Exploring the Indexes of Economic Stress

A comparative analysis of the Financial Stress Indexes and Consumer Financial Stress Indexes available in the United States

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This paper provides a comparative analysis on the financial stress indexes and consumer financial stress indexes available for the United States. Financial stress measures an interruption in the financial market, whereas consumer stress is measured based on a compilation of American household financial conditions. It is evident through research that financial stress and consumer stress are inversely related. When the economy is in a highly stressed condition, the Financial Stress Index tends to rise "above normal" levels; in contrast, the Consumer Distress Index score tends to fall.

Keywords: Financial Stress Index, Consumer Financial Stress Index, Financial Stress, Consumer Financial Stress, Employment, Household Budget, Housing, Credit, Net Worth, NFCI, STFSI

INTRODUCTION-

Financial stress plays a key role in economic performance. Two major indexes which are used to measure economic stress are the Financial Stress Index and the Consumer Stress Index. The greater degree of stress in the economy, the poorer the economy is likely to perform. This paper attempts to provide a comprehensive overview of both the Consumer Stress Index and Financial Stress Index after which it provides a comparative analysis of the two.

CONSUMER FINANCIAL STRESS INDEX-

Data provided by the Federal Reserve Bank of St. Louis for consumer distress conditions computes a consumer stress index using five main sources of American household financial conditions: employment, housing, credit, household budget, and net worth. The information is collected through the periods dating back to 1980, and includes data from the 50 American states (Federal Reserve Bank of St. Louis [1]).

Figure 1 displays the Consumer Distress Index in a quarterly comprehensive picture. The index is measured on a 100-point scale where the higher the score, the less the financial distress. A score of below 70 indicates financial distress. The five American household financial conditions are considered equally important in maintaining a stable financial life and are thus given equal weight in determining level of distress in the Index.

Seen in *Figure 1*, consumer distress is highly volatile, constantly fluctuating and falling drastically during each of the recessions indicated in the shaded areas. The first and second recession occurred in the early 1980's and the early 1990's resulting from the oil price shocks. The recession which occurred during the early 2000s was a result of the September 11 attacks while the Great Recession which takes place between late 2007 and mid 2009 was due to the

Mortgage Crises. Although this last recession has caused the index score to reach an all-time low of 64 percent, economic conditions in the United States have been improving since, and the score has been steadily climbing upward.

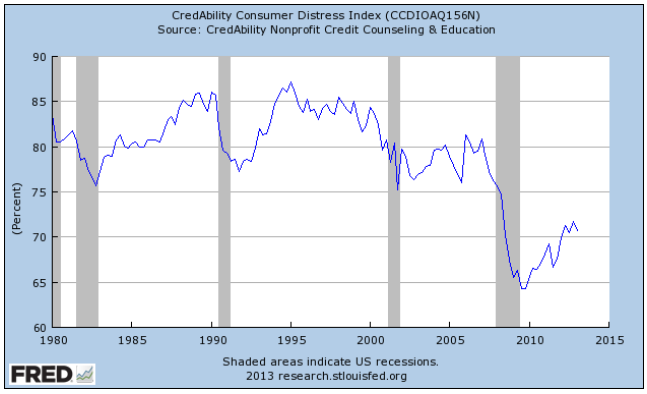

Figure 1: Consumer Distress Index

Employment

Probably the most important of the five measurements taken into account when measuring the Consumer Stress Index is unemployment. This is because consumers will have no finances to manage if they do not have jobs to bring in a stable flow of income. When unemployment in the economy is high, households in general experience a decrease in their flow of income, causing the Distress Index score to fall sharply. Since unemployment is generally higher during recessions, it makes sense that the Distress Index score drops during each recession.

Figure 2 displays the Distress Index score for employment alone. As is expected, the score drops significantly during the four recessions. The decrease in employment can also be seen in *Table 1*. The largest drop in the employment score occurred during the most recent recession (the Great Recession). After reaching a low of 4.4 percent in March of 2007, the Great Recession caused unemployment to rise to an astounding 10 percent by October of 2009, hence the immense drop in the score (Bureau of Labor Statistics).

