

Technical analysis as a financial risk management tool

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Abstract :

This article covers one of the core functions of finance, which is risk management. A large part of the role of finance - the actions of the financial specialist and the operations of the financial department within firms-is devoted to handling, controlling and profiting from risk.

This article sets out to show why and how firms manage their financial risks. For most kinds of activity, a risk is unavoidable as long as the output is uncertain. Therefore, taking on risk and handling it is a core management discipline.

Technical analysis is one of the tools used in the analysis in the financial markets in order to verify certainty and the profitability of shares and securities invested and technical analysis in various ways is also used to manage financial risks in this area.

الملخص:

يغطي هذه المقالة إحدى الوظائف الأساسية في علم المالية، والتي هي إدارة المخاطر، التي يخصص لها دور كبير في المالية وخاصة إجراءات المتخصصين الماليين وعمليات الإدارة المالية داخل الشركات والمؤسسات للتعامل مع المخاطر والتحكم فيها والاستفادة منها. تحدد هذه المقالة أسباب ظهور المخاطر والمخاطر المالية بشكل خاص وكيفية إدارة الشركات لمخاطرها المالية، بالنسبة لمعظم أنواع النشاطات المختلفة، وأحيانا لا يمكن تجنب المخاطر ما دامت المخرجات غير مؤكدة لذلك، فإن تحمل المخاطر ومعالجتها هو نظام إداري أساسي. ويعتبر التحليل الفني أحد الأدوات المستخدمة في التحليل داخل الأسواق المالية بغية التحقق من مردودية وربحية الأسهم والأوراق المستثمر فيها و التحليل الفني بشتى أساليبه يستخدم كذلك قصد إدارة المخاطر المالية في هذا المجال.

Introduction:

Financial markets are a fascinating reflection of the people behind them. Usually interesting, occasionally irrational, markets take on a life of their own, moving farther and faster than models predict and sometimes concluding with events that are theoretically unlikely.

There is tremendous value in a qualitative, as well as a quantitative, approach to risk management. Risk management cannot be reduced to a simple checklist or mechanistic process. In risk management, the ability to question and contemplate different outcomes is a distinct advantage.

This article is intended for the business or finance professional to bridge a gap between an overview of financial risk management and the many technical, though excellent, resources that are often beyond the level required by a nonspecialist.

Since the subject of financial risk management is both wide and deep, this volume is necessarily selective. Financial risk is covered from the top down, to foster an understanding of the risks and the methods often used to manage those risks.

It is very difficult to define the concept of risk in a general way. The risk is related to the occurrence of an Event that one can not predict who has significant consequences on the bank's, financial institutions and companies financial situation.

It is necessary therefore distinguish between random and unpredictable (which is the origin of the risk) of the stake (consequent final).

Technical analysis means determining the real price of a stock. It is concerned with the collection or analysis of any available data or information (such as economic and other news) because it is primarily based on tracking price movements in the past in the hope of finding a pattern for the movement that can determine the correct timing of the investment decision. The past is a reliable indicator of its future movement. Hence, technical analysis is one of the tools of financial risk management in the financial markets and so on in order to make the right investment decision and not take the risk of troubled investments.

In light of the above, the fundamental problem of the research can be raised in the following question:

- To what extent technical analysis contributes to financial risk management when investing in financial markets ?

First: Risk and financial risks management typology.

I. Fundamental Definitions

The risk is a concept that denotes a potential negative impact on an asset or some characteristic of value that may arise from some present process or future event.

a. What Is Risk?

Risk provides the basis for the opportunity. The terms risk and exposure have subtle differences in their meaning. Risk refers to the probability of loss, while the exposure is the possibility of loss, although they are often used interchangeably. Risk arises as a result of exposure.

Exposure to financial markets affects most organizations, either directly or indirectly. When an organization has financial market exposure, there is a possibility of loss but also an opportunity for gain or profit.

Financial market exposure may provide strategic or competitive benefits. The risk is the likelihood of losses resulting from events such as changes in market prices. Events with a low probability of occurring, but that may result in a high loss, are particularly troublesome because they are often not anticipated. Put another way, a risk is the probable variability of returns¹.

Potential Size of Loss	Probability of Loss
The potential for Large Loss	High Probability of Occurrence
The potential for Small Loss	Low Probability of Occurrence

Since it is not always possible or desirable to eliminate risk, understanding it is an important step in determining how to manage it. Identifying exposures and risks forms the basis for an appropriate financial risk management strategy.

