Antitrust, Vol. 37, No. 2, Spring 2023.

The Proper Measure of Profits for Assessing Market Power

BY MICHAEL CRAGG, PATRICK HOLDER, DAVID HUTCHINGS, AND BIN ZHOU

A PERSISTENT TOPIC IN ANTITRUST cases—and one particularly accessible for juries—is the extent of profits that an alleged monopolist is receiving. Plaintiffs would like that number to be large and breathtaking, while defendants want it either to be relatively small or easily explained by other factors, for example, R&D costs, product differentiation and innovation, dynamic markets, or just good management. Whatever the outcome, an essential starting point for both sides is a common understanding of the types of the analysis used to evaluate firm profitability.

Our objectives in this article are straightforward. First, we describe how to calculate economic profit and the economic rate of return using firm financial data. Second, we set forth some of the key economic issues when considering whether a given level of economic profit may be reflective of the presence and exercise of market power. We review recent economic analysis performed in academic, legal, and regulatory contexts that highlight some examples of how economists have recently leveraged accounting data in antitrust economics. To conclude, we make a number of recommendations for how to properly use accounting data to assess a firm's market power, in particular when the firm in question has significant intangible assets.

We discuss the accounting standards used by managers and analysts for measuring financial performance. The confusion about the general term "economic profit" has led to sweeping debates about the relationship between firm accounting data and the analysis of profits relevant to indicia of market power. Antitrust economists and lawyers are often uncertain of the relatively simple relationships between corporate finance, GAAP, and management accounting principles, and the economic principles at the heart of antitrust matters.

Michael Cragg, David Hutchings, and Bin Zhou are Principals, and Patrick Holder is a Senior Associate, at The Brattle Group. *The coauthors discussed and developed the contents of this article in part through consulting work supporting the testimony of our colleague Rosa Abrantes-Metz in FTC v. Surescripts (on behalf of the FTC) and in US Airways v Sabre (on behalf of American Airlines). We would like to thank Dr. Abrantes Metz for the valuable discussion and guidance related to the contents of this article.*

Background: Accounting versus Economic Profits

Managers in a brick-and-mortar manufacturing company who are interested in evaluating the profitability of their firm's output can simply compare the prices paid for their products to the cost of goods sold (COGS) for those goods.[1] However, many modern firms, such as pharmaceutical companies or technology firms, often incur significant fixed costs associated with long-term investments such as R&D. It is these overhead costs that must be taken into account when evaluating the companies' seemingly high profit margins.

High margins may beg the question of whether firm profits are "excessively" high. Economists address the question of whether large, sustained margins are excessive through a "rate of return" calculation. The rate of return on an investment is the discount rate that equalizes the present value of the stream of cash flows *from* an investment and the present value *of the invested capital*. In a competitive industry, firms will invest up to the point at which the expected rate of return in a given investment is equal to the expected returns on a firm's other investment opportunities, adjusting for differences in the risks across these opportunities. The "economic rate of return" is simply the difference between the rate of return of a given investment and that of other investments, or "the opportunity cost of capital."

As economic theory dictates, as long as a firm's economic returns in Industry A are positive and larger than firms' returns for Industry B, entrants are attracted to Industry A, rather than entering (or remaining) in Industry B. This competition exerts downward pressure on prices as supply expands, reducing profits for firms in Industry A. In a perfectly competitive industry, this entry (or the threat of entry) continues until *firms, in equilibrium, earn zero economic profits*.[2]

"Positive economic returns" or "excess economic profits" occur when the rate of return in one investment systematically and persistently exceeds the rate of returns in other investments. When firms enjoy positive economic returns, the antitrust practitioner should inquire why other firms have not entered to compete away these profits; the practitioner may conclude that these returns are, in fact, due to market power. Furthermore, they may reflect anticompetitive conduct that protects that market or monopoly power. For this reason, excessive economic profits have been interpreted by courts as evidence that the firm has market power or even monopoly power and that it has abused this power.[3]

With an understanding of why antitrust economists care whether (and the extent to which) economic profits exist, we now turn to the measurement of these profits. An analysis

of economic profits typically begins with firms' accounting and financial records, so any economist wishing to study firms' returns must have an understanding of how to extract the relevant information from financial records.

