

Shareholders Pay for

ROA

THEN WHY ARE WE STILL LIVING IN A MARGIN-ONLY WORLD?

BY MICHAEL ROTHSCHILD

No one—particularly management accounting experts—would dispute the old saying, “You can’t manage what you can’t measure.” Yet consider for a moment what is perhaps the most critical financial goal of manufacturing firms: return on assets (ROA). Investors rate the management performance of CEOs and CFOs of manufacturing firms largely by their ability to wring profits from the assets under their control. As such, ROA is perhaps the premier metric of quarterly and annual results. But how many manufacturing firms are able to measure and report on ROA at the transactional level of detail? How many provide their middle-management ranks with accurate, timely, detailed reporting of ROA by invoice line item, production run, customer order, production line, etc.? Virtually none.

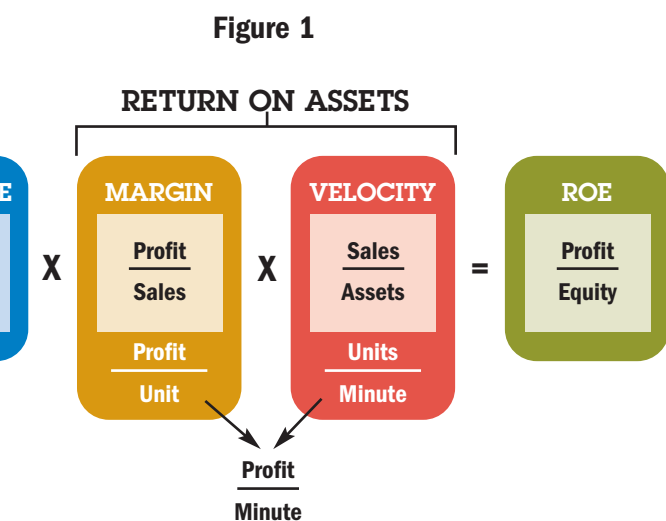
ROA may be the central financial goal of manufacturing firms, but even today's "advanced" management accounting systems, including sophisticated activity-based costing (ABC) and enterprise resource planning (ERP) systems, aren't capable of calculating, reporting, or modeling ROA at a level of detail sufficient to allow managers to know the ROA impacts of their day-to-day, deal-by-deal choices and trade-offs. Consequently, ROA is really nothing more than a high-level, after-the-fact, end-of-the-quarter or end-of-the-year, rearview mirror report card on CFOs and CEOs. ROA can't be managed because it can't be measured at the transactional level where profit-making business decisions actually get made. If truth be told, there is no effective linkage between the key financial goal of manufacturing firms and their daily operating decisions because the strategic ROA goal hasn't been translated into a pragmatic, tactical measure of business activity.

Following this logic, it's my contention that, despite decades of massive investment in sophisticated information systems, when it comes to the management accounting challenges facing managers of complex, asset-intensive manufacturing enterprises, an enormous gap remains between management's need for actionable, profit-optimizing information and the capabilities of today's "advanced" systems.

Further, I would argue that, as a direct consequence of this weakness in management accounting systems used by complex, asset-intensive manufacturers, shareholder returns in industries including chemicals, steel, semiconductors, electronic components, paper, packaging, plastics, and several others often fall well below an acceptable rate of return on investor capital. Viewed on the global scale, in this \$2 trillion sector of manufacturing, I estimate that this problem causes an annual profit shortfall of more than \$100 billion. In short, inadequate and superficial measurement of ROA allows misguided management decisions that, in turn, are causing \$100 billion per year to be frittered away. That's real money.

WHAT ABOUT PROFIT?

Before we drill into the details of this problem, let's go back to basics. First, consider how most well-trained business people think about and define the ultimate goal of any business: profit. If you were to ask a dozen experienced managers seated around a conference table to sug-



gest the "best" definition of profit, a few would undoubtedly mention gross margins, and others would say operating earnings or profit after tax, earnings per quarter, earnings per share, return on assets, or return on equity. Still others would show their sophistication by spouting an alphabet soup of acronyms: ROS, EBITDA, ROCE, ROIC, RONA, EVA®, etc. Isn't it remarkable that such a hodgepodge of labels, each with its own underlying definition, could reasonably be suggested as the proper definition of profit?

Despite the confusion, none of these terms is wrong per se. Each one can be a useful definition of profit under certain circumstances. But there's a hierarchy of profit definitions, and not all definitions of profitability are created equal. Some measures of profit are far more important than others.

