# A Comparative Analysis* of Pakistan's External Debt Performance in Two Eras Democratic Era (FY1989-FY1999) & Military Era (FY1999-FY2007)

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***Abstract:*** *This research paper gives an in depth review of Pakistan's debt performance during Fiscal Years 1989 to 2007. The objective of the research was to study debt situation of Pakistan and develop a statistical framework using Binary Recursive Tree to analyze and compare the debt management performance of Pakistan during two eras namely: The Democratic Era (FY1989-FY1999) and Military Rule Era (FY1999-FY2007). The Binary Recursive Tree was used to analyze era wise performance based on the mean values of important debt indicators compared to benchmark values. The outcomes of the BRT analysis show that the Military Era had performed better than the Democratic Era, but as mentioned there are several external factors, which affect the debt performance of a country. BRT analysis for the Democratic Era showed that the Era as a whole was crisis prone; on the other hand the Military Era comparatively was not crisis prone.*

***Keywords:*** *Debt performance, debt crises, comparative analysis, Binary Recursive Tree*

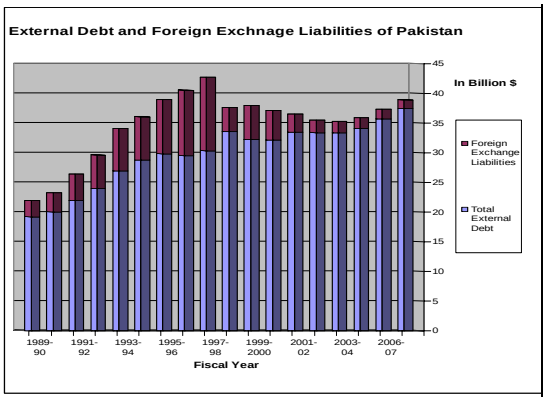
## 1. INTRODUCTION

The total external debt stock foreign is an important indicator of a country's external debt burden. The objective of this paper is to compare the debt performance of the Military and Democratic Era, which together spanned from FY1989 to FY2007. In order to understand and compare, one must look in the past and review Pakistan's debt situation.

In the decade of the 1980s, Pakistan's debt stock more than doubled from US $11.4 billion in 1980-1981 to US $22.35 billion in 1989-1990. The debt burden has long been a very serious problem for Pakistan, but was especially so in the 1990s. The civilian governments not only amassed large amounts of foreign debt, but also used this debt for meeting the current expenditures of government. In 1998, Pakistan was hovering on the brink of default. Its foreign exchange reserves, which were $1.3 billion on the eve of the May nuclear tests, fell to $400 million by mid November 1998. Pakistan's debt situation reached an unsustainable level by 1999 because of the persistence of the current account, fiscal deficits and balance of payment deficits during the 1990s.

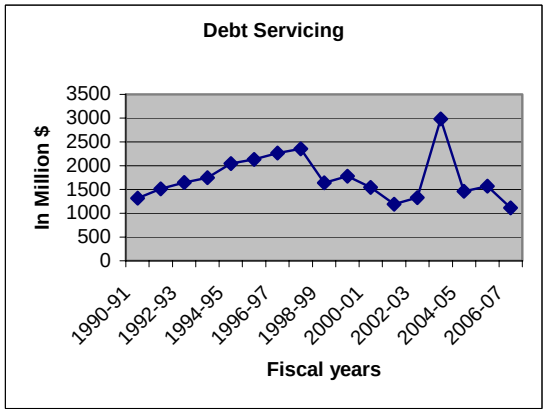
Graph 1 below shows the external debt and foreign exchange liabilities of Pakistan from1988 to date.

The graph shows three trends: The first is for the period between 1988 and 1998, when there is a constant growth in Total External Debt and Foreign Exchange Liabilities. The second trend is for the period between 1999 and 2003. This is only period in the study where External Debt and Foreign Exchange Liabilities have decreased. The third period is from 2003 to date, which again shows an increasing trend in Total External Debt and Foreign Exchange Liabilities.