Measuring Economic Profits

A natural starting place for measuring economic profits is examining the GAAP financials for a single product firm. Conceptually, this involves four steps: (1) identifying investments, (2) identifying returns on those investments, (3) calculating the rate of return, and (4) measuring the "normal" (or competitive) rate of return. For a company manufacturing a tangible product, the first step is straightforward and involves searching for the initial entry for asset purchases on the balance sheet.[4] Alternatively, the initial outlay for a durable good can be identified in the statement of cash flows. Identifying the returns on an investment is done typically using the income statement component Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA).[5] In the case of a single-product firm or a firm that maintains financials for discrete business units, the impact on EBITDA resulting from an investment may be readily apparent. However, in multiproduct firms or for those making frequent investments, a more sophisticated analysis may be appropriate for disentangling the impact of particular investment(s) on EBITDA.

Having measured a firm's investments and the returns on those investments, the calculation of the economic rate of return for an investment takes into account the axiom that a dollar tomorrow is worth less than a dollar today. The "time value of money" is typically measured by the government's cost of borrowing capital, since investors assume that lending to the government is risk free. This "risk free" rate of return for an investment is then adjusted upwards based on the premium that other market participants receive for investments that are similarly risky. For example, if an investment has a 20 percent probability of becoming valueless in any given year, then the rate of return should be adjusted upwards by the premium on returns that other market participants receive for investments with a similar probability of becoming valueless in a given year.[6]

A common approach to analyzing the total riskiness of a firm is to study the firm's opportunity cost of capital, that is, the return an investor would have earned on their next-best opportunity to invest, which the investor foregoes by instead investing in the firm being studied. In practice, this is done using a firm's weighted average cost of capital, or "WACC." The WACC is a market-determined rate of return for investments that have the same risk as an investment in the firm. To estimate the capital cost of a firm, economists examine public firms with a similar risk profile to estimate a WACC, since companies facing comparable business risks also face similar costs of raising debt and equity. For publicly traded companies, the WACC can be obtained from standard financial data vendors, such as CapIQ or Bloomberg.

Potential Explanations for "High" Returns

Whether or not a firm has a positive economic rate of return is ultimately a question of the firm's investment(s) providing a higher rate of return than the other investment opportunities available to the firm and its investors. An analyst typically addresses this question by benchmarking a firm's returns against firms or markets with similar risks but without the presence of market power. For example, a software company's rate of return on software development R&D might be compared to the returns of other software and technology firms that are in a competitive industry. Rates of return that are consistently higher than these benchmarks could indicate that a firm has positive economic profits. However, such an indicator of market power is not sufficient to indicate that anticompetitive conduct is the cause of positive economic profits.

For example, the market in which a firm competes may have significant product differentiation. That is, the products produced by competing firms may be imperfect substitutes, and therefore not all economic rents are competed away. This might arise because of so-called "scarcity rents," in which products are differentiated and unique because of valuable intangibles, such as trademarks or patents. This uniqueness creates economic value that other potential entrants are not able to replicate easily or quickly. Another environment in which positive economic profits arise is in dynamic markets. Markets that are particularly dynamic—in the sense that there are frequent changes in products or market participants—may require short-term economic returns to induce innovation, since market volatility generates risk which requires higher expected returns.

In the same way high economic profits may be explained by factors other than the extent of competition, a lack of high economic profits does not imply there is no anticompetitive conduct. A lack of competition may lead to so-called "lazy monopolists" that do not aggressively pursue cost savings or process improvements and as a result earn lower profits than they could.[7] Thus, the presence or absence of economic returns is informative as to the extent of competition but may not be dispositive.

Challenges in Measuring Economic Returns

We now turn to the practical question of how to measure economic returns. First, we discuss general issues with accounting data that can affect the measurement of these returns. Second, we discuss some of the critiques of economic profit calculations that have been raised in the academic literature.

