

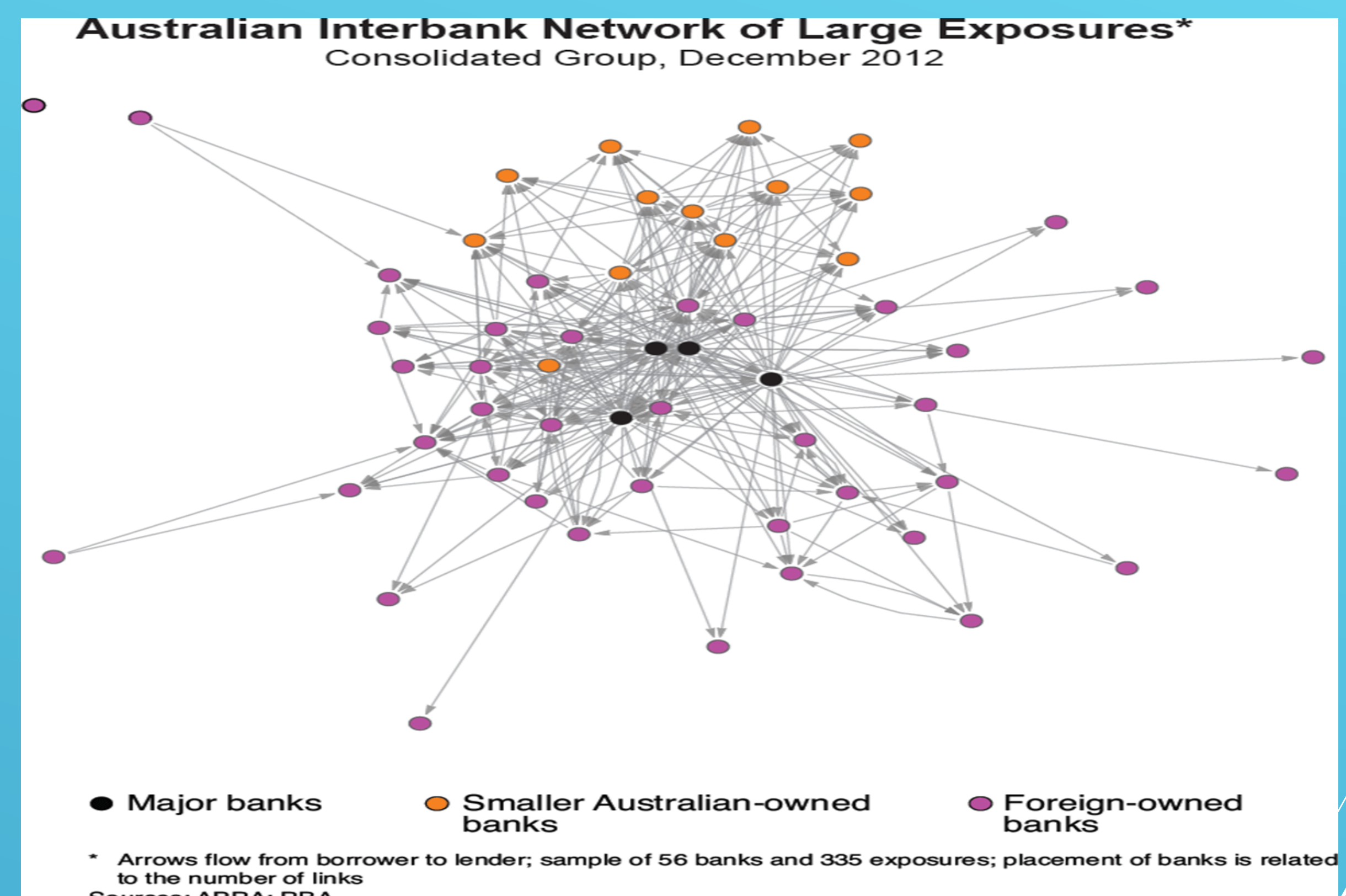
# Inter-bank loan market simulation

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## Introduction

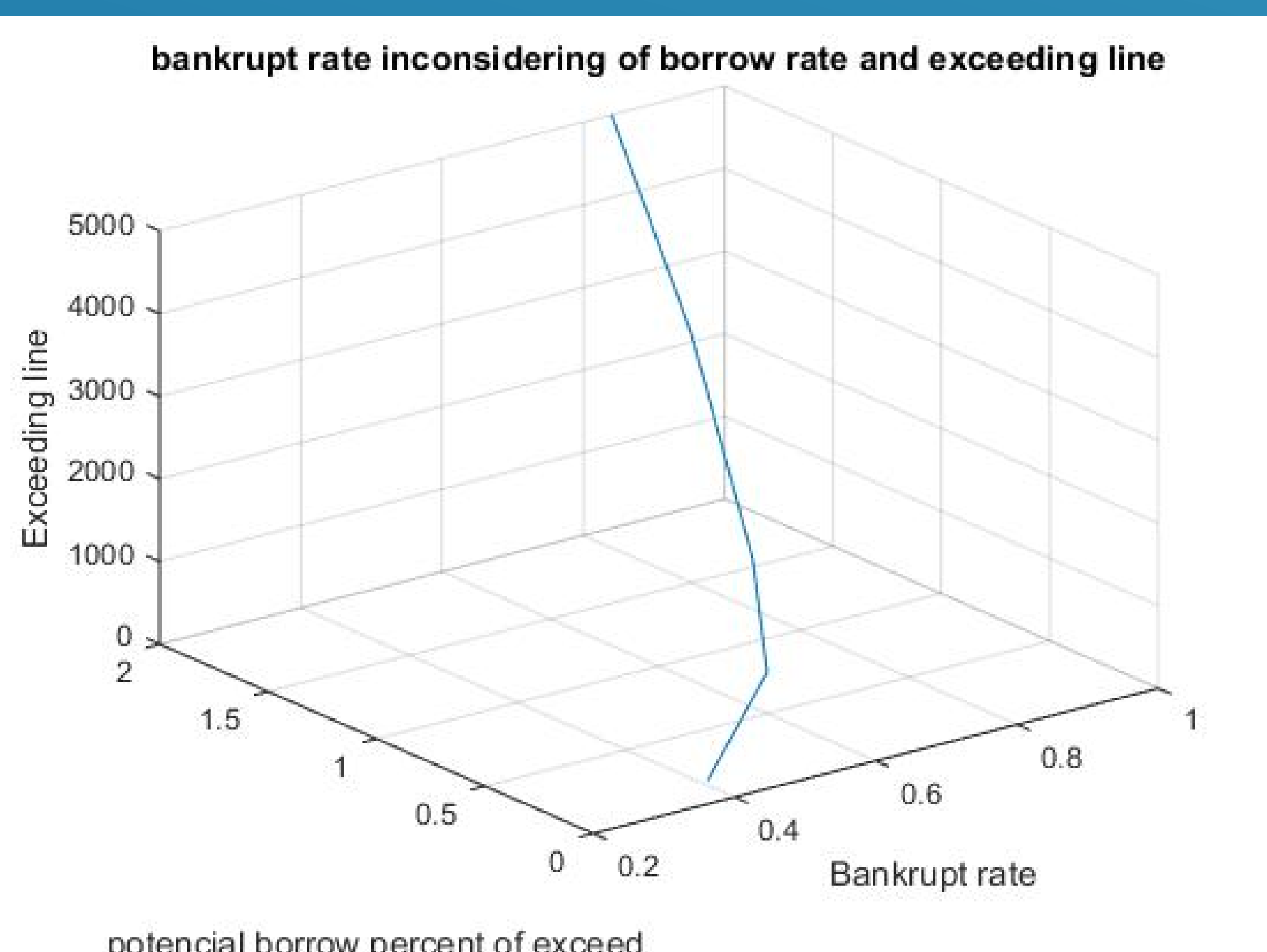
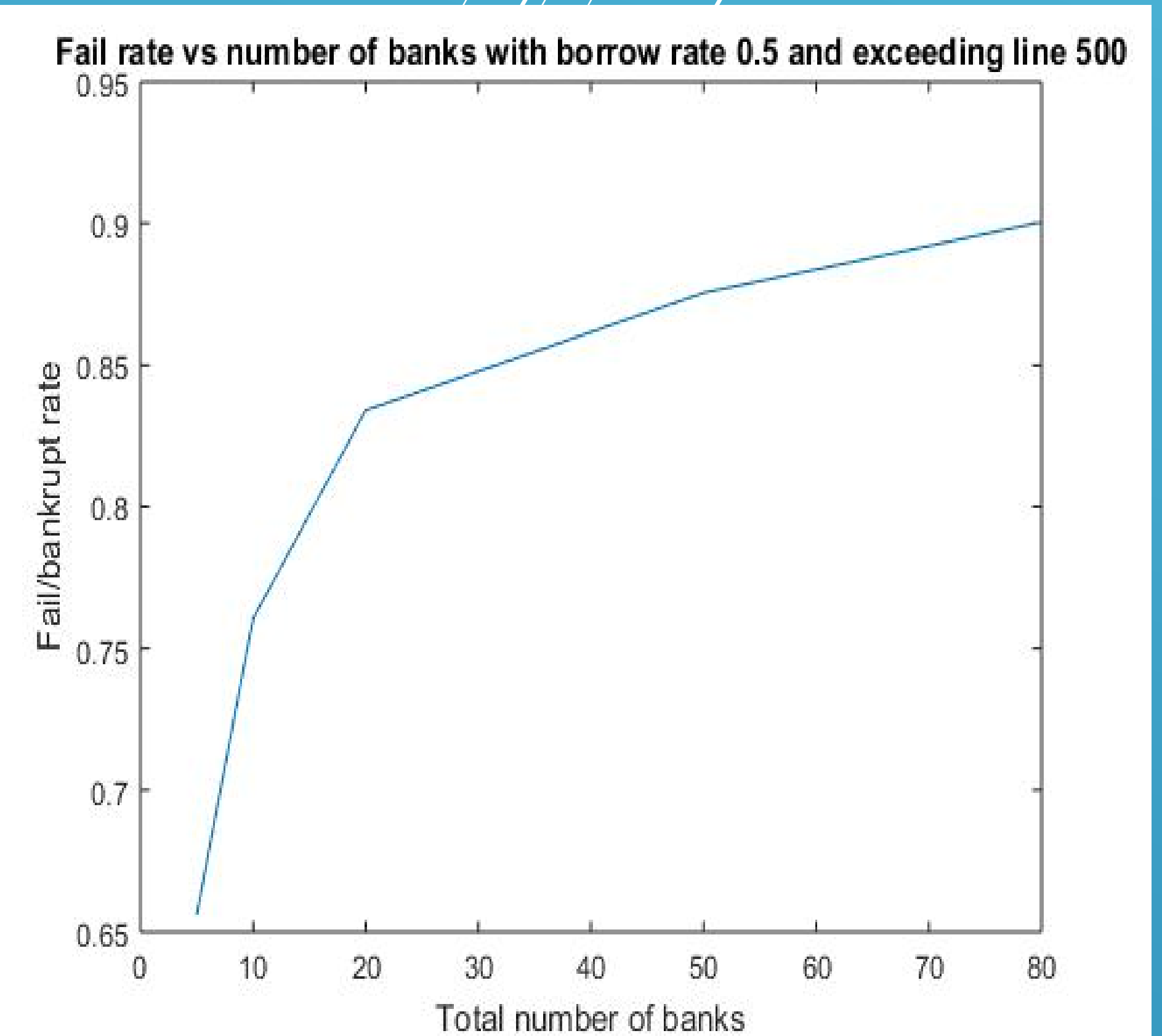
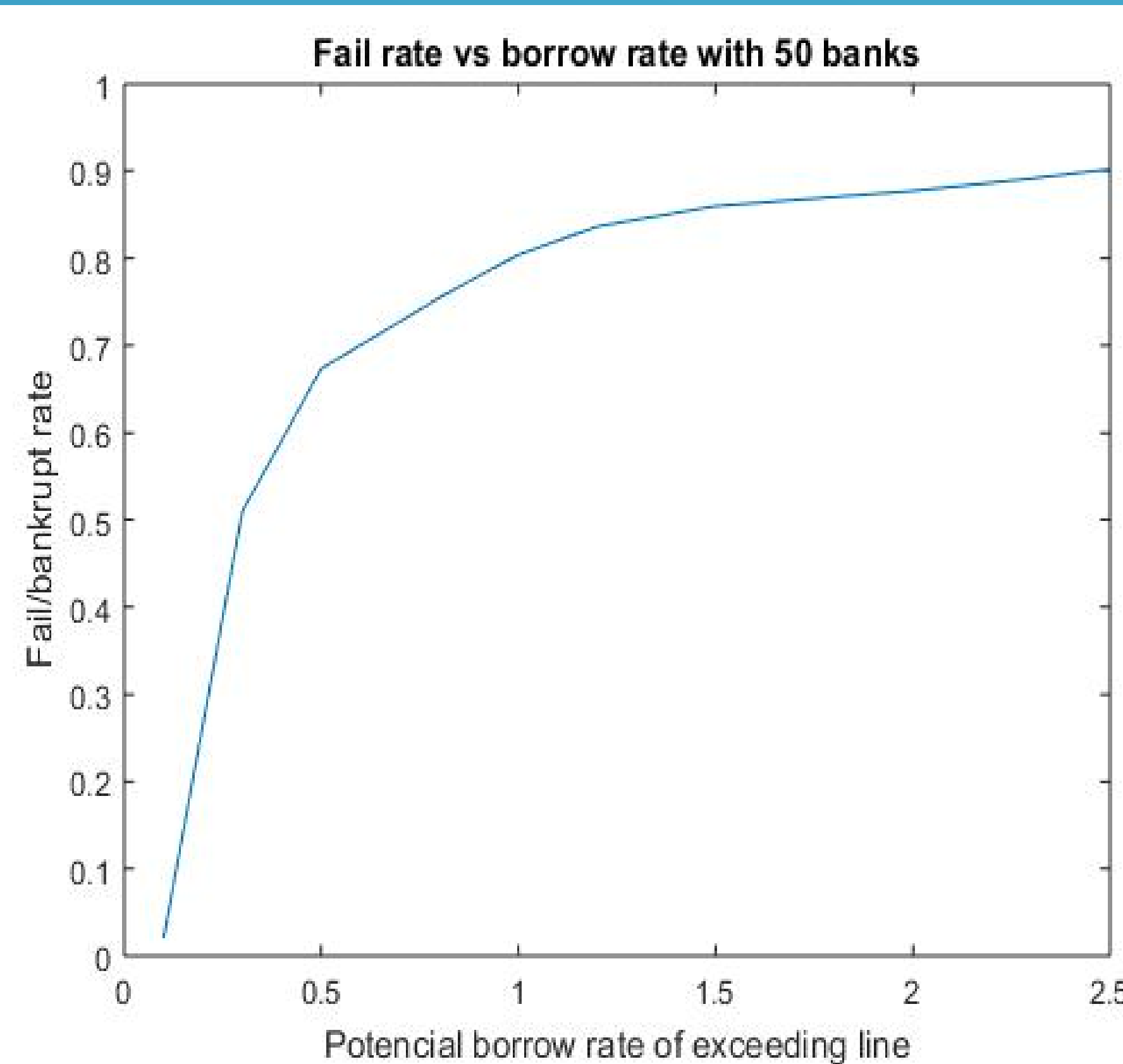
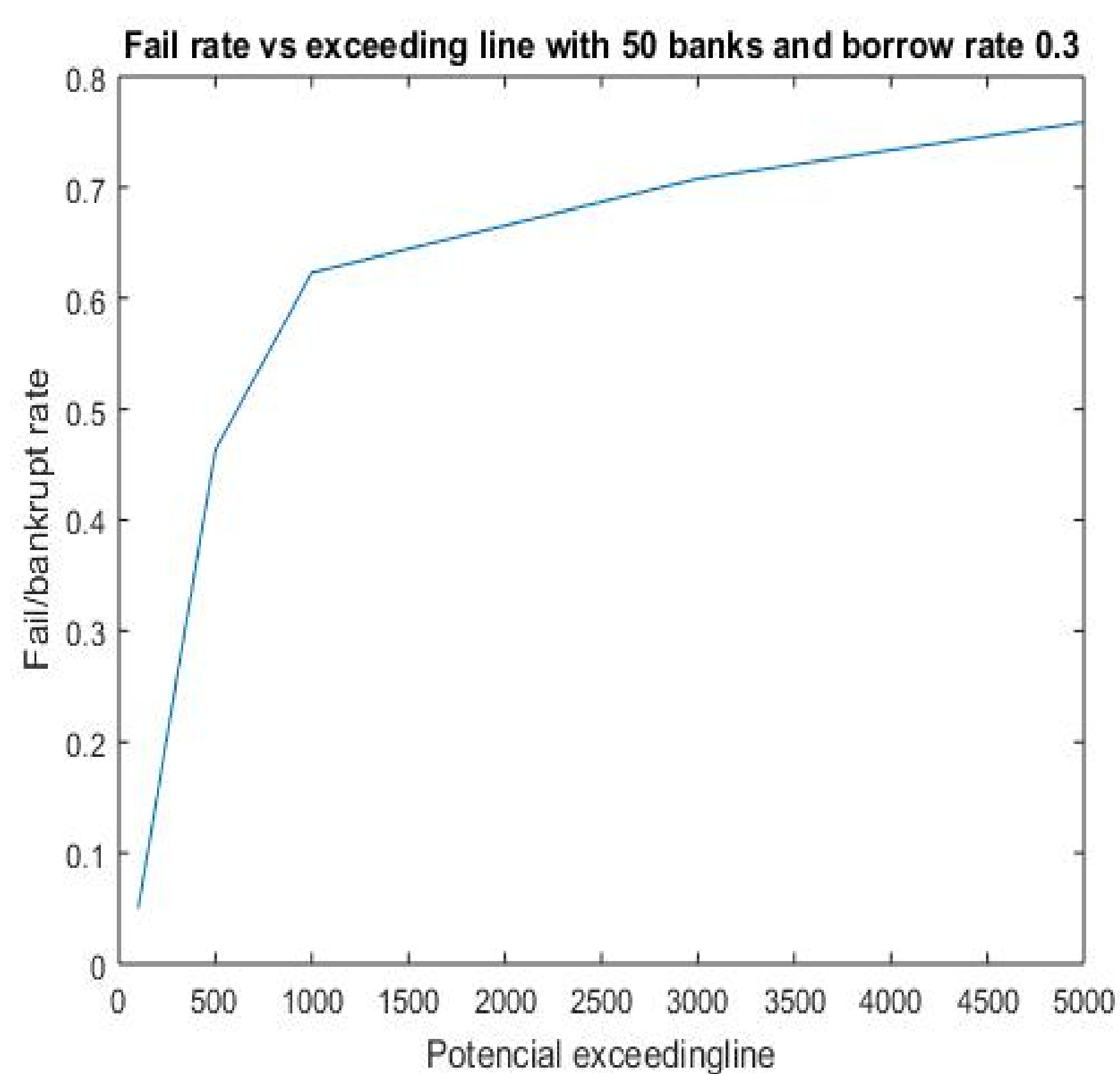
This project aims at simulating inter-bank loan data. Banks may borrow money