VOLATILITY IN INDIAN STOCK MARKET – A STUDY OF POST AND PRE RECESSION PERIOD

Dr. K. V. RAMANATHAN
Associate Professor, Dayananda Sagar Business School, Bangalore
E-Mail: kvr08@rediffmail.com

Mr. M. MUTHU GOPALAKRISNAN
Associate Professor, Acharya Business School, Bangalore

ABSTRACT

Indian stock markets have high fluctuating stock prices. The share price fluctuations are always reported in the news and these fluctuations are caused by various factors. The most stock market is among the most volatile financial institutions in business, and it’s the volatility that tends to be the biggest problem with stock market. Volatility in equity market has become a matter of mutual concern in recent years for investors, regulators and brokers. Understanding “Historical volatility” is important for many investors as well as traders. For investors, this term is important, because it helps in estimating or calculating their risk. Traders, generally use “Historical volatility” to know how volatile a stock or an index will be in the future. The present paper is an attempt to examine the volatility of sectoral indices listed in Nifty as on March 28, 2013 using daily opening price, closing price, high and low prices of 31 selected companies. The sample period for the study is 2005-2008(1-4-2005 to 31-3-2008) and 2009-2012(1-4-2009 to 30-3-2012). The sample period chosen helps to identify volatility relationship during Pre Recession and Post Recession period. The data have been analyzed by working out Yang-Zhang Estimator and the calculation carried in excel.

KEYWORDS:

INTRODUCTION

The ups and downs of the financial markets are always in the news. Wide price fluctuations are a daily occurrence on India's stock markets as investors react to economic, business, and political events. “Volatility” is an important term used in the stock markets and by many market professionals. Many investors use this term to manage their risk. Analysis of stock market for the evaluation of the risk has assumed greater significance in India after liberalization. Usefulness of efficient stock market in mobilizing resources is well-known. Volatility in the prices of stock adversely affects individual earnings and health of the economy.

Understanding “Historical volatility” is important for many investors as well as traders. For investors, this term is important, because it helps in estimating or calculating their risk. Traders, generally use “Historical volatility” to know how volatile a stock or an index will be in the future.

Volatility in equity market has become a matter of mutual concern in recent years for investors, regulators and brokers. Stock return volatility hinders economic performance through consumer spending. Stock Return Volatility may also affect business investment spending. Further the extreme volatility could disrupt the smooth functioning of the financial system and lead to structural or regulatory changes.

From an investor’s view point, it would be immensely useful if the future stock return volatility could be predicted from the past data. Such forecasting capabilities are useful for pricing of sophisticated financial instruments such as futures and options. Here in the present study an attempt has been made to understand the nature of volatility in the Indian Stock Market from the past daily stock return data of NSE.

CAUSES FOR STOCK PRICE VOLATILITY

Investors are drawn to the stock market to make money, which is done by selling stock at a price higher than what it was originally bought for. Since stock prices are largely connected to our moneymaking goals, it helps to understand their inner workings. Stock prices are established in the marketplace, but what exactly causes them to behave the way they do? Here are several factors that influence their movements.

- LATEST INFORMATION ON STOCK PRICES

Information is a crucial factor in the movement of stock prices as it is what the market uses to put a value on a stock at a certain price level. These are usually based on all data that the public has been made aware of. As the information is updated, the market adjusts the prices up or down depending on the way the market interprets that the information will affect the company’s future earnings ability.
• **Inflation and Stock Prices**

Inflation is another influential factor that affects the motion of stock prices. History indicates that there had been a strong inverse correlation between low inflation and valuations. This is because low inflation propels high multiples, and high inflation drives low multiples.

• **Economic Strength of Market and Peers**

Company stocks have the propensity to track with the market, as well as with their sector or industry age group. A lot of leading investment firms put significant importance on overall market and sector movements as major factors involved in the movement of prices. An example would be when a negative outlook for one stock affects other similar ones due to mere association with each other, dragging the demand for the whole sector along the way.

• **Psychological Issues on Stock Prices**

These prices are also greatly influenced by human behavior. Greed is one trait that can cause stock prices to increase more than it should. New information can elicit a frantic market, may cause an increase in prices, and may make investors disregard rational valuation, preferring instead to buy the stock to ensure they are not left behind. Fear can cause significant decreases in stock prices when investors rush for the exit in an effort to avoid losses. Though listed at number 4, this factor is probably the most important factor in determining the volatility of the market at any given time.