As any Wall Street analyst or finance professor will attest, the ultimate measure of profitability is return on equity (ROE), the ratio of the current year's profit divided by shareholders' equity (all accumulated past profits), or profit/equity. The higher the ROE ratio, the faster total shareholder equity—and stock price—will grow as each year's profits are added to the stockpile of shareholder wealth.

Unfortunately, even though achieving and sustaining a high ROE is the ultimate goal of any financial strategy, the ROE ratio itself is too abstract and removed from day-to-day business operations to be of any practical use in measuring and managing profitability. To gain real control over profitability, the profit/equity ratio needs to be broken down into its components.

THE DUPONT FORMULA

The most elegant explanation of the three components driving ROE is the famous "DuPont Profit Formula." In a

nutshell, this formula shows how three financial measures interact to yield the ultimate result of ROE (see Figure 1). Control over all three ratios leads to control over the return on equity.

By far, the simplest to control is the nonoperating ratio, assets/equity. If a company carries no long-term debt, all of its assets must have been purchased with shareholder equity, and its assets/equity ratio equals 1. But if a company finances its assets by both equity and debt, the more debt it carries, the more assets it can acquire with the same equity. This financial leverage works wonders in boom times, but a high assets/equity ratio can lead to disaster when times get tough.

Banks and other lenders allow roughly the same range of debt leverage for all competitors in a given business segment since all the players face similar operating risk. For example, as a group, electric utilities are allowed to borrow heavily because their revenues are highly predictable and their hard assets are easy to attach. Advertising agencies, by contrast, tend to carry little or no long-term debt because their revenues are highly uncertain and their key assets walk out the door every evening.

So even though the assets/equity ratio, or debt leverage, is one of the three components driving ROE, the assets/equity ratio isn't terribly interesting from an operational and competitive standpoint. Debt leverage is a matter of long-term financial strategy, not daily business operations. And since lenders tend to allow direct competitors similar ratios of debt leverage, there's no way to consistently beat the competition's return on equity by borrowing more heavily.

To run a business for optimal profitability, management must focus on the interaction between the two remaining ratios of the DuPont Profit Formula: profit/sales and sales/assets. Multiplied together, these two ratios compose ROA—the final measure of a management team's effectiveness in squeezing profits from the assets under their control.

Of these two vital operating ratios, profit/sales, or margin, is the focus of enormous attention in every company. Indeed, whatever method is employed, much of management accounting boils down to an effort to measure margins accurately. To calculate the profit margin generated by each unit shipped or each dollar of revenue sold, companies expend huge resources attempting to accurately calculate the full cost of each product type made. Financial controllers and management teams pound away at costing studies, standards setting, activity-based costing, margin analysis, overhead allocation, etc., all in a relent-

less effort to make detailed profit/sales figures as close to perfect as possible.

SPEED COUNTS

No such claim can be made for the equally crucial sales/assets ratio. Sales/assets, or the velocity ratio, measures the speed at which sales are generated from a company's asset base. The arithmetic is simple and unforgiving. Sales/assets, or velocity, is just as important as profit/sales, or margin, in determining a company's ROA. $\text{Margin} \times \text{Velocity} = \text{ROA}$. Low-margin products can yield exactly the same ROA as high-margin products if those low-margin products are easier to make and flow through the assets at higher velocities. Conversely, high-margin products won't deliver a superior ROA if those high margins are offset by slow production velocities.

Maximizing a company's ROA (and ultimately ROE) requires managers to understand in great detail the trade-offs between margin and velocity product by product, order by order, customer by customer, etc. Knowing this, you would reasonably assume

that management teams of complex, asset-intensive manufacturers already work just as hard measuring and controlling the velocities of the products they make as they do measuring and controlling the margins of those products. But this isn't the case. My experience, which stretches

back over a decade in a variety of industries at nearly 100 manufacturing firms around the world, indicates that management teams lack the management accounting systems needed to measure and control velocity in conjunction with margin in order to maximize ROA.

Yet the CEO and CFO are extremely focused on producing better ROA results. Nonetheless, virtually no one down in the managerial ranks of manufacturing firms, where all the day-to-day decisions are made, knows precisely how their choices will impact ROA. In almost all manufacturing firms, the metric used by marketing managers, sales managers, production planners, and others to rank and evaluate daily operating trade-offs is margin and margin only.

Production velocity data exists somewhere in the manufacturing organization, usually at the plant level. But it has been too complex a challenge to link detailed production velocity data to margin information in a rigorous way. Lacking access to robust management accounting

systems that can seamlessly integrate margin and velocity data, managers have no choice but to rely on traditional “margin only” metrics.

