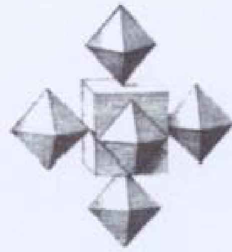

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Kepa M. Ormazabal

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University of the Basque Country

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by:

Kepa M. Ormazabal
Department of Foundations of Economic Analysis I
University of the Basque Country
Lehendakari Agirre etorbidea 83
48015 Bilbo, Bizkaia
Spain
Phone: 34-94-6013772
Fax: 34-94-6013891
e-mail: jeporsak@bs.ehu.es

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ABSTRACT

I contrast the theoretical foundation of profit maximization of Mas-Colell, Whinston and Green's "*Microeconomics*" against that provided by Scitovsky in a paper of 1943. Whereas Mas-Colell, Whinston and Green try to show that profit maximization can be derived from utility maximization, Scitovsky categorically states the contrary view. I argue, first, that the foundation provided by Mas-Colell, Whinston and Green is not sound and, secondly, that Scitovsky's line of reasoning opens a better way to model business behavior.

Introduction

This paper deals with two opposite views about the foundation of the principle of profit maximization. The first view is that provided by Mas-Collel, Whinston and Green in their authoritative "*Microeconomic Theory*": business firms maximize profit as a means to maximize the utility of their owners. In a word: businessmen maximize profit as a means to maximizing utility, so profit maximization follows from utility maximization. The second and opposite view is that provided by Scitovsky in a paper published in 1943 and entitled "*A Note On Profit Maximisation and Its Implications*". For Scitovsky, a fundamental fact from which any theory of profit must start is that profit is maximized for its own sake, independently of the utility that businessmen may derive therefrom. Moreover: if we are logically coherent with the premise that profit is the primary aim of the firm, the utility function of businessmen cannot be well-behaved. In a word: profit is not maximized as a means to utility maximization and the two principles, rather than complementary, are at odds. The very notion of profit maximization implies that the pursuit of profit is not conditioned by the utility or sacrifice that businessmen may derive from profit maximization.

I was surprised to see that these giants of Economic Theory uphold strongly opposite views on such a fundamental issue as profit maximization and decided to examine their positions in detail, on the belief that if these authors clash so violently in

the justification of a fundamental principle of economic analysis something very important must be at stake.

Scitovsky, as well as Mas-Colell, Whinston and Green deserve special credit for taking up explicitly the question as to the theoretical foundation of the principle of profit maximization. This question is not even raised in the standard Microeconomics literature and even such celebrities as Debreu introduce the principle of profit maximization without any justification (see, for instance, [1]). Contrary to Debreu and to standard practice, the authors examined in this paper are exceptional in that they notice that the principle of profit maximization is not self-evident and requires some foundation, which is what they try to provide for in the texts that I analyze in the present paper.

My aim is to define the position of the two parties with accuracy so as to determine what can be learnt from their conflicting statements. My conclusion is that Scitovsky's paper shows a fundamental theoretical defect in the foundation of profit maximization that Mas-Collell, Whinston and Green put forward, as they fail to realize in full the logical consequences of the position of profit as the primary aim of the business firm. We will develop better models of business behavior if we stick to Scitovsky's intuition and avoid Mas-Colell, Whinston and Green's mistaken project of reducing profit maximization to utility maxmization.

The paper has a very simple structure. It is divided into two sections. In the first one, I present the position of Mas-Colell, Whinston and Green and make a critical analysis of it. In the second section, I do the same with Scitovsky's position. The third and final section is devoted to conclusions.

1. The Position of Mas-Colell, Whinston and Green

Mas-Colell, Whinston and Green note that profit maximization is to be justified, that is to say, that it is not a self-evident principle and, therefore, needs a foundation, a rationale. The self-evident principle that requires no justification is, according to Mas-Colell, Whinston and Green, utility maximization; thus, utility maximization is the basis upon which profit maximization is to be justified. The problem, therefore, is to show how profit maximization logically follows from utility maximization.

> "Although it is logical to take the assumption of preference maximization as a primitive concept for the theory of the consumer, the same cannot be said for the assumption of profit maximization by the firm. Why this objective rather than, say, the maximization of sales revenues or size of the firm's labor force." [2, 152].

