



ISSN: 2395-7852



International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

Volume 11, Issue 1, January 2024



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

IMPACT FACTOR: 6.551

www.ijarasem.com | ijarasem@gmail.com | +91-9940572462 |



Role and Functions of Stock Broking Agencies

DR. SUNIL KUMAR GOYAL

Associate Professor, Dept. Of Accountancy And Business Statistics, Spc Govt. College, Ajmer, Rajasthan, India

ABSTRACT: Indira Securities is one of the leading Stock broker firms in India. The company offers flexible plans to its investors and traders community which helps them save on brokerage. Moreover, there are special plans to cater to online trading requirements of its clients dealing in Equities, Derivatives, Futures and Options, Currencies, and Commodities.

Best Indian Stock Broker

Some of the features offered by Indira Securities which makes it the first choice of investors and trades include:

Lower brokerage charges

Simple brokerage structure

Prompt customer care service

No hidden charges

Robust online and mobile trading application

Ease of open demat account

Open demat account with best share broking firms Indira Securities and start your trading journey with the best full-service providing brokerage firm in Central India.

KEYWORDS: stock, broking, agencies, role, functions

I.INTRODUCTION

A stockbroker is an individual or company that buys and sells stocks and other investments for a financial market participant in return for a commission, markup, or fee. In most countries they are regulated as a broker or broker-dealer and may need to hold a relevant license and may be a member of a stock exchange. They generally act as a financial advisor and investment manager. In this case they may also be licensed as a financial adviser such as a registered investment adviser (in the United States).

Examples of professional designations held by individuals in this field, which affects the types of investments they are permitted to sell and the services they provide include chartered financial consultants, certified financial planners or chartered financial analysts (in the United States and UK), chartered financial planners (in the UK).[1,2,3]

In the United States, the Financial Industry Regulatory Authority provides an online tool designed to help understand professional designations.^[2]

History of stock broking

This enigmatic business [i.e. the inner workings of the stock exchange in Amsterdam, primarily the practice of VOC and WIC stock trading] which is at once the fairest and most deceitful in Europe, the noblest and the most infamous in the world, the finest and the most vulgar on earth. It is a quintessence of academic learning and a paragon of fraudulence; it is a touchstone for the intelligent and a tombstone for the audacious, a treasury of usefulness and a source of disaster, (...) The best and most agreeable aspect of the new business is that one can become rich without risk. Indeed, without endangering your capital, and with out having anything to do with correspondence, advances of money, warehouses, postage, cashiers, suspensions of payment, and other unforeseen incidents, you have the prospect of gaining wealth if, in the case of bad luck in your transactions, you will only change your name. Just as the Hebrews, when they are seriously ill, change their names in order to obtain relief, so a changing of his name is sufficient for the speculator who finds himself in difficulties, to free himself from all impending dangers and tormenting disquietude.

—Joseph de la Vega, in his book *Confusión de confusiones* (1688), the earliest book about stock trading^[3]

The first recorded buying and selling of shares occurred in Rome in the 2nd century BC.^[4] After the fall of the Western Roman Empire, stockbroking did not become a profession until after the Renaissance, when government bonds were traded in Italian city-states such as Genoa and Venice.^[5] In 1602, the Amsterdam Stock Exchange (now Euronext Amsterdam) became the first official stock market with trading in shares of the Dutch East India Company, the first company to issue stock.^[6] In 1698, the London Stock Exchange opened at the Jonathan's Coffee-House.^[7] On May 17, 1792, the New York Stock Exchange opened under a platanus occidentalis (buttonwood tree) in New York City, as 24 stockbrokers signed the Buttonwood Agreement, agreeing to trade five securities under that buttonwood tree.^[8]

Licensing and training requirements

Australia

Up until January 1, 2019, investment professionals that offer financial advice in Australia had to pass training pursuant to RG146.^[9] They must hold an Australian Financial Services Licence that is overseen by the Australian Securities and Investments Commission.^[10] They are subject to fiduciary obligations.

As of 2019, Australia's biggest online stockbroker was Commonwealth Securities, other large brokers were ANZ Share Investing, nabtrade and Westpac Online Investing.^[11]

Canada

In Canada, to be licensed as a "registered representative" or an "investment advisor" and thus be qualified to offer investment advice and trade all instruments with the exception of derivatives, an individual employed by an investment firm must have completed the Canadian Securities Course, the Conduct & Practices Handbook, and the 90-day Investment Advisor Training Program. Within 30 months of obtaining designation as a "registered representative", the registrant is further required to meet the post-licensing proficiency requirement to complete the Wealth Management Essentials course. A registered representative is also required to complete 30 hours of professional development (product knowledge) and 12 hours of compliance training every three year continuing education cycle as set out by the Investment Industry Regulatory Organization of Canada. To trade options and/or futures, a registered representative must pass the Derivatives Fundamentals Course in addition to the Options Licensing Course and/or the Futures Licensing Course, or alternatively, the Derivatives Fundamentals Options Licensing Course for options.^{[12][13][14]}

Hong Kong

In Hong Kong, to become a representative one has to work for a licensed firm and pass 3 exams to prove competency. Passing a fourth exam results in obtaining a "specialist" license. All tests can be taken with the Hong Kong Securities Institute.^[15] After passing all tests, approval must be received by the Securities and Futures Commission.^[4,5,6]



India

Share brokers in India are governed by the Securities and Exchange Board of India Act, 1992 and brokers must register with the Securities and Exchange Board of India. The National Stock Exchange of India and the Bombay Stock Exchange via brokers, provide an ecosystem to investors to trade in capital markets through various channels-broker offices, investment advisor or screen-based electronic trading system. An individual employed by an investment firm must complete the National Institute of Securities Markets (NISM) exam and apply to SEBI for registration as an Investment Advisor.^[16]

Stock market advisory and research services are highly regulated in India. Only SEBI registered stock advisory and investment research analysts are allowed to do so. The complete details of these authorized persons are available on website of SEBI for protection of investors.