DECISIONS BASED ON MARGIN

In a phrase, shareholders pay for ROA. As I mentioned earlier, even though ROA doesn't equal margin, the vast majority of operating decisions are based on margin. Further, even though $\text{Margin} \times \text{Velocity} = \text{ROA}$, virtually no manufacturers have systems that can properly take into account the role of velocity in driving ROA. In my view, the absence of management accounting tools that deal with the pivotal role of velocity and management's consequent inability to adroitly manage velocity in conjunction with margin are the root cause of roughly \$100 billion per year in foregone profits at complex, asset-intensive manufacturing firms.

Although the DuPont Profit Formula applies to all businesses, it's worth noting that a failure to accurately measure and manage velocity, or sales/assets, isn't important in all businesses. For example, many service businesses require very few assets. In service businesses, there is often no physical linkage between the volume of sales produced in a given time period and the value of the assets owned. In service firms, as in all businesses, controlling margins matters greatly, as does controlling the volume of sales produced. But if there's no hard linkage between sales and assets, monitoring sales/assets isn't terribly meaningful.

At the other end of the economic spectrum, however, in industries where asset-intensive manufacturing firms struggle to maximize financial results for shareholders, velocity matters just as much as margin in determining

financial performance. This is especially true for “highly complex” manufacturers who produce an extremely wide variety of products for an array of customers from a number of different production facilities. In industries such as chemicals, steel, semiconductors, electronic components, packaging, and paper, a single company will often produce hundreds, if not thousands or tens of thousands, of distinct product items.

Integrated steel producers, for instance, can adjust their multi-hundred-million-dollar rolling mills to make sheet steel in literally thousands of different thicknesses, widths, coatings, etc. In addition to producing flat sheet steel for cars and appliances, integrated steel makers also make bars, tubes, plates, rebar, etc. And within each of these broad product categories are thousands of specific product items—each with its own unique characteristics, pricing, margin, production velocity, and, therefore, ROA.

To optimize the ROA generated each year from their hugely expensive production assets, management teams must make a bewildering array of choices with great precision every day. Those choices can be grouped into four key areas, which are shown in Figure 2.

Let's take a very simple example of a product mix choice (see Figure 3). Would we rather accept a new order for \$1,000 of Product A with its \$200 margin above material costs or an order for \$1,000 of Product B with its \$100 margin? On a margin-only basis, we clearly prefer Product A. But what if we know that Product A, because of its physical properties, is half as fast as B when running through the rolling mill? In one minute of rolling mill time, Product A will generate \$600 ($3 \times \200), while Product B will also generate \$600 ($6 \times \100). From an ROA standpoint—generating profit within a given period of time from the assets—Products A and B are equally profitable. Product A's higher margin does not translate into a higher ROA.

In the real world of modern manufacturing, where complexity rules, what are your optimal ROA choices if are you making 2,000 or 20,000 varieties of products on 40 different production lines in production runs of various quantities for 200 different customers, all paying different prices? Do you really know how to commit your capacity optimally or what your best price bid should be on a given day to a particular customer for a specific product quantity? In a nutshell, unless you can measure, report,

