



Nanyang Technological University  
**DIVISION OF ECONOMICS**  
Seminar Series

The Division of Economics invites you to a seminar by Professor Stefan Thurner

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- Speaker** : **Stefan THURNER**  
*Professor, Science of Complex Systems at the Medical University of Vienna*
- Topic** : **"Eliminating systemic risk in financial markets"**
- Chairperson** : **Associate Professor Huang Weihong**  
*Division of Economics  
School of Humanities & Social Sciences*
- Date** : **30th March 2016 (Wednesday)**
- Time** : **2.30pm to 3.30pm**
- Venue** : **Meeting Room 5 (HSS-04-89)**  
*Nanyang Technological University  
School of Humanities and Social Sciences  
14, Nanyang Drive  
Singapore 637332*

**About the Speaker:**

Stefan Thurner is full professor for Science of Complex Systems at the Medical University of Vienna, where he chairs Section for Science of Complex Systems. Since 2007 he is external professor at the Santa Fe Institute, since 2010 he is a part-time senior researcher at IIASA. Since 2015 he is the president of the Complexity Science Hub Vienna, a new research institute to study and understand complex systems.

He obtained a PhD in theoretical physics from the Technical University of Vienna in 1995, and a PhD in economics from the University of Vienna in 2001. He held postdoc positions at Humboldt Universität zu Berlin and Boston University before he joined the faculty of the University of Vienna in 1999 and later Medical University. He obtained his habilitation in theoretical physics in 2001. With his engagement with the Santa Fe Institute - he shifted his focus from theoretical physics to biological and complex systems, which are now his main scientific areas. Since 1995 Thurner has published more than 180 scientific articles in fundamental physics, applied mathematics, complex systems, life sciences, economics and lately also in social sciences. He holds 2 patents. Thurner has (co-) organized many international workshops, conferences and summerschools, and has himself presented more than 200 talks. His work has received broad interest from the media such as the New York Times, BBC world, Nature, New Scientist, Physics World and is featured in more than 400 newspaper, radio and television reports. He works in a network of scientists mostly around the Santa Fe Institute, the former Collegium Budapest, where he was a fellow in 2007, and many European initiatives. Thurner serves as a member of numerous scientific and editorial boards. Apart from science Thurner has been active in quantitative financial consulting for financial institutions since 2003. In 1993 he founded a non-professional chamber music group for which he still plays the clarinet.

**Abstract:**

Systemic risk in financial markets arises either through synchronized behaviour of agents, or because of the interconnectedness of agents through financial contracts. We show that the systemic risk level of every agent in the system can be quantified by simple network measures. With actual central bank data for Austria and Mexico we are able to compute the expected systemic losses of an economy, a number that allows to estimate the cost of a crisis. We can further show with real data that it is possible to compute the systemic risk contribution of every single financial transaction to the financial system. We suggest a simple financial transaction tax that taxes the systemic risk contribution of all transactions. This tax provides an incentive for market participants to trade financial assets in a way that effectively restructures financial networks so that contagion events become impossible. With an agent based model we can demonstrate that this Systemic Risk Tax practically eliminates the network-component of systemic risk in a system.

**Reservation:**

Admission is free. Please reply to [h-dae@ntu.edu.sg](mailto:h-dae@ntu.edu.sg) to confirm your attendance.