One frequently cited issue with the economic analysis of accounting data is the difference between GAAP's treatment of intangibles developed internally and intangibles obtained through one firm acquiring another. The balance sheet components of "identifiable intangible assets" and "goodwill"[8] are used to record the difference between the price paid for acquiring a firm and the total "book value" of the intangible assets owned by the acquired firm. However, valuing acquired

intangible assets versus internally developed intangible assets is done differently under GAAP; expenditures on internally developed intangibles are expensed each year instead.[9]

To illustrate the intricacies of properly valuing intangibles, we consider the case of two technology firms. Each firm wishes to enter a new market, but it must first acquire the technology to do so. Firm 1 elects to develop the technology "in-house," and its subsequent R&D expenditures are expensed. In contrast, firm 2 acquires a smaller company that has developed the technology that the firm desires.[10] Each firm later brings a new successful product to market as a result of these investments. In the case of the firm 1, both the investment and subsequent return on that investment are readily observable in the income statement. As a result, if there is a lag between the R&D expenditures and bringing the new product to market, firm 1 will see an increase in operating expenses (and a decrease in operating profit) due to the increase in R&D in the earlier years, before seeing a rebound in operating profits when the new product is launched.

However, firm 2's income statement does not make this sequence of events clear since the acquisition affects the income statement as per GAAP accounting rules. To understand the source of firm 2's increase in accounting profits, an analyst must review the firm's balance sheet, which shows the increase in intangible assets. Note that increases in intangibles corresponding with an increase in profitability may not be sufficient to demonstrate that the former was the cause of the latter. The analyst should understand the source of the intangibles and determine whether it is plausible that the return on the investment was commensurate with the acquired assets.

Next, we turn to firms' entry/exit decision and discuss how this decision factors into the calculation of economic returns. Under standard economic theory, the returns to a firm's investments determine whether or not it should exit the market. In the long run, a firm with negative economic returns—those *less* than the returns of other potential investments—should exit the market. However, market exit may not be immediate. If this is the case, a firm may have a rate of return exceeding another similar firm not because the more profitable firm has *positive* economic returns but because the less profitable firm has *negative* economic returns.[11]

In the 1980s, Fisher and McGowan published several influential papers on the topic of economic returns.[12] On one hand, they declare that the economic rate of return is the only relevant indicator of market power and that other measures such as accounting rates of return and profit-sales ratios do not provide useful insight about monopoly power.[13] On the other hand, they note that economic rates of return are often impractical, if not impossible, to measure. To address Fisher and McGowan's assertion that GAAP accounting is not suited for antitrust analysis, it is useful to first reflect on the objectives of GAAP accounting data and how it is intended to be used by various professionals, be they stock analysts, credit analysts, management, investors, or policymakers.

The first objective of GAAP accounting data is that it should allow for comparability across time and across firms. Standard rules that are easy to apply across a variety of scenarios reflect this goal of comparability. GAAP's treatment of goodwill on the balance sheet is one example of this principle. One could imagine a number of reasonable ways to value the intangible assets of an acquired firm, but using the price paid for them in an acquisition is a rule of thumb that leaves little room for ambiguity or subjectivity on behalf of the accountant.

Another objective of GAAP accounting is that it promotes conservatism. For example, under normal circumstances, a depreciation schedule does not allow for the value of a tangible asset to increase although this sometimes happens in the real world. Conservative rules that leave little room for ambiguity help ensure that a firm cannot misrepresent its finances to investors, regulators, or tax authorities.

The simplifying assumptions inherent in GAAP accounting standards do not make the accounting data unreliable or irrelevant for the calculation of economic profits. However, an economist must understand how GAAP accounting data are constructed in order to properly perform economic analysis of the data. As a simple example, R&D investments will not appear on a firm's balance sheet, even if the activity produced durable intangible assets for the firm. However, the expenditures associated with R&D will appear on a firm's income statement and statement of cash flows which an economist should rely on to analyze a firm's research activity.

It is standard for economists to start with GAAP-based financial data and adjust them to fit the purposes of their economic analysis. Some notable examples of economists using accounting data to measure economic profits in antitrust analyses include:

- In the TFT-LCD antitrust litigation, Professor Carlton "follow[ed] methodologies used in the literature to estimate economic profit margins ... In particular, [he used] a definition of economic profits that accounts for the cost of capital, as regularly used in the literature."[14] He further notes "[a]n estimate of economic profit can be obtained from accounting data as the net operating profit after taxes…, minus the costs of capital employed."[15]
- In a 2018 paper titled, "Antitrust in a Time of Populism," Professor Carl Shapiro uses the evidence of high corporate accounting profits to make the case for "a rise in incumbency rents, i.e., excess profits earned by firms whose positions are protected by high barriers to entry."[16]
- A 2003 white paper commissioned by UK's Office of Fair Trading recommended that "while measurement and interpretation problems [from using accounting data] may arise in profitability assessments, this is no reason to reject the use of such assessments in competition policy. . . . The important point is to use profitability assessment in conjunction with a number of

complementary economic indicators and techniques. In other words, profitability assessment simply forms part of the toolkit for competition policy analysis."[17]