¹ Karen A. Horcher., **ESSENTIALS of Financial Risk Management**, Published by John Wiley & Sons, Inc, Hoboken, New Jersey, 2005, pp 16-17.

From the economic point of view, the risk is any event or action that may adversely affect an organization's ability to achieve its objectives and execute its strategies.

In finance, financial risk is essentially any risk associated with any form of financing².

Risk has two components: uncertainty and exposure. Uncertainty is referred to the probability of facing the risk. Exposure is the amount of the potential loss if the risk has been faced. For a portfolio of financial assets, the risk comprises of the systematic risk, also known as undiversifiable risk, and the unsystematic risk which is also known as idiosyncratic risk, specific risk or diversifiable risk³.

Systematic risk is the market risk or the risk that cannot be diversified away. It refers to the movements of the whole economy. Even if we have a perfectly diversified portfolio, there is some risk that we cannot avoid.

However, the systematic risk is not the same for all securities or portfolios. Different companies respond differently to a recession or a booming economy. For example both the automotive.

industry and the food industry will be affected in a case of a recession. But food industry possibly will not be affected as much as automotive industry.

Unsystematic risk is the risk associated with individual assets and it differs from asset to asset. Unlike the systematic risk, unsystematic risk can be diversified away by including a number of assets in the portfolio⁴.

b. What Is Financial Risk?

Financial risks create the possibility of losses arising from the failure to achieve a financial objective. The risk reflects uncertainty about foreign exchange rates, interest rates, commodity prices, equity prices, credit quality, liquidity, and an organization's access to financing. These financial risks are not necessarily independent of each other. For instance, exchange rates, and interest rates are often

² McNeil, A., R. Frey, and P. Embrechts, **Quantitative Risk Management: Concepts Techniques and Tools**, Princeton University Press, Princeton, 2005, p 33.

³ Holton, G. A., **Value-at-risk: theory and practice**, Academic Press, 2003.

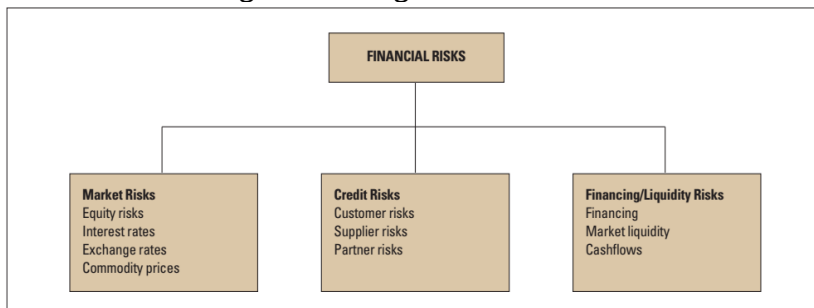
⁴ Wikipedia, "Systemic Risk", http://en.wikipedia.org/wiki/Systemic_risk, [Online; accessed 14-07-2017].

strongly linked, and this interdependence should be recognized when managers are designing risk management systems⁵.

c. Different Types of Financial Risk

Financial risks can be subdivided into distinct categories; a convenient classification is indicated in Figure 1 below.

Figure 1: Categories of Financial Risk



Source: Risk Management: A Guide to Good Practice, CIMA (Chartered Institute of Management Accountants), 2002, p5.

These are the financial risks that arise because of possible losses due to changes in future market prices or rates. The price changes will often relate to interest or foreign exchange rate movements, but also include the price of basic commodities that are vital to the business.

II. What Is Financial Risk Management?

Financial risk management can be qualitative and quantitative. As a specialization of risk management, financial risk management focuses on when and how to hedge using financial instruments to manage costly exposures to risk⁶.

Financial risk management is the practice of economic value in a firm by using financial instruments to manage exposure to risk:

- operational risk,
- credit risk and market risk
- foreign exchange risk
- shape risk,

⁵ Margaret Woods and Kevin Dowd, **Financial Risk Management for Management Accountants**, Management accounting guideline, Published by The Society of Management Accountants of Canada, the American Institute of Certified Public Accountants and The Chartered Institute of Management Accountants, 2008, p 05.

⁶ Allan M. Malz (13 September 2011). [Financial Risk Management: Models, History, and Institutions](#). John Wiley & Sons, 2011, p 27.

- volatility risk
- liquidity risk
- inflation risk
- business risk
- legal risk
- reputational risk
- sector risk etc.