Ireland

The recognized benchmark designation for investment professionals in Ireland is the QFA ("qualified financial adviser") designation, which is awarded to those who pass the Professional Diploma in Financial Advice and agree to comply with the ongoing "continuous professional development" (CPD) requirements. The qualification, and attaching CPD program, meets the "minimum competency requirements" specified by the Financial Regulator, for advising on and selling five categories of retail financial products:

- Stock shares, bonds, and other investment instruments
- Savings, investments, and pensions
- Mortgage loans
- Consumer credit
- Life insurance

As of 2019, Davy and Goodbody were Irish largest stockbrokers.^[17]

New Zealand

In New Zealand, the New Zealand Qualifications Authority oversees qualifications. The New Zealand Certificate in Financial Services (Level 5) is the minimum level of qualification necessary to offer investment advice.^[18]

Singapore

In Singapore, becoming a trading representative requires passing 4 exams, modules 1A, 5, 6 and 6A, from the Institute of Banking and Finance and applying for the license through MAS and SGX

South Africa

The Johannesburg Securities Exchange rules require that member firms must be under the control of a "qualified stockbroker", who is also an executive director of the firm; and branches, likewise managed.^[19] The South African Institute of Stockbrokers (SAIS)^[20] offers the six exams required to become such, a Certified Stockbroker, or CSb(SA), following 3 years' work experience, and with other educational requirements met.^[21] See also re. "Regulated Positions" and "Registered Persons" at The South African Institute of Financial Markets. (SAIS also offers the Financial Markets Practitioner vocational certification.^[22])

South Korea

In South Korea, the Korea Financial Investment Association oversees the licensing of investment professionals.

United Kingdom

Stockbroking is a regulated profession in the United Kingdom and brokers must achieve a recognised qualification from the Appropriate Qualifications list of the Financial Conduct Authority (FCA).^[23]



The Chartered Institute for Securities & Investment (CISI), established in 1992, is the largest UK professional body for investment professionals.^[24] It evolved from the London Stock Exchange, has around 45,000 members in over 100 countries and delivers more than 40,000 exams each year.^[25] Qualifications include: the CISI Level 4 Diploma in Investment Advice and the CISI Level 7 Diploma in Wealth Management^[7,8,9]

CFA UK^[26] also offers various FCA Appropriate Qualifications.^[27] It represents the interests of around 12,000 investment professionals and is part of the worldwide network of members of the CFA Institute.^[28]

United States

The Financial Industry Regulatory Authority, a self-regulatory organization, regulates investment professionals in the United States. Exams that individuals may take for accreditation include the Series 7 exam, the Uniform Securities Agent State Law Exam (Series 63), the Uniform Combined State Law Exam (Series 66), and the Uniform Investment Adviser Law Exam (Series 65).^[29]

Individuals holding some of those licenses, such as the Series 6 exam, cannot be called stockbrokers since they are prohibited from selling stocks. Selling variable products, such as a variable annuity contract or variable universal life insurance policy, typically requires the broker to also have one or another state insurance department licenses.

Individuals and firms are regulated by the U.S. Securities and Exchange Commission and laws related to the Investment Advisers Act of 1940, including laws related to fiduciary.

II.DISCUSSION

A stock exchange, securities exchange, or bourse is an exchange where stockbrokers and traders can buy and sell securities, such as shares of stock, bonds and other financial instruments. Stock exchanges may also provide facilities for the issue and redemption of such securities and instruments and capital events including the payment of income and dividends. Securities traded on a stock exchange include stock issued by listed companies, unit trusts, derivatives, pooled investment products and bonds. Stock exchanges often function as "continuous auction" markets with buyers and sellers consummating transactions via open outcry at a central location such as the floor of the exchange or by using an electronic trading platform.^[2]

To be able to trade a security on a particular stock exchange, the security must be listed there. Usually, there is a central location for record keeping, but trade is increasingly less linked to a physical place as modern markets use electronic communication networks, which give them advantages of increased speed and reduced cost of transactions. Trade on an exchange is restricted to brokers who are members of the exchange. In recent years, various other trading venues such as electronic communication networks, alternative trading systems and "dark pools" have taken much of the trading activity away from traditional stock exchanges.^[3]

Initial public offerings of stocks and bonds to investors is done in the primary market and subsequent trading is done in the secondary market. A stock exchange is often the most important component of a stock market. Supply and demand in stock markets are driven by various factors that, as in all free markets, affect the price of stocks (see stock valuation).

There is usually no obligation for stock to be issued through the stock exchange itself, nor must stock be subsequently traded on an exchange. Such trading may be off exchange or over-the-counter. This is the usual way that derivatives and bonds are traded. Increasingly, stock exchanges are part of a global securities market. Stock exchanges also serve an economic function in providing liquidity to shareholders in providing an efficient means of disposing of shares.^[10,11,12]

The beginnings of lending were in Italy in the late Middle Ages. In the 1300s, Venetian lenders would carry slates with information on the various issues for sale and meet with clients, much like a broker does today.^[4] Venetian merchants introduced the principle of exchanging debts between moneylenders; a lender looking to unload a high-risk, high-interest loan might exchange it for a different loan with another lender. These lenders also bought



government debt issues.^[5] As the natural evolution of their business continued, the lenders began to sell debt issues to the first individual investors in the late 1900s. The Venetians were the leaders in the field and the first to start trading securities from other governments, yet did not embark on private trade with India. Nor did the Italians connect on land with the Chinese Silk Road. Along the potential overland trade route, Habsburg (Austrian) emperor Frederick II repulsed advances by Mongol Batu Khan (Golden Horde) in 1241.^[6] There is little consensus among scholars as to when corporate stock was first traded. Some view the key event as the Dutch East India Company's founding in 1602,^[7] while others point to much earlier developments (Bruges, Antwerp in 1531 and in Lyon in 1548). The first book in history of securities exchange, the *Confusion of Confusions*, was written by the Dutch-Jewish trader Joseph de la Vega and the Amsterdam Stock Exchange is often considered the oldest "modern" securities market in the world.^[8] On the other hand, economist Ulrike Malmendier of the University of California at Berkeley argues that a share market existed as far back as ancient Rome, that derives from Etruscan "Argentari". In the Roman Republic, which existed for centuries before the Empire was founded, there were *societates publicanorum*, organizations of contractors or leaseholders who performed temple-building and other services for the government. One such service was the feeding of geese on the Capitoline Hill as a reward to the birds after their honking warned of a Gallic invasion in 390 B.C. Participants in such organizations had *partes* or shares, a concept mentioned various times by the statesman and orator Cicero. In one speech, Cicero mentions "shares that had a very high price at the time". Such evidence, in Malmendier's view, suggests the instruments were tradable, with fluctuating values based on an organization's success. The *societas* declined into obscurity in the time of the emperors, as most of their services were taken over by direct agents of the state.

