Brainy's Articles on
Technical Analysis
Fibonacci

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Introduction

The term *Fibonacci* is often used with reference to share market price charts. As a topic of study it might seem to be a little complex, but with a basic understanding it can open up a very useful extra view of the market and market behaviour.

In this Article in Brainy's series on technical analysis, TA-7200, *"Fibonacci"*, we look at: Who was Mr. Fibonacci? What is it that is named after him? And what is it's relevance to the share market? This includes some share price chart examples below showing both the Fibonacci retracement and Fibonacci extensions in real use. For more information about the Fibonacci tools in charting software, refer to the BullCharts Article BC-07-120, *"Fibonacci tools"*.

Who was Fibonacci?

Leonardo Fibonacci (c.1170-c.1250) was a 13th century Italian mathematician, who was well known for many things. (By the way, Fibonacci was not his real name — it was a nickname.) He was one of the first people to introduce the Hindu-Arabic number system into Europe, which is based on ten digits with its decimal point and a symbol for zero. Some of his ideas and studies were published in a book entitled *Liber abaci*, which can be translated to *"The Book of the Abacus"*, or *"The Book of Calculation"*. (Googling this term will reveal a wealth of information.)

The Fibonacci sequence

This number sequence had been known of for a few centuries before Fibonacci came along, but it was named after him. This number sequence is also referred to as Nature's numbering system. The sequence if numbers commences as follows:

> 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, …

This sequence of numbers is such that any number in the sequence is the sum of the two preceding numbers, and is basically derived as follows:

- Start off with the two digits zero and one.
- The next number in sequence is the sum of these last two numbers.
- So the third number is: 0 + 1 = 1
- The next number is the sum of the last two digits: 1 + 1 = 2
- The next number is: 1 + 2 = 3
- The next number is: 2 + 3 = 5 … and so on.

There are some useful observations about these numbers:

- The ratio of two consecutive numbers is close to the Golden Ratio (ie. 1.618 or 0.618).
- The higher in the sequence, the closer to the Golden Ratio.

Why is this important?

The *Golden Ratio* is reputed to be common in nature. It has fascinated academics in many fields over many decades (in architecture, art, music, and more.). It is often applied in architecture because it is believed that the ratio produces visually appealing ratios of things like building height to width. It was also utilised extensively by Renaissance artists for a similar reason. For more information about the Golden Ratio simply Google the term.

The Golden Ratio value 0.618 = 61.8% and this is important for application in the share market.

Other important and related values are:-

- 38.2% — derived by dividing one number in the sequence by not its' adjacent number in the sequence, but the second number along. For example: 55 / 144
- 23.6% — derived by dividing a number from the sequence by the third number along . For

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