Online retail reduces the costs of obtaining information about a product's price and availability and of flexibly timing a purchase. Consequently, consumers can strategically time their purchases, weighing the costs of monitoring and the risk of inventory depletion against prospectively lower prices. At the same time, firms can observe and exploit their customers' monitoring behavior. Using a dataset tracking customers of a North American specialty retail brand, we present empirical evidence that monitoring products online associates with successfully obtaining discounts. We develop a structural model of consumers' dynamic monitoring to find substantial heterogeneity, with consumers' opportunity costs for an online visit ranging from $2 to $25 in inverse relation to their price elasticities. Our estimation results have important implications for retail operations. The randomized markdown policy benefits retailers by combining price commitment with the exploitation of the heterogeneity in consumers' monitoring costs. We estimate that the retailer's profit under randomized markdowns is 81% higher than from subgame-perfect, state-contingent pricing. Our finding combines the effects of pricing and inventory management: optimal inventory levels are 133% higher under the randomized markdown policy. We also discuss targeting customers with price promotions using online histories and the implications of reducing consumers' monitoring costs.