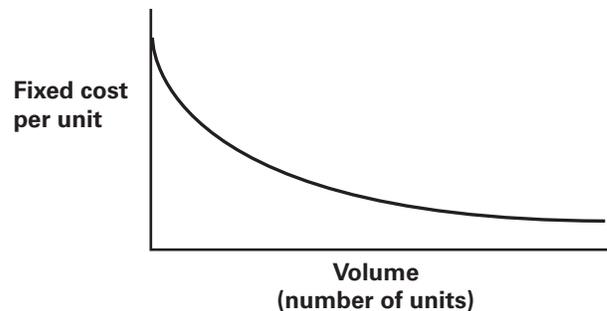


Economies of Size

Economies of size result from spreading fixed costs over a large number of units of production. Because fixed costs remain the same regardless of the number of units produced, as the number of units produced increases, the fixed cost per unit declines. As a result of declining fixed cost per unit, total cost per unit also declines.

Examples of fixed costs include depreciation on machinery or a processing facility, administrative overhead, interest payments on real estate or capital assets, and other costs that don't change with the level of production.

Figure 1. Economies of size



Example 1. Economies of size

Fixed cost \$7,500
Variable cost \$7.50 per unit

Production	Total Fixed Cost	Fixed Cost Per Unit
1,000	\$7,500	\$7.50
2,500	\$7,500	\$3.00
5,000	\$7,500	\$1.50
10,000	\$7,500	\$.75

Production	Cost per Unit		
	Fixed Cost	Variable Cost	Total Cost
1,000	\$7.50	\$7.50	\$15.00
2,500	\$3.00	\$7.50	\$10.50
5,000	\$1.50	\$7.50	\$9.00
10,000	\$.75	\$7.50	\$8.25

As shown in Example 1, spreading fixed costs over more units of production reduces the cost per unit of production (\$7.50 per unit at 1,000 units to \$.75 per unit at 10,000 units). Because variable costs per unit of production remain the same, the total cost per unit of production declines as more units are produced. This is shown graphically in Figure 1.

High Fixed Cost Business

As shown in Example 2, a high fixed cost business has a high proportion of costs that are fixed. Businesses requiring a lot of brick and mortar to produce the product are usually high fixed cost businesses. In the high fixed cost business, the reduction in total cost per unit of production declines from \$15 per unit when 1,000 units are produced to \$6 per unit when 10,000 units are produced. This is a reduction of \$9 or 60 percent.

Example 2. High fixed cost economies of size

Fixed cost \$10,000
Variable cost \$5.00 per unit

Production	Cost per Unit		
	Fixed Cost	Variable Cost	Total Cost
1,000	\$10.00	\$5.00	\$15.00
2,500	\$4.00	\$5.00	\$9.00
5,000	\$2.00	\$5.00	\$7.00
10,000	\$1.00	\$5.00	\$6.00

Low Fixed Cost Business

In a low fixed cost business as shown in Example 3, the reduction in total cost per unit of production declines from \$15 per unit when 1,000 units are produced to \$10.50 per unit when 10,000 units are produced. This is a reduction of \$4.50 or 30 percent. There is still a significant reduction, but not as great as for the high fixed cost business.

Example 3. Low fixed cost economies of size

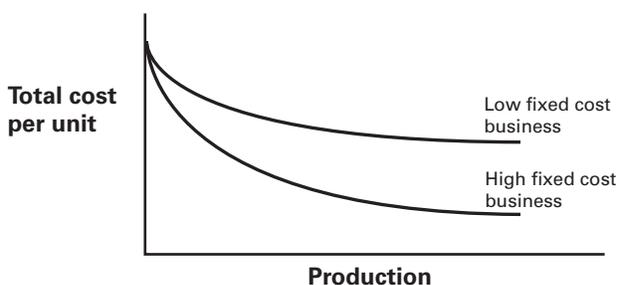
Fixed cost \$5,000

Variable cost \$10.00 per unit

Production	Cost per Unit		
	Fixed Cost	Variable Cost	Total Cost
1,000	\$5.00	\$10.00	\$15.00
2,500	\$2.00	\$10.00	\$12.00
5,000	\$1.00	\$10.00	\$11.00
10,000	\$0.50	\$10.00	\$10.50

Figure 2 compares the high fixed cost business to the low fixed cost business. As can be seen, the economies of size are more dramatic for the high fixed cost business.

Figure 2. Economies of size by size of fixed cost



See the [Ag Decision Maker website](http://www.extension.iastate.edu/agdm/vdanalysis.html#concepts) for more [economic and business analysis concepts](http://www.extension.iastate.edu/agdm/vdanalysis.html#concepts), www.extension.iastate.edu/agdm/vdanalysis.html#concepts.

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