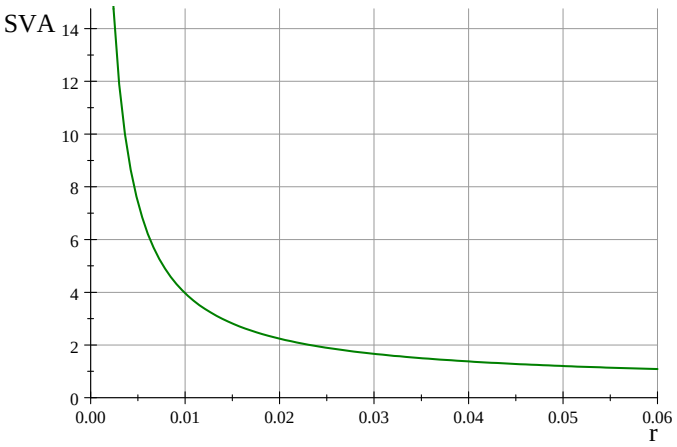

Figure 6. Plot of the ratio of sales to value-added of the economy as a function of the borrowing rate r ($\alpha = 0.033$)

Hence, the sales to value-added ratio is

$$\begin{aligned} \frac{\sum_{k=1}^{n} p_k}{p_1} &= (n+1)\,\frac{\frac{1}{3}r + \frac{2}{3}nr + 1}{r + nr + 2} \\ &= \frac{(r+2\alpha)\,(r+\alpha\,(1+r)+3)}{3r\,(1-\alpha)\,(r+2)} \end{aligned} \tag{21}$$

Figure 6 plots the sales to value-added ratio given by (21) when $\alpha = 0.033$. We see that the sales to value-added ratio is decreasing in the borrowing rate r, reflecting the shorter production chains when financial conditions are tighter.

Although our model is not sufficiently developed to take to the data, it is illuminating to get some bearing on the empirical magnitudes for the sales to value-added ratio for US manufacturing firms. The U.S. Census Bureau publishes an annual survey of manufacturing firms and provides estimates of the total value of shipments and value-added of the manufacturing sector. Figure 7 plots the recent movements in total shipments and value-added, where both series have been normalized to be 1 in 2000. The total value of shipments for the manufacturing sector in 2000 was 4.21 trillion dollars, and