Similar to general risk management, financial risk management requires identifying its sources, measuring it, and plans to address them ⁷.

a. Why Manage Financial Risks?

Firms can benefit from financial risk management in many different ways, but perhaps the most important benefit is to protect the firm's ability to attend to its core business and achieve its strategic objectives. By making stakeholders more secure, a good risk management policy helps encourage equity investors, creditors, managers, workers, suppliers, and customers to remain loyal to the business. In short, the firm's goodwill is strengthened in all manner of diverse and mutually reinforcing ways. This leads to a wide variety of ancillary benefits:

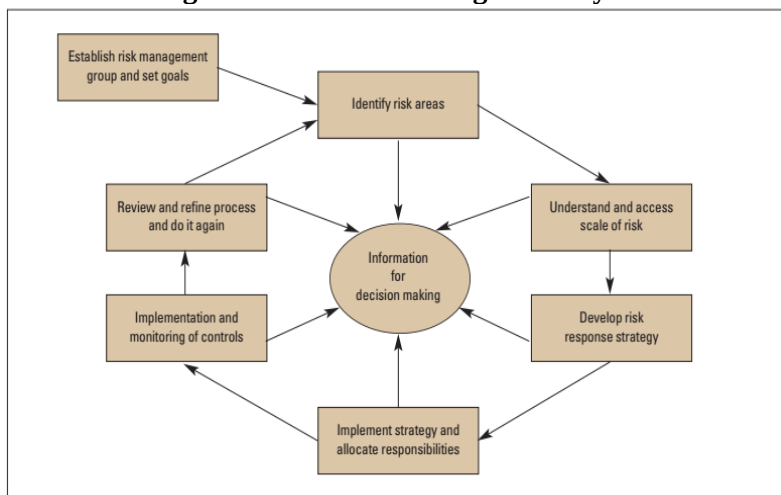
- Risk management can protect a firm's cash flows.
- Risk management can reduce earnings volatility, which helps to make financial statements and dividend announcements more relevant and reliable.
- The firm's reputation or 'brand' is enhanced, as the firm is seen as successful and its management is viewed as both competent and credible.
- Greater earnings stability also tends to reduce average tax liabilities.
- Some commentators suggest that risk management may reduce the cost of capital, therefore raising the potential economic value added for a business.
- The firm is better placed to exploit opportunities (such as opportunities to invest) through an improved credit rating and more secure access to financing.

⁷ Peter F. Christoffersen (22 November 2011). [Elements of Financial Risk Management](#). Academic Press, 2011, p28.

- The firm is in a stronger position to deal with merger and acquisitions issues. It is also in a stronger position to take over other firms and to fight off hostile takeover bids.

These benefits show that it is difficult to separate the effects of financial risk management from the broader activities of the business. It is therefore important to ensure that all parties within the organization recognize and understand how they might create or control financial risks⁸.

Figure 2: The Risk Management Cycle



Source: Margaret Woods and Kevin Dowd, Financial Risk Management for Management Accountants, Published by The Society of Management Accountants of Canada, the American Institute of Certified Public Accountants and The Chartered Institute of Management Accountants, 2008, p7.

b. Financial Risk Management Tools and Techniques

Knowing the potential scale and likelihood of any given financial risk, management needs to decide how to deal with it. This means deciding whether it wishes to accept, partially mitigate, or fully avoid the risk. Different tools exist for each of these choices and for each risk type.

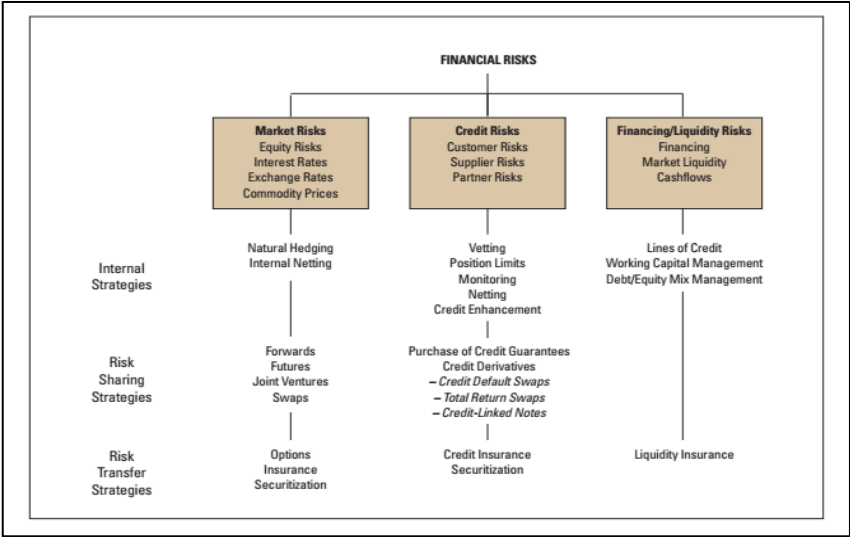
Summarizes the choices, using the risk management framework developed earlier. Choosing the most appropriate tool depends upon

