Risk Prediction and Evaluation of Transnational Transmission of Green Financial Crisis Based on Complex Network

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Abstract: Financial risks bring internal and external risks to the operation of multinational corporations. Political, financial and other factors can be jointly resisted by many multinational companies. Business and financial problems depend on the company's self-prevention and self-remedy. Facing the new features of all kinds of risks under the financial crisis, it is important to strengthen external cooperation with multinational companies, improve the overall ability to resist risks, and strengthen their own management. While financial and other aspects of management do a good job in the early warning and management, reduce the risk of various threats, in order to improve the ability of resisting risks, and improving market competitiveness. A risk propagation model and effective algorithm based on complex network are proposed. By combining the generalization model of propagation and spreading in complex network, risk propagation models can be divided into two kinds: active risk propagation model and passive risk propagation model. And the existing risk propagation algorithm is improved. The experiment shows that the model and algorithm can improve the risk propagation mechanism and enhance the speed and accuracy of transmission.

1. Introduction

With the increasingly prominent problem of network security, risk assessment has been paid more and more attention. Risk assessment is generally divided into two kinds of static assessment and dynamic assessment, the evaluation system is more perfect, to evaluate the degree of accuracy is higher, but the drawback is that the evaluation cycle is too long, the evaluation model may with the passage of time and not applicable, cannot reflect the real-time information of the network; the latter evaluation according to the network status timely make risk estimation, dynamic change it can reflect the network risk, to study the spread of risk existing in the network, but the propagation model and algorithm has some shortcomings: firstly, the model only consider the risk propagation model, cannot consider the risk into the model; secondly, there are a number of weaknesses might be a component, the component of trusted access path another part of the same direction can be more than one, then the parts cannot be in the directed graph is regarded as graph nodes. Third, the probability of the risk of infection of the minimal entry components is low, so the probability of being the source of risk is not high. Fourth, if the smallest component is infected, its outgoing degree is not the biggest. Just as influenza outbreaks in densely populated areas, its risk can not immediately spread, lagging behind, and timeliness is not good.

2. Complex Network Financial Risk Model

Complex network active risk propagation model: also known as active risk outgoing, that is, using risk that the risk node has existed to make active access to its direct connection points, including illegal attack or trusted access, the same below, to generate risk diffusion (i.e. risk outgoing). Node A for risk source node to node, there B, C, D, E four to the path set node to node A risk node, B, C, D, E to the path probability PAJ (J=B, C, D, E), the probability of each node is its successful visit the PJ (J=B, C, D, E), node A with probability PAJ * PJ (J=B, C, D, E) caused by the degree of risk of connecting point. In real networks, the probability of path propagation can be calculated by all possible paths of two nodes, while the probability of successful node attack is
spread by risk propagation model. Due to the shortage of the minimum penetration of nearest neighbor algorithm, this paper designs a can better reflect the dynamic characteristics of network risk algorithm, maximum degree algorithm, and for the active risk propagation model algorithm and the maximum degree for the passive risk propagation model maximum degree algorithm. Step1: calculate the risk node output value numofoutdegree that has not been processed. Step2: select the node with maximum output priority, and use the algorithm to propagate its risk value to adjacent nodes along its output, and the risk calculation method is as follows. Step3: the node is marked as color=red after the risk of propagation. Step4: repeat Step1, Step2, and Step3 until all risk nodes are marked. Strictly speaking, the node of zero penetration does not exist. Therefore, the concept of zero penetration of nearest neighbor algorithm does not indicate its time category. In this paper, the node of zero entry refers to the node that does not accept access in a certain time period. Step A: mark all zero - admission non - risk source nodes in the network node as color=green. Step B: calculate the output value numofoutdegree of the non - processed zero - admission non - risk source. Step C: select maximum degree of nodes, and determine the degree of risk in a node, if there is a choice of value even one of the biggest risks as the introduction of risk source, to introduce the risk probability, risk calculation method, the node labeled color=pink, disconnected from the introduction of risk the link to the source; if not, then re select the node, the node without any treatment until the condition is satisfied again. Step D: after the risk is introduced, the node has become the risk node. If the condition of maximum degree of arrival is satisfied, then the Step2 that jumps to the maximum degree algorithm continues to spread risk. If the condition of maximum output is not satisfied, the jump to Step A is executed sequentially. The risk of network nodes is spreading: nodes A, B and C are nodes of non risk sources, D and E are risk nodes and RiskD>RiskE. According to the theory, they usually stop running. In order to solve this problem, the following algorithm is introduced. Step A: calculating the output value of the non - risk source node numofoutdegree. Step B: priority of the largest node, if the degree of risk connected node node, select a node value at risk as the biggest risk into the source and disconnect with the risk of introducing sources is to link, the node is marked as color=pink; if not, then choose again. Step C: after the risk is introduced, the node has jumped to Step B and continues to execute until the Step3 appears again. Then it will jump to Step A and continue to execute until the risk communication is completed. Note: the network node is initialized to a risk node (color=pink) and trusted node (color=green), the largest source of operational risk and non risk source algorithm zero penetration maximum degree algorithm, both the implementation of the order, does not exist, and the general non risk source risk is introduced in order to prevent the risk of spread of neglect this risk leads to greater risk of error.