• **Supply and Demand**

Stocks that trade smaller volumes of shares do not have the liquidity of the more popular stocks. So, prices for these smaller ones are prone to fluctuations because of supply and demand. When a large shareholder wants to sell a large quantity of shares into a market with weak liquidity, that shareholder can considerably move share price.

• **Uncertainty**

The movement of stock prices is also affected by a vague future. Prices do tend to bounce around a bit due to market apprehension and the unpredictable future. Because of the ambiguity of a company's future, volatility in stock prices is possible even without new information.

**Review of Literature**

**Mohan, G. (2002)** investigated the change in volatility in the Indian stock market due to the introduction of future trading using daily closing prices of Nifty and weekly closing prices of Satyam Computers Ltd. The individual stocks seem to be slightly more volatile and their volatility have become less and less dependent on past volatility and more dependent upon news in the current period. The average long-term volatility has decreased an index level.

**Padhi, P. (2006)** explained the stock market volatility at the individual script.
level and at the aggregate indices level using ARCH, GARCH and ARCH in Mean model and it was based on daily data for the time period from January 1990 to November 2004. The analysis reveals the same trend of volatility in the case of aggregate indices and five different sectors such as electrical, machinery, mining, non-metallic and power plant sector. The GARCH (1, 1) model is persistent for all the five aggregate indices and individual company.

Dr. Mrs. Punithavathy Pandian (2009) studied the issues of return and volatility that had become increasingly important in recent times to the Indian investors, regulators, brokers, policy makers, dealers and researchers with the increase in the FIIs investment. Hence the paper was an attempt to analyses return and volatility.

Kirti Arakekar and Rinku Jain (2011): In this article, a snapshot of the market performance during 2007-2010 is presented and compared with the major overseas markets. The study considered the market performance of different sectors i.e. Information Technology and Banking with respect to the market. Further they analyzed that which sector is impacted most during the recession period. Finally, interpreted that which sector performing good and bad at Global recession period and which sector has performed well after the recession or can say there is no impact of recession for that particular sector.

Dr. G. Sakthivel- The aim of the paper was to present a comprehensive view of the current global recession of Indian stock market through an analysis of various impact of India stock market that has contributed to it. A recession is also preceded by several quarters of slowing down. The economy and the stock market are closely related. The stock markets reflect the buoyancy of the economy. The Indian stock markets also crashed due to a slowdown in the US economy.

Arindam Mandal and Prasun Bhattacharje studied the impact of the outbreak of the Great Recession of 2007 on the behaviour of the Indian stock market. The SENSEX index of the Bombay Stock Exchange is analyzed for the prerecession period of January 2002 – November 2007 and the post recession outbreak period of December 2007 – July 2010. Substantial increase in SENSEX return volatility observed during the post-recession outbreak period, whereas no substantial difference in returns between two periods is found. Also strong co-movements in returns and volatility are observed between the SENSEX and other major stock indexes during the post-recession period. Our results establish the dominance of global factors in influencing Indian stock market behavior during periods of economic turmoil.

**METHODOLOGY**

**OBJECTIVES OF THE STUDY**

The study is undertaken with the following objectives in view:
The study of volatility in the Indian Stock Market during Pre Recession and Post Recession period.

To study the factors responsible for volatility of stocks.

To study the overview of Indian stock market and its price movements.

**METHOD OF VOLATILITY ESTIMATION**

There are broadly five approaches for estimating and forecasting historical volatility. They are:

- Close to close Estimator
- Parkinson Estimator
- Garman-Klass Estimator
- Rogers-Satchell Estimator
- Yang-Zhang Estimator

**SAMPLE PERIOD**

The sample period for the study is 2005-2008 (1-4-2005 to 31-3-2008) and 2009-2012 (1-4-2009 to 30-3-2012). The sample period chosen helps to identify volatility relationship during Pre Recession and Post Recession period.

The sectoral indices sample taken for study is 31 companies which are listed in Nifty as on March 28, 2013.

**SAMPLE TECHNIQUE**

In the study the samples are selected through judgemental sampling. The major performing sectoral indices are selected as samples and are considered to be more volatile. The sectoral indices taken for study are companies which are listed in Nifty. Hence these sectors have been selected to know their price movement and fluctuations.

**SAMPLE DESCRIPTION**

The sectoral indices comprising 31 companies taken for study are companies which are listed in Nifty as on March 28, 2013, the sector such as Bank, FMCG, Energy, IT, Pharma, Auto sectors are considered. Each sector comprises of various companies which are as follows.