⁸ Margaret Woods and Kevin Dowd, **Financial Risk Management for Management Accountants**, Published by The Society of Management Accountants of Canada, the American Institute of Certified Public Accountants and The Chartered Institute of Management Accountants, 2008, p7.

the risk appetite, level of expertise in the business, and the cost effectiveness of the particular tool. The board of directors sets the organization’s risk appetite, so it is important for board members to understand the methods being used to manage risk in their company. If the methods are not well understood, then it is advisable not to use them.

The rest of this section explains, according to risk type, each of the control tools listed in Figure 3:

Figure 3:Risk Management Tools for Different Categories of Financial Risk



Source: Margaret Woods and Kevin Dowd, Financial Risk Management for Management Accountants, Published by The Society of Management Accountants of Canada, the American Institute of Certified Public Accountants and The Chartered Institute of Management Accountants, 2008, p14.

Second : Technical analysis as a financial risks (market risks) management tool

The technical analysis is concerned with the past information of securities away from interest in the development of the market, and this analysis uses several tools, including what is used to analyze

market prices, including what is used to analyze stock prices, And the other to manage financial risk. This enables investors to determine the type of security they should buy or sell and also the timing.

I. The philosophy of technical analysis

a. Definition of technical analysis

Robert Edwards and John Maggie defined it as "an artistic term. In its application to the stock market, it has a very special meaning that is quite different from its definition in the ordinary dictionary. It refers to the study of the market movement itself rather than the study of goods and goods traded on the market.

Technical analysis is usually the science of monitoring and recording in the form of charts, all trading information (price changes, volume, date of trading ... etc.) of a particular stock or group of shares, and thus conclude from that date the possible future direction.⁹ "

As Marilyn MacDonald defines it as "analyzing past price data to determine price movements in the future and studying prices to make better trading, technical analysis in modern times can be mainly due to Dow's theory and many tools to identify potential deals.¹⁰"

The Australian Stock Exchange defined that "technical analysis is the study of past price movements per share or the market as a whole, charts are the main tool used in technical analysis¹¹.

b. Technical Analysis Assumptions:

The market value of the stock is determined solely by the interaction of supply and demand factors operating in the market, and there are several factors surrounding the supply and demand of shares, these factors may be rational as well as irrational:

- Stock prices move in directions or waves up and down depending on the psychological factors and emotions and emotions of dealers.
- Current price trends are influenced by past trends and expectations for future trends occur by analyzing past price trends.

⁹ Robert D. Edwards and John Magi, "Technical Analysis of Stock Trends", 8th edition, San Francisco, USA, (2001),p3.

¹⁰ Marilyn McDonald, "Forex Simplified: behind the scenes of currency trading", Chicago, USA, (2011), p24.

¹¹ ASX "Technical Analysis", course 11, available on

http://www.asx.com.au/documents/resources/shares_course_11.pdf?shares_course_11_text, viewed on 28/07/2017.

- In most cases, stock prices tend to move in the usual direction for a considerable period of time.
- Share price trends change whenever there is a change in supply factors.
- Changes in supply and demand can be detected regardless of when and why they occurred, through charts designed specifically to show market changes.
- Some trends in the graph tend to repeat themselves.

c. Elements of technical analysis

There are four main pillars of technical analysis¹²:

1. Prices: Whenever there is a change in the prices of securities, this reflects the trends of investors and the supply and demand for securities.

2. Time: The degree of movement in the price is a time function, and the longer the trend is delayed, the greater the price change it follows.

3. Volume: The intensity of price changes is reflected on the volume of transactions that accompany the change is accompanied by a price increase a slight change in transactions, it means that the change is not strong enough.