Graph 1 Source: Different economic surveys of Pakistan

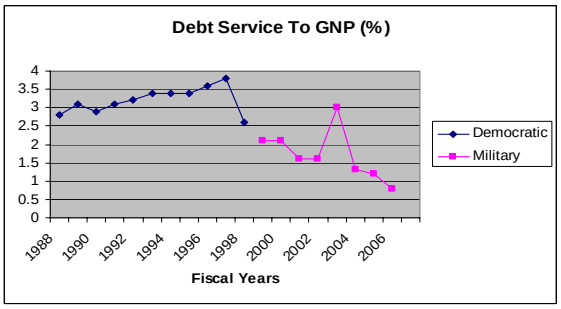
Graph 2 below shows debt servicing for Pakistan for the period falling between 1988 and 2007. The trend has been fairly consistent in the Democratic Era. However, the trend line took a nosedive in the years following 2001 and almost back to original levels in 2003-4 in the Military Era.




Graph 2 Source: Different economic surveys of Pakistan

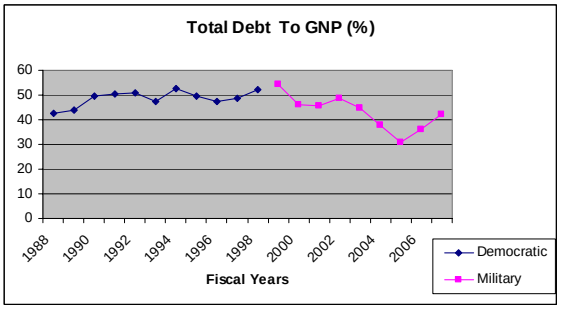
* Using Binary Recursive Tree

Graph 3 below shows debt servicing to GNP (%) for Pakistan for the period falling between FY1988 and FY2007. The trend has been fairly consistent in each of the respective eras. Democratic Era had high Debt Service to GNP (%) with an increasing trend. The Military Era with the exception of a slight upward trend in 2003-04 had a consistent downward trend.




Graph 3 Source: Different economic surveys of Pakistan

Graph 4 below shows total debt to GNP (%) for Pakistan for the period falling between FY1988 and FY2007. The ratio hovered at the same mark till 2001; this is when the trend saw a decrease at the back of strong GNP growth and post 9/11-debt assistance championed by the USA.




Graph 4 Source: Different economic surveys of Pakistan

Since external debt situation caries such heavy reprecussions, External Debt situation has, perhaps, become one of the most if not the most important problem for the countries of the developing world. External Debts on their own have a snowball effect, what worsens the situation is the commonly prevailing corruption in heavily indebted countries.

### 1.1 Objectives of the Study

The objective of the study is to develop a statistical framework using both descriptive and inferential statistics to analyze and compare the debt management of Pakistan during two eras; Democratic Era and Military Rule. The study is also going to look into the causes of Pakistan's Debt Crisis and the temporary breather that Pakistan has been given by massive debt rescheduling/restructuring and refinancing after the events of 9/11, when sanctions were lifted and Pakistan was reconnected financially to the international economy due to its status as a key ally on the "war on terror".

### 1.2 Key Research Questions

1) What is the key cause of Pakistan's Debt Crisis?
2) Has the current military regime performed better in terms of managing debt than the previous democratic era, as indicated by key debt and debt servicing indicators?
3) Has the overall quality of the debt profile improved during the present military rule as compared to the previous democratic era?

### 1.3 Limitations

In addition to time and resource constraints, the research limitations include the fact that the research methodology is based on simple rules of thumb. A rule of thumb is a principle with broad application that is not intended to be strictly accurate or reliable for every situation. It is an easily learned and easily applied procedure for approximately calculating or recalling some value, or for making some determination. Based on this, it would be difficult to ignore the sensitivity of data and the relevant application of rule of thumb on Pakistan's specific data. In essence, the rules of thumb used are determining the said conclusion in a broader sense and may include errors, which are situation specific. Further to this, the rules of thumb may apply accurately to one, both or none of the researched democratic and military eras. It is an underlying assumption of the research that the rules of thumb apply to all data included from both of the researched eras.