Tradable bonds as a commonly used type of security were a more recent innovation, spearheaded by the Italian city-states of the late medieval and early Renaissance periods.^[9]

A 17th-century engraving depicting the Amsterdam Stock Exchange

Joseph de la Vega, also known as Joseph Penso de la Vega and by other variations of his name, was an Amsterdam trader from a Spanish Jewish family and a prolific writer as well as a successful businessman in 17th-century Amsterdam. His 1688 book *Confusion of Confusions*^[10] explained the workings of the city's stock market. It was the earliest book about stock trading and inner workings of a stock market, taking the form of a dialogue between a merchant, a shareholder and a philosopher, the book described a market that was sophisticated but also prone to excesses, and de la Vega offered advice to his readers on such topics as the unpredictability of market shifts and the importance of patience in investment.

In England, the Dutch King William III sought to modernize the kingdom's finances to pay for its wars, and thus the first government bonds were issued in 1693 and the Bank of England was set up the following year. Soon thereafter, English joint-stock companies began going public.

London's first stockbrokers, however, were barred from the old commercial center known as the Royal Exchange, reportedly because of their rude manners. Instead, the new trade was conducted from coffee houses along Exchange Alley. By 1698, a broker named John Castaing, operating out of Jonathan's Coffee House, was posting regular lists of stock and commodity prices. Those lists mark the beginning of the London Stock Exchange.^[11]

One of history's greatest financial bubbles occurred around 1720. At the center of it were the South Sea Company, set up in 1711 to conduct English trade with South America, and the Mississippi Company, focused on commerce with France's Louisiana colony and touted by transplanted Scottish financier John Law, who was acting in effect as France's central banker. Investors snapped up shares in both, and whatever else was available. In 1720, at the height of the mania, there was even an offering of "a company for carrying out an undertaking of great advantage, but nobody to know what it is".^[13,14,15]

By the end of that same year, share prices had started collapsing, as it became clear that expectations of imminent wealth from the Americas were overblown. In London, Parliament passed the Bubble Act, which stated that only royally chartered companies could issue public shares. In Paris, Law was stripped of office and fled the country. Stock trading was more limited and subdued in subsequent decades. Yet the market survived, and by the 1790s



shares were being traded in the young United States. On May 17, 1792, the New York Stock Exchange opened under a *Platanus occidentalis* (buttonwood tree) in New York City, as 24 stockbrokers signed the Buttonwood Agreement, agreeing to trade five securities under that buttonwood tree.^[12]

Bombay Stock Exchange was started by Premchand Roychand in 1875.^[13] While BSE Limited is now synonymous with Dalal Street, it was not always so. In the 1850s, five stock brokers gathered together under a Banyan tree in front of Mumbai Town Hall, where Horniman Circle is now situated.^[14] A decade later, the brokers moved their location to another leafy setting, this time under banyan trees at the junction of Meadows Street and what was then called Esplanade Road, now Mahatma Gandhi Road. With a rapid increase in the number of brokers, they had to shift places repeatedly. At last, in 1874, the brokers found a permanent location, the one that they could call their own. The brokers group became an official organization known as "The Native Share & Stock Brokers Association" in 1875.^[15]

The Bombay Stock Exchange continued to operate out of a building near the Town Hall until 1928. The present site near Horniman Circle was acquired by the exchange in 1928, and a building was constructed and occupied in 1930. The street on which the site is located came to be called Dalal Street in Hindi (meaning "Broker Street") due to the location of the exchange.

On 31 August 1957, the BSE became the first stock exchange to be recognized by the Indian Government under the Securities Contracts Regulation Act. Construction of the present building, the Phiroze Jeejeebhoy Towers at Dalal Street, Fort area, began in the late 1970s and was completed and occupied by the BSE in 1980. Initially named the BSE Towers, the name of the building was changed soon after occupation, in memory of Sir Phiroze Jamshedji Jeejeebhoy, chairman of the BSE since 1966, following his death.

In 1986, the BSE developed the S&P BSE SENSEX index, giving the BSE a means to measure the overall performance of the exchange. In 2000, the BSE used this index to open its derivatives market, trading S&P BSE SENSEX futures contracts. The development of S&P BSE SENSEX options along with equity derivatives followed in 2001 and 2002, expanding the BSE's trading platform.^[16,17,18]

Historically an open outcry floor trading exchange, the Bombay Stock Exchange switched to an electronic trading system developed by Cmc Ltd. in 1995. It took the exchange only 50 days to make this transition. This automated, screen-based trading platform called BSE On-Line Trading (BOLT) had a capacity of 8 million orders per day. Now BSE has raised capital by issuing shares and as on 3 May 2017 the BSE share which is traded in NSE only closed with ₹999.^[16]

Stock exchanges have multiple roles in the economy. This may include the following:^[17]

Raising capital for businesses

Besides the borrowing capacity provided to an individual or firm by the banking system, in the form of credit or a loan, a stock exchange provides companies with the facility to raise capital for expansion through selling shares to the investing public.^[18]

Capital intensive companies, particularly high tech companies, typically need to raise high volumes of capital in their early stages. For this reason, the public market provided by the stock exchanges has been one of the most important funding sources for many capital intensive startups. In the 1990s and early 2000s, hi-tech listed companies experienced a boom and bust in the world's major stock exchanges. Since then, it has been much more demanding for the high-tech entrepreneur to take his/her company public, unless either the company is already generating sales and earnings, or the company has demonstrated credibility and potential from successful outcomes: clinical trials, market research, patent registrations, etc. This is quite different from the situation of the 1990s to early-2000s period, when a number of companies (particularly Internet boom and biotechnology companies) went public in the most prominent stock exchanges around the world in the total absence of sales, earnings, or any type of well-documented promising outcome. Though it is not as common, it still happens that highly speculative and financially unpredictable hi-tech startups are listed for the first time in a major stock exchange. Additionally, there are smaller,



specialized entry markets for these kind of companies with stock indexes tracking their performance (examples include the Alternext, CAC Small, SDAX, TecDAX).

Alternatives to stock exchanges for raising capital

Alternative investment funds refer to funds that include hedge funds, venture capital, private equity, angel funds, real estate, commodities, collectibles, structured products, etc. Alternative investment funds are an alternative to traditional investment options (stocks, bonds, and cash).