4. Offer: The quality of price change is measured by determining whether the change in direction is spread across most sectors or industries or is concentrated on only a few securities, a market supply study indicates how much price changes have occurred in the market according to some general trends.

II. Price Trends.

Experts describe the general movement of prices in the direction, trends can be upward, sideways, or down, and the combination of these three trends allows the formation of a periodic movement of the stock price. From the definition, we conclude that price movements are in three directions¹³:

1. Trendline (up-trend):

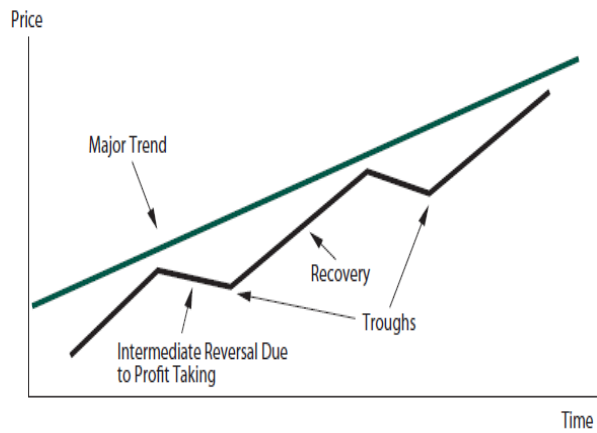
The trend line is a straight line drawn upwards on the right of the map passing along the points of the lowest price gradually rising in succession. The ascending trend line has a positive slope. This line is

¹² Michael N. Kahn, "Technical analysis plain and simple", 3rd edition, New Jersey, USA, (2010), p10.

¹³ Tickerchart guide to technical analysis, available on <http://www.book.yemenforex.com/tickerchart.pdf>, viewed on 26/7/2017.

formed by connecting two or more low points in the chart, and the second low point Top of the first.

Figure 4: An upward trend in price movement



Source: REILLY and BROWN, "Investment Analysis & Portfolio Management", South-Western, Cengage Learning, 12 Edition, 2012, p 535.

2. The bearish trend line (own-trend) :

The bearish trend line of the market has a negative inclination. This line is formed by connecting two or more of the high points in the chart. The second high point must be lower than the first, so that the line formed is negatively inclined and the bearish trend line can place the resistance line , The trend line of the downward movement will be a straight line drawn down on the right of the map passing along the higher price points gradually lower in succession.

Figure 5 : A downward trend in price movement



Source: Leigh Stevens, "Essential Technical Analysis tools and Techniques to spot market trends", USA, 2009, p 22.

3. Side Trend Line:

When the price action is horizontal, this occurs when the supply and demand are almost equal. This situation occurs when prices move up and down within a horizontal trading channel for a long period of time.

Figure 6: Side direction of price movement



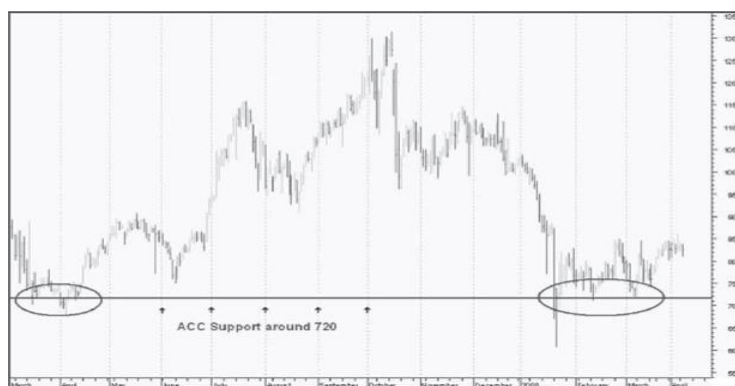
Source: Leigh Stevens, "Essential Technical Analysis tools and Techniques to spot market trends", USA, 2009, p 22.

III. support and resistance

1. Support

Comes at the end of the decline and is generally known as the price level or the region where the demand for stock is burdensome supply, support areas can be catalysts for the upward movement in prices, where many traders who are looking for stocks will find support before taking a bullish position in the stock, There can be significant differences in how support is defined versus how it is identified in an upward direction, as shown in Figure 7.

Figure 7 : A sample showing the support line



Source: National Stock exchange of India limited, "Technical Analysis Module", p47. available on:

<http://fxborssa.com/forums/showthread.php?64>, viewed on 26/07/20117.