The question about what is to be maximized by the firm is a question about the end of the firm or, as Coase would say, about "the nature of the firm". What is the firm out for? For creating employment, even at the cost of lower profits? For making profits, with employment increasing or decreasing as profit maximization requires? For gaining market share, even at the expense of profits or employment? In a word: What is the "nature" of the firm?

Mas-Colell, Whinston and Green acknowledge that the standard answer to this question is that the end of the firm is to get as much profit as possible. This implies that all the other variables relevant for the operations of the firm, such an employment or market share will fluctuate according to the requirements of profit maximization; thus, the firm will hire or fire workers as far as it is profitable, will increase or decrease its market share as far as it is profitable, and so on. The question is: why this standard answer and not some other alternative?

"Fortunately, it is possible to resolve these issues and give a sound theoretical grounding to the objective of profit maximization. We shall now show that under reasonable assumptions this is the goal that all owners would agree upon." [2, 152]

The strategy of Mas-Colell, Whinston and Green to justify the position of profit maximization as the basic principle for the study of the firm is to show that profit maximization, and not employment or market share maximization, is the logical outcome of utility maximization. Their point is that profit maximization is but utility maximization looked at from the viewpoint of the producer. Mas-Colell, Whinston and Green state this thesis saying that profit maximization is the only goal on which all the owners of a firm would always agree independently of their utility functions:

"Suppose that a firm with production set Y is owned by consumers. Ownership here simply means that each consumer (KMO: "owner" is more appropiate) i=1,...,I is entitled to a share $\vartheta_i \geq 0$ of profits, where $\sum_i \vartheta_i$ =1 (some of the ϑ_i's may equal zero). Thus, if the production decision is $y \in Y$, then a consumer *i* with utility function $\mu_i(.)$ achieves the utility level

Max $u_i(x_i)$

$x_i \geq 0$

s.t. $p.x_i \leq w_i + \vartheta_i$ p.y,

where w_i is consumer *i*'s nonprofit wealth. Hence at fixed prices, higher profit increases consumer-owner *i*'s overall wealth and expands her budget set, a desirable outcome. It follows that at any fixed price vector *p*, the consumers-owners unanimously prefer that the firm implement a production plan $y' \in Y$ instead of $y \in Y$ whenever p.y'>p.y. Hence, we conclude that if we maintain the assumption of price-taking behavior, all owners would agree, whatever their utility functions, to instruct the manager of the firm to maximize profits." [2, 152]

It is not very difficult to determine the central message of this model. The firm produces *y* goods, but the utility of the owners of the firm is a function not of the goods produced by their firm, the *y* goods, but of the *x* goods that their firm does not produce. The only way the owners of the firm can get the *x* goods on which their utility depends is by exchanging the *y* goods they produce for the *x* goods that they do not produce. In the model, this exchange is assumed to be intermediated by money, in such a way that the owners of the firm exchange their *y* goods for money and this money for the *x* goods. The money that stands between the *y* and *x* goods is the *profit* of the firm.

According to this story, the end-goal of the firm, that is, the goal on which all owners would always agree regardless of their utility functions is, precisely, the maximization of those utility functions. For the firm, money and profit are a tool, a means towards the true end, which is the improvement of the utility of its owners. The monetary proceeds from the sale of the *y* goods, which Mas-Collel, Whinston and Green equivocally call profit, is assumed to be just an intermediary between the *y* and the *x* goods. The greater the amount of profit obtained in exchange for the *y* goods produced, the greater the amount of *x* goods the owners can purchase and, therefore, the better off they are.

In this model, profit is a necessary intermediate step in so far the goods produced by the firm do not happen to enter in the utility function of the producers. In the hypothetical case that the utility of the owners of the firm depended on goods produced by the firm, that is, on *y* goods, the owners would consume these goods straight away, and there would be no need for any monetary exchange or for any profit. As, by assumption, this is no the case and the products of the firm are useless for its owners, it follows that the production of useless *y* goods is regulated by the utility of

the x goods, which implies that the firm will produce y goods to the extent determined by the utility derived from the consumption of x goods.

This implies, in turn, that the pursuit of profit by the firm is regulated by the utility of the x goods. This is the logical consequence of the assumption that the production and, of course, sale for money of the y goods is just a means to get the bundle of x goods that fits best the preferences of the owners.