The Binary Recursive Tree[1] (BRT) procedure has also a few shortcomings, unlike regression or probit/logit analysis, the individual *marginal* contribution of each variable to the probability of belonging to a class cannot be ascertained. This is because, unlike regression or probit/logit analysis, BRT assigns a single probability to *all* cases belonging to the same node.

## 2. REVIEW OF LITERATURE[2]

Theoretical models and empirical studies have both been done to study sovereign debt crises. The literature on sovereign debt crises falls into four broad categories:

i. theoretical models of sovereign debt and default
ii. empirical studies of the determinants of debt crisis
iii. empirical studies of the predictive power of credit ratings
iv. empirical studies of the determination of sovereign spreads. Most studies focus on a

[1] Method discussed in detail in the methodology section
[2] Portions of this section have been taken from Paolo [1] and Shafi (1985). It is highly recommended that the long report version of the report is read for detailed understanding

particular aspect of debt crises or particular determinants of default.

This literature suggests a number of macroeconomic and other factors that influence the likelihood of sovereign debt servicing difficulties and default.
The theoretical literature highlights a variety of factors that can trigger sovereign default and debt crises. Different researchers have identified several ratios and indicators.

Regarding the definition of a debt crisis, empirical studies use different crisis definitions depending on the specific research question and the information available in the data source used. A priori, there is no single empirical definition of what should constitute a sovereign default or a debt crisis. Several studies have compiled varying answers to the question.

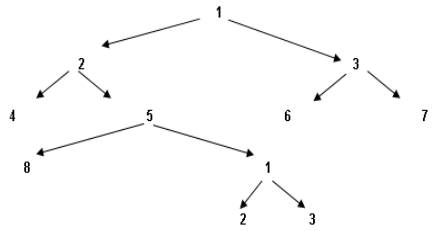
Empirical studies of the determinants of debt crisis are closest in nature to an early warning signal model. Factors influencing the probability of a debt crisis occurring are identified by means of probit/logit regressions or a signal model. Most studies have focused on the debt crisis of the 1980s, but there are also some recent efforts that look at crises occurring in the 1990s[3]. Taken together, measures of solvency such as the debt-to-GDP ratio, and measures of liquidity such as short-term debt over reserves or exports and debt service over reserves or exports, are significant explanatory variables in addition to macroeconomic controls, such as real growth, inflation, exchange rate overvaluation, and the fiscal balance. Reinhart [2] finds that in 84 percent of the cases in her sample, a debt crisis is preceded by a currency crisis. Hence, variables that are well suited for predicting currency crisis should also have some explanatory power in models for sovereign default. Detragiache and Spilimbergo [3] carry out a number of interesting tests. They find that short-term debt, debt service, and reserves enter their model separately and the null of equal coefficients is rejected. Using ratios such as short-term debt over reserves, therefore, impose a restriction that is not supported by the data. They also find that short-term debt is endogenous to the model, as countries find it more and more difficult to borrow long term in the run-up to a debt crisis. While most studies use macroeconomic variables only in levels, Catão and Sutton [3] also include measures of volatility in their model. Their model in-sample predictive power increases markedly when measures of terms of trade volatility, fiscal policy volatility, monetary policy volatility, and exchange rate policy volatility are added to a model containing real GDP growth, debt service over exports, net international reserves over debt, the fiscal balance, the U.S. interest rate, and the real effective exchange rate. Manasse, Roubini, and Schimmelpfenning [4] estimate a logit model of sovereign debt crisis that includes a large set of emerging market economies for the 1970–2002 period; thus, they include the sovereign crises of the last decade in their sample. They identify macroeconomic variables reflecting, both, insolvency, illiquidity and other domestic and external macroeconomic factors that predict a debt crisis episode one year in advance. Their model predicts about three quarters of all crises entries while sending few false alarms.

