
PHELIM BOYLE, Wilfrid Laurier University
Beyond Perron Frobenius

The classical Perron-Frobenius theorem provides a sufficient condition for the dominant eigenvector of an n by n matrix to be positive. The condition is that all the matrix elements are positive. An extension of this result has a direct application in finance. The dominant eigenvector of the correlation matrix of stock returns can proxy the market portfolio. As the market portfolio must have positive weights we are interested in the conditions under which elements of this eigenvector are positive. It turns out that one can have some negative elements in the correlation matrix and the matrix can still have a positive dominant eigenvector. We analyze these conditions and this leads to extensions of the Perron Frobenius theorem