One of Fisher and McGowan's main criticisms of using accounting data for economic analysis stems from the way in which tangible capital is depreciated on the balance sheet under GAAP.[18] As intangible assets become more prevalent in both the broader economy and in antitrust analysis relative to tangible assets, this criticism holds less weight; conversely, the proper treatment of intangible assets has become a greater concern for antitrust practitioners. As discussed above, adjusting GAAP financial statements to properly account for intangible assets is a more pressing question for an analysis of economic profit, and this can be accomplished by capitalizing (rather than expensing) intangibles.[19] We describe one such approach here.

The "capitalized R&D" or "capitalized investment" model is a variant of the cost approach to valuation that links the returns of R&D to its costs and allows economists to estimate the economic rates of return for R&D assets. When capitalizing and amortizing R&D, "successful" R&D expenditures—that is, those that create positive returns—should be capitalized based on the average historical rate of return for R&D from the economics and finance literature, combined with an assumed useful life for the R&D. R&D may be capitalized differently at each point in the R&D process, based on the rates of return investors would demand to commit capital to the project at each point. This multi-stage approach to valuing R&D as a series of real options is consistent with valuation theory.[20] For example, Myers and Howe developed a drug life cycle model,[21] showing how the value of the potential drug increases as the drug progresses from discovery, research, development, clinical trials, and to commercial sales. A 2014 survey article on R&D returns also discusses staged development of R&D projects,[22] focusing in particular on the aerospace[23] and life sciences[24] sectors which are both characterized by long development cycles for new products and large R&D spending. Other academic research in valuation theory has used a similar approach.[25]

With the above principles in mind, we pose two sets of questions an economic rate of return analysis should address:

1. How should goodwill be used in economic profit analysis?
   - Goodwill is an accounting device to recognize transaction value above the book value. It is the residual after all identifiable sources of value (those commercially transferable on an individual basis) are separately valued and reported.
   - A firm's economic profits (i.e., those above the standard rate of return) may be due to: R&D activities (expensed on the income statement), goodwill (on the balance sheet), or monopoly power.[26]
   - Whether goodwill should be capitalized and included in an economic returns analysis depends on the sources of the goodwill.
2. Is an alleged monopolist sacrificing short-term profitability for long-run investment activity, such as undertaking R&D or building a network of users?
   - Compare economic profits against those of similar firms; is the alleged monopolist significantly less profitable?
   - Is the alleged monopolist's market price significantly higher than its competitors?
   - How significant is the alleged monopolist's investments in R&D, advertising, marketing, or acquiring other firms? What are reasonable rates of return for those activities?
   - Do any of the firm's investments themselves constitute potential anticompetitive behaviors?

The Presence of Market Power is Different than the Exercise of It

In conclusion, we note that a positive economic return on capital is not, in itself, an indication of anticompetitive conduct. For instance, the process of competition leads to technological innovation that can generate patents, trade secrets, or other licensable intellectual property that provides barriers to entry, in turn allowing firms to receive positive economic returns. The potential for positive returns is critical to providing the motivation for innovation and progress that consumers value. Likewise, investments that lead to only a limited number of firms—perhaps because further entry cannot be justified due to commercialization risks—can lead to traditional oligopoly pricing. In the U.S., in contrast to Europe, the existence of market power through prices that deviate systematically from costs is not a violation of antitrust law. In the U.S., the plaintiff must demonstrate that the defendant has behaved illegally to perpetuate market power in the relevant antitrust market(s).

