

Call for a global early warning system

By Richard Olsen

With the deepening economic crisis there have been repeated calls for an early warning system of the world economy. Little has been said, how such a system should be built.

To build a global early warning system we have to overcome the predicament that Alan Greenspan highlighted: 'How do we know when international exuberance has unduly escalated asset values?...We should not underestimate or become complacent about the complexity of the interactions of asset markets and the economy.

Macroeconomic data alone cannot provide us with sufficient information to determine if asset prices are inflated. We need to dig deeper and track the complexity of interactions in asset markets and the economy.

We can do this by collecting and analyzing the tick by tick market data that financial markets spew with abundance. There are today in excess of 1 Mio financial instruments that are being traded. For the most liquid instruments 100'000 and more price quotes are generated every day. This huge swell of data incorporates the foot prints of the complex interactions that dictate relative asset prices and give us early information of dangerous misalignments of asset prices and risk premiums.

The tick by tick market prices is not just noise – the sequence of price changes is driven by the second by second flow of buy and sell orders. The size of these orders determines the magnitude of the resultant price change. The bigger the order the larger is the price change.

By tracking the tick by tick prices we can infer how market participants build and close positions. This is important information, because from this we can come up with maps of estimates of the size of positions and make inference of the positions that have been established at the various price levels and what profits and losses the different groups of traders and investors are incurring.

The position information is valuable, because we can infer which group of traders and investors is most likely to run into losses so big that they face margin calls and are forced to close out their positions at a loss. When this happens, the closing of positions due to margin calls will accelerate the price move and give rise to a cascading of additional price moves.

We can use this information to create weather maps of the positions that traders have established in the market and under what circumstances they will be forced to close their positions causing a cascade of further margin calls increasing the momentum of the price moves. Such a cascade of margin calls is like a storm building up. In the recent past, the

violent sell offs in the currency, commodity, equity and fixed income markets was precisely due to this effect – whole groups of traders were being hit by margin calls which forced them to close out their positions and adding momentum to the price move.

Building a financial weather forecasting service to uncover this information is no small task. We have to collect tick by tick data of all the financial markets and auxiliary information. There have been private initiatives to collect tick by tick data, but the task has hardly been started. We need a truly comprehensive data repository of all financial markets, not just of the exchanges, but also of the over the counter markets. The task is not just about collecting the tick by tick data, but also cleaning and scrubbing of the data. Other things have to be done as well. We have to generate the synthetic information, such as volatility smiles, liquidity price bands and yield curves.

Why is it necessary to even mention that tick by tick data of the world's financial instruments has to be collected and that synthetic information needs be generated in order to build a global early warning system? Are not banks flush with powerful hardware and have done everything to maximize profits and will certainly have collected this information, if it is so valuable? To our knowledge none of the banks and government agencies have access to such a comprehensive data repository. How is this possible?

Economics and finance has only in recent years started to focus on studying the statistical properties of tick by tick data. For far too long has academia followed the model of classical economics assuming that financial markets follow a random walk and that market data is just noise and is not worthy of further scrutiny. Banks have not done this work either. They have been focused on day by day profit making and have not established an engineering tradition understanding the long-term benefit of research spending.

In natural sciences, we take it for granted that researchers have to be well equipped to do their experiments. Governments provide large amount of funding to physics labs and have not shied away from spending billion of USD to build large scale particle accelerators to understand the inner workings of atoms.

In economics and finance, this is different. Universities struggle to get even the smallest budget to buy the tick by tick data for one or two financial market instruments for one or two years. This approach is so entrenched that the annual reports of banks do not even mention any research spending at all. This is no small matter. Today, we do not have the necessary resources and tools to model the intricate flow of capital in financial markets and to predict the Tsunami waves of economics.

If we commit to spend say 0.2 percent of the losses incurred by the banking system in the current crisis (banks have lost approximately 1 trillion USD to this date) that is approximately 2 billion USD we would be able to build a huge data repository, launch an intense research initiative and develop a comprehensive predictive service for the global economy. This would be money well spent, if we consider the damage that the current crisis is doing to the real economy.

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The proposal is to set up a truly independent agency to raise money from banks, hedge funds, governments and international agencies. The organization would have a small staff operating as a hub. All the work would be done in a collaborative effort, modeled along the lines of the successful the collaborative Internet projects of which Wikipedia is just one of them. The 2 billion USD would be not be used to fund a bureaucratic organization, but to fund prizes (large and small) to pay for the work of participants contributing to building the basic infrastructure, software tools, scientific research, constructing the predictive models and operating the forecasting services. With a development initiative that reaches out to the many people accessible over the Internet, we could create a truly amazing array of services in a short period to time.

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Olsen Ltd is a research and development company and investment manager based in Zurich, Switzerland. Olsen has yielded practical applications and managed accounts and third-party products, investing in currencies as a separate asset class or as an overlay to an existing currency exposure.

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