2. Resistance

Called the price top of the resistance zone, the resistance level is the level reached by the stock price or the entire market at the rise and then repeatedly fall from that level, but cannot penetrate this level, and here the sale is increasing and in turn causing prices to fall¹⁴.

¹⁴ Cory Janssen, Chad Langager, and Casey Murphy, "Artical on guide to technical and fundamental analysis", Rich dad education,(2010), p110.

Figure 8 : A model showing the resistance line

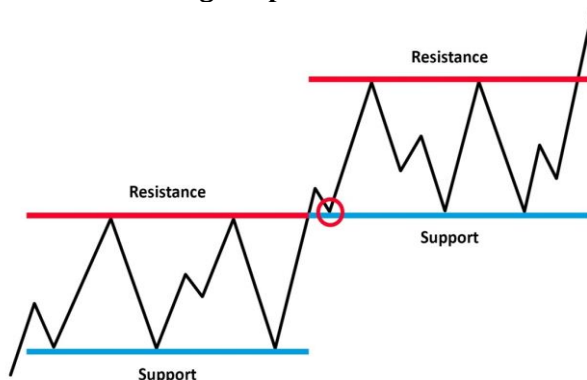


Source: National stock exchange of India limited, "Technical Analysis Module", p49, available on <http://fxborssa.com/forums/showthread.php?64>, viewed on 26/07/2017.

3. Breakthrough and role-playing

When the resistance level is successfully breached, this level becomes a new support level, and similarly, when the support level is breached, this level becomes a new resistance level.

An important principle in technical analysis is the principle of the exchange of roles between support and resistance. When the price breaks any support or resistance, they exchange their roles. Resistance turns into support and support to resistance, that is, they both reverse the role they played before His price penetration, shown in Figure 9.

Figure 9 : A model showing the penetration of resistance and support

Source: National Stock Exchange of India limited, "Technical Analysis Module", p49, available on:

<http://fxborssa.com/forums/showthread.php?64>, viewed on: 26/07/2017.

IV. Technical analysis tools for the purpose of predicting the movement of stocks and managing financial risks.

The technical analyst is interested in studying past patterns of stock prices and trading volumes to predict the future price movement, and then determining the appropriate timing to sell or buy the security.

a. Graphs

Graphs are the most widely used technical analysis tool. Knowing how to build and use them in making buying and selling decisions for securities is important, so we will try to give a preliminary picture of the most important types of charts used in technical analysis.

1. Columns:

The charts display the opening price of stocks (if any), the highest price, the lowest price, and the closing price. The charts are the most popular type of charts.

Figure 10: Graphical chart

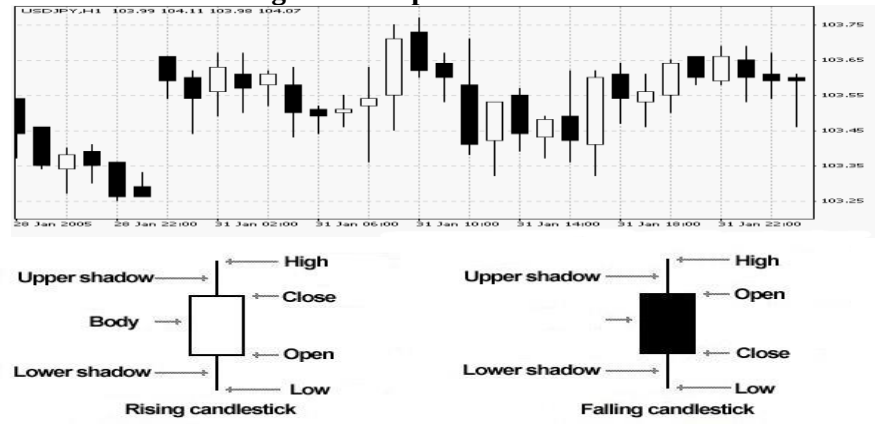


Source: Steven B. Achelis,"Technical Analysis from A to Z", Available on: <http://www.equis.com/Customer/Resources/TAAZ/> ?p=5, viewed on: 02/08/2017.

2. Japanese candles in technical analysis

This type of chart is one of the oldest tools to determine stock prices. This type has been used in Japan since 1700 as a method for forecasting rice prices. It is now one of the most important technical analysis tools used to reflect the phenomenon of price movement and forecasting in the short term Less).