Research and Development limited partnerships

Companies have also raised significant amounts of capital through R&D limited partnerships. Tax law changes that were enacted in 1987 in the United States changed the tax deductibility of investments in R&D limited partnerships. In order for a partnership to be of interest to investors today, the cash on cash return must be high enough to entice investors.

Venture capital

A general source of capital for startup companies has been venture capital. This source remains largely available today, but the maximum statistical amount that the venture company firms in aggregate will invest in any one company is not limitless (it was approximately \$15 million in 2001 for a biotechnology company).

Corporate partners

Another alternative source of cash for a private company is a corporate partner, usually an established multinational company, which provides capital for the smaller company in return for marketing rights, patent rights, or equity. Corporate partnerships have been used successfully in a large number of cases.[19]

Mobilizing savings for investment

When people draw their savings and invest in shares (through an initial public offering or the seasoned equity offering of an already listed company), it usually leads to rational allocation of resources because funds, which could have been consumed, or kept in idle deposits with banks, are mobilized and redirected to help companies' management boards finance their organizations. This may promote business activity with benefits for several economic sectors such as agriculture, commerce and industry, resulting in stronger economic growth and higher productivity levels of firms.

Facilitating acquisitions

Companies view acquisitions as an opportunity to expand product lines, increase distribution channels, hedge against volatility, increase their market share, or acquire other necessary business assets. A takeover bid or mergers and acquisitions through the stock market is one of the simplest and most common ways for a company to grow by acquisition or fusion.

Profit sharing

Both casual and professional stock investors, as large as institutional investors or as small as an ordinary middle-class family, through dividends and stock price increases that may result in capital gains, share in the wealth of profitable businesses. Unprofitable and troubled businesses may result in capital losses for shareholders.

Corporate governance

By having a wide and varied scope of owners, companies generally tend to improve management standards and efficiency to satisfy the demands of these shareholders and the more stringent rules for public corporations imposed by public stock exchanges and the government. This improvement can be attributed in some cases to the price mechanism exerted through shares of stock, wherein the price of the stock falls when management is considered poor (making the firm vulnerable to a takeover by new management) or rises when management is doing



well (making the firm less vulnerable to a takeover). In addition, publicly listed shares are subject to greater transparency so that investors can make informed decisions about a purchase. Consequently, it is alleged that public companies (companies that are owned by shareholders who are members of the general public and trade shares on public exchanges) tend to have better management records than privately held companies (those companies where shares are not publicly traded, often owned by the company founders, their families and heirs, or otherwise by a small group of investors).

Despite this claim, some well-documented cases are known where it is alleged that there has been considerable slippage in corporate governance on the part of some public companies, particularly in the cases of accounting scandals. The policies that led to the dot-com bubble in the late 1990s and the subprime mortgage crisis in 2007–08 are also examples of corporate mismanagement. The mismanagement of companies such as Pets.com (2000), Enron (2001), One.Tel (2001), Sunbeam Products (2001), Webvan (2001), Adelphia Communications Corporation (2002), MCI WorldCom (2002), Parmalat (2003), American International Group (2008), Bear Stearns (2008), Lehman Brothers (2008), General Motors (2009) and Satyam Computer Services (2009) all received plenty of media attention.

Many banks and companies worldwide utilize securities identification numbers (ISIN) to identify, uniquely, their stocks, bonds and other securities. Adding an ISIN code helps to distinctly identify securities and the ISIN system is used worldwide by funds, companies, and governments.

However, when poor financial, ethical or managerial records become public, stock investors tend to lose money as the stock and the company tend to lose value. In the stock exchanges, shareholders of underperforming firms are often penalized by significant share price decline, and they tend as well to dismiss incompetent management teams.

Creating investment opportunities for small investors

As opposed to other businesses that require huge capital outlay, investing in shares is open to both the large and small stock investors as minimum investment amounts are minimal. Therefore, the stock exchange provides the opportunity for small investors to own shares of the same companies as large investors.

Government capital-raising for development projects

Governments at various levels may decide to borrow money to finance infrastructure projects such as sewage and water treatment works or housing estates by selling another category of securities known as bonds. These bonds can be raised through the stock exchange whereby members of the public buy them, thus loaning money to the government. The issuance of such bonds can obviate, in the short term, direct taxation of citizens to finance development—though by securing such bonds with the full faith and credit of the government instead of with collateral, the government must eventually tax citizens or otherwise raise additional funds to make any regular coupon payments and refund the principal when the bonds mature.

Barometer of the economy

At the stock exchange, share prices rise and decrease depending, largely, on economic forces. Share prices tend to rise or remain stable when companies and the economy in general show signs of stability and growth. A recession, depression, or financial crisis could eventually lead to a stock market crash. Therefore, the movement of share prices and in general of the stock indexes can be an indicator of the general trend in the economy.

Listing requirements

Each stock exchange imposes its own listing requirements upon companies that want to be listed on that exchange. Such conditions may include minimum number of shares outstanding, minimum market capitalization, and minimum annual income.



Examples of listing requirements

The listing requirements imposed by some stock exchanges include:

- New York Stock Exchange: the New York Stock Exchange (NYSE) requires a company to have issued at least 1.1 million shares of stock worth \$40 million and must have earned more than \$10 million over the last three years.^[19]
- NASDAQ Stock Exchange: NASDAQ requires a company to have issued at least 1.25 million shares of stock worth at least \$70 million and must have earned more than \$11 million over the last three years.^[20]
- London Stock Exchange: the main market of the London Stock Exchange requires a minimum market capitalization (£700,000), three years of audited financial statements, minimum public float (25%) and sufficient working capital for at least 12 months from the date of listing.
- Bombay Stock Exchange: Bombay Stock Exchange (BSE) requires a minimum market capitalization of ₹250 million (US\$3.1 million) and minimum public float equivalent to ₹100 million (US\$1.3 million).^[21]

Ownership

Stock exchanges originated as mutual organizations, owned by its member stockbrokers. However, the major stock exchanges have demutualized, where the members sell their shares in an initial public offering. In this way the mutual organization becomes a corporation, with shares that are listed on a stock exchange. Examples are Australian Securities Exchange (1998), Euronext (merged with New York Stock Exchange), NASDAQ (2002), Bursa Malaysia (2004), the New York Stock Exchange (2005), Bolsas y Mercados Españoles, and the São Paulo Stock Exchange (2007).

