

LET C_{ij} BE THE NUMBER OF DOLLARS OF OUTPUT FROM INDUSTRY i THAT INDUSTRY j NEEDS WHEN PRODUCING A ONE DOLLAR OUTPUT. THE RESULTING MATRIX IS CALLED THE CONSUMPTION MATRIX.

NOTE: THE i^{TH} COMPONENT OF $C\vec{x}$ IS THE TOTAL DOLLAR OUTPUT NEEDED FROM ALL OF THE INDUSTRIES BY INDUSTRY i WHEN IT PRODUCES x_i DOLLARS OF TOTAL OUTPUT.

THUS, WE NEED $\vec{x} - C\vec{x} = \vec{d}$, I.E. $(I - C)\vec{x} = \vec{d}$.

WE SAY THAT C IS PRODUCTIVE IF $(I - C)^{-1}$ EXISTS AND HAS ALL NON-NEGATIVE ENTRIES. THIS ENSURES THAT ANY DEMAND \vec{d} CAN BE MET.

C IS GUARANTEED TO BE PRODUCTIVE IF EACH OF ITS ROWS ADD UP TO LESS THAN 1.

C IS GUARANTEED TO BE PRODUCTIVE IF EACH OF ITS COLUMNS ADD UP TO LESS THAN 1.