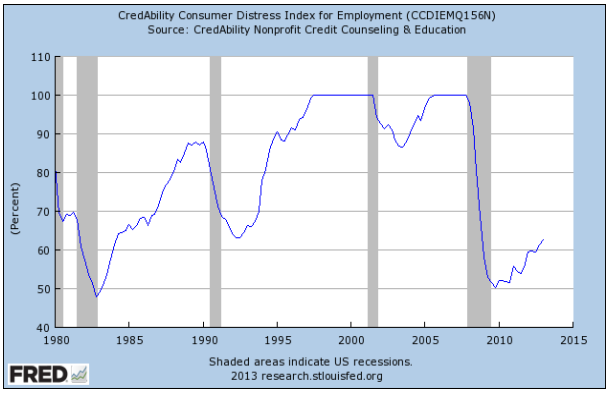

Figure 2: Consumer Distress Index for Employment

Employment score during Recession Periods		
Period	Change of index	Condition
Early 1980's	20% decrease	48%-Emergency/ Crisis
Early 1990's	10% decrease	71%- Weakening/Unstable
Early 2000's	6% Decrease	94%- Excellent/Secure
2007-2009	47% decreased	53%- Emergency/Crisis

Table 1: Employment Scores during Recessions

Household Budget

Another component that is included in the Consumer Distress Index is the household budget. The household budget is measured by the amount of money families save compared to the amount of money households spend. It is unique in that it always falls and then rises during recessions (FRED). This trend indicates that households tend to spend less during the beginnings of recessions then begin spending more as the recessions draw to an end.

The household budget score was above 80 percent for the entirety of the time before 1999, and has only risen above 80 percent once since (in the second quarter of 2009). This shows that households have been spending larger portions of their income recently with one exception. As can be clearly seen in *Figure 3*, during the Great Recession people tended to save more and spend less because they had less cash on hand. The decrease in the demand for money caused household budget conditions to rise 21 percent, bringing the conditions out of a distressed state and into a stable one. Household budget conditions during the four recessions are also listed in *Table 2*.

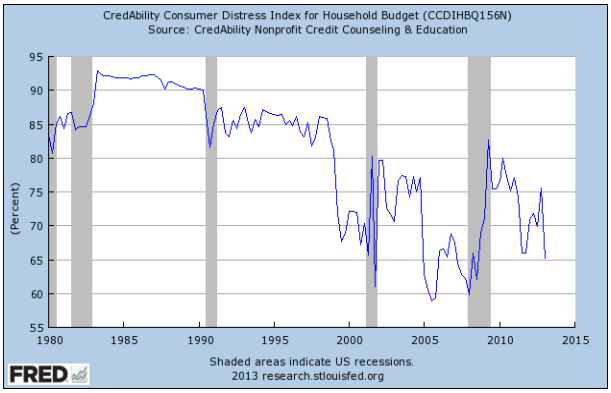

Figure 3: Distress Index for Household Budget

Household Budget During Recession Periods		
Period	Change of index	Condition
Early 1980's	1% decrease	85%-Good/ Stable
Early 1990's	1% decrease	85%-Good/Stable
Early 2000's	5% Decrease	61- Distress/Unstable
Late 2007-2009	21% increase	83%- Good/Stable

Table 2: Household Budget during Recessions

Housing

Most responsible for the 2008 recession is the housing component since the housing bubble was the factor that triggered the recession. The Consumer Distress Index for Housing remains fairly high throughout the years until the housing bubble burst, when it rocketed downward drastically by 11% creating unstable conditions after the first quarter of 2007 (FRED). During the mortgage crises, mortgage lenders increased their risky investments and caused yields to increase. As the yields increased, home owners began to owe more on their houses than they were actually worth. This resulted in more home owners walking away from their mortgages. Because consumers were no longer paying their mortgages, the percentage of consumers' budgets spent on housing decreased.

Another interesting observation to note is that the Consumer Distress Index for Housing has been consistently higher than the Consumer Distress Index as a whole, indicating that the other four components are dragging the overall score down.

Credit

Another factor responsible for the changes in the Consumer Index score is credit. Credit is measured by the consumer's ability to be responsible with their credit. During expansions there are better credit conditions and consumers can afford to borrow large amounts of money

providing voluminous opportunities to increase one's credit score. However, during recessions, it is extremely difficult to build credit. Hence, credit scores fall during recessions and rise during expansions (see *Figure 4*), causing the Index scores to mimic the same trend. It is notable that the Consumer Distress Index for Credit undergoes the greatest fluctuations of the five components (FRED), showing that credit is extremely sensitive to the economic cycle.

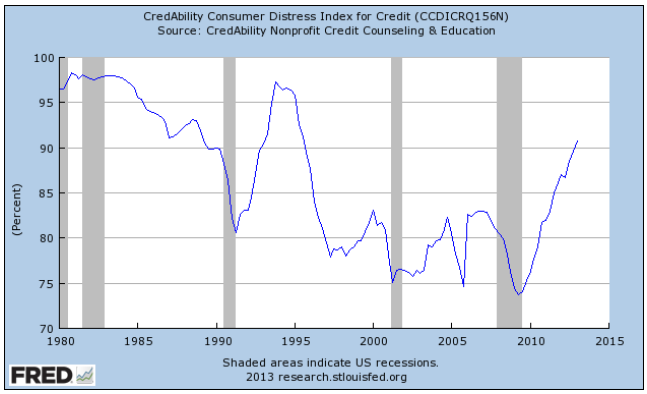

Figure 4: Consumer Distress Index for Credit

Net Worth

The final factor which determines the Index score for the Consumer Financial Stress is net worth. Net worth is a measurement of how well consumers are strengthening their personal balance sheets. Since 1980, this score has had larger and larger fluctuations (FRED). However, the score has always remained between 60 and 68, making it the steadiest of the five components, yet the score is constantly below 70, indicating financial distress. The consistent score over time shows that consumers have not improved or decreased the level of their balance sheets, yet the low score reveals that there is significant room for improvement.

