

Don't Underestimate the Strategic Value of the Humble Volume Hurdle

by: Nathan L. Phipps

Using the standard volume hurdle equation allows a pricing professional to calculate the volume hurdle required for both price increases and price decreases. However, this volume hurdle analysis only considers pure price changes, where nothing changes but the price. It does not take cost changes into account. In this article, the author explains how to expand this equation to account for changing costs, which is a critical consideration for pricers in the current economic environment. Nathan L. Phipps is a Senior Consultant at Wiglaf Pricing. His areas of focus include pricing transformations, marketing analysis, conjoint analysis, and commercial policy. He can be reached at nhipps@wiglafpricing.com.



The volume hurdle is one of the fundamental tools that all pricing professionals are exposed to. At least, it is if they earn their CPP (Certified Pricing Professional) designation. For a given price change, a volume hurdle tells you the minimum change in volume that you must achieve in order to maintain the same (or higher) profit.

For a price increase, a volume hurdle tells you how much volume a product can lose without losing profits. For a price decrease, a volume hurdle tells you how much volume must increase to maintain the same profit.

The equation is quite straightforward, where %ΔQ is the percent change in quantity sold, %ΔP is the percent change in price, and %CM_i is the ratio of the initial contribution margin to the initial price. Contribution margin is simply the price less the variable cost; divide it by price to calculate the ratio.

Using this equation allows a pricing professional to calculate the volume hurdle required for both price increases and price decreases. However, this volume hurdle analysis only considers pure price changes, where nothing changes but the price. It does not take cost changes into account.

But what about costs?

However, anyone reading the news (or anyone who owns, manages, or works at a business) may be aware that costs have been increasing for most categories of goods since early 2021.

Luckily, you can derive a more sophisticated equation that takes cost changes into account as well. My goal for this article is not to derive that equation, but to look at how you can use the volume hurdle framework to have impactful discussions on how your firm should respond to increasing costs.

Let's look at a concrete example. Assume that you have 3 products (A, B, and C) that all sell at \$100. However, they have contribution margins of 20%, 40%, and 60%. (This means that their variable costs are \$80, \$60, and \$40 respectively.)

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$$\% \Delta Q \geq \frac{-\% \Delta P}{\% CM_i + \% \Delta P}$$



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Your variable costs increase by 10% for each product. You learn that your sales team does not believe a price increase of more than 5% is possible for these 3 products. With a new price of \$105 for each product, what is the volume hurdle for each product? After some number crunching, you calculate the volume hurdles below.

OLD				NEW				Change in volume % to preserve Profit
Product Name	CM%	Price (\$)	Variable Cost (\$)	New Variable Cost (\$)	Price Change %	New Price (\$)	New CM%	
A	20%	100	80	88	5.0%	105	16%	18%
B	40%	100	60	66	5.0%	105	37%	3%
C	60%	100	40	44	5.0%	105	58%	-2%

You learn that Product A must increase volume by 18% to maintain the same profit dollars, and Product B must increase volume by 3% to maintain profit. Product C can lose up to 2% of its volume and still maintain the same profit dollars.

Why the variance in volume hurdles? Well, the differences in contribution margins are the underlying cause. But look specifically at how much the contribution margin percentage changed for the products.

Product A experienced a CM% reduction of 19% (from 20% to 16%). Product B experienced a CM% reduction of 7% (from 40% to 37%). Product C experienced a CM% reduction of 3% (from 60% to 58%). Greater reductions in CM% require greater increases in volume to maintain the same profit dollars.

You finish the analysis and are now armed with information that will beg questions of the sales team. Is it realistic to expect an 18% increase in volume for Product A? Is it reasonable to expect a 3% volume increase for Product B? How achievable is limiting Product C to a 2% volume reduction?

I'm going to guess that the volume hurdle for Product C will not be a problem, Product B's will be more difficult to achieve, and Product A's will be laughably unlikely. But there are other ways of approaching the problem.

What are the other options?

Well, there are 3 alternate scenarios that come to mind. First, your firm can keep prices at \$100 and absorb the 5% cost increase. Second, you could raise

prices proportionally with the cost increase so that you maintain the original CM%. Finally, you could simply pass through the cost increase (in dollar terms).

What are the volume hurdles associated with these alternate scenarios? Let's start with the volume hurdles for absorbing the 5% cost increase.

Absorb the cost increase

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Absorbing Cost Increase				
<i>Fully absorbing the cost increase is imprudent</i>				
Product Name	New Variable Cost (\$)	New Price (\$)	New CM %	Change in volume % to preserve Profit
A	88	100	12%	67%
B	66	100	34%	18%
C	44	100	56%	7%

If you thought the volume hurdles for a 5% increase were bad, the volume hurdles for absorbing the cost increase may give you and your sales team nightmares. Product A's volume hurdle has gone from laughably high to practically science fiction. Product B's volume hurdle is now laughable, and Product C's volume hurdle is anxiety-provoking.

Next scenario, please!

Proportional cost increase

Allowable Volume Loss for Taking a Proportional Cost Increase					
<i>Raising prices proportionate to the cost increase may be excessive</i>					
Product Name	New Variable Cost (\$)	Variable Cost Increase (%)	New Price (\$)	New CM %	Change in volume % to preserve Profit
A	88	10%	110	20%	-9%
B	66	10%	110	40%	-9%
C	44	10%	110	60%	-9%

With a proportional cost increase, the “good” news is that all three of your products have the same volume hurdle. Each product can lose up to 9% of its volume. The bad news is that your prices are increasing by 10%, which is double what your sales team thinks is possible.

Is there a middle ground?

Pass through the cost increase

Passing through the cost increase in dollar terms may be a realistic compromise between the scenarios reviewed above.

Passing Through Cost Increase					
<i>A nuanced approach is more neutral</i>					
Product Name	New Variable Cost (\$)	Δ Variable Cost	New Price (\$)	New CM %	Change in volume % to preserve Profit
A	88	8	108	19%	0%
B	66	6	106	38%	0%
C	44	4	104	58%	0%

This solution requires no change in volume to maintain the same profit dollars.

Additionally, there is a certain elegant simplicity to this solution. Product A's cost went up by \$8? Increase the price by \$8! Product B's cost went up by \$6? Increase the price by \$6! Product C's cost went up by \$4? Increase the price by \$4!

What's the answer?

Is simply passing on the cost always your best option? Maybe, maybe not.

The point here is not to necessarily determine the optimal price all by yourself in your spreadsheet, disconnected from your team.

Rather, the goal is to use your available pricing tools to facilitate a discussion about the available options and the tradeoffs associated with each option. You can't expect to always have the absolutely correct, one-ring-to-rule-them-all answer. But you can provide resources (and calculations) to your team to help sharpen everyone's thinking about the problem at hand.

And for a scenario like this, the strategic value of the volume hurdle is not to be underestimated.

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