

## The Random Walk Hypothesis—Truth Or Nonsense?

**Portfolios heavy with under-performing stocks almost never outperform the market. Ignat's Law**

**“Where everyone thinks alike, no one thinks very much.”**

**unknown**

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### **Market Dynamics**

[www.clayallen.com](http://www.clayallen.com)

7325 S. Jackson St.  
Centennial, CO 80122

Phone: 303-804-0507

[clayallen@msn.com](mailto:clayallen@msn.com)

The academic community aggressively indoctrinates their students in the belief that all stock price movements are random and therefore all stock price movements follow what is called a random walk. Does this idea stand up under careful examination?

I have examined the price histories of hundreds of stocks over several years and the proportion of up days versus down days is usually close to 50/50. They are seldom outside the range of 40/60 to 60/40 and they follow the famous bell shaped curve. The idea that stock price movements are random can hardly be seriously questioned. That part of the random walk hypothesis is almost certainly true.

The random walk hypothesis however rests upon a faulty assumption that all price movements must be the same size. The implications of the movements of the drunk about the lamp post suggest that he will only return to the lamp post if the step sizes are equal. If the step sizes are unequal and that inequality persists for a considerable length of time, the drunk can depart well away from the lamp post and will not return to the lamp post even if the direction of the steps is equally likely or close to 50/50.

This seems to explain how the stock market really works, at least for a large proportion of stocks. A few years ago I prepared a histogram of the daily percent price changes for a stock that covered a year of history, approximately 250 days. The up days represented 54% of the days and the down days represented 46% of the days. Close enough to a 50/50 relationship to satisfy the requirements for a random walk. However, the percent changes on the up days were considerably bigger than the percent changes on the down days and the difference on average amounted to 0.4% per day. Even though the daily changes were almost equally

likely the stock gained almost 100% over that year. This represented a significant and persistent movement away from the lamp post.

An examination of the annual percent price changes for a large sample of stocks, over 4000 stocks, shows a very large standard deviation. This distribution shows a well defined bell shaped curve but the distribution shows large numbers of stocks with price movements well above and well below the average. The positive region on the right side shows large numbers of individual stocks with a large difference between their up days and their down days on average. This is also true for the negative region on the left side of the distribution.

Considering the positive right side of the distribution, the standard deviation is usually so large that roughly one third of all stocks will show a relatively large difference between their up days and their down days. This indicates that these stocks are following a strong up trend and they are not following a random walk. This is also true in reverse for the one third of all stocks on the negative left side of the distribution that are following a strong downtrend. This indicates that at any point in time there will be around two thirds of all stocks that are moving up and down in strong trends and these stocks are not following a random walk. This also suggests that only one third of all stocks will be moving, more or less, within a random walk.

My conclusion is that all stock price movements are random but only a minority of stocks are actually following a random walk at any point in time. The position taken by most academics that all stocks are random and they must, therefore, follow a random walk is not borne out by the data or by experience.

Experience shows that it is common for many stocks to move up and down in strong trends and those trends may persist for long periods of time. The existence of persistent trends is far more important than the tendency for stock price movements to occur randomly. W. Clay Allen CFA