Figure 11: Japanese Candles



Source: Steven B. Achelis,"Technical Analysis from A to Z", Available on: <http://www.equis.com/Customer/Resources/TAAZ/> ?p=6, viewed on: 02/08/217.

3. Various styles of Japanese candles

In short, an initial look will be given to each form and how it will analyze the price movement, in order to be able to make the appropriate decision, as follows :

Figure 12: Different Japanese candle patterns



Source :<https://www.pinterest.co.uk/stephenmarfo/candle-stick-analysis/> viewed on 16/07/2017.

4. Map point and shape

The point and shape map consists of X and O columns that show a bullish or bearish trend in prices, respectively. Figures and letters in the graph represent the beginning of a month (eg 9 for September, A for October, etc.) to eliminate minor price volatility, The minimum price movement in a box called Box size, if the price is higher or lower than the minimum price movement, is not indicated on the graph, Figure 13 shows this¹⁵.

¹⁵ OANDA, Forex Point and Figure charts <https://www.oanda.com/forex-trading/analysis/point-and-figure-charts> viewed on: 01/08/2017.

Figure 13: Map of point and shape

Source: OANDA, Forex Point and Figure charts,

<https://www.oanda.com/forex-trading/analysis/point-and-figure-charts>

viewed on: 01/08/2017.

b. the moving average line

1. Definition

Moving averages are one of the most common technical tools used by technical analysts and are one of the methods used to initialize and settle a specific time series, ie, to eliminate the acute vibrations that may occur due to transient, periodic or seasonal changes, until their general trend is seen up or down.

2. Types of moving averages: There are three types of moving averages.

– Simple Moving Average:

Is the most common indicator, calculated by collecting the closing prices for a certain period of time and divided by the number of days in that period, and then the exclusion of the first day and the addition of a new day and the creation of the new moving average. So we get to a moving series of averages that change every day¹⁶.

– Weighted average moving average:

The weighted average is calculated by giving each price of the price contained in the index a different weight according to the seniority of the price, that is, it gives weight to the price equivalent to the order of the day in the time series, the weight of the first day = 1,

¹⁶ Tareq Abdel-Al Hammad, "Technical and Basic Analysis of Securities", University House, Egypt, (2000), p.233

the weight of the second day = 2 thus, and thus will be calculated, according to the following equation:

$$\frac{1(CP_1)+2(CP_2)+...+n(CP_n)}{1+2+...+n} = W A M$$

– **CP_n** : Close price for day n.

– **n** : Number of time periods.

– **Exponential moving average:**

Some analysts believe that it is wrong to ignore historical prices entirely, as they remain significant, albeit diminishing, so they use the exponential moving average in their analyzes, as this average does not drop any price from old prices other than the previous averages Without the use of the computer because it needs to effort arithmetic hard and takes time¹⁷.

Conclusions

All organizations face financial risks, and their ability to achieve their objectives (and in some cases even their survival) depends on how well they manage those risks.

It is therefore critical to establish a framework that (a) facilitates the identification and quantification of the main types of risk to which a firm is exposed, and (b) sets out the main tools and techniques that the firm will use to manage those exposures. The importance of financial risk management is reinforced by the very large losses reported by many institutions since August 2007, which highlight the fact that they still have a long way to go before they can be said to be managing their financial risks adequately. Financial risk management does not come cheap, But less than to bear financial risk losses.

It uses technical analysis by professionals and specialists in financial markets. It focuses on examining the changes in share price over the past period in the hope of discovering the pattern of these

¹⁷ Mohammed Ibrahim Badawi, "Stock Trading", on the website: www.sandroses.com/myBooks2/Stock_trading2.pdf viewed on: 18/07/2017, p. 170.

changes and predicting the price of the stock in the future and trying to identify the price trends to manage and manage the risks related to the market. Among the investment tools and risk management in the financial markets.

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4. Wikipedia, "Systemic Risk", http://en.wikipedia.org/wiki/Systemic_risk, [Online; accessed 14-07-2017].
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11. ASX" ,**Technical Analysis**", course 11, available on http://www.asx.com.au/documents/resources/shares_course_11.pdf?shares_course_11_text, viewed on 28/07/2017.
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16. Tareq Abdel-Al Hammad, "**Technical and Basic Analysis of Securities**", University House, Egypt, (2000), p.233
17. Mohammed Ibrahim Badawi, "**Stock Trading**", on the website: www.sandroses.com/myBooks2/Stock_trading2.pdf viewed on: 18/08/2017, p. 170.