



# Build a controlled experimental stock market

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## Why do we need a controlled experimental stock market(CESM)?

Econophysics is a new research field in which physicist study economic system and phenomenon in a physics way. A very important foundation of physics is the experiments, especially controlled experiments. While everyday thousands of human economic activities produce great amount of data, not all the data is suitable for research, the data might be too expensive to be fetched for normal researcher or be noised by many other reasons. Trying to control the real market is nearly impossible and even against the law.

However, with this small experimental stock market we could do a lot of controlled experiments with very little pay and risk. This market might not be persuadable enough for its size and rules, but with hope it will at least give us some insights of the real stock market.

## What is it like now?

The CESM is now under alpha test. It is now a web-based system, a player have his/her personal account of virtual money and stock (which could be exchanged to RMB in certain time under certain rules). He/she could buy, sell the stock by giving call or put orders. The CESM now have a well-tested full function program to automatically set the call and put orders. In our former test, the CESM could act correctly and fast with 100 player, which has already met our expectation.

See the information on the right-bottom corner of the poster for more.

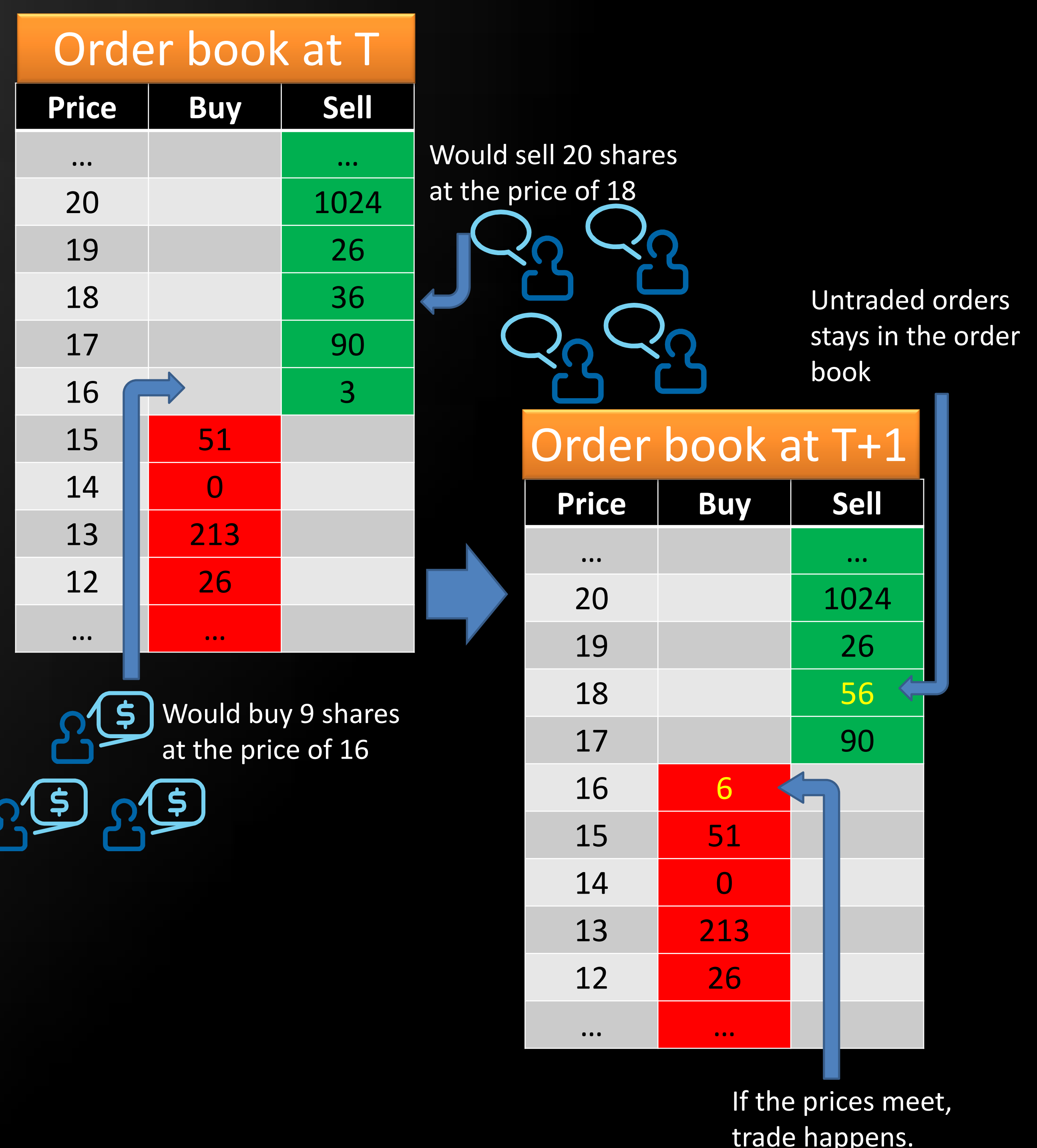


Fig.1 An easy example of how order book is evolved. In this case, the new transaction price is 17.



Fig.2 Two short-term experiments we run later in 2011. The two charts share the same axes on volume. There are 20 players in total. The only difference between the two experiments is that in Exp. I each people have same amount of starting fund, in Exp. II starting fund is not even but with big bias.

## How is the test results?

### Long-term

During the alpha test from Nov. 2011, about 20 players are invited to test the CESM's functions and performance. In about 2 month's test, the CESM received about 1000 orders, 1/4 of them came to successful deals.

### Short-term

Later we did a 2 1-hour controlled experiments. The players started with only money and experienced an 'IPO' to get some starting stock, then they are free to trade as they like. Some random information about the price is given as market environment. In the end they are evaluated by their net gain percentage. The stock price and volume are shown in fig.2. The only factor we changed is the starting money. In Exp. I all the players have the same amount of money, in Exp. II some of the player are given more money and some of them are given less to create a more normal wealth distribution. The results are apparently different with just this small change.

## What is the future?

The CESM is just a simple website far from a good tool, and the tests we took are just hasty experiments and far from a conclusion. However with the positive feedback we have got, we are very confidence to pay more time and hard work to this promising project.

For more information please email [an@naich.org](mailto:an@naich.org)  
The alpha-test site now is <http://xtrade.sinaapp.com>

