

Alfred Marshall & the Neoclassical Tradition

Introduction

Marshall described his *Principles of Economics*, published in 1890, as a fusion of classical political economy with the more recent marginalist work and with reference to contemporary problems. From here we see the roots of the term neoclassical.

Marshall's intellectual development of many significant economic ideas presented in his *Principles* were developed during the years 1870-1874; however, these ideas were not published until 1890. Over the next 30 years, Marshall continued to refine his work, releasing eight editions of essentially the same book.

Marshall initially wanted to enter the Church, but the prospect of addressing problems of human improvement drew him to the study of political economy. He approached these problems with the Utilitarian spirit of Mill and the analytical rigor of Ricardo.

At the time Marshall entered economics, political economy was waning as the Marginal Revolution was under full swing. Marshall firmly believed in the Ricardian principles but also believed that utility should be given a greater role in the determination of value.

The birth of neoclassical emerged from the work of Marshall and continues to serve as the foundation for much of contemporary economic thought and analysis.

For decades following its publication, Marshall's *Principles* was the text for the study of economics in both the US and UK.

Principles of Economics

Objectives

According to the *Principles*, "economics is the study of mankind in the ordinary business of life; it studies that part of individual and social action which is most closely connected with the attainment and use of the material requisites of well-being."

Pause for a minute and contrast Marshall's definition with the narrow definition adopted today, which was shortened from the definition put forward by Robbins in his 1932 article: economics is the study of choice.

Marshall sought to identify regularities or patterns inherent in economic phenomena and to express the economic forces generating these patterns as generalizations. The primary aim can be summarized as studying economic aspects of human behavior to derive the laws that govern the functioning of the economic system.

The present system, according to Marshall, represented an improvement material achievement and human character, both of which emerged from the gradual and progressive extension of liberty and competition. Aware that there could be ramifications from competition, both to the individual and society, he maintained that the economic gain and wholesome effect on individual character

outweighed any potential cost. Moreover, the study of economics not only led to the esoteric discovery of knowledge, but also contributed to the solutions of social problems.

Methodology

Given the complexity of the social system and the diverse motivations of human behavior, Marshall concluded that it is necessary to reduce the number of variables considered and seek out a method to measure them. Money, Marshall recognized, specifically what an individual would be willing to give up to “secure a desired satisfaction”, can serve as a proxy for the effects of motive.

With the assumption that the behavior of a single variable is incapable of appreciable influence on the economy, Marshall justified his method of singling out one variable or one sector of the economy for analysis. This use of *ceteris paribus* underlies the classic example presented in Ch. 5 of *Principles* to study the interaction of supply and demand forces on determining the equilibrium price in a single market. The principle of the negligibility of indirect effects or equivalently, the assumption of *ceteris paribus*, allows Marshall to derive supply and demand curves that are independent of each other: you can shift the supply curve while holding demand constant. For this independence to be valid, it must be true that the market is perfect: there are many firms, each producing a small amount of homogenous output.

Time is a complicated matter in economics; with time comes change. Marshall appreciated the impact of change. In his attempt to discern patterns, and particularly the normal behavior of prices, Marshall introduced the assumption of the stationary state.

In the stationary state, preferences and production techniques are constant. Unlike the classical conception of the stationary state, Marshall allowed population and capital to grow at the same rate. If conditions are sufficiently stable, it can be shown how prices will change in the long run. It is important to note, and Marshall reminds readers several times, that the stationary state is an analytical construct, not a real-world phenomenon. Moreover, Marshall appreciated history sufficiently to explicitly acknowledge that the generalizations he arrived at were not universal and permanent.

“That part of economic doctrine which alone can claim universality has no dogmas. It is not a body of concrete truth, but an engine for the discovery of concrete truth.”

He did regard theory as essential but did not consider it to constitute the totality of economics proper. I can only imagine that he must be rolling in his grave if he saw the modern microeconomics that has emerged from his theory of value and distribution.

Theory of demand

Utility and demand

Marshall begins Book 3 with the observation that until recently, insufficient attention has been paid to consumption and demand, a shout out to Jevons.

