ADVANCED LAB 4

SIDDHESH TIWARI

UNIVERISTY OF ILLINOIS AT CHICAGO

UIN: 657796780

CORPORATE STRATEGIC ALLIANCE 2007 ANALYSIS

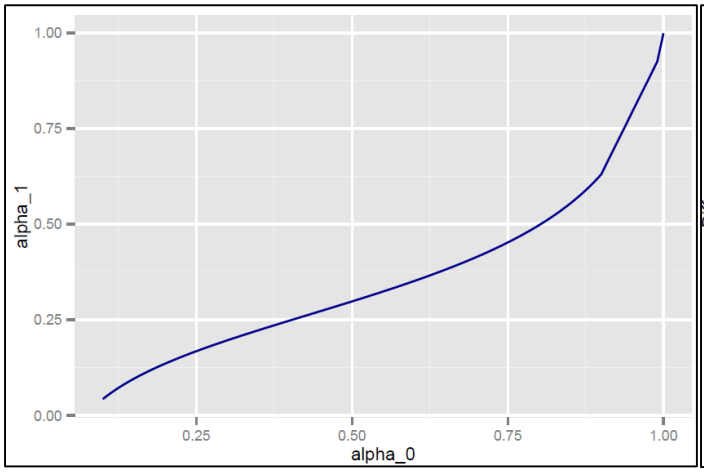

Fig 1.1 alpha_1 vs alpha_0

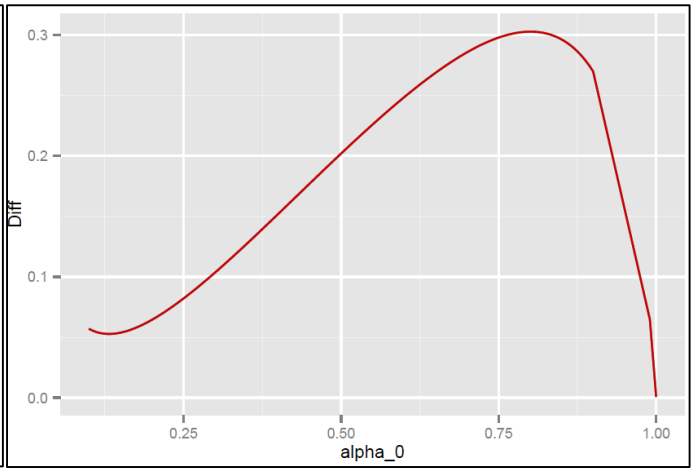

Fig 1.2 Diff(alpha_1,alpha_0) vs alpha_0

The alpha values for corporate strategic alliances in 2007 converge at a value of 0.999 which is evident from the above graphs. Such a high value of alpha signifies that 99.9% of new corporation that are going to form alliances are likely to do it in a random pattern i.e there is no preferential attachment and the network growth is random.

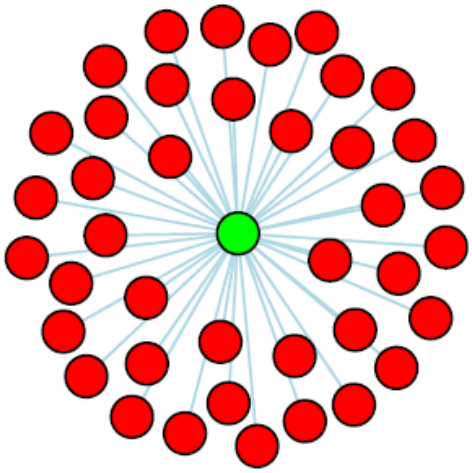

Fig1.3 Largest Connected Component 2007

The largest connected component in 2007 alliance consists of 41 corporation in a star pattern. The star pattern here signifies that there is one corporation (highlighted in green here) which has alliance with all other corporation (highlighted in red here). This single corporation which has alliance with all other corporation can become a basis for foundation of an alliance organization to which new corporation can get affiliated to by becoming a member. This connected component has potential of moving the random growth of network towards preferential attachment.

