

# Could a mathematical model predict the demise of a business?

**Many gamblers claim to have a "system", whether they're shooting craps, backing horses, or punting on the stock market. Now, researchers in Taiwan have devised an approach to spotting when a company is likely to fail based on the principles of natural selection. They report details of their system in a forthcoming issue of the *International Journal of Electronic Finance*.**

Ping-Chen Lin of the National Kaohsiung University of Applied Sciences in Kaohsiung and Jiah-Shing Chen of the National Central University, Jhongli, in Taiwan, explain how the financial status of any company can be of interest not only to its owners and employees but to a range of creditors, stockholders, banks, and individual investors.

However, there are so many changing and interconnected factors that can lead to success or failure that it is usually considered an impossible task to predict whether a company will fail.

The researchers have now borrowed some of the principles of evolutionary biology to come up with a computer algorithm to make such predictions possible. They feed different variables, such as earnings per share, liabilities and net income, into their genetic-based hybrid algorithm, which assigns a weighting to each value. The output of the algorithm is a new set of variables that are then selected for how well they fit the next set of financial results from the company. Those that fail are discarded, or reduced in weight, and those that match the actual results more closely are fed back into the algorithm for the next round.

By using actual data from successful and failed companies and feeding this into the algorithm the researchers build up the fittest set of variables and weightings. This allows the algorithm to evolve so that it can then predict the financial future of any given company based on current income and expenditure, and tax obligations.

The team has blind tested the predictive power of their system on several companies successfully. "Our experimental results show that this hybrid approach obtains better prediction performance than when using a single approach effectively," the researchers say.

Source: Inderscience Publishers

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