Consumer wants and satisfaction are important to a theory of value. However, unlike Jevons, Marshall considered utility as a supplement to cost of production in determining value. One way of viewing Marshall’s analysis is as a synthesis between the Ricardian cost-oriented and marginal utility approaches.

Demand schedules and curves

The analysis of demand begins by translating diminishing utility into price terms: the larger the quantity a person holds of a commodity, *ceteris paribus*, the lower the price they would be willing to pay for an additional unit. The assumption here most importantly holds the amount of money and its purchasing power held constant. From here, the marginal utility can be converted into a demand schedule and then demand curve.

Individual demand can be discontinuous, but in the aggregate, it is believed to be continuous with respect to small changes in prices. This is the source of the law of demand: a rise in price causes a reduction in quantity demanded and vice versa. Holding tastes and prices of other goods constant, a change in the price of the commodity under consideration results in a movement along the demand curve.

Allowing the factors that have been held constant will alter the position and/or shape of the demand curve. When looking at the demand schedule, there would be different quantities sold at every possible price.

Price elasticity of demand

The law of demand tells us in what direction demand change with a change in price. To understand how sensitive the change in demand is for a change in price requires introducing the elasticity of demand. Marshall defined price elasticity as the percentage change in quantity demanded divided by the percentage change in price.

$$e_d = \frac{\frac{dq}{q}}{\frac{dp}{p}} = \frac{dq \cdot p}{dp \cdot q}$$

I imagine you have seen this formula before, it is the standard analytical tool for understanding price sensitivity of demand.

Theory of production

Theory of production occupies the central theme of Book 4 and serves as the foundation for understanding costs, supply, factor prices, and alternative allocation and distribution of the product.

By conceiving of the market period as a situation in which production has already occurred, laws of return are ignored. Recall Smith's pin factory which exhibited increasing returns. In this short run conception, supply is altered by allowing some, but not all the factors of production to vary. Conversely in the long run, all factors can vary.

Laws of return in the short run

Holding at least one of the factors of production and technology constant implies that production is governed by the law of diminishing returns. While Marshall only explicitly considered this phenomenon for agriculture, it is implied for other sectors in his law of substitution. Profit maximization causes the decision maker to substitute less expensive factors for the more expensive ones and because these factors are not perfect substitutes, diminishing returns occur. The more of the variable factor used relative to the fixed factor, the less effective of a substitute it becomes.

The profit maximizing firm will seek out the least cost combination of inputs. This process is analogous to the maximization of utility by the consumer: the consumer allocates income across goods to equate marginal utility with price. The firm allocates expenditures to equate marginal revenue with marginal cost.

The firm's demand curve for a factor is related to its marginal productivity much like the consumer's demand curve is related to marginal utility. The optimal allocation depends upon marginal product, cost, and price. The principle of marginal productivity links Marshall's theory of value with his theory of distribution. Value is affected via cost and supply. Distribution is affected by factor demand.

Laws of return in the long run

In the long run, Marshall posited three possible behavior patterns: constant, increasing, and decreasing returns. Increasing and decreasing returns, Marshall posited acted against each other. The result when these forces balance was a tendency towards constant returns.

"the part which nature plays in production shows a tendency to diminishing return, the part which man plays shows a tendency to increasing return."

External and internal economies are another concept that is central to the Marshallian framework and returns to scale. Marshall describes external economies as progress in the industrial environment which contribute to decreasing costs. Marshall explicitly mentions a few examples seen here.

the development of better transportation and marketing facilities, and improvements in resource-furnishing industries

Internal economies derive from advantages of larger scale production within the firm.

Diminishing returns is a short run phenomenon that from holding some factors of production constant. Increasing returns, either from internal or external economies, is a long run phenomenon; thus, it is difficult to understand how these forces can interact with each other given that they operate in different time periods.

Increasing returns is not compatible with competition. According to Marshall, increasing returns leads to concentrating firm power. However, the growth could not continue indefinitely due to limitations of the internal economies.

"Insofar as the economies of production on a large scale are 'internal,' i.e. belonging to the internal organization of individual firms, the weaker firms must speedily be driven out of existence by the stronger."