Taken together, the existing literature suggests several factors that are at the core of an empirical model attempting to predict sovereign default.

While the tree methodology used in this paper has been used in a limited number of economic studies and even applied to the case of currency crises (see Ghosh and Ghosh, [5], and Frankel and Wei [5]), no previous study has used this methodology to assess the determinants of sovereign crises and to predict them. Further to this, no previous studies were found in which mean values for each era was compared to analyze in general, whether an era was prone to crises or not.

## 3. RESEARCH METHODOLOGY[4]

The process is binary because parent nodes (partitions) are always split into exactly two child nodes and recursive because the process can be repeated by treating each child node as a parent, as shown below:




The key elements of a BRT analysis are a set of rules for:

i. splitting each node into two child nodes
ii. deciding when to stop growing the tree
iii. assigning each terminal node to a class outcome (e.g. crisis vs. non-crisis)

To split a node into two child nodes, BRT always asks questions that have a “yes” or “no” answer. In a dataset containing X individuals and Y observed characteristics, BRT considers up to X times Y splits for a total of XY possible splits. The next activity is to rank order each splitting rule on the basis of a quality-of-split criterion. The default criterion, the Gini rule, essentially measures of how well the splitting rule separates the classes contained in the parent node and produces more homogeneous subnodes. Once a “best” split is found for a node, BRT repeats the search process for each child node continuing recursively until further splitting is impossible or stopped.

[3] See for example Detragiache and Spilimbergo [3] for a study including recent episodes

[4] The section is taken from, http://www.salford-systems.com/, Paolo Manasse and Nouriel Roubini [4] and from Breiman and others [6]

Splitting is impossible if only one case remains in a particular node or if all the cases in that node are exact copies of each other (on predictor variables).

The work for finding the variables has been done by Paolo [7]. In IMF working paper, the BRT was applied to Columbia to determine whether in a particular year the country was crises prone or not. The same methodology is used on the Military and Democratic Eras of Pakistan. For each era, its mean values are compared to defined benchmarks at a particular test node. After recursing through different nodes, the result is found once; we reach a node where further recursion is not possible for that particular era.

BRT analysis application is broad based. The application is neither limited to a particular field, nor to a time frame or a composite of the same. Like shown in this paper, we have applied it to compare Democratic and Military Era.

### 3.1 Population and Sample

The population data for the research includes all debt related data from 1947 to date. The sample selected for this research includes data from FY1988 to end of FY2007.

### 3.2 Sample Size and Characteristics

The sample size is of 20 years divided into two sub samples representing the Democratic Era and the Military Era. The former is taken from FY1988 to FY1998, while the later is from FY1998 to FY2007.

For the BRT methodology, the following variables out of the 50 candidates listed were selected:

1. total external debt in percent of GDP
2. short-term debt on a remaining maturity basis to foreign reserves
3. public external debt to government revenue
4. real GDP growth
5. inflation

### 3.3 Data Collection Method

The data was collected from various issues of Economic Survey of Pakistan, SBP annual reports, ADB reports, IMF reports and World Bank debt tables and Global Development Finance issues.

## 4. DATA ANALYSIS AND FINDINGS

To compare the Military Era and the Democratic Era, the BRT analysis was first applied to the Democratic Era and then to the Military Era.

As explained in the methodology section, the BRT will be cursing through several nodes. Each node will have a yes and no option. For choosing one of the two options, a threshold level is set. For example at node 1 we have test; ratio or figure XYZ is > 50%. If we have less than 50%, the answer is "no"; we move down and left to the next node corresponding to "No". If XYZ is greater than 50%, the answer is "yes"; we move down and to the right node corresponding to "Yes". Depending on our previous answer we move to a different test at each node. We continue cursing through the Binary Tree until we reach a conclusive answer for "Debt Crisis Prone" or for "Not Debt Crises Prone."