The Shenzhen Stock Exchange and Shanghai Stock Exchange can be characterized as quasi-state institutions insofar as they were created by government bodies in China and their leading personnel are directly appointed by the China Securities Regulatory Commission.

Another example is Tashkent Stock Exchange established in 1994, three years after the collapse of the Soviet Union, mainly state-owned but has a form of a public corporation (joint-stock company). Korea Exchange (KRX) owns 25% less one share of the Tashkent Stock Exchange.^[22]

In 2018, there were 15 licensed stock exchanges in the United States, of which 13 actively traded securities. All of these exchanges were owned by three publicly traded multinational companies, Intercontinental Exchange, Nasdaq, Inc., and Cboe Global Markets, except one, IEX.^{[23][24]} In 2019, a group of financial corporations announced plans to open a members owned exchange, MEMX, an ownership structure similar to the mutual organizations of earlier exchanges.^{[25][23]}

Other types of exchanges

In the 19th century, exchanges were opened to trade forward contracts on commodities. Exchange traded forward contracts are called futures contracts. These commodity markets later started offering future contracts on other products, such as interest rates and shares, as well as options contracts. They are now generally known as futures exchanges.

III.RESULTS

In financial markets, stock valuation is the method of calculating theoretical values of companies and their stocks. The main use of these methods is to predict future market prices, or more generally, potential market prices, and thus to profit from price movement – stocks that are judged undervalued (with respect to their theoretical value) are bought, while stocks that are judged overvalued are sold, in the expectation that undervalued stocks will overall rise in value, while overvalued stocks will generally decrease in value. A target price is a price at which an analyst believes a stock to be fairly valued relative to its projected and historical earnings.^[1]



In the view of fundamental analysis, stock valuation based on fundamentals aims to give an estimate of the intrinsic value of a stock, based on predictions of the future cash flows and profitability of the business. Fundamental analysis may be replaced or augmented by market criteria – what the market will pay for the stock, disregarding intrinsic value. These can be combined as "predictions of future cash flows/profits (fundamental)", together with "what will the market pay for these profits?" These can be seen as "supply and demand" sides – what underlies the supply (of stock), and what drives the (market) demand for stock?

Stock valuation is different from business valuation, which is about calculating the economic value of an owner's interest in a business, used to determine the price interested parties would be willing to pay or receive to effect a sale of the business. Re. valuation in cases where both parties are corporations, see under Mergers and acquisitions and Corporate finance.

Fundamental criteria (fair value)

There are many different ways to value stocks. The key is to take each approach into account while formulating an overall opinion of the stock. If the valuation of a company is lower or higher than other similar stocks, then the next step would be to determine the reasons.

The first approach, Fundamental analysis, is typically associated with investors and financial analysts - its output is used to justify stock prices. The most theoretically sound stock valuation method, is called "income valuation" or the discounted cash flow (DCF) method. It is widely applied in all areas of finance. Perhaps the most common fundamental methodology is the P/E ratio (Price to Earnings Ratio). This example of "relative valuation" is based on historic ratios and aims to assign value to a stock based on measurable attributes. This form of valuation is typically what drives long-term stock prices.

The alternative approach – Technical analysis – is to base the assessment on supply and demand: simply, the more people that want to buy the stock, the higher its price will be; and conversely, the more people that want to sell the stock, the lower the price will be. This form of valuation often drives the short-term stock market trends; and is associated with speculators as opposed to investors.[20]

Discounted cash flow

The discounted cash flow (DCF) method involves discounting of the profits (dividends, earnings, or cash flows) that the stock will bring to the stockholder in the foreseeable future, and sometimes a final value on disposal,^[2] depending on the valuation method. The discounted rate normally includes a risk premium which is commonly based on the capital asset pricing model. For discussion of the mechanics, see Valuation using discounted cash flows.

In July 2010, a Delaware court ruled on appropriate inputs to use in discounted cash flow analysis in a dispute between shareholders and a company over the proper fair value of the stock. In this case the shareholders' model provided value of \$139 per share and the company's model provided \$89 per share. Contested inputs included the terminal growth rate, the equity risk premium, and beta.^[3]

Earnings per share (EPS)

EPS is the Net income available to common shareholders of the company divided by the number of shares outstanding. Usually, there will be two types of EPS listed: a GAAP (Generally Accepted Accounting Principles) EPS and a Pro Forma EPS, which means that the income has been adjusted to exclude any one time items as well as some non-cash items like amortization of goodwill or stock option expenses. The most important thing to look for in the EPS figure is the overall quality of earnings. Make sure the company is not trying to manipulate their EPS numbers to make it look like they are more profitable. Also, look at the growth in EPS over the past several quarters / years to understand how volatile their EPS is, and to see if they are an underachiever or an overachiever. In other words, have they consistently beaten expectations or are they constantly restating and lowering their forecasts?



The EPS number that most analysts use is the pro forma EPS. To compute this number, use the net income that excludes any one-time gains or losses and excludes any non-cash expenses like amortization of goodwill. Never exclude non-cash compensation expense as that does impact earnings per share. Then divide this number by the number of fully diluted shares outstanding. Historical EPS figures and forecasts for the next 1–2 years can be found by visiting free financial sites such as Yahoo Finance (enter the ticker and then click on "estimates").

Price to Earnings (P/E)

Now that the analyst has several EPS figures (historical and forecasts), the analyst will be able to look at the most common valuation technique used, the price to earnings ratio, or P/E. To compute this figure, one divides the stock price by the annual EPS figure. For example, if the stock is trading at \$10 and the EPS is \$0.50, the P/E is 20 times. A complete analysis of the P/E multiple includes a look at the historical and forward ratios.

Historical P/Es are computed by taking the current price divided by the sum of the EPS for the last four quarters, or for the previous year. Historical trends of the P/E should also be considered by viewing a chart of its historical P/E over the last several years (one can find this on most finance sites like Yahoo Finance). Specifically, consider what range the P/E has traded in so as to determine whether the current P/E is high or low versus its historical average.

Forward P/Es reflect the growth of the company into the future. Forward P/Es are computed by taking the current stock price divided by the sum of the EPS estimates for the next four quarters, or for the EPS estimate for next calendar or fiscal year or two.

P/Es change constantly. If there is a large price change in a stock, or if the earnings (EPS) estimates change, the ratio is recomputed.