"The continued existence of weaker firms is evidence that a strong firm cannot indefinitely increase its output. This is partly because of the difficulty of extending its market and partly because the strength of a firm is not permanent."²⁷

Costs of production and supply

Real costs and money costs

Production costs, except in the short run, underlie both a firm's and industries supply schedule.

Production costs are clearly monetary costs. Yet production also entails real costs from the disutility of

effort and the postponed consumption that comes from capital accumulation. In contemporary language, money costs include fixed and variable costs which Marshall referred to as supplementary and prime costs, respectively.

Diminishing return and short run cost behavior

In the short run, Marshall drew upward sloping industry supply curves. Holding a factor constant creates diminishing returns to the variable factor and thus rising marginal costs and upward sloping supply curves. In the long run, this is not necessarily true.

Long run cost and supply curves

Heterogeneity across firms, whether it be better management, location, or capital yields advantages which are termed quasi rents. In the long run these rents have a tendency towards zero. Under competition and in the long run, firms will produce along identical cost curves. The shape of the long run costs curve depends on the returns to scale of the industry.

To understand the long run cost of production and supply schedule Marshall constructs another analytical tool, the representative firm.

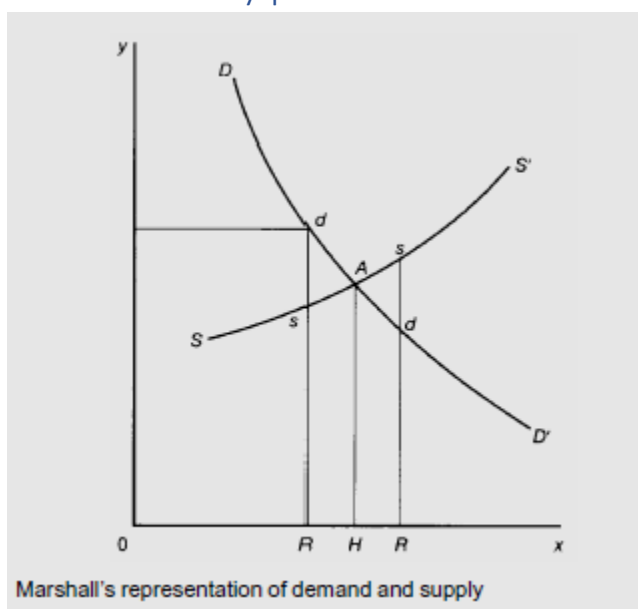
“[the representative firm] has had a fairly long life, and fair success, which is managed with normal ability and which has normal access to the economies, external and internal, which belong to that aggregate volume of production; account being taken of the class of goods produced, the conditions of marketing them and the economic environment.”

Again, the slope of the long run supply curve may be constant, upward, or downward sloping depending on the interaction between internal and external economies.

Theory of price determination

The combination of utility with demand and cost of production informs Marshall’s analysis of the theory of price determination. This theory is presented in this week’s reading.

Marshall’s key points



Price is governed by the interaction of marginal utility and the cost of production. In the long run, competition will push the price closer to its cost of production.

The industry demand curve DD' represents the summation of consumer demand curves. SS'' is the supply curve and represents the cost experience of the representative firm. The interaction of the forces of supply and demand determines equilibrium output and price.

This presentation places greater emphasis on the cost of production in determining commodity prices. However, there are several cases where demand dominates. One of them is competitive price determination in the market period when production has already happened. The other two are joint production cost and monopoly prices.

Joint production is when a productive process yields multiple outputs: steak and leather. In a monopoly situation the firm has the power to set the price (adjust the supply) to maximize profit.

Long run competitive price determination

Absence joint production and monopoly power, the long run price will equal the cost of production. Marshall concludes that marginal utility theory of value plays a role, but not the dominant one.

“that the foundations of the theory as they were left by Ricardo remain intact; that much has been added to them, and that very much has been built upon them, but that little has been taken from them.”

