

ANSWERS TO STUDY QUESTIONS

Chapter 12

- 12.1. MV is important because it represents the opportunity cost (or opportunity value) of buying or holding the real estate asset. It is the most likely amount of present cash the investor must give up in order to purchase or retain the asset.
- 12.3. a. Market value = $\$40,000/0.10 = \$400,000$, before arch demolition cost, $\$380,000$ if buyer has to pay that cost.
b. Investment value to McDonald's = $\$50,000/0.10 = \$500,000$.
- 12.5. a. As the seller, Bob's expected NPV from the sale is $P - V$, which from a MV perspective ex ante simply equals $MV - MV = 0$.
b. From an IV perspective, Bob's ex ante NPV as seller is $P - V = MV - IV$. As Bob is a "typical" (i.e., marginal) investor, $IV = MV$ for Bob, so his IV-based NPV is also zero: $MV - IV = MV - MV = 0$.
c. Because of the uniqueness of the property, there is a chance that Bob can extract some positive NPV by selling the property to McDonald's. This depends on Bob's and McDonald's relative negotiating skill and information, and on the number of alternative equivalent sites available to McDonald's. There is no guarantee that Bob could get any more than $\$380,000$ from McDonald's (or perhaps $\$400,000$, since the building already has arches that McDonald's may not have to tear down), if McDonald's has done its homework and realizes that this is the MV of the property. On the other hand, from McDonald's perspective, if it fails to do the deal with Bob, it will be walking away from a transaction that for it as buyer would potentially have an NPV from an IV perspective equal to $NPV = V - P = IV - MV = 500,000 - 380,000 = +\$120,000$ (but only if it does not have any nearly equivalent alternatives in the form of other suitable sites). If Bob is able to know what McDonald's IV for the site is, then he may be able to extract some of this positive NPV through the negotiation process.
- 12.7. When the market is in equilibrium, we would expect to see at least one major "type" of investor on *both* sides of the market. Investor types are defined here by their income tax and real estate operational abilities. For example, REITs, wealthy individuals, pension funds, and profitable taxed corporations are all examples of different types of investors. If one or more of these types are observed to be significantly engaged on both sides of the market (buying and selling), then this is a good indication that the market is currently in equilibrium.
- 12.9. a. $MV = \$1,000,000 = (50\%)\$900,000 + (50\%)\$1,100,000$
b. $\pm 10\% = STDEVP(900,1100)/1,000$
c. $NPV(Seller) = P - MV = \$900,000 - \$1,000,000 = -\$100,000$.
 $NPV(Buyer) = MV - P = \$1,000,000 - \$900,000 = +\$100,000$.
d. $NPV(Seller) = P - MV = \$1,100,000 - \$1,000,000 = +\$100,000$.
 $NPV(Buyer) = MV - P = \$1,000,000 - \$1,100,000 = -\$100,000$.
e. $E(NPV) = (50\%)(-100,000) + (50\%)(+100,000) = 0$

12.11. a.

Time	Property A Value	Property B Value
Period 0	\$1,000	\$1,000
Period 1	\$1,050	\$1,100
Period 2	\$1,100	\$1,100

- b. Period 0: Borrow \$1,000 and buy B, net zero ($\$1,000 - \$1,000 = 0$). Period 1: Sell B and buy A, net \$50 ($\$1,100 - \$1,050 = \50). Period 2: Sell A and pay back loan, net \$50 ($\$1,100 - \$1,050 = \50). Total profit over all transactions: $0 + \$50 + \$50 = \$100$.
- c. Period 0: Borrow \$1000 and buy B, lose \$30 transaction cost ($\$1,000 - \$1,000 - (0.03)(\$1,000) = -\30). Period 1: Sell B and buy A, net loss of \$14.50 after transaction costs ($\$1,100 - \$1,050 - (0.03)(\$1,100) - (0.03)(1,050) = -\14.50). Period 2: Sell A and pay back loan, net \$17 ($\$1,100 - \$1,050 - (0.03)(\$1,100) = \17). Total profit over all transactions: $-\$30 - \$14.50 + \$17 = -\27.50 , i.e., a loss of \$27.50.
- 12.13. If there is true (widespread, or systematic) differential valuation between the private property market and the REIT market, we would expect to see REITs very active in the private property market, and only on one side of that market (either only buying or only selling). By definition, differential valuation implies that IV for REITs differs from the MV in the property market, which makes REITs intramarginal participants in the property market and gives them positive-NPV opportunities from dealing on the appropriate side of that market.
- 12.15. Suppose that at some point in time REIT market valuation exceeds private property market valuation such that, in general, $NPV_R = IV_R - MV_P > 0$. Large differences in valuation cannot persist for a long time because as REITs raise capital that they apply to making purchases in the property market, competition among REITs drives prices in the private property market up to the level at which $NPV_R = IV_R - MV_P = 0$, in other words, until $MV_P = IV_R$.
- 12.17. Price discovery is a process of determining the asset value through the information revealed by transaction prices observable in the market. Price discovery is likely to be more efficient in “denser” markets. The more numerous and frequent the transactions, the more alike or homogeneous the individual properties or assets in the market, and the easier it is to observe quickly and accurately the transaction prices. Thus, the information revealed by the observed transactions will be more directly relevant to the valuation of the other assets in the market.