Prof. Burton Malkiel, in his 1973 book *A Random Walk Down Wall Street*, argued that randomly throwing darts at a list of shares traded on the New York Stock Exchange would earn just as high a return as the returns earned by professional money managers. His argument drew on efficient markets theory, which predicts that, since share price always fully reflects all publicly available information, there are no "bargain" stocks (i.e., investing is a fair game). Then, professional money managers cannot do better than a strategy of random stock choice.

During the 1990s, *The Wall Street Journal* tested this argument. It sponsored a monthly series of contests, whereby four investment analysts each picked a favoured stock. The return on each stock over the next six months was tallied and compared with the return on a randomly chosen stock for the same period. For the first 100 contests, the pros earned an average six-month return of 10.9 percent while the darts earned a 4.5 percent return. The average six-month return of the Dow Jones Industrial Average index was 6.8 percent.

When asked to explain these results, Prof. Malkiel defended the efficiency theory, arguing that the results could be explained by risk differences—if the pros picked riskier than average stocks, we would expect them to earn higher returns over time. He also pointed out that stock market performance during the 1990s was driven by very large firms. But, since the market has many more relatively small firms than large firms, the probability that a randomly thrown dart would pick a small firm was quite high. Moreover, as investors learned of the stocks picked by the pros they would revise upward their opinions of these stocks. The resulting increase in demand would raise their prices and returns relative to the randomly chosen stocks.

While not mentioned by Malkiel, it is also possible that the pros had access to inside information. Regulation FD of the SEC, which prohibits managers from disclosing information to analysts before disclosing it to the general public, did not come into effect until 2000. We discuss Regulation FD in Section 13.4.

may seem surprising, but as Tang asserts, the result illustrates "the wisdom of crowds" (See Note 2). That is, the average opinion of a product or brand by members of the Twitter crowd accurately predicts the purchasing behaviour of all consumers. Since sales growth is an important aspect of firm performance, Tang suggests that analysis of Twitter posts is a readily available public source of information for investors.

Of course, just because a consensus forecast outperforms individual forecasters of football games, or the Twitter crowd outperforms experts and media, this does not by itself mean that the same phenomenon carries over to security prices. Essentially, what is required is that investors' estimates of security values must on average be unbiased, and that each investor's error in estimating is independent of every other investor's estimation error.[2] That is, the market does not systematically misinterpret the valuation implications of information, but rather puts a valuation on securities that is correct or unbiased. As mentioned, this does not mean that any individual investor will necessarily be correct, but it does mean that *on average* the market reflects all available information. This averaging process underlies the term "fully reflects" in the definition of securities market efficiency given earlier.