

Economic principles for dairy and beef producers and their advisors to think about

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Abstract

To be economically competitive, it is important that live-stock producers and their advisors understand key economic principles such that they make good business and management decisions. A lot of terms exist to define/describe costs (e.g., variable, fixed, cash, non-cash) and it is important to know what these are, and more importantly, how they tie into financial decisions that need to be made. Partial budgets, which can range from very simple to extremely complex, can be a powerful tool to help in the decision-making process.

Key words: economic costs, partial budget, time value of money

Résumé

Pour être plus compétitif économiquement, il est important que les producteurs de bétail et leurs consultants comprennent des principes économiques clés afin de prendre de bonnes décisions d'affaires et de gestion. On utilise plusieurs termes pour définir/décrire les coûts (e.g. variable, fixe, financier, non-financier) et il est important de les connaître et surtout de comprendre comment ils sont liés aux décisions financières qui doivent être prises. Les budgets partiels, qui peuvent être très simples ou extrêmement complexes, sont des outils très puissants dans le contexte de la prise de décision.

Executive Summary

Most all sectors of agriculture, both crops and livestock, have seen tremendous increases in price volatility in the last decade. Large swings in both input and output prices have resulted in corresponding large swings in year-to-year profitability. A natural concern for producers and their advisors is to think about, and focus on, ways to manage this risk. However, predicting where prices might go in real time is challenging, and managing price risk is difficult for numerous reasons (e.g., marketing tools/options available, basis risk, time frame, etc.). Thus, for many producers and their advisors, it is much more important to focus on things they have more control over. That is, making decisions based on sound economic principles and focusing on producing at the lowest cost/unit of production is important for long-term business survival.

The following is a list of some economic principles/concepts that are important for both producers and their advisors to understand to ensure they are making sound economic business decisions.

1. Variable vs fixed costs
2. Short-run vs long-run
3. Cash costs vs economic costs
4. Price = cost
5. Marginal revenue vs marginal cost
6. Partial budget vs whole-farm analysis
7. Time value of money

Many of these principles are interrelated and help explain both behavior of decision makers and trends that we observe. Below is a short explanation of each of the concepts.

Variable vs fixed costs – variable costs are defined as those costs that vary with additional production and fixed costs are those that are constant regardless of production. Fixed costs are directly related to the concept of economies of size (scale). We often use the term “dilution of fixed costs” which simply means that we can lower fixed costs *per unit of production* by increasing production. Classic examples of fixed costs are things such as facilities, management, overhead, etc. Variable costs are those costs that increase proportionately to production. For example, feed and supplies will increase as cows are added to an operation.

Short-run vs long-run – the concept of short-run and long-run is directly linked to variable and fixed costs. In the long run, defined as a period long enough such that all inputs can be adjusted, everything is variable. On the other hand, as the length of the decision period decreases, more costs become fixed. The short run is a period where some inputs are fixed and thus decisions made do not affect them. Many people would like to assign a specific time period as to what is “long” run and what is “short” run, but this really cannot be done as it is a continuum. For example, if the number of cows can be changed, feed costs typically would be considered a variable cost; however, once a cow is in place, a certain portion of her feed (maintenance) becomes a fixed cost. In other words, feed cost (often considered variable) can have both fixed and variable components. In the decision-making process, it is important to recognize the difference between variable and fixed costs, but also recognize that they change based on the time frame being considered.

Cash costs vs economic costs – managers easily can relate to cash costs, i.e., those costs that require a direct cash outlay (e.g., feed bill, vet bill, loan payment), whereas

economic costs are more difficult for many people to grasp. Put another way, cash costs are those things that show up on a cashflow statement with a lender. Cash costs are more of a short-run concept and economic costs are more of a long-run concept. Cash and economic costs can be exactly equal (and in many cases are), but they can also vary considerably. Economic costs reflect the fact that all inputs (feed, supplies, labor, facilities, capital) need to be repaid or else they will shift to another use in the long run. Cash and economic costs tend to differ for those things typically considered “fixed”. Economic costs incorporates the concept of “opportunity cost” which may be different from what is actually paid (i.e., cash cost). Economic costs also incorporates the useful life of an asset as opposed to loan payments (or lack thereof) which is another reason economic costs can vary considerably from cash costs.

