# The Surviving Profit Measurements for Japanese Business Group Network

## M. Nagase[a] , M. Kojima [a], and H. Toyoizumi[b]

[a]Graduate School of Accountancy, Waseda University
Nishi-Waseda, Shinjuku-ku, Tokyo, 169-8050 JAPAN
Mitsukun0206@toki.waseda.jp

[b]Graduate School of Accountancy, Waseda University
and
Dept. of Applied Mathematics, Waseda University
Nishi-Waseda, Shinjuku-ku, Tokyo, 169-8050 JAPAN
Toyoizumi@waseda.jp

It is well known that business activities among cooperation form a complicated network. The recent financial crisis started from the subprime loan problem caused a chain of bankruptcies of not only limited to financial institutions but also extending to many major cooperates in various fields. The financial crisis made an impact on industry reorganization, injection of taxpayers' money and large drop in share prices, but the magnitude of the influence is still immeasurable. Thus, it is important to understand and evaluate the role of cooperation in the business network. The purpose of this paper is to analyze the business network by introducing a new method for valuation of cooperates using transaction data appeared on official financial reports, which is thought to be reliable and continuously obtainable. We define a quantity called "surviving profit", which is the profit that other companies may earn given the target company continues to exist on the business network. To derive the surviving profit, we use transaction data such as accounts receivable and payable to other companies. We can evaluate the superiority of the company in a business network by measuring the surviving profit. We can also discriminate of corporate structure by assuming network structure. Figure 1 and 2 show the networks surrounding particular companies, based on transaction data appeared on official financial reports. The company shown in Figure 1 had been accused for its illegal transaction and disbanded, while the company in Figure 2 is a typical example of ordinary companies
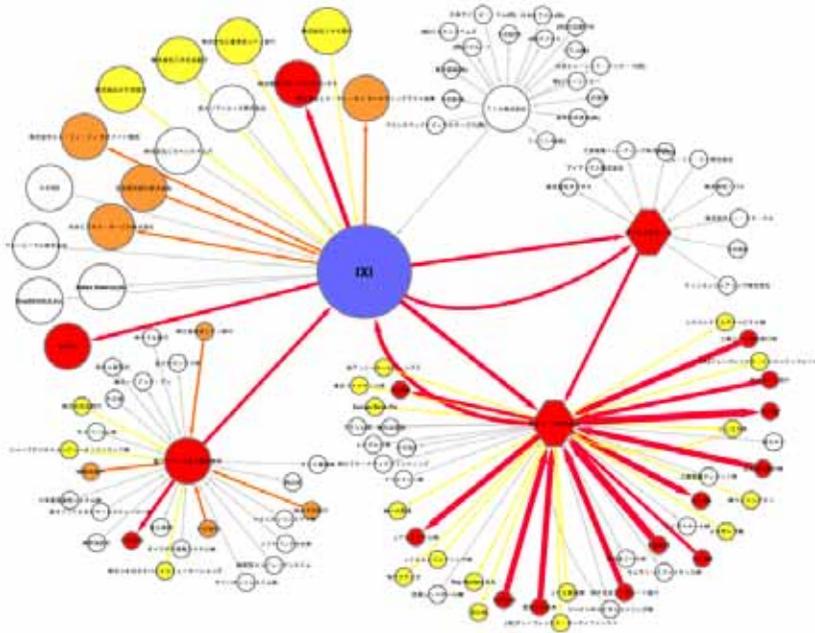
Figure.1 the network of IXI:

The arrows indicate the source has a debt to destination and the width and color indicate the size of debt. There are some suspicious transactions such as red triangles in this network.
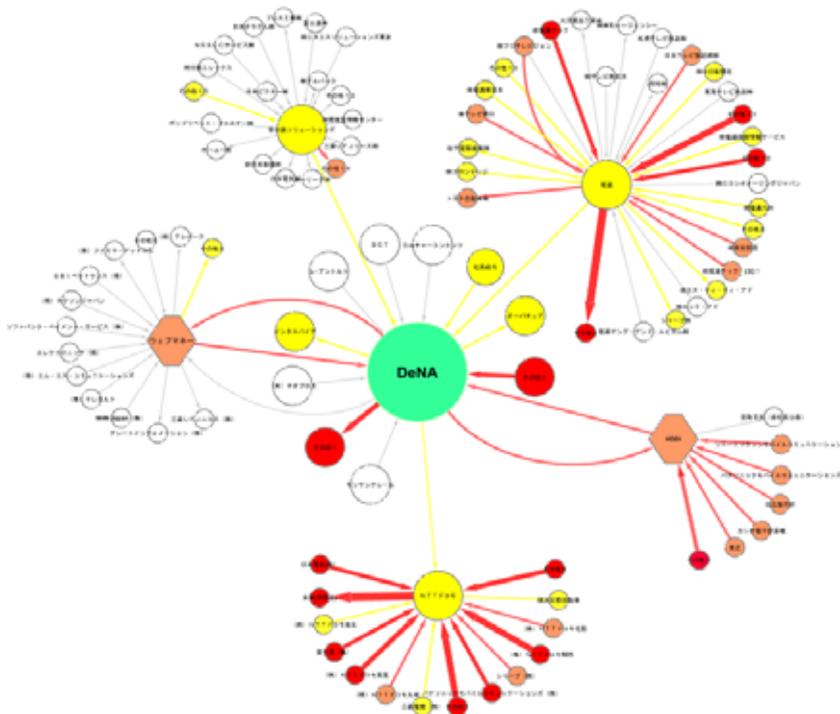


Figure.2 the network of DeNA:

**References**

[1] J. Kanemitsu, Fundamental of Social Network Analysis, Keisoshobo, 2003

[2] Y. Yasuda, Practical Network Analysis, Sinyosha, 2001

[3] Y. Saito, T. Watanabe, Inter-Business Relationship and Company Size, Economic Research, 2007

[4] K. Yukawa, Cluster and Corporate Strategy of the Net Company Observed from Inter-Business Network, Research Report, 2004

[5] K. Sugiyama, O. Honda, H. Ohsaki, and M. Imase, ``Application of Network Analysis Techniques for Japanese Corporate Transaction Network, '' *The Institute of Electronics, Information and Communication Engineers (IN2005-32), pp. 85-90, 2005*

[6] M. Takayasu, H. Takayas, A. Koizumi, Y. Shiraishi, and A. Kaneko, ``Temporal Characteristics of Moving Average of Foreign Exchange Markets,'' *Proceeding of"Practical Fruits of Econophysics", pp.*29-32, 2005