Positive returns in a single-product static firm may be easy to identify. However, in an economy that values innovation and provides rewards to investors who risk their capital by financing investments leading to new products with natural barriers to entry, we expect to observe systematic and persistent positive economic rates of return because these are necessary to offset failed investments that lead to negative economic returns. Any changes in antitrust law designed to protect consumers from excess pricing should recognize that natural barriers to entry are a powerful inducement for innovation. For innovation to continue, in equilibrium, the "expected" returns to R&D must be sufficiently high to attract capital investment. Disentangling the effects of anticompetitive conduct and returns to innovation is a challenging exercise, since durable economic profits can reflect the presence of market power, but also a reward to innovation. GAAP and management accounting data can be useful for such an exercise, but we emphasize that care must be taken to understand what is reflected in a firm's accounting data, and adjustments are frequently required to convert these data to a form that is economically relevant. ■

[1] A common antitrust analysis of a good's markup is the calculation of the Lerner index. Though the index provides a valuable antitrust tool, a full discussion of this index is beyond the scope of the present article. One shortcoming of analyzing a firm's markup in isolation is that firms may need to price above marginal cost in order to recover the significant fixed costs associated with selling a good, and thus high markups may not be indicative of anticompetitive conduct. In *United States v. Eastman Kodak Co*., the court rejected the government's claim that Kodak's high Lerner index indicated that the firm had market power, citing Kodak's substantial fixed costs. 63 F.3d 95, 109 (2d Cir. 1995).

On the other hand, an important limitation of an analysis focusing on the *economic rate of return*, the topic of this article, is that it can only be used to evaluate the profitability of an investment. If a firm's production technology relies only on labor and other variable input goods, there is no investment for which to measure the economic rate of return for a firm. The Lerner index may be a more appropriate tool in this case. This article focuses on firms and industries with significant fixed costs, for which economic rate of return of analyses are appropriate.

[2] Dennis W. Carlton and Jeffrey M. Perloff, Modern Industrial Organization 86 (4th ed. 2015) ("In long-run equilibrium, firms receive economic profits of zero, which is just enough to induce them to stay in the market.").

[3] Organisation for Economic Co-operation and Development, *Directorate for Financial and Enterprise Affairs Competition Committee: Excessive Pricing in Pharmaceutical Markets—Note by Italy* (Nov. 28, 2018), https://one.oecd.org/document/DAF/COMP/WD(2018)106/en/pdf, at 7.

[4] We say initial entry, because over time, fixed assets are depreciated over their lifetime as they are worn out in production.

[5] Earnings are defined as revenues, less cost of goods sold, less operating expenses. Non-operating "overhead" expenses typically include rent, marketing, R&D, and distribution expenses.

[6] Such an adjustment is typically done with the Capital Asset Pricing model.

[7] Economists have termed this "X-inefficiency." *See, e.g.,* Harvey Leibenstein and Shlomo Maital, *Empirical Estimation and Partitioning of X-inefficiency: a Data-envelopment Approach,* 82.2 Am. Econ. Rev. 428 (1992).

[8] Goodwill is calculated as the difference between the total consideration paid to the seller and the net value of the identifiable assets acquired. It frequently includes intangible assets such as patents, brands, customer lists, etc.

[9] This fact can increase the difficulty of properly attributing returns to particular R&D activity, since GAAP rules specify that R&D should not be capitalized in the same manner that tangible assets are, even when the R&D produces value over multiple years. It may be more appropriate to capitalize, rather than expense, the intangible assets created from a firm's R&D activities by taking into account the useful life of intangible assets.

[10] *See,* Arik Hesseldhal, *What to Do with Apple's Cash*, Bus. Wk. (March 1, 2007).

[11] We note also that rates of return should be calculated over the long-term because the benefits generated from a firm's investments may lag months or years behind the outlays for those investments.

[12] Franklin M. Fisher and John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 73.1 Am. Econ. Rev. 82 (1983). *See also* Franklin M. Fisher, *The misuse of accounting rates of return: reply*, 74.3 Am. Econ. Rev. 509 (1984), and Franklin M. Fisher, *On the misuse of the profits-sales ratio to infer monopoly power*, 18(3) Rand J. Econ. 384 (1987).

[13] *See*, Fisher and McGowan at 91 ("economists (and others) who believe that analysis of accounting rates of return will tell them much . . . are deluding themselves . . . examination of absolute or relative accounting rates of return to draw conclusions about monopoly profits is a totally misleading enterprise").

