



SAID BUSINESS SCHOOL, University of Oxford

SEMINAR SERIES / Hilary Term 2012

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## 'How likely is contagion in financial networks?'

Professor H. Peyton Young  
Department of Economics, University of Oxford

Thursday 28<sup>th</sup> February, 14.00 -15.30  
Founders' Room, Saïd Business School

### ABSTRACT:

Interconnections among financial institutions create potential channels for contagion and amplification of shocks to the financial system. We propose precise definitions of these concepts and analyze their magnitude. Contagion occurs when a shock to the assets of a single firm causes other firms to default through the network of obligations; amplification occurs when losses among defaulting nodes keep escalating due to their indebtedness to one another. Contagion is weak if the probability of default through contagion is no greater than the probability of default through independent direct shocks to the defaulting nodes. We derive a general formula which shows that, for a wide variety of shock distributions, contagion is weak unless the triggering node is large and/or highly leveraged compared to the nodes it topples through contagion. We also estimate how much the interconnections between banks increase total losses beyond the level that would be incurred without interconnections. A distinguishing feature of our approach is that the results do not depend on the specific topology: they hold for any financial network with a given distribution of bank sizes and leverage levels. We apply the framework to European Banking Authority data and show that both the probability of contagion and the expected increase in losses are small under a wide variety of shock distributions. Our conclusion is that the direct transmission of shocks through network connections does not in itself have a major amplifying effect; other mechanisms such as loss of confidence and declines in credit quality are more important sources of contagion.