As Mas-Colell, Whinston and Green put it, profit making consists basically in the production of goods for exchange for other goods that happen to fit better the preferences of the owners of the firm. The money derived from the sale of the products of the firm may be a very valuable tool to facilitate the barter of y for x goods, but it is not a necessary element in the process, because the activity of a business firms starts and ends in goods. If the variety of x goods were not large, firms may even dispense with the use of money and barter the goods they produce straight away for the goods that improve the welfare of their shareholders.

The point that Mas-Colell, Whinston and Green intend to make is that since profit is just a means to utility maximization, profit maximization is but utility maximization looked at from the standpoint of the producer who produces goods that happen to be useless for him. If the goods produced by the firm happened to enter in the utility functions of is owners, they would consume their whole profit within their firm, and it would be very easy to see that the productive activity of the firm is just a means to the maximization of the utility of its owners. As Mas-Colell, Whinston and Green put it, the fact that the owners of the firm have to go through the intermediation of monetary profit to obtain the goods that maximize their utility should no obscure this basic fact. Profit as such is not the end-goal of the firm, but a means to its true end-goal,

which is utility maximization. The flows of money to and from the firm are intermediate steps in the activity of the firm, which ultimately consists in a barter of *y* for *x* goods.

What about the alternatives to profit maximization mentioned above, such as employment or market share? The model discards them by assumption, because the utility of the owners of the firm depends exclusively on the *x* goods they obtain by allocating optimally the profits from the sale of their *y* good. This means that, by assumption, the utility and profit of the owners of the firm does not depend on the amount of jobs that the firm may create, or on its market share or on any other alternative variable. The model does not provide an argument to discard these alternatives, as it is built on the assumption that these alternatives do not even enter the calculations of the firm.

The situation gets worse in regard to the question that motivated the model, namely, to prove that profit maximization is the logical outcome of utility maximization. To show why, let us turn to Scitovsky's 1943 paper.

2. The Position of Scitovsky

In open contradiction to Mas-Colell, Whinston and Green, Scitovsky holds that profit maximization is totally unrelated to the income and welfare of the owners of the firm, which he refers to as "businessmen". For Scitovsky, the characteristic feature of profit maximization is that it does *not* depend on income or utility; exactly the contrary to the thesis of Mas-Collel, Whinston and Green.

"That the entrepreneur aims at maximising his profits is one of the most fundamental assumptions of economic theory. So much so that it has almost come to be regarded as equivalent to rational behaviour, and as an axiom, which is self-evident and needs no proof or justification. (…) In the

following we set out to show that by attributing to the entrepreneur the desire to maximise his profits we also attribute to him a particular psychology, which, though very plausible, is rather special." [3, 352]

As we are about to see, the "particular psychology" of profit maximization as described by Scitovsky is so *special* that it is all but *plausible*; at least from the standpoint of Mas-Colell, Whinston and Green it would be *downright irrational* and, therefore, totally *unplausible*. To present his idea, Scitovsky starts with a geometrical model, but we can dispense with it and go straight to the point he intends to make:

"The entrepreneur's choice between more and less activity -or between more income and more leisure- must be independent of his income. This is equivalent to Marshall's familiar assumption of a constant marginal utility of money; or, to use more up-to-date terminology, to a zero income elasticity of supply of entrepreneurship." [3, 356]

That profit maximization implies zero income elasticity of supply of entrepreneurship means that the ultimate goal of profit maximization is the very activity of profit maximization, not of any of its possible results. Thus, profit maximization by the business firms will go ahead independently of the utility or sacrifice that this may involve for the businessmen concerned. This means that firms do not maximize profit in order to improve the utility level of any of its owners. The primary goal of the owners of the firm, the reason why they undertook the investment, is to make profit for its own sake. In other words: the principle of profit maximization implies that the growth of the capital of the firm is not subordinated to the welfare of the owners, but the welfare of the owners to the growth of the firm. This is the logical consequence of posing profit as the primary goal of business activity.