**TABLE 1 - LIST OF COMPANIES**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>SECTOR</th>
<th>COMPANIES</th>
</tr>
</thead>
</table>
| 1      | BANK   | 1.1 Axis Bank  
|        |        | 1.2 Bank of Baroda  
|        |        | 1.3 HDFC Bank  
|        |        | 1.4 ICICI Bank  
|        |        | 1.5 IndusInd Bank  
|        |        | 1.6 Kotak Mahindra Bank  
|        |        | 1.7 PNB  
|        |        | 1.8 SBI  |
| 2      | FMCG   | 2.1 HUL  
|        |        | 2.2 ITC  |
| 3      | ENERGY | 3.1 BPCL  
|        |        | 3.2 Cairn India  
|        |        | 3.3 GAIL  
|        |        | 3.4 NTPC  |
Basicallv, the data used in this study are secondary in nature. The historical data of companies are collected from the Web Site of NSE and stockviz.biz. Past 6 year (1-4-2005 to 31-3-2008 and 1-4-2009 to 30-3-2012) daily opening price, closing price, high and low prices of stock of all selected NSE Nifty listed companies have been used in this study.

**TECHNIQUES USED FOR DATA ANALYSIS**

Basically whole data analysis has been performed using Microsoft Office Excel 2007. The Following formula is used to calculate the historical volatility.

**Yang-Zhang (OHLC):** Yang-Zhang is the most powerful volatility estimator which has minimum estimation error. It is a weighted average of Rogers-Satchell, the close-open volatility and the open-close volatility. It is up to a maximum of 14 times as efficient (for 2 days of data) as the close to close estimate.

\[
\sigma_n^2 = \sigma_o^2 + k\sigma_c^2 + (1-k)\sigma_{rs}^2
\]

Where: \( k = \frac{0.34}{(1 + (n+1)/(n-1))} \)

\[
\sigma_{rs}^2 = \frac{1}{n-1} \sum_{i=1}^{n} \left( \ln \frac{\ell_i}{\ell_{i-1}} \right) \left( \ln \frac{\ell_i}{\ell_{i-1}} \right) + \left( \ln \frac{\ell_i}{\ell_{i-1}} \right) \left( \ln \frac{\ell_i}{\ell_{i-1}} \right)
\]

\[
\sigma_o^2 = \frac{1}{n-1} \sum_{i=1}^{n} \left( \ln \frac{\ell_i}{\ell_{i-1}} \right)^2
\]

\[
\sigma_c^2 = \frac{1}{n-1} \sum_{i=1}^{n} \left( \ln \frac{c_i}{c_{i-1}} \right)^2
\]

Where \( \ell_i \) = Low Price
\[ h_i = \text{High Price} \]
\[ c_i = \text{Closing Price} \]
\[ o_i = \text{Opening Price} \]

Why Yang-Zhang Estimator

- Specifically designed for minimum estimation error.
- Can handle both drifts and jumps
- Makes most efficient use of available data.
- It is the sum of the overnight volatility (close to open volatility) and a weighted average of the Rogers-Satchell volatility and the open to close volatility.
- It is up to a maximum of 14 times as efficient as the close to close estimate.

**EMPIRICAL RESULTS**

The below table shows the volatility during Pre Recession and Post Recession period of 31 companies using Yang-Zhang Estimator.