A change in demand may or may not cause price to change. If the industry experience constant costs, the price will not change. While if the industry experiences diseconomies, costs, and prices would rise with an increase in demand. And finally, if the industry experiences decreasing costs from external economies, then price would fall with an increase in demand.

Without constant costs, *laissez faire* policies would lead to a loss in economic welfare.

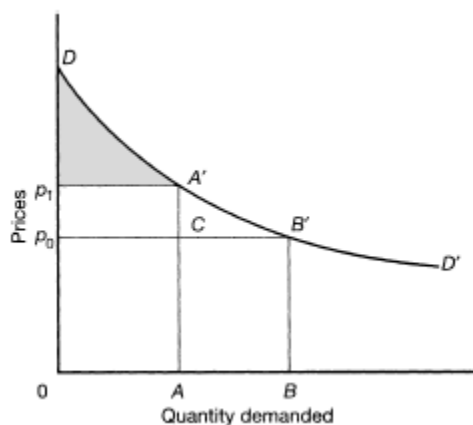
Consumer surplus

While Marshall did not invent the concept of consumer surplus, it was his application of it that ultimately lead to its importance for welfare economics.

He first used money to the value of utility a consumer gains when price is less than what they are willing to pay. If a consumer is willing to pay a price higher than the actual price, they enjoy a surplus. At price p_1 the total consumer surplus is the shaded area under DA' . At a lower price, say p_0 , the surplus is given by the area under DB' .

To conceptualize consumer surplus like this, two assumption are necessary: additive utility and constant marginal utility of money. These problems can be avoided by using indifference curves developed by Francis Edgeworth and Vilfredo Pareto.

Marshall sought to use the concept of surplus to understand the implications to consumer welfare of taxes and subsidies.



Supply of productive factors

Time matters to both the supply of productive factors and commodities. The supply of labor and capital are positive functions of their respective remuneration. Acknowledging that there are complex sociological factors that influence work, in the short run he emphasizes a functional relationship that is like Malthus, high wages attract workers. However, unlike Malthus, the quality of labor can vary in Marshall's analysis. A very similar story is told for supply of capital.

Pricing of productive factors

In the short run, rewards of labor and capital are governed by marginal productivity and demand. Demand adjusts until the reward to the productive factor equals its marginal productivity. For Marshall, the equality between reward and marginal productivity does not explain distribution, but rather informs us of some aspects of it. It is also necessary to consider the supply specifically the quality of the factor relative to other factors.

These conclusions hold for both labor and capital

Concluding remarks

Marshall initially set out to mathematize Mill's interpretation of Ricardo; however, he ended up with a much more significant and comprehensive transformation than originally intended. Here you can see 7 key features of this transformation.

Even though Marshall chose to use partial equilibrium, his analysis led him outside those confines to concepts like price elasticity, principle of substitution, and consumer surplus.

He also went beyond Ricardo and Mill by emphasizing subjective factors and using money to measure them.

Marshall was and remains a very influential economist. One major departure in contemporary economics is in the world of macroeconomics. He considered money passive and accepted Say's law. The concern of modern macro is directed more heavily at the determination of output, employment, and prices. Says law precludes economic fluctuations and money is not neutral. However, we will have to wait for Keynes before understanding the role of money and interest in determining employment and income.

- 1) the assumption that the effects of human motives as they relate to behavior in the marketplace are uniquely measurable in terms of sums of money that would be given up to gain particular satisfactions; this is in contrast with human motives in a social environment, such as neighborly and charitable acts;
- 2) the explicit introduction of demand equations in the explanation of commodity values.
- 3) recognition that the technical coefficients of production are not fixed but vary with the costs of factor substitution at the margin and that this will affect the marginal cost of producing a commodity in the short run;
- 4) an inquiry into the laws of return that govern the cost of production in the long run.
- 5) recognition that the real wage of labor is not a constant that depends on the cost of producing raw produce at the margin, and that there is a separate wage rate for each grade of labor that depends in the long run on the amount of that grade demanded and the amount supplied.
- 6) recognition that the return to capital is distinct from that of organization.
- 7) recognition that factor prices and commodity prices are interrelated, and that the theories of value and distribution are therefore different aspects of a single problem.