[14] Expert Report of Professor Dennis W. Carlton at 139, *In re* TFT-LCD (Flat Panel) Antitrust Litig., No. 07-md-01827 (N.D. Cal. Oct. 29, 2013).

[15] *Id*.

[16] Carl Shapiro, *Antitrust in a Time of Populism*, 61 Int'l J. Indus. Org. 714, 737 (2018).

[17] OXERA, *Assessing Profitability in Competition Policy Analysis: Economic Discussion Paper 6*, Off. of Fair Trading, 17 (July 2003), https://www.oxera.com/wp-content/uploads/2018/03/OFT-Assessing-profitability-1.pdf.

[18] Fisher & McGowan, *supra* note 12 at 83.

[19] *See*, Doron Nissim and Jacob Thomas, *R&D Costs and Accounting Profits*, (April 27, 2000) (unpublished manuscript, on file with Columbia Business School), http://www.columbia.edu/~dn75/R%26D%20Costs%20and%20Accounting%20Profits.pdf. *See also*, Baruch Lev and Theodore Sougiannis, *The Capitalization, Amortization, and Value-relevance of R&D*, 21 J. Acct. & Econ. 107 (1996); Zvi Griliches, *R&D and productivity: econometric results and measurement issues, in* Handbook of the Economics of Innovation and Technological Change, (Paul Stoneman ed., 1995); Baruch Lev, Doron Nissim, and Jacob Thomas, *On the Informational Usefulness of R&D Capitalization and Amortization, in* Visualising Intangibles: Measuring and Reporting in the Knowledge Economy, 97-98 (Stefano Zambon & Giuseppe Marzo eds., 2007).

[20] *See, e.g.*, Richard Brealey, Stuart Myers, and Franklin Allen, Principles of Corporate Finance 512 (11th ed., 2014) ("[M]any capital investments include an embedded option to expand in the future. . . . [T]he company is paying money today for the opportunity to make a further investment. To put it another way, the company is acquiring *growth opportunities*."). Chapter 22 discusses examples and valuation of real options.

[21] Stewart C. Myers and Christopher D. Howe, *A Life-Cycle Financial Model of Pharmaceutical R&D* (Sloan Sch. Mgmt. Program Pharm. Indus. Working Paper 4197, 1997).

[22] Frontier Economics, Rates of Return to Investment in Science and Innovation: A Report Prepared for the Department for Business, Innovation and Skills (BIS), 85, 100, 108, 110-111, & 120 (Dep't Bus., Innovation and Skills, June 2014).

[23] *Id.*, at 81-106.

[24] *Id.*, at 106-133.

[25] *See*, *e.g.*, Nancy Nichols, *Scientific Management at Merck: An Interview with CFO Judy Lewent*, Harvard Bus. Rev. Jan.-Feb. 1994, https://hbr.org/1994/01/scientific-management-at-merck-an-interview-with-cfo-judy-lewent (using real-options analysis at Merck to evaluate R&D decisions); Onno Lint & Enrico Pennings, *An Options Approach to New Product Development: Experience from Philips Electronics, in* Real R&D Options, 48-66 (Dean A. Paxson ed., 2003).

[26] We note that goodwill recognized on the balance sheet could also be due to monopoly power, for example, if an acquired firm had monopoly power.

Subject to the terms and conditions set forth below, permission to reprint the below listed materials on The Brattle Group website has been granted for no fee.

"The Proper Measure of Profits for Assessing Market Power," by Patrick J. Holder, in Antitrust Magazine, vol. 37, no. 2 (Spring 2023)

Use of the requested material is limited to the one-time use as described above, and does not include the right to license this Requested Material, individually or as it appears in your publication, or to grant others permission to photocopy or otherwise reproduce this material. Permission is granted to make versions for use by blind or physically handicapped persons, provided that no fees are charged.

Use of the Requested Material is granted on a non-exclusive basis and is valid throughout the world in the English language only.

If any material in the Requested Material credits another source, then you must obtain authorization from that original source.

Permission is limited solely to the text portion of the Requested Material. If any photographs, illustrations, cartoons, advertisements, etc. appear in conjunction with the Requested material, those portions should be blocked out before reproduction, as well as text from other articles.

The reproduction of the ABA logo and/or section logos is strictly prohibited, as is the reproduction of covers and mastheads of ABA publications.