

The paper considers monopoly pricing behavior motivated by safety-first behavior that differs from standard expected profit maximization. The paper significantly extends the safety-first literature initiated by A.D. Roy's portfolio analysis (1952) to risk associated with pricing behavior. In the context developed in the paper, the monopolist must set the product price before the demand level is known, so that reducing the price may lower the risk of a bankruptcy that would terminate the firm, at the cost of a lower expected profit. In the formal model developed in the paper, sales are the sum of a function of price and a stochastic variable. Then setting the price determines both the mean and standard deviation of profits. The optimization problem results in a solution in which the monopolist maximizes the difference between expected sales and the level of sales at which profits are zero. In Proposition 1, this price is lower than the price that maximizes expected profit. An additional difference from expected profit maximization is that the monopolist responds differently to a change in demand. In the standard case, a vertical shift in a linear demand raises the price by half of the shift. In contrast, with a vertical shift, the price satisfying the first order condition for the safety-first solution is unchanged, so no change in price occurs. A third difference is that in the standard model, if a constant marginal price goes up by one dollar, the price goes up by half a dollar. Again in contrast, the price in the safety-first solution would go up by the full increase in the marginal cost. With safety-first behavior, the monopolist responds more strongly to cost increases than demand shifts. The authors apply these results to the determination of how much of a tax increase is passed through to buyers and the practice of mark-up pricing. A final pricing phenomenon suggested by safety-first behavior is that the monopolist may set the price in the inelastic region of demand when variable costs are small. The extensive results for the pricing behavior of monopolists go far towards explaining observed pricing anomalies and demonstrate the relevance and significance of Roy's safety-first principle to decision-making under uncertainty.