### 4.1 Democratic Era: Using BRT

Pakistan in its Democratic Era had high levels of external debt, which were steadily on the rise and had hit a high of around 39 billion dollars. The era also had a GDP growth, which averaged around the 4.6% mark. The Total External Debt to GDP (TED/GDP) of the Democratic Era had a mean of 48.6%. The endogenous threshold calculated by Paolo (2005) was 50% for TED/GDP. Since the mean value was less than the 50% mark, we move down and to the left from the first node in the BRT. The Democratic Era had an average Short Term External Debt to Reserve (STED/RES) ratio of 1.920; the benchmark for this node of binary recursive tree being 1.345. Since the Democratic Era had far surpassed the same, we move down and to the right in the BRT. The next test node is for the number of years to the nest presidential elections (YTPE). The Democratic Era, which was politically unstable and had seen four different tenures from two political parties, had an average YTPE, which was far less than 5.5 years mark. Since the maximum time to next presidential elections as governed by Pakistani law is 5 years, it is impossible to exceed the level stated for this BRT. Therefore, we move down and to the left. As stated and tested above at the very first node of the BRT TED/GDP had a mean value of 48.6 %. Since the TED/GDP ratio far exceeds the lower limit of 19.1% for this particular node, we move down and to the right in the BRT. The Exchange rate volatility for the democratic area had an arithmetic average below the threshold level of 27.88, indicating that Pakistan's Democratic Era as a whole falls in the crisis prone section.

The results can further be supported by the fact that the Nawaz Sharif government, which was the last in the democratic era, had the worst ratios for a rule within the democratic era. Pakistan was quickly heading towards zero Foreign exchange reserves in his tenure.

Figure 1 depicts the BRT analysis for the Democratic Era.

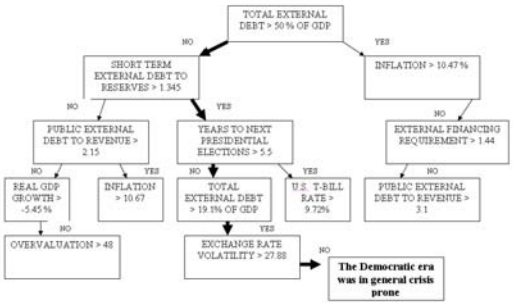



Figure 1: Democratic Era analysis using BRT

### 4.2 Military Era: Using BRT

The military rule, which started by toppling Nawaz Sharif government with a bloodless coup, overtook Pakistan's dismal affairs back in 1999. Using the BRT analysis for understanding the Military Era performance as a whole, we start off at the first node: the Total External Debt to GDP (TED/GDP) ratio. The Military Era had a mean of 43.99% of the TED/GDP. The judgment criterion for this ratio was set at 50%. Since the mean value was less than the 50% mark, we move down and to the left from the first node in the BRT. The Military Era had an average Short Term External Debt to Reserve (STED/RES) ratio of 0.334; the benchmark for this node of binary recursive tree being 1.345. Since the Military Era had far below the set criterion, we move down and to the left of the BRT. The next test node is for the Public External Debt to Revenue (PED/REV) with the threshold level set at 2.15. The Military Era had an average PED/REV, which was almost double the threshold limit. Therefore, we move down and to the right of the BRT. The next test in the BRT was for inflation. The endogenous threshold for this node was 10.67%. Inflation averaged at 6.31% in the Military Era. Since the Military Era had inflation below the threshold level, we move down and to the left. This step brings us to the end of BRT indicating that Pakistan's Military Era as a whole was not crisis prone.