Connected Component Analysis

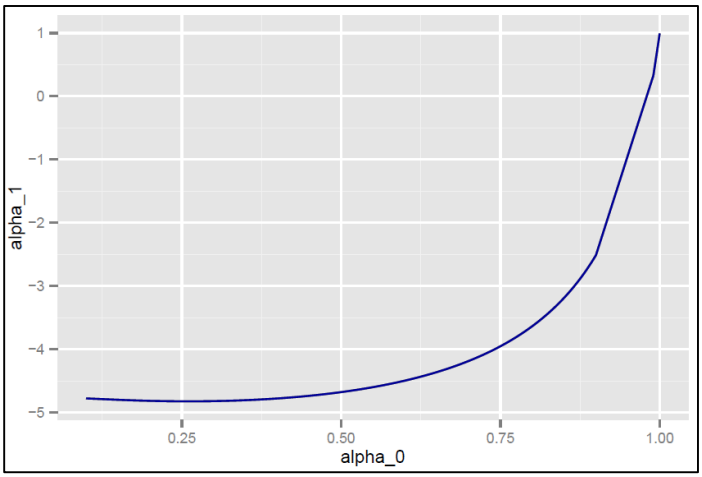

Fig 1.4 alpha_1 vs alpha_0

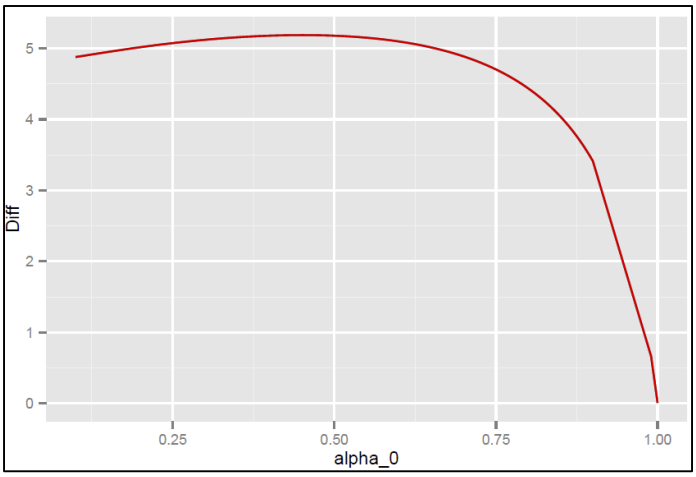

Fig 1.5 Diff(alpha_1,alpha_0) vs alpha_0

As we can see from above graphs that alpha values for the connected component converge at a value of 0.999. This signifies that connected component also has a random growth pattern.

CORPORATE STRATEGIC ALLIANCE 2014 ANALYSIS

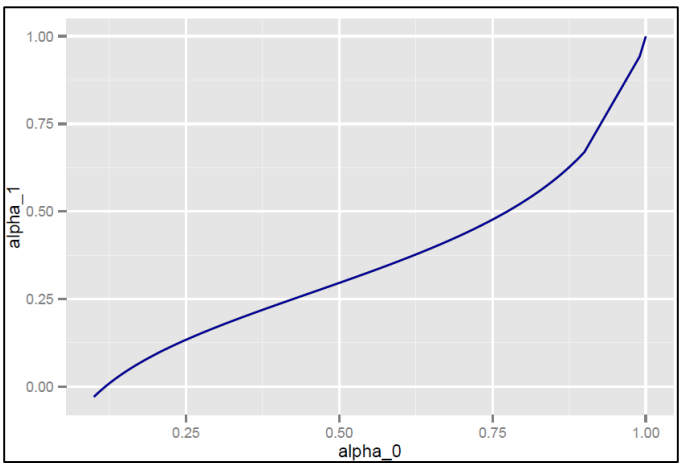

Fig 2.1 alpha_1 vs alpha_0

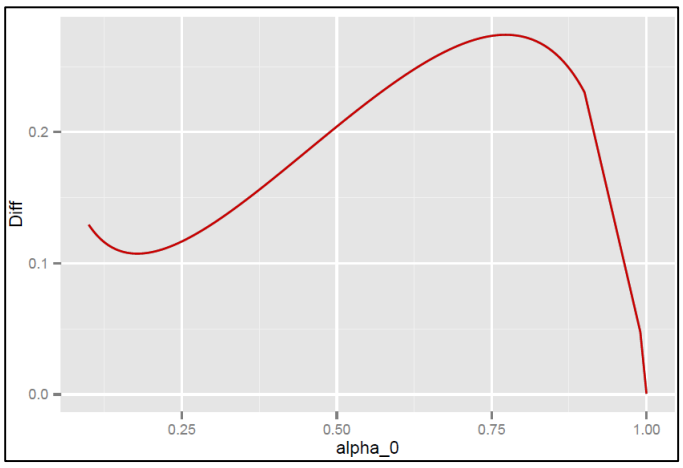

Fig 2.2 Diff(alpha_1,alpha_0) vs alpha_0

In 2014 there has been decrease in number of nodes in network of corporate alliances indicating that more nodes are leaving the network than joining it. The alpha values for corporate strategic alliances in 2014 converge at a value of 0.999 as seen from analysis of above graph. This high value of alpha signifies that there has not been any change in pattern of network growth from 2007 and still 99.9% of new corporation that are going to form alliances are likely to do it in a random pattern i.e there is no preferential attachment and the network growth is random. The highest degree in this network has reduced to 26 from 41 in 2007.