3. Risk Prevention Strategies of Multinational Corporations

In this case, multinational companies are facing greater internal and external pressure, internal pressure mainly comes from the capital market due to atrophy caused by financial pressure and incomplete markets intensifies brought by decision-making pressure, external pressure mainly comes from the financial crisis caused by the political risk and financial risk. In such a dilemma, how to effectively predict risks and implement effective financial control and risk prevention measures is very important for enterprises to enhance their strength and competitiveness and ensure that they survive the financial crisis. Faced with the new risks arising from the financial crisis, multinational corporations can take precautions, avoid risks and disperse risks and so on, so as to strengthen financial control and risk prevention of multinational corporations.

3.1 Strengthen the management of financial revenue and expenditure

The object of financial revenue and expenditure management includes financial management of subsidiaries and subsidiaries. Strengthening financial revenue and expenditure management can mainly start from the following aspects: first, establish efficient management organization. Financial revenue and expenditure management personnel must have good quality, financial budget, revenue and expenditure management must be timely and accurate, and need to formulate specific
measures of financial management (including remedial measures). And we should strictly examine the plan of revenue and expenditure and do a good job of inspection. Second, standardize the financial revenue and expenditure procedures. In line with the consideration of the development strategy of enterprises, we should standardize the financial revenue and expenditure, take the strategy of hierarchical management, check it at all levels, be responsible at all levels, compile a sound financial budgeting plan, standardize the registration of financial receipts and payments, and check in time, find problems and solve problems. Third, do a good job of budget control. The financial management department should periodically review the financial situation, find out the new situation in time, solve the new problems and improve the measures.

3.2 Perfect early warning and prevention mechanism

Even under the financial crisis, the risk will not happen suddenly, in the market will be foreshadowed in advance. Multinational companies should establish early warning mechanisms to capture all kinds of information and monitor the occurrence of risk. Especially in terms of finance, TNCs must be controlled by qualified financial management personnel. Usually, we should strengthen the inspection of the income and expenditure of enterprises, and check regularly or irregularly, so as to detect and solve risks as soon as possible. MNCs should strengthen cooperation with the financial sector, establish links with funds, banks and financial regulatory authorities, so as to capture risk information and prevent them in advance. In the face of the shrinking of the capital market brought by the financial crisis, a reliable source of funds can also be obtained by improving the credibility of the financial institutions such as the bank.

3.3 Choice of fund recovery scheme

In the international settlement, the choice of good settlement method is an important way to ensure the timely recovery of enterprise funds. In the choice of customer and settlement, all factors should be taken into consideration. First, select the high quality customers, and use different settlement plans according to the different customers. The credibility of customers is an important factor to ensure timely recovery of trade funds. Therefore, in choosing trade objects, enterprises should further investigate the credibility and solvency of customers. Enterprises can only relax the settlement conditions for customers with good credit and strong repayment ability; for those customers whose credit degree is not good enough and their repayment ability is low, they should not take credit or long-term payment strategies. Second, choose the settlement method with appropriate income and less risk. In trade, the 5C principle can be used to measure customer standards; a certain amount of cash discounts can be used to reduce credit sales, and financial risks can be reduced.

3.4 Seeking the host country's asylum

Policy risk in international trade has always been the main source of risk for multinational corporations. Especially in the environment of the current financial crisis, the main body of foreign investment should try to minimize the political risk. First, strengthen cooperation with the host government. In the context of the current financial crisis, governments are working to promote exports, thus providing more opportunities for bilateral trade agreements. Multinationals should take an active part in the agreement, reduce the threshold of entry to the market, and make full use of the provisions of tax and price in trade agreements to reduce financial pressure. Second, take part in overseas investment insurance. Investors can join the investment insurance institutions established by the host country, which can claim damages to overseas investment insurance institutions in host countries because of their losses due to political factors, so as to transfer political risk to foreign countries. In particular, under the financial crisis, investment insurance is particularly important.

4. Conclusions

Under the current financial crisis environment, many unfavorable factors of international trade
will also exist in the short run. Multinational corporations are facing not only internal risks, but also external risks such as politics and finance. Multinational companies want to get a place in the international market, to solve their own problems, but also to solve the problems of political, financial and other aspects. In these problems, external factor is obviously, can improve the overall resistance through alliances; but the internal problems such as finance, is the biggest risk for multinationals, which requires enterprises to strengthen management and control, improve the self immunity, timely detection of problems, to solve the problem. To solve these problems, MNCs can gain more income in the international market, both in the healthy financial environment and under the financial crisis. This method is a nonlinear change of risk, and it starts to change faster. At last, it changes slowly. That is to say, within a certain range of accuracy, when risk is sampled at any time, the risk value of this paper is closer to the real risk, so the dynamic performance is better. In addition, the risk of non risk source nodes is introduced, and the part of the risk value is ignored is recalculated, and the risk accuracy is improved.

References