Growth rate

Discounted cash flow based valuations rely (very) heavily on the expected growth rate of a company. An accurate assessment is therefore critical to the valuation

Here, the analyst will typically look at the historical growth rate of both sales and income to derive a base for the type of future growth expected. However, since, companies are constantly evolving, as is the economy, solely using historical growth rates to predict the future will not be appropriate (the "problem of induction"; see Discounted cash flow #Shortcomings). These, instead, are used as guidelines for what future growth "could look like" if similar circumstances are encountered by the company.

Calculating the future growth rate, therefore, requires personal investment research – familiarity with a company is essential before making a forecast. This may take form in listening to the company's quarterly conference call or reading a press release or other company article that discusses the company's growth guidance. However, although companies are in the best position to forecast their own growth, they are often far from accurate; further, unforeseen macro-events could cause impact the economy and /or the company's industry.

Regardless of research effort, a growth-rate based valuation, therefore, relies heavily on experience and judgement ("gut feel"), and analysts will thus (often) make inaccurate forecasts. It is for this reason, that analysts often display a range of forecast values, especially based on different terminal value assumptions. [As an example here, if the company being valued has been growing earnings between 5 and 10% each year for the last 5 years, but believes that it will grow 15–20% this year, a more conservative growth rate of 10–15% would be appropriate in valuations. Another example would be for a company that has been going through restructuring. It may have been growing earnings at 10–15% over the past several quarters or years because of cost cutting, but their sales growth could be only 0–5%. This would signal that their earnings growth will probably slow when the cost cutting has fully taken effect. Therefore, forecasting an earnings growth closer to the 0–5% rate would be more appropriate rather than the 15–20%.]



Capital structure substitution - asset pricing formula

The CSS theory suggests that company share prices are strongly influenced by bondholders. As a result of active repurchasing or issuing of shares by company managements, equilibrium pricing is no longer a result of balancing shareholder demand and supply. The asset pricing formula only applies to debt-holding companies.

The asset pricing formula can be used on a market aggregate level as well. The resulting graph shows at what times the S&P 500 Composite was overpriced and at what times it was under-priced relative to the capital structure substitution theory equilibrium. In times when the market is under-priced, corporate buyback programs will allow companies to drive up earnings-per-share, and generate extra demand in the stock market.[16,17,18]

Price earnings to growth (PEG) ratio

This valuation technique has really become popular over the past decade or so. It is better than just looking at a P/E because it takes three factors into account; the price, earnings, and earnings growth rates. To compute the PEG ratio, the Forward P/E is divided by the expected earnings growth rate (one can also use historical P/E and historical growth rate to see where it has traded in the past). This will yield a ratio that is usually expressed as a percentage. The conjecture goes that as the percentage rises over 100% the stock becomes more and more overvalued, and as the PEG ratio falls below 100% the stock becomes more and more undervalued. The conjecture is based on a belief that P/E ratios should approximate the long-term growth rate of a company's earnings. Whether or not this is true will never be proven and the conjecture is therefore just a rule of thumb to use in the overall valuation process.

Here is an example of how to use the PEG ratio to compare stocks. Stock A is trading at a forward P/E of 15 and expected to grow at 20%. Stock B is trading at a forward P/E of 30 and expected to grow at 25%. The PEG ratio for Stock A is 75% (15/20) and for Stock B is 120% (30/25). According to the PEG ratio, Stock A is a better purchase because it has a lower PEG ratio, or in other words, its future earnings growth can be purchased for a lower relative price than that of Stock B.

Sum of perpetuities method

The PEG ratio is a special case in the sum of perpetuities method (SPM)^[4] equation. A generalized version of the Walter model (1956),^[5] SPM considers the effects of dividends, earnings growth, as well as the risk profile of a firm on a stock's value. Derived from the compound interest formula using the present value of a perpetuity equation, SPM is an alternative to the Gordon Growth Model.

Return on Invested Capital (ROIC) terms of earnings, growth rate, the risk-adjusted discount rate, and accounting book value.^[6]

This valuation technique measures how much money the company makes each year per dollar of invested capital. Invested Capital is the amount of money invested in the company by both stockholders and debtors. The ratio is expressed as a percent and one looks for a percent that approximates the level of growth that expected. In its simplest definition, this ratio measures the investment return that management is able to get for its capital. The higher the number, the better the return.

To compute the ratio, take the pro forma net income (same one used in the EPS figure mentioned above) and divide it by the invested capital. Invested capital can be estimated by adding together the stockholders equity, the total long and short term debt and accounts payable, and then subtracting accounts receivable and cash (all of these numbers can be found on the company's latest quarterly balance sheet). This ratio is much more useful when comparing it to other companies being valued.

Return on Assets (ROA)

Similar to ROIC, ROA, expressed as a percent, measures the company's ability to make money from its assets. To measure the ROA, take the pro forma net income divided by the total assets. However, because of very common irregularities in balance sheets (due to things like Goodwill, write-offs, discontinuations, etc.) this ratio is not always



a good indicator of the company's potential. If the ratio is higher or lower than expected, one should look closely at the assets to see what could be over or understating the figure.

Price to Sales (P/S)

This figure is useful because it compares the current stock price to the annual sales. In other words, it describes how much the stock costs per dollar of sales earned.

Market Cap

Market cap, which is short for market capitalization, is the value of all of the company's stock. To measure it, multiply the current stock price by the fully diluted shares outstanding. The market cap is only the value of the stock. To get a more complete picture, look at the enterprise value.

Enterprise Value (EV)

Enterprise value is equal to the total value of the company, as it is trading for on the stock market. To compute it, add the market cap (see above) and the total net debt of the company. The total net debt is equal to total long and short term debt plus accounts payable, minus accounts receivable, minus cash. The enterprise value is the best approximation of what a company is worth at any point in time because it takes into account the actual stock price instead of balance sheet prices. When analysts say that a company is a "billion dollar" company, they are often referring to its total enterprise value. Enterprise value fluctuates rapidly based on stock price changes.

EV to Sales

This ratio measures the total company value as compared to its annual sales. A high ratio means that the company's value is much more than its sales. To compute it, divide the EV by the net sales for the last four quarters. This ratio is especially useful when valuing companies that do not have earnings, or that are going through unusually rough times. For example, if a company is facing restructuring and it is currently losing money, then the P/E ratio would be irrelevant. However, by applying an EV to Sales ratio, one could compute what that company could trade for when its restructuring is over and its earnings are back to normal.