<table>
<thead>
<tr>
<th>S. No</th>
<th>SECTOR</th>
<th>COMPANY</th>
<th>PRE RECESSION</th>
<th>POST RECESSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bank</td>
<td>1.1 ICICI Bank</td>
<td>0.531538</td>
<td>0.376935</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2 Kotak Mahindra Bank</td>
<td>0.869552</td>
<td>0.466165</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3 IndusInd Bank</td>
<td>1.109509</td>
<td>0.690605</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4 State Bank of India</td>
<td>0.415576</td>
<td>0.285514</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5 Punjab National Bank</td>
<td>0.517061</td>
<td>0.354957</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.6 HDFC Bank</td>
<td>0.446131</td>
<td>0.244768</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.7 AXIS Bank</td>
<td>0.71996</td>
<td>0.40825</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.8 Bank of Baroda</td>
<td>0.74463</td>
<td>0.428796</td>
</tr>
<tr>
<td>2</td>
<td>FMCG</td>
<td>2.1 Hindustal Uni-Lever</td>
<td>0.404209</td>
<td>0.230244</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2 Indian Tobacco Company</td>
<td>0.398207</td>
<td>0.240421</td>
</tr>
<tr>
<td>3</td>
<td>IT</td>
<td>3.1 INFOSYS</td>
<td>0.282932</td>
<td>0.186729</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2 Tata Consultancy Services</td>
<td>0.336998</td>
<td>0.294616</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.3 Hindustan Computers Ltd</td>
<td>0.684546</td>
<td>0.487298</td>
</tr>
<tr>
<td>4</td>
<td>Pharma</td>
<td>4.1 Dr Reddy Lab</td>
<td>0.399231</td>
<td>0.281478</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2 Lupin</td>
<td>0.479275</td>
<td>0.287494</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.3 Sun Pharma</td>
<td>0.505474</td>
<td>0.332605</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.4 Ranbaxy</td>
<td>0.436424</td>
<td>0.408625</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.5 Cipla</td>
<td>0.479275</td>
<td>0.287494</td>
</tr>
<tr>
<td>5</td>
<td>Energy</td>
<td>5.1 Bharat Petroleum Corporation Limited</td>
<td>0.594207</td>
<td>0.402829</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.2 CAIRN India Limited</td>
<td>0.322811</td>
<td>0.317384</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.3 Gas Authority of India Limited</td>
<td>0.543671</td>
<td>0.319627</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.4 National Thermal Power Corporation</td>
<td>0.415536</td>
<td>0.218839</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.5 Oil Natural Gas Corporation</td>
<td>0.448093</td>
<td>0.309751</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.6 Power Grid</td>
<td>0.259179</td>
<td>0.244115</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.7 Reliance Industries</td>
<td>0.311063</td>
<td>0.256178</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.8 Tata Power</td>
<td>0.58902</td>
<td>0.332991</td>
</tr>
</tbody>
</table>
Volatility In Indian Stock Market – A Study Of Post And Pre Recession Period
- Dr. K. V. Ramanathan and Mr. M. Muthu Gopalakrishnan

INTERPRETATION

**ICICI BANK:** By comparing the volatility estimates between ICICI Bank Pre and Post Recession period, .53 and .38 per cent respectively; volatility of stocks fluctuating in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

**KOTAK BANK:** The volatility of Pre and Post Recession period are .87 and .47 per cent respectively. The price fluctuations of both was similar most of the times but at certain period of time was highly fluctuating. The pre recession period was highly volatile as compared to Post recession period.

**INDUSIND BANK:** Volatility during Pre and Post Recession period are 1.11 and .69 per cent respectively. This stock remains highly volatile most of the times where in pre recession period volatility was very high as compared to post recession period.

**SBI:** The volatility of Pre and Post Recession period are .41 and .29 per cent respectively. Volatility of stocks remained fairly consistent in both periods but at certain period of time the price was highly fluctuating. The pre recession period was relatively highly volatile as compared to Post recession period.

**PNB:** Pre and Post Recession volatility are .51 and .35 per cent respectively. The price fluctuations of both was similar most of the times but at certain period of time was highly fluctuating. The pre recession period was relatively highly volatile as compared to Post recession period.

**HDFC BANK** Comparing post-recession with pre recession the volatility has gradually reducing after recession, hence Pre recession period had a higher upward or downward movement in stock prices compared to Post recession.

**AXIS BANK:** Volatility during Pre and Post Recession period are .72 and .41 per cent respectively. This stock remains highly volatile most of the times where in pre recession period volatility was high as compared to post recession period.

**BANK OF BARODA:** Volatility during Pre and Post Recession period are .74 and .43 per cent respectively. This stock remains highly volatile most of the times where in pre recession period volatility was high as compared to post recession period.

**HUL:** Comparing post-recession with pre recession the volatility has
gradually reducing from .40 to .23 after recession, hence Pre recession period had a higher upward or downward movement in stock prices compared to Post recession.

**ITC:** By comparing the volatility estimates between Pre and Post Recession period, .40 and .24 per cent respectively; volatility of stocks remained fairly consistent in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

**INFOSYS:** Volatility during Pre and Post Recession period are .28 and .19 per cent respectively. The price fluctuations of both was similar most of the times but at certain period of time was fluctuating high.

**TCS:** The volatility estimates between Pre and Post Recession period, .34 and .29 per cent respectively; volatility of stocks remained fairly consistent in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

**HCL:** Comparing Volatility during Pre and Post Recession period .68 and .49 per cent respectively the stock remains highly volatile most of the times where in pre recession period volatility was high as compared to post recession period.

**Dr. REDDY:** Volatility during Pre and Post Recession period are .40 and .28 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were similar.

**LUPIN:** Volatility during Pre and Post Recession period are .48 and .29 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were similar.

