

E.R.S. Industries

To Whom It May Concern:

E.R.S. Industries tasked the Carroll College Center for Mathematical Consulting with analyzing the financial impacts of manufacturing overseas or relocating to the United States. The analysis focused on determining the profit maximizing production levels with and without the tariff, the effect of tariffs on production levels and profit, the total cost of the tariff to the company, and the possible benefit of relocating manufacturing to the U.S..

The analysis assumed the production capacities of the air-oil and lock shock bikes were 5050 and 1000 bikes, respectively, with a total production capacity of 13,750 bikes. Further, the analysis assumed the manufacturing costs of each bike model remained constant regardless of facility location. If E.R.S Industries continues to manufacture overseas the company should produce 4,055 air-oil and 9,694 bikes to maximize profit. When operating overseas at these production levels and paying the tariff, the company would earn a profit of approximately \$1,324,720 and pay approximately \$343,725 in tariffs per year. Without the tariff, E.R.S. Industries would earn approximately \$1,668,445 per year when producing at these production levels. However, analysis of moving production to the U.S. showed the profit maximizing production levels remained the same as the overseas production levels, with a profit of \$1,068,470, an approximate \$256,250 reduction in yearly profit.

While the company will pay approximately \$343,725 in tariffs if overseas, the E.R.S. Industries would pay an additional \$600,000 in operational costs per year. This results in an additional cost of \$256,250 per year, which is the same as the difference in profits between manufacturing overseas and in the U.S.. As a result, it is monetarily beneficial for E.R.S. Industries to remain overseas despite the \$25 tariff per bike. In fact, E.R.S. will continue to earn a greater profit overseas until the total cost of tariffs per year exceeds \$600,000, which occurs when the tariff exceeds approximately \$43.60 per bike.

The findings of the analysis support the decision for E.R.S. Industries to manufacture overseas rather than in the U.S., despite the current import tariff. If the tariff increases beyond the threshold of \$43.60 per bike, E.R.S. Industries should consider relocating manufacturing to the U.S.

Very Respectfully,

Amy Hoffman