EBITDA

EBITDA stands for earnings before interest, taxes, depreciation and amortization. It is one of the best measures of a company's cash flow and is used for valuing both public and private companies. To compute EBITDA, use a company's income statement, take the net income and then add back interest, taxes, depreciation, amortization and any other non-cash or one-time charges. This results in a number that approximates how much cash the company is producing. EBITDA is a very popular figure because it can easily be compared across companies, even if not all of the companies are profit.

EV to EBITDA

This is perhaps one of the best measurements of whether or not a company is cheap or expensive.^[7] To compute, divide the EV by EBITDA (see above for calculations). The higher the number, the more expensive the company is. However, more expensive companies are often valued higher because they are growing faster or because they are a higher quality company. With that said, the best way to use EV/EBITDA is to compare it to that of other similar companies.

Approximate valuation approaches

Average growth approximation

Assuming that two stocks have the same earnings growth, the one with a lower P/E is a better value. The P/E method is perhaps the most commonly used valuation method in the stock brokerage industry.^{[8][9]} By using comparison firms, a target price/earnings (or P/E) ratio is selected for the company, and then the future earnings of the company are estimated. The valuation's fair price is simply estimated earnings times target P/E. This model is



essentially the same model as Gordon's model, if $k-g$ is estimated as the dividend payout ratio (D/E) divided by the target P/E ratio.

IV.CONCLUSION

Prime brokerage is the generic term for a bundled package of services offered by investment banks, wealth management firms, and securities dealers to hedge funds which need the ability to borrow securities and cash in order to be able to invest on a netted basis and achieve an absolute return. The prime broker provides a centralized securities clearing facility for the hedge fund so the hedge fund's collateral requirements are netted across all deals handled by the prime broker. These two features are advantageous to their clients.

The prime broker benefits by earning fees ("spreads") on financing the client's margined long and short cash and security positions, and by charging, in some cases, fees for clearing and other services. It also earns money by rehypothecating the margined portfolios of the hedge funds currently serviced and charging interest on those borrowing securities and other investments.^[1]

Services

Each client in the market of a prime broker will have certain technological needs related to the management of its portfolio. These can be as simple as daily statements or as complicated as real-time portfolio reporting, and the client must work closely with the prime broker to ensure that its needs are met. Certain prime brokers offer more specialized services to certain clients.

For example, a prime broker may also be in the business of leasing office space to hedge funds, as well as including on-site services as part of the arrangement. Risk management and consulting services may be among these, especially if the hedge fund has just started operations.

The following services are typically bundled into the Prime Brokerage package:

- Global custody (including clearing, custody, and asset servicing)
- Securities lending
- Financing (to facilitate leverage of client assets)
- Customized technology (provide hedge fund managers with portfolio reporting needed to effectively manage money)
- Operational support (prime brokers act as a hedge fund's primary operations contact with all other broker dealers)

In addition, certain prime brokers provide additional "value-added" services, which may include some or all of the following:

- Capital Introduction – A process whereby the prime broker attempts to introduce its hedge fund clients to qualified hedge fund investors who have an interest in exploring new opportunities to make hedge fund investments.
- Office Space Leasing and Servicing – Certain prime brokers lease commercial real estate, and then sublease blocks of space to hedge fund tenants. These prime brokers typically provide a suite of on-site services for clients who utilize their space. This is typically called a "hedge fund hotel".
- Risk Management Advisory Services – The provision of risk analytic technology, sometimes supplemented by consulting by senior risk professionals.
- Consulting Services – A range of consulting / advisory services, typically provided to "start-up" hedge funds, and focused on issues associated with regulatory establishment requirements in the jurisdiction where the hedge fund manager will be resident, as well as in the jurisdiction(s) where the fund itself will be domiciled.



The basic services offered by a prime broker give a money manager the ability to trade with multiple brokerage houses while maintaining, in a centralized master account at their prime broker, all of the hedge fund's cash and securities. Additionally, the prime broker offers stock loan services, portfolio reporting, consolidated cash management and other services. Fundamentally, the advent of the prime broker freed the money manager from the more time consuming and expensive aspects of running a fund. These services worked because they also allowed the money manager to maintain relationships with multiple brokerage houses for IPO allocations, research, best execution, conference access and other products.

The concept and term "prime brokerage" is generally attributed to the U.S. broker-dealer Furman Selz in the late 1970s. However, the first hedge fund operation is attributed to Alfred Winslow Jones in 1949. In the pre-prime brokerage marketplace, portfolio management was a significant challenge; money managers had to keep track of all of their own trades, consolidate their positions and calculate their performance regardless of which brokerage firms executed those trades or maintained those positions. The concept was immediately seen to be successful, and was quickly copied by the dominant bulge bracket brokerage firms such as Morgan Stanley, Bear Stearns, Merrill Lynch, Credit Suisse, Citigroup, and Goldman Sachs. At this nascent stage, hedge funds were much smaller than they are today and were mostly U.S. domestic long/short equity funds. The first non-U.S. prime brokerage business was created by Merrill Lynch's London office in the late 1980s. After the financial crisis of 2007–2008, new entrants came to the market with custody-based prime brokerage offerings.^[2]

1980s to 2000s

Through the 1980s and 1990s, prime brokerage was largely an equities-based product, although various prime brokers did supplement their core equities capabilities with basic bond clearing and custody. In addition, prime brokers supplemented their operational function by providing portfolio reporting; initially by messenger, then by fax and today over the web. Over the years, prime brokers have expanded their product and service offerings to include some or all of the full range of fixed income and derivative products, as well as foreign exchange and futures products.

As hedge funds proliferated globally through the 1990s and the 2000s, prime brokerage became an increasingly competitive field and an important contributor to the overall profitability of the investment banking business. As of 2006, the most successful investment banks each report over US\$2 billion in annual revenue directly attributed to their prime brokerage operations (source: 2006 annual reports of Morgan Stanley and Goldman Sachs).

Financial crisis of 2007–08

The financial crisis of 2007–2008 brought substantial change to the marketplace for prime brokerage services, as numerous brokers and banks restructured, and customers, worried about their credit risk to their prime brokers, sought to diversify their counter-party exposure away from many of their historic sole or dual prime broker relationships.

