of credit investigation data of credit investigation agencies and the data application of big data credit information service. For the former, it should be clear that the application scope of credit investigation data is still in the field of financial lending, and users still take banks and financial companies as the standard of whether to borrow or not. For people without credit reports, other information such as payment and asset flow can be used as supplements. The latter tend to be more widely used, including social travel, bike-sharing and other aspects of social credit. Therefore, different application standards should be made for different data application areas.

Second, with diversified representation data application, is no longer just limited to the credit reporting credit report, and may to foreign credit reporting agencies, to credit ratings, precise marketing forecast, fraud, such as credit information service, therefore, is a should according to different forms of credit scores to its application scope, main body, object, manner; Second, we can learn from the relevant provisions of the American credit investigation industry on precision marketing and fraud evaluation services, and formulate detailed operation specifications and penalties for violations.
4.5. Strengthen the practice of big data credit investigation characteristics supervision

- **Innovate big data regulation methods**

  The virtuality of big data leads to the inability of traditional on-site supervision methods to achieve regulatory effects. Therefore, on-site supervision should be combined with off-site supervision, regular supervision should be combined with real-time dynamic supervision, and traditional supervision mode should be combined with science and technology driven supervision.

  First of all, the conventional on-site inspection should be optimized, the traditional supervision mode should be standardized, and the implementation of credit investigation policies or guiding opinions by big data credit investigation agencies should be inspected and audited from time to time, such as on-site inspection and report review. If the credit investigation agency has any violation of laws and regulations, it shall be dealt with at different levels, including the general cases, it shall be ordered to stop immediately or timely notify. If it violates administrative regulations, it shall be imposed administrative punishment. If it violates criminal law, it shall be investigated for criminal responsibility.

  Secondly, to strengthen the supervision level of big data credit investigation agencies and implement dynamic real-time supervision, it is necessary to supervise the whole process of credit data collection, processing, processing and application, ensure the smooth path of information subject inquiry, objection, complaint handling and information security, and at the same time timely feedback and report to the relevant authorities. In view of this, scientific and intelligent supervision is crucial: first, the establishment of remote data Internet credit supervision system, combined with the relevant provisions of the “network Security Law”, from the macro level to regulate the legitimacy of Internet data information collection, storage, processing, protect data information; The second is to promote the establishment of automatic data feedback model, for data collection, storage, processing, real-time, dynamic supervision and timely feedback to the regulatory authorities; Third, strengthen model evaluation, apply random monitoring to the scene, form monthly and quarterly credit reports and send them back to the regulatory authorities; Fourth, monthly and quarterly intelligent evaluation of credit investigation behavior, improve the punishment mechanism, and establish red and black lists.

- **Improve the responsibility system for big data credit investigation and supervision**

  The relevant subjects of big data credit investigation activities include credit investigation agencies, data providers, information users, and big data technology designers. To clarify the legal responsibilities of relevant subjects in credit investigation activities is conducive to the division of power and responsibility, better balance the interests of all parties, prevent risks, and achieve the ultimate goal of credit investigation and credit system construction. Therefore, according to the different reasons and characteristics of big data credit investigation infringement, a four-level legal liability system should be established, which is “regulatory liability -- credit investigation agency liability -- big data technology design and application liability -- punishment liability of trust-breakers”.

  The first is the responsibility of supervision, that is, the responsibility caused by the lack of supervision, dereliction of duty of supervision and infringement of the rights and interests of information subjects.

  Second, agency liability, namely agency information acquisition, processing and
application data illegal data quality standards, the infringement of rights of information subjects responsibility, often as a platform responsibility, often for information data, data leaks and other routine credit reporting infringement, still draw lessons from “The Act Of Tort Liability”, such as credit reporting platform to reveal personal information, No fault liability can be adopted for credit investigation platforms.

The third is big data design and application liability, that is, technology tort liability caused by big data and algorithm models, which can be divided into two situations: infringement behaviors caused by inappropriate behaviors of technology developers or users within the scope of existing technology control, and infringement behaviors that cannot be identified and controlled by certain existing technology. The former should still be based on no-fault liability; The latter may be liable for the fault of the developer and the user of the technology, and the liability may be appropriately reduced if the reasonable duty of presentation is fulfilled.

Four is paper disciplinary liability, namely to determine the range of disciplinary boundaries, standards and relevant disciplinary measures, the damage of low dishonest ACTS processing range should not be included in the law, at the same time, not all credit reporting activities of the faithless definition falls within the scope of legal disciplinary, such as market big data credit score can be directly as a faithless standard, because of its lack of authority, It is necessary to define individual cases. This situation should be considered in credit investigation legislation, and the “principle + exception” method should be clarified, instead of a one-size-fits-all approach.

5. Conclusion

Perfect social credit system is the footstone of modern market economy, the central bank online credit systems since 2006, after 14 years of development, update, change, and gradually optimize the system performance, to further improve the information collection work, improve the credit management, service level, and has achieved obvious results in practical application. [8]By analyzing the causes of the problems, this paper proposes to accelerate the promulgation of the “Social Credit Law” and refine the “Credit Investigation Industry Management Regulations” to improve laws and regulations by improving the legislation on credit investigation of big data. In addition, we should improve the central bank's off-site supervision procedures, construct and perfect the off-site supervision data index system, and improve the standardization of off-site supervision. Strengthen the application of the port data of the existing credit investigation system, improve the integration and utilization of the existing information platform resources; To develop a unified comprehensive evaluation system, reduce or avoid the artificial factors of the People's Bank of China's grass-roots off-site supervision evaluation, and promote the objectivity and fairness of the off-site supervision results. At the same time, with the development of credit investigation, we should constantly revise and improve the index system according to the improvement of relevant laws and regulations of credit investigation industry. To provide a good social environment for the development of socialist market economy.
References