from the other banks which is called inter-bank loan. In a economy crisis, banks may bankrupt and resulting in failing to pay their loan to other banks. Our project study if a bank fails to pay its loan, how would other banks fail following by that.



## Sequential default algorithm

1. A bank  $i$  fails by assumption.
2. Any bank  $j$  fails if its exposure versus  $i$ ,  $x_{ji}$ , multiplied by an exogenously given  $\theta$ , exceeds its equity  $e_j$ .
3. A second round of contagion occurs if there is a bank  $k$  for which  $\theta(x_{ki} + x_{kj}) > e_k$ . Contagion stops if no additional banks go bankrupt. Otherwise a third round of contagion takes place.

Inter bank Network graph  
Nodes are banks  
Edges are borrowing from banks to banks



## Conclusion

1. Fail rate increasing when the network become more complex.
2. Fail rate increasing while exceeding line increasing (more rich the bank is), or number of bank increasing or borrow rate increasing.

## Future work

1. More research in considering of different combination of factors is needed.
2. What are the other factors haven't been considered?

## References:

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Tellez, E. (2013, June). Bulletin – June Quarter 2013 Mapping the Australian Banking System Network. Retrieved April 10, 2016, from <http://www.rba.gov.au/publications/bulletin/2013/jun/6.html>

Upper, C. (2011). Simulation methods to assess the danger of contagion in interbank markets. *Journal of Financial Stability*, 7(3), 111-125. doi:10.1016/j.jfs.2010.12.001