**SUN PHARMA** Comparing volatility during Pre and Post Recession period of .51 and .33 per cent respectively, the price fluctuations of both were fluctuating most of the times but at certain period of time was similar.

**RANBAXY:** By comparing the volatility estimates between Pre and Post Recession period, .44 and .40 per cent respectively; volatility of stocks remained fairly consistent in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

**CIPLA:** Volatility during Pre and Post Recession period are .48 and .29 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were similar.

**BPCL:** Volatility during Pre and Post Recession period are .59 and .40 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were relatively highly fluctuating.
CAIRN: By comparing the volatility estimates between Pre and Post Recession period, .32 and .32 per cent respectively; volatility of stocks remained fairly consistent in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

GAIL: Volatility during Pre and Post Recession period are .54 and .31 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were relatively highly fluctuating.

ONGC: Volatility during Pre and Post Recession period are .45 and .30 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time the prices were similarly fluctuating.

POWERGRID: By comparing the volatility estimates between Pre and Post Recession period, .26 and .24 per cent respectively; volatility of stocks remained fairly consistent in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

RELIANCE: By comparing the volatility estimates between Pre and Post Recession period, .31 and .26 per cent respectively; volatility of stocks remained fairly consistent in both period. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar.

TATAPOWER: Volatility during Pre and Post Recession period are .59 and .33 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were relatively highly fluctuating.

BAJAJ-AUTO: Volatility in the year 2009-12 was .33. The volatility of pre recession was not calculated because the stock was traded during 2008 only. The volatility of the stock is comparatively less volatile.

HEROMOTOCO: Volatility during Pre and Post Recession period are .45 and .33 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time the prices were similarly fluctuating.

M&M: Volatility during Pre and Post Recession period are .54 and .44 per cent respectively. The price fluctuations of both were fluctuating most of the times but at certain period of time were relatively highly fluctuating.

MARUTI: Volatility during Pre and Post Recession period are .48 and .33 per cent respectively. The price
fluctuations of both were similarly fluctuating most of the times but at certain period of time were relatively highly fluctuating.

**TATAMOTOR: Volatility during Pre and Post Recession period are .46 and .73 per cent respectively. This stock remains highly volatile most of the times where in post recession period volatility was high as compared to pre recession period.**

**FINDINGS**

By comparing the volatility of Pre and Post Recession period the volatility of stocks remained fairly consistent in both periods. This does not necessarily mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar. Mostly Energy sector indices were less volatile. The stocks which remained quite consistent are as follows.

On the other hand, by comparing post-recession with pre recession the volatility has gradually reducing after recession in most of the stocks, one can conclude that Pre recession period had a higher upward or downward movement in stock prices compared to Post recession. The volatility of stock during pre recession was moderately high as compared to post recession such as HDFC, ICICI, SBI, M&M, HUL, TCS, INFOSYS, CIPLA, BPCL, ONGC, and TATA POWERS.

The study shows that the banking sector stocks were highly volatile during the pre recession period as compared to post recession period. Some of the stocks which were highly volatile were INDUSIND, KOTAK, AXIS, and BANK OF BARODA.

The only stock which is more volatile during the post recession period was TATA MOTORS of .73 per cent were pre recession period volatility was only .46 per cent. Post recession period had a higher upward or downward movement in stock prices compared to Pre recession.

**CONCLUSION**

The study examines the hot issue of volatility in the Indian stock markets. There are number of factors which have an influence on the price movements. The volatility depends on the internal and external factors. Some of them are controllable and others are non controllable. The study shows that the volatility estimates compared between Pre and Post Recession period, Pre Recession seems to be more volatile where in Post Recession the volatility of stocks were gradually decreasing in most of the companies selected. CAIRN, POWERGRID, RANBAXY, RELIANCE have been comparatively stable over years than other securities taken in the study. This does not necessary mean that the stocks behaved similarly, it means that in either case, the stock's probability of upward or downward movement are similar. The banking sector was more volatile during the pre recession period which in post recession period gradually reduced. By comparing sample companies post-recession with pre recession the volatility has gradually reduced after
recession for most of the companies, hence Pre recession period had a higher upward or downward movement in stock prices compared to Post recession which may be due to various factors discussed in the study and due to even other undetermined internal and external factors by which the volatility during Pre Recession would have been more.

BIBLIOGRAPHY

ARTICLES

Dr. Mrs. Punithavathy Pandian and Dr. Sr. Queensly Jeyanthi (2009) “Stock Market Volatility in Indian Stock Exchanges” pg 1-3.


WEBSITES