Restructuring transactions in 2008 included the absorption of Bear Stearns into JP Morgan, the acquisition of the assets of Lehman Brothers in the US by Barclays, the acquisition of Merrill Lynch by Bank of America, and the acquisition of certain Lehman Brothers assets in Europe and Asia by Nomura. Counter-party diversification saw the largest flows of client assets out of Morgan Stanley and Goldman Sachs (the two firms who had historically had the largest share of the business, and therefore had the most exposure to the diversification process), and into firms which were perceived, at the time, to be the most creditworthy. The banks which captured these flows to the greatest degree were Credit Suisse, JP Morgan, and Deutsche Bank. During these market changes, HSBC launched a prime brokerage business in 2009 called "HSBC Prime Services", which built its prime brokerage platform out of its custody business.

Counterparty risks

The prime brokerage landscape has dramatically changed since the collapse of Lehman Brothers in September 2008. Hedge funds who received margin financing from Lehman Brothers could not withdraw their collateral when



Lehman filed for Chapter 11 bankruptcy protection due to a lack of asset protection rules (such as 15c3 in the United States) in the United Kingdom. This was one of many factors that led to the massive deleveraging of capital markets during the financial crisis of 2007–2008.

Upon Lehman's collapse, investors realized that no prime broker was too big to fail and spread their counterparty risk across several prime brokerages, especially those with strong capital reserves. This trend towards multi-prime brokerage is also not without its problems. From an operational standpoint, it is adding some complexity and hedge funds have to invest in technologies and extra resources to manage the different relationships. Also, from the investors' point of view, the multi-prime brokerage is adding some complexity to the due diligence as it becomes very complicated to perform proper assets reconciliation between the fund's administrator and its counterparties.^[3]

Fees

Prime brokers do not charge a fee for the bundled package of services they provide to hedge funds. Rather, revenues are typically derived from three sources: spreads on financing (including stock loan), trading commissions and fees for the settlement of transactions done away from the prime broker. The financing and lending spreads, which are charged in basis points on the value of client loans (debit balances), client deposits (credit balances), client short sales (short balances), and synthetic financing products such as swaps and CFDs (Contract for difference), make up the vast majority of prime brokerage revenue.

Therefore, clients who undertake substantial short selling or leverage represent more lucrative opportunity than clients who do less short selling and/or utilize minimal leverage. Clients whose market activities are principally fixed income-oriented will generally produce less prime brokerage revenue, but may still present significant economic opportunity in the repo, foreign exchange (fx), futures, and flow business areas of the investment bank.

Risks

Prime Brokers facilitate hedge fund leverage, primarily through loans secured by the long positions of their clients. In this regard, the Prime Broker is exposed to the risk of loss in the event that the value of collateral held as security declines below the loan value, and the client is unable to repay the deficit. Other forms of risk inherent in Prime Brokerage include operational risk and reputational risk.

Large prime brokerage firms today typically monitor the risk within client portfolios through house-designed "risk based" margin methodologies that consider the worst case loss of a portfolio based on liquidity, concentration, ownership, macroeconomic, investing strategies, and other risks of the portfolio. These risk scenarios usually involve a defined set of stress test scenarios, rules allowing risk offsets between the theoretical profit and losses (P&Ls) of these stress test scenarios for products of a common underlier, and offsets between groups of theoretical P&Ls based on correlations.

Liquidity penalties may be established using a rule-of-thumb for days-to-liquidate that 10% of the daily trading volume can be liquidated without overdue influence on the price. Therefore, a position 1x the daily trading volume would be assumed to take 10 business days to liquidate.

Stress testing entails running a series of what-if scenarios that identify the theoretical profits or losses for each position due to adverse market events.

Examples of stress test scenarios include:

- Flight to Quality
- 3%–15% up or down price movements used in Portfolio margin[19,20]



REFERENCES

1. "Compare brokers: what is the best broker?". Retrieved April 17, 2016.
2. ^ komsan, seksun. "Understanding Professional Designations". seksun_komsan.org.co.th. Financial Industry Regulatory Authority. Retrieved October 9, 2020.
3. ^ De la Vega, Joseph: Confusión de confusiones (1688): Portions Descriptive of the Amsterdam Stock Exchange. Selected and translated by Hermann Kellenbenz. (Cambridge, MA: Baker Library, Harvard Graduate School of Business Administration, 1957)
4. ^ Goetzmann, William N. (2017). Money Changes Everything: How Finance Made Civilization Possible. Princeton University Press. p. 17. ISBN 9780691178370.
5. ^ Piola Caselli, Fausto (2015). Government Debts and Financial Markets in Europe. Routledge. p. 24. ISBN 9781317314233.
6. ^ Beattie, Andrew (December 13, 2017). "What Was the First Company to Issue Stock?". Investopedia. Retrieved October 9, 2020.
7. ^ Rolland, Gail (2010). Market Players: A Guide to the Institutions in Today's Financial Markets. John Wiley & Sons. p. 277. ISBN 9780470665558.
8. ^ "Wall Street and the Stock Exchanges: Historical Resources". Library of Congress. June 12, 2018. Retrieved October 9, 2020.
9. ^ Goh, Jassmyn (June 10, 2020). "RG146 CPD no longer required". moneymanagement.com.au. Retrieved October 9, 2020.
10. ^ "Financial advice". Australian Securities and Investments Commission. Retrieved October 9, 2020.
11. ^ Yeates, Clancy (September 30, 2019). "CommSec profits fall 20.8 per cent amid market turbulence". The Sydney Morning Herald. Retrieved October 9, 2020.
12. ^ "CSI Career Map - CSI Global Education". Canadian Securities Institute.
13. ^ "Continuing Education/Approval Category Chart" (PDF). Investment Industry Regulatory Organization of Canada.
14. ^ "Continuing Education & Member Resources". Investment Industry Regulatory Organization of Canada.
15. ^ Yiu, Enoch (December 1, 2012). "Hong Kong puts financial professionals to the test". South China Morning Post. Retrieved October 9, 2020.
16. ^ "SEBI prescribes norms for investment advisors". Business Line. September 24, 2020. Retrieved October 9, 2020.
17. ^ Hamilton, Peter (October 15, 2019). "So you want to invest in the stock market: what will it cost?". The Irish Times. Retrieved October 9, 2020.
18. ^ "For Individuals Seeking to Complete the Level 5 qualification". Skills Organisation.
19. ^ "SAIS Gazette Report" (PDF).
20. ^ South African Institute of Stockbrokers, sais.co.za



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

| Mobile No: +91-9940572462 | Whatsapp: +91-9940572462 | ijarasem@gmail.com |

www.ijarasem.com