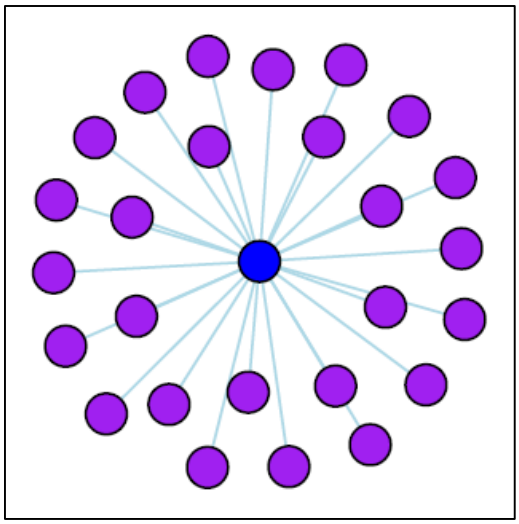

Fig1.3 Largest Connected Component 2014

The largest connected component in 2014 alliance consists of 26 corporation in a star pattern. This decrease in number of nodes in largest connected component follows appropriately from the above discussion where it was shown that more nodes have been leaving the network than joining it. The star pattern of the subgraph here also shows potential of moving the random growth pattern towards preferential attachment.

Connected Component Analysis

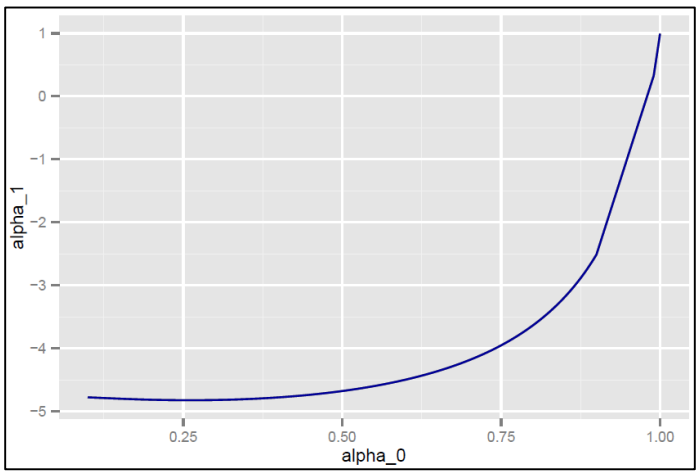

Fig 2.4 alpha_1 vs alpha_0

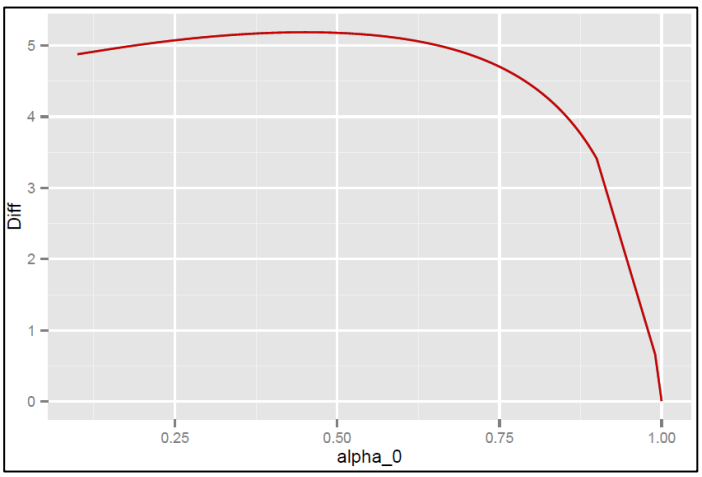

Fig 2.5 Diff(alpha_1,alpha_0) vs alpha_0

The analysis of the connected component show that they also follow random growth pattern like the overall network. There hasn't been any change in growth pattern when compared to 2007.

Conclusion

The comparison of the 2007 and 2014 network shows that there has not been change in the pattern of network growth. The growth pattern has always been completely random. This random pattern tells us that the new corporations which are joining the network are not making alliances based on the degrees of old nodes but they might be looking for some kind of individual benefits to form alliance which is making the network to grow in a random pattern. The corporate alliance network is individualistic i.e the corporations form alliances by attaching themselves to corporation which might be beneficial and not necessarily to a corporation linked to many other corporations.

Network Measure for Year 2007

transitivity	diameter	average.path.length
0	4	1.49216

Network Measures for Year 2014

transitivity	diameter	average.path.length
0	3	1.397065

The transitivity value of 0 tells us that none of connected triplets are going to form closed triangles i.e the clustering capability of the network is negligible. From diameter of network with value of 4 & 3 we can infer that there are very less number of tightly knit sub networks.