

Producer Surplus

Producer surplus (introduced by Marshall) is the benefit on the production side from participating in the market. The concepts of consumer surplus and producer surplus are widely used for evaluating policy changes: Cost-Benefit Analysis recognizes that benefits accrue as surplus and so are not always measured in market transactions. Producer surplus consists of gross profits accruing to firms and economic rents accruing to input owners (in special cases, it consists only of one or the other). It is often depicted as the area to the left of the supply curve and below the horizontal line representing price.

A firm's supply curve is determined by its cost. Two cases are commonly considered. In the first, the quantity supplied increases continuously from zero as the price rises (corresponding to increasing average avoidable costs). Then, the firm's supply curve is its marginal cost curve. Any point on it characterizes a price and output whose product is the firm's revenue. The area below the curve is the avoidable cost at that quantity, and hence the area to its left and below the price is this producer's surplus. The second case covers the standard U-shaped average cost curve. For prices below a threshold level (minimum average avoidable cost) the firm produces nothing, but at or above this threshold the firm is willing to supply a strictly positive output. Then, the firm's supply curve is its marginal cost curve above average avoidable cost. The area to the left of the supply curve and below the price is this producer's surplus. To see this, note this surplus is zero at the threshold price since the firm is indifferent between producing and not. If price increases, the quantity supplied rises and the revenue rectangle expands. The area below the supply curve represents the increase in costs, so the difference is this producer's surplus. In either case, a firm's profit equals its producer surplus minus sunk (unavoidable) costs.

If all inputs are supplied to the industry perfectly elastically, input prices are constant. In the long run the market supply curve is perfectly elastic reflecting zero profit and zero producer surplus. If the number of firms is fixed (as in the short run), the market supply is the horizontal sum of individual supplies and producer surplus is the sum of the individual firms' producer surpluses. All producer surplus accrues to firms since inputs earn no rents.

Now suppose instead that at least one input supply curve slopes upward. This gives rise to an upward-sloping market supply curve because increased industry output bids up the prices of those inputs with upward-sloping supply curves. In the long run, free entry ensures zero profits, and the supply-side benefits from the market accrue only to the owners of inputs whose prices are bid up. The area below the price and left of the supply curve measures the economic rents received by input owners. With a fixed number of firms, the market supply curve is more inelastic than the horizontal sum of the individual firms' supply curves: firms take input prices as given, but these are bid up as industry output expands. Then, the area between the market supply curve and the horizontal sum represents the rents accruing to input owners.