

1 Introduction (Updated: Sep 21 2017)

Neoclassical economics traditionally viewed a firm as a production set—a collection of feasible input and output vectors. Given market prices, the firm chooses a set of inputs to buy, turns them into outputs, and then sells those outputs on the market in order to maximize profits. This “black box” view of the firm captures many important aspects of what a firm does: a firm transforms inputs into outputs, it behaves optimally, and it responds to market prices. And for many of the issues that economists were focused on (such as: what is a competitive equilibrium? do competitive equilibria exist? is there more than one? who gets what in a competitive equilibrium?), this was perhaps the ideal level of abstraction.

But this view is inadequate as a descriptive matter (what do managers do? why do firms often appear dysfunctional?), and it leads to the following result:

Representative Firm Theorem (Acemoglu, 2006) Let \mathcal{F} be a countable set of firms, each with a convex production-possibilities set $Y^f \subset \mathbb{R}^N$. Let $p \in \mathbb{R}_+^N$ be the price vector in this economy, and denote the profit-maximizing net supplies of firm $f \in \mathcal{F}$ by $\hat{Y}^f(p) \subset Y^f$. Then there exists a representative firm with production possibilities set $Y \subset \mathbb{R}^N$ and set of profit-maximizing net supplies $\hat{Y}(p)$ such that for any $p \in \mathbb{R}_+^N$, $\hat{y} \in \hat{Y}(p)$ if and only if $\hat{y}(p) = \sum_{f \in \mathcal{F}} \hat{y}^f$ for some $\hat{y}^f \in \hat{Y}^f(p)$ for each $f \in \mathcal{F}$.

That is, by abstracting from many of the interesting and complex things that happen within firms, we are also left with a simplistic perspective of the production side of the economy as a whole—in particular, we can think of the entire production side as a single (price-taking)

firm. This view therefore is also inadequate as a model of firm behavior for many of the questions economists are currently interested in (why do inefficient and efficient firms coexist? should we care about their coexistence? when two firms merge, should this be viewed as a bad thing?).

The purpose of this course is to move beyond the Neoclassical view of the firm and to incorporate a couple basic economic insights to help us understand the diversity in organizational structures and practices we see in the world. It will provide you with a set of models that you can use as a first step when thinking about contemporary economic issues. In doing so, we will recognize the fact that organizations consist of many individuals who almost always have conflicting objectives, and we will see that these conflicting objectives can result in production sets that are determined as equilibrium objects rather than as exogenously specified sets of technological constraints. In the first part of the course, we will effectively be thinking about how these incentive issues affect the set Y^f . That is, given what is technologically feasible, how do different sources of contracting frictions (limits on monetary transfers or transfers of control) affect what is actually feasible and what firms will actually do?

In the next part of the course, we will study theories of the boundary of the firm. We will revisit the representative-firm theorem and ask under what conditions is there a difference between treating two firms, say firm 1 and firm 2, separately or as a single firm. If we denote the characteristics of the environment as θ , and we look at the following object:

$$\Delta(\theta) = \max_{y \in Y^1 + Y^2} \pi(y) - \left[\max_{y^1 \in Y^1} \pi_1(y_1) + \max_{y^2 \in Y^2} \pi_2(y_2) \right],$$

we will ask when it is the case that $\Delta(\theta) \geq 0$ or $\Delta(\theta) \leq 0$. The representative-firm theorem shows that under some conditions, $\Delta(\theta) = 0$. Theories of firm boundaries based solely on technological factors necessarily run into what Oliver Williamson refers to as the “selective intervention puzzle”—why can’t a single large firm do whatever a collection of two small firms

could do and more (by internalizing whatever externalities these two small firms impose on each other)? That is, shouldn't it always be the case that $\Delta(\theta) \geq 0$? And theories of the firm based solely on the idea that "large organizations suffer from costs of bureaucracy" have to contend with the equally puzzling question—why can't two small firms contractually internalize whatever externalities they impose on each other and remain separate, thereby avoiding bureaucracy costs? That is, shouldn't it be the case that $\Delta(\theta) \leq 0$?

We will then focus on the following widespread phenomenon. If we take any two firms i and j , we almost always see that $\pi_i^* > \pi_j^*$. Some firms are just more productive than others. This is true even within narrowly defined industries, and it is true not just at a point in time, but over time as well—the same firms that outperform their competitors today are also likely to outperform their competitors tomorrow. Understanding the underlying source of profitability is essentially the fundamental question of strategy, so we will spend some time on this question. Economists outside of strategy have also recently started to focus on the implications of these performance differences and have pointed to a number of mechanisms under which (in some sense) $\pi_i^* > \pi_j^*$ implies that $\pi_i^* + \pi_j^* < \max_{y \in Y^i + Y^j} \pi(y)$. That is, it may be the case that performance differences are indicative of misallocation of resources across different productive units within an economy, and there is some evidence that this may be especially true in developing countries. The idea that resources may be misallocated in equilibrium has mouthwatering implications, since it suggests that it may be possible to improve living standards for people in a country simply by shifting around existing resources.

Because the literature has in no way settled on a "correct" model of the firm (for reasons that will become clear as the course progresses), much of our emphasis will be on understanding the individual elements that go into these models and the "art" of combining these elements together to create new insights. This will, I hope, provide you with an applied-theoretic tool kit that will be useful both for studying new phenomena within organizations as well as for studying issues in other fields. As such, the course will be primarily theoretical. But in the world of applied theory, a model is only as good as its empirical implications, so

we will also spend time confronting evidence both to see how our models stack up to the data and to get a sense for what features of reality our models do poorly at explaining.