Keynesian Supermultiplier

National income accounting equation:

$$Y = C + I + G + X - M \qquad (1)$$

Consumption function includes autonomous consumption, a, plus the marginal propensity to consume, b, times disposable income:

$$C = a + bY_d \qquad (2)$$

Disposable income is aggregate national income less the tax bill, T:

$$Y_d = Y - T \qquad (3)$$

Assuming a flat rate income tax, t, the tax bill is equal to the tax rate times aggregate national income:

$$T = tY \qquad (4)$$

Substituting equation 4 into equation 3 gives:

$$Yd = Y - tY \qquad (5)$$

Investment may be thought of as having an autonomous component, d, but also a component that is a function of income (not disposable income). So we can introduce the marginal propensity to invest, e:

$$I = d + eY \qquad (6)$$

Government spending remains autonomous:

$$G = G \qquad (7)$$

Aggregate exports are also exogenous, si