Price = cost – this concept indicates profits are equal to \$0. It is important to recognize that the definition of profit here is “economic profit” which means that all costs have been accounted for. A couple of additional qualifiers are needed regarding this statement -- profit equals zero, on average, in the long run, in a competitive industry. While many people get frustrated with this statement, i.e., “why am I in business if I’m not making any profit?” it is important to recognize the main result of this statement – over time the below average producer will go out of business (we have lots of evidence that this is truly the case in agriculture). More importantly, it points to the need to constantly strive to be better than average, which is a moving target, for long-term business survival (either that or accept below average rates of returns to some inputs – typically labor and capital).

Marginal revenue vs marginal cost – this concept is a primary rule for profit maximization and simply suggests that something should be done if the revenue from making that change (i.e., marginal revenue) is greater than the cost of making the change (i.e., marginal cost). This concept generally would assume that some costs are variable and some are fixed, but that is not a requirement. Assuming some costs are fixed, making decisions to where “the last unit of output” (marginal revenue) is equal or slightly greater than the “last unit of input” (marginal cost) ensures fixed costs are being diluted as much as possible.

Partial budget vs whole-farm analysis – this is a straight forward concept that simply indicates that many times we only need to develop a partial budget to make a decision because we are focusing on only those factors impacted by the decision. By definition, a partial budget is more of a short-run concept as it ignores all costs that are fixed and thus not impacted by the decision being considered. The downside of a partial budget is that it gives no indication as to whether or not the operation is profitable, only whether or not the specific incremental decision being considered is beneficial or not. Thus, while partial budgets may not be reflective of total profitability, they are very helpful in the

decision-making process. A whole-farm analysis is important to examine whether or not an option is profitable, but is not particularly relevant for making short-run management decisions.

Time value of money – anybody that has ever borrowed money recognizes this concept as banks always want the money you borrowed returned with interest. While people understand the concept of paying interest on borrowed money, the time value of money is often not accounted for properly in many analyses. This concept is related to the cash costs vs economic costs concept discussed previously. If time value of money is not appropriately accounted for, cash-based decisions will always look better than those involving borrowed capital. Accounting for the time value of money and calculating an annualized rate of return on investment (also known as Internal Rate of Return) helps producers and their advisors make decisions about where capital is best used.

Currently many sectors in agriculture are facing tough margins due to market prices and thus it is easy and/or tempting to let these prices influence decisions that may not be optimal. As a general rule, in a commodity market being a low cost producer – *on a per unit of production basis* – is critical for business survival. Having an understanding of several key basic economic principles is important for both producers and their advisors to help them make sound economic decisions. It is recognized that not everybody makes all decisions based on profit maximization, which is perfectly fine, but it is also important that they recognize the trade-offs they are making. While the need to make sound economic decisions is always important, it becomes even more critical in times of tight margins. Principles that tend to be misunderstood or ignored the most often are understanding the difference between cash costs and economic costs, and how time value of money is related to costs and rates of return.

The profitability for dairies and beef cow-calf operations (and most all other agricultural enterprises) varies tremendously over time due to market cycles. While this variability can cause significant financial pain and hardship, it is important for producers and their advisors to focus on things they can control and manage. More importantly, profitability of dairy and beef cow-calf operations is extremely variable *across* operations indicating that management and how resources are used is important; thus, making well-informed management decisions related to production can make the difference between profit and loss and hence long-term business survival. Partial budgets, which can range from being extremely simplistic to extremely complex, can be a powerful tool to help producers make good economic decisions. Computer spreadsheets and online tools can do the math required to analyze the choices producers have to help them make optimal decisions. However, it is always important to remember that information generated from any tool is only as good as the information fed into it and the formulas or algorithms used.