"At first sight it may seem strange and unrealistic to attribute to the entrepreneur a type of behaviour that would fulfil this condition. For, if his aim is to make money, it seems natural that the amount he is already making should affect the ardour and energy with which he seeks to make more." [3, 356]

The monetary result of profit maximization would affect the "ardour and energy" if the primary goal of the firm was the utility of its owners. But the entrepreneur maximizes profit independently of the utility that he might obtain by exchanging his profit for consumable goods. In this sense, profit maximization is, in Scitovskyan terms, "unnatural", because it implies a paradoxical separation of money from consumption and makes of money, which in Mas-Colell, Whinston and Green was mistakenly modeled as a pure intermediary, the primary goal of the firm, to which the production of utility is subordinated.

> "But the assumption that the entrepreneur's willingness to work (KMO: that is, *to work in making profit*) is independent of his income need not imply that he is not interested in the material rewards of his work. It may also mean that he is so keen on making money that his ambition cannot be damped by a rising income. The latter interpretation seems to be the more realistic one of the two. Businessmen regard the income they earn as an index of their success and efficiency; and their ambition of excelling in their profession (KMO: in making profit) manifests itself in the desire to make more money. We claim that a businessman's entrepreneurial activity will remain unaffected by a rise in his income if he makes money, not in order to have more, to spend, but for its own sake, because it is an index and token of his success in life." [3, 356]

According to Scitovsky, thus, profit maximization is an unconditional principle, that is, the pursuit of profit is not a function of utility, but if anything, utility a result of profit maximization. The profit maximizing producer does not seek profit as a means to anything else or for the sake of something else than profit. On this score, Scitovsky, unlike Mas-Colell, Whinston and Green, takes account of the fact that the actual behavior of business firms is regulated by their profits and that this implies that all the other variables of business activity, including the welfare of the shareholders, are conditioned by profit and that profit is not conditioned by anything (except, of course,

by natural accidents). In sharp opposition to Mas-Colell, Whinston and Green, Scitovsky concludes:

> "We set out, not to justify or criticise the assumption that entrepreneurs aim at maximising profits, but to make its implications explicit. Many of us have been in the habit of regarding this assumption as similar in every respect to the assumption that the individual maximises his satisfaction. We have shown above that this is not so." [3, 358]

In the model of Mas-Colell, Whinston and Green, the entrepreneur does not maximize utility by choosing some optimal combination of effort and profit (income). Indeed, profit is not an argument of the utility function of the owner of the firm, but the budget constraint subject to which the owners of the firm maximizes his utility. The higher the budget, the greater the amount of x goods that the owners of the firm can get. This indubitable truth does not show anything as to the question at stake, which is whether profit maximization can be derived from utility maximization.

The entrepreneur does not maximize utility as entrepreneur, as he has no choice between profit and something else than profit. This is the logical consequence of the assumption that the utility of the owners of the firm as such depends entirely on the x goods they get, because this implies that utility maximization takes place *after profit is given*, so that the problem solved by the owners of the firm is the optimal allocation of this given profit among the x_i's. This says nothing about the relationship between profit and utility maximization because it takes profit as a constraint in a decision problem which is not about profit. Thus, it provides no "theoretical grounding to the objective of profit maximization", to use the expression of Mas-Colell, Whinston and Green.

In Scitovsky, on the contrary, the entrepreneur faces a true problem of choice, and it is in this context where Scitovsky makes his point, namely, that *the rational*

entrepreneur cannot have a well-behaved utility function with arguments income and work (profit making), because he has a systematic preference of work (profit making) over consumption If we admit that the rational entrepreneur is he who maximizes profit, we have to admit that the results of profit maximization in terms of welfare do not fully regulate the continuance and development of entrepreneurial activity, that is, of profit maximization.

Conclusions

We have seen that the model of Mas-Colell, Whinston and Green fails to provide any foundation for profit maximization and, thus, that their attempt to explain profit maximization on the basis of utility maximization is unsuccessful.

Scitovsky puts forward an interesting alternative to the line of reasoning attempted by Mas-Colell, Whinston and Green and is not stopped by the seeming direct relation between utility and profit maximization. He acknowledges that the observation of actual business behavior shows that such relation is not direct at all and draws our attention to the fact that business firms do not make profit for the sake of utility, but for the sake of profit itself. Paradoxical at it might seem, this is the behavior that we can often observe in the market and the one we want to model. Such behavior may look irrational from the standpoint of utility maximization, but it is a fact that firms are established to grow and that they are valued in the market according to their expected growth. Scitovsky understands that this shows that profit for the sake of profit must have some rational foundation and tries to account for it.

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