Figure 2 depicts the BRT analysis for the Military Era:

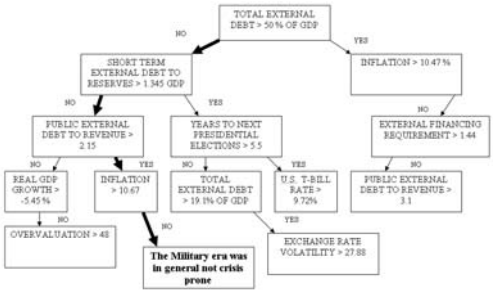



Figure 2: Military Era analysis using BRT

## 5. CONCLUSION

Pakistan has been dependent on external financing for the past four decades. This research sheds light on the mediocre performance of Pakistan's debt policy. Contrary to this view, Ishrat Hussain, the former governor of State Bank of Pakistan, said that he disagreed with the notion that Pakistan was economically weak and fragile and has been dependent on external assistance. Mr. Ishrat had justified his statement by rightly saying that there are very few countries that have achieved average growth rate of 6 percent annually; low inflation, high agricultural and industrial output over such a long period of time [8]. In the 1990s, Pakistan had not fared well in relation to its own potential or countries such as China or India but the historical performance of Pakistan over a forty-year period 1950-90 has been simply impressive.

Pakistan's performance of the 1990s can be explained in terms of the rapid changes in political regime. In Pakistan, there has been a tendency to attribute the success or failures of the economy to a particular regime in power. This flawed way of thinking has resulted in discontinuities and disruptions towards the path of economic growth, which has always been strewn with structural weaknesses. From 1988 to 1998, the Pakistani nation was ruled by two political parties with two short lived periods of control each. Each incoming regime had attempted to distance itself from the past policies and programs of its predecessor. To make things worse, each regime had sought to implement new policies. Multiple regime changes started the vicious cycle of political instability leading to macro economic instability, which came back and forth.

The content of economic policies that have been pursued in Pakistan since 1991 by different regimes has been identical [9]. What has been missing is their continuous and consistent implementation. The heavily reliance on foreign resources, especially on short-term loans following the structural adjustment programmers within the framework of the IMF and the World Bank in the 1990s, has contributed to the external financial vulnerability, debt, and recession that precipitated debt rescheduling in 1998/9.

Pakistan's macroeconomic indicators had improved since 2002. To promote growth, the Government had pursued an expansionary fiscal policy in the following two years after 9/11. Macroeconomic indicators gave a robust picture of Pakistan in the 2000s. The improvement in the debt indicators reflected acceleration in economic growth, improvement in fiscal conditions, increase in export earnings, and higher capital inflows. In particular, external conditions had become more favorable to Pakistan since September 2001. 9/11 could virtually be said as the turning point in the Pakistan economy. This had enabled relief of public debt amounting to about $3.7 billion between 2001 and 2003. Coupled with debt rescheduling, this had **significantly** reduced Pakistan's debt servicing burden. Following 9/11, there had been increased official transfers, Workers' remittance and Foreign Direct Investment (FDI). All had helped improve Pakistan's Debt situation. Whereas the economy had improved, factors such as slow growth of exports, the widening deficit in the

current account, continuing high inflation, and the emerging power shortage have been considered potential risks to the country's medium-term economic prospects [10]. Pakistan's debt management strategy in the 2000s specifically that after 9/11 has been appreciated [10].

This research report other than a qualitative review of Pakistan's debt performance also did a quantitative review comparing the two Democratic Era and Military Era. The Binary Recursive Tree method indicates that Pakistan in its Democratic Era based on mean values was in fact crisis prone. Debt Crisis reached its peak as witnessed in 1998 during Nawaz Sharif democratic rule. On the other hand, the figures and ratios for Military Era show that as a whole the era was not crisis prone. In lieu of these outcomes, based on the BRT method, it is safe to conclude that the Military Era has performed better then the Democratic Era, as a whole.

One must also note that the outcome of the BRT did not account for the several external and internal changes that had taken place. The relative success or failure of an era is subjective at most and does not necessarily account for the favorable or unfavorable changes that have taken place during the two eras, and hence, had significantly affected the debt performance of the ruling era at that particular point in time.

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