Figure 2

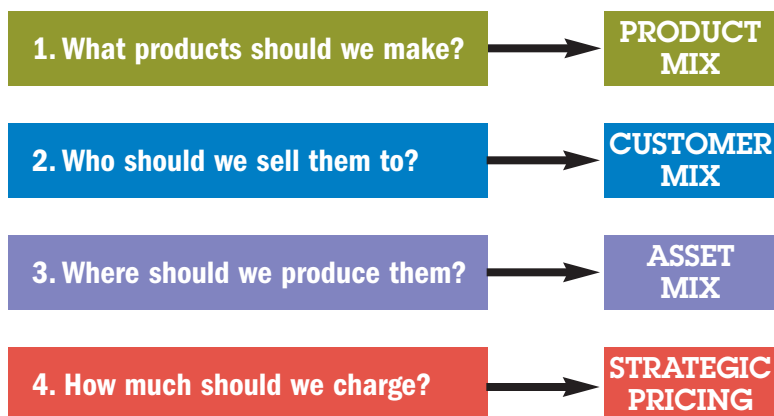
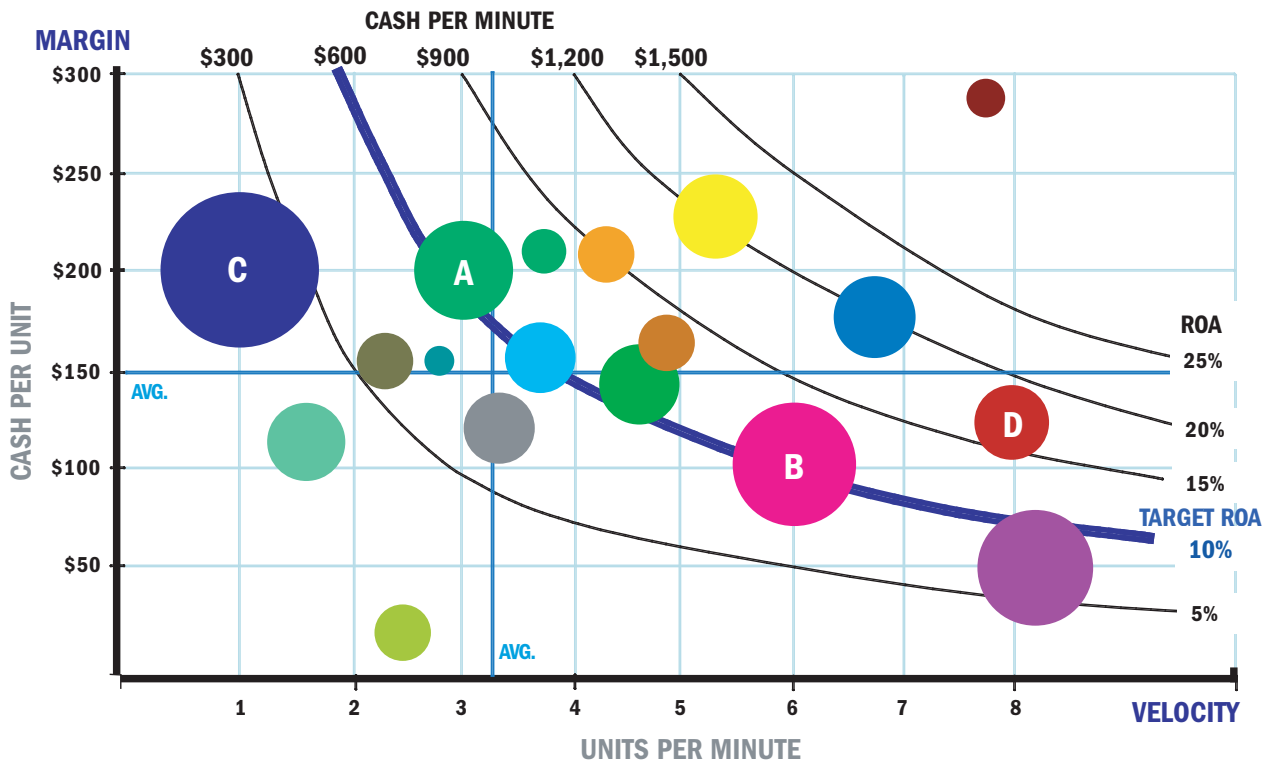


Figure 3



With margin on the vertical axis and production velocity on the horizontal axis, this profit topographical map shows contour lines that represent levels of cash/profit per minute and ROA. The bubbles can represent products, customers, markets, sales regions, or production facilities. The Profit Topo Map™ shows a dramatically different view of profitability than a “margin only” approach. High-margin products, customers, etc. may be significantly less profitable and generate lower ROA than ones that are produced faster and generate higher profit per minute (e.g., C vs. D).

and model both the velocity of production (sales/assets) at critical manufacturing steps and the margin (profit/sales) of each transaction to compute transaction-level ROA, you simply can’t gain effective management control over your ultimate ROA performance.

Having long recognized that choices based solely on margin can’t, by definition, lead to maximum ROA, dozens of leading manufacturers have been eager to implement an innovative management accounting system that fully integrates velocity and margin metrics at the transactional level. By allowing managers to model the ROA implications of their choices, before they make those choices, these companies have made significant adjustments to their product mix, customer mix, asset mix, and pricing levels. Substantial increases in profitability, typically in the range of 3% to 5% of revenues, have been reported, which has translated into notable improvements in ROA performance.

But most of the profitability gains made possible by converting ROA from a year-end report card for senior executives into a robust daily measurement and planning system for all managers remain to be harvested. I estimate that it will take nearly a decade before the leading manufacturing organizations who have already implemented this approach and the thousands who will follow in their footsteps learn how to fully exploit actionable ROA metrics and put that missing \$100 billion a year on their bottom lines. Nonetheless, substantial profit and ROA gains have already been achieved by advancing the tools of management accounting to the point where complex, asset-intensive manufacturers can measure and manage at a transactional level the ROA results shareholders demand. ■

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