FINANCIAL STRESS INDEX-

Financial stress is measured using a variety of indexes and measurement methods. The Financial Stress Indexes capture financial stress in the entire financial market for the United

States. Some of the indexes which focus solely on the U.S. include the Chicago Federal Reserve Bank's Financial conditions index (NFCI) in 2006, the Kansas City Federal Reserve Bank's Financial Stress Index (KCFSI) in 2009, the St. Louis Federal Reserve Bank's Financial Stress Index (STFSI) in 2010, and the Cleveland Federal Reserve Bank's Financial Stress Index (CFSI) in 2011 (Manamperi, 2013).

The analysis concerning the financial stress indexes for this paper focuses on the Chicago Fed's National Financial Conditions Index (NFCI). This is because the NFCI shows strong correlations with all other regional central banks' Financial Stress Indexes as well as the Bloomberg Financial Consumer Index, making it best suited for a direct comparative analysis with the Consumer Stress Index (Manamperi, 2013).

The National Financial Conditions Index (NFCI) measures risk, liquidity and leverage in money markets and debt and equity markets, as well as in the traditional and "shadow" banking systems. The index measures stress occurring in the financial sector on a quarterly scale. The scale Index ranges from -2 to 5 beginning in 1980 until the present. Indexes above 0 indicate financial stress above normal or financial conditions that are tighter than average, while anything below 0 suggests below-average financial market stress or financial conditions that are looser than average (Federal Reserve Bank of St. Louis [2]).

Financial stress is caused by an interruption to the normal functioning of financial markets (Hakkio & Keeton, 2009). No two episodes of financial stress are exactly the same, causing difficulties for economists to formulate a more specific definition. However, every episode in financial stress involves at least one of three phenomena; increased uncertainty about the fundamental value of an asset, increased uncertainty about the behavior of other investors, and the decreased willingness to hold risky and illiquid assets (Hakkio & Keeton, 2009). These

three phenomena cause the financial sectors to react in one way while they affect consumer stress in an entirely different way.

Figure 5 reveals an apparent trend in the Financial Stress Index. Between 1994 and 1998, 2002 and 2007, as well as 2010 until today, financial stress appears to be falling further and further below average. These three periods of decreasing financial stress are followed by a fairly significant rise in financial stress (excluding the period following 1998). This trend could be explained by the fact that banks and firms are more likely to take higher risk during times of economic success. Hence, as the economy does better and better, more and more risks are taken, eventually leading to a recession when borrowers are no longer able to make loan payments.

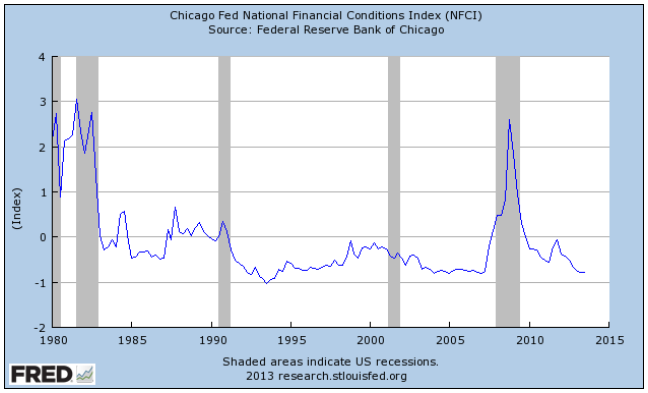

Figure 5: Chicago Fed's National Financial Conditions Index

COMPARATIVE ANALYSIS-

As is made apparent in Figure 6, the Financial Stress Index and Consumer Distress Index have an inverse relationship. For example, during the Early 1980s recession, financial stress holds an upward sloping trend; at the same time, consumer stress experiences a downward sloping trend. In addition, between 1983 and the 1990s, financial stress demonstrates "average" index scores while consumer stress maintains strong, stable conditions. During the Great Recession, financial stress increases sharply creating the tightest financial conditions the

economy has seen since the early 1980's. Simultaneously, the score for consumer stress decreases into conditions consumers have not experienced since the Index was created. For the years following the Great Recession, financial stress slowly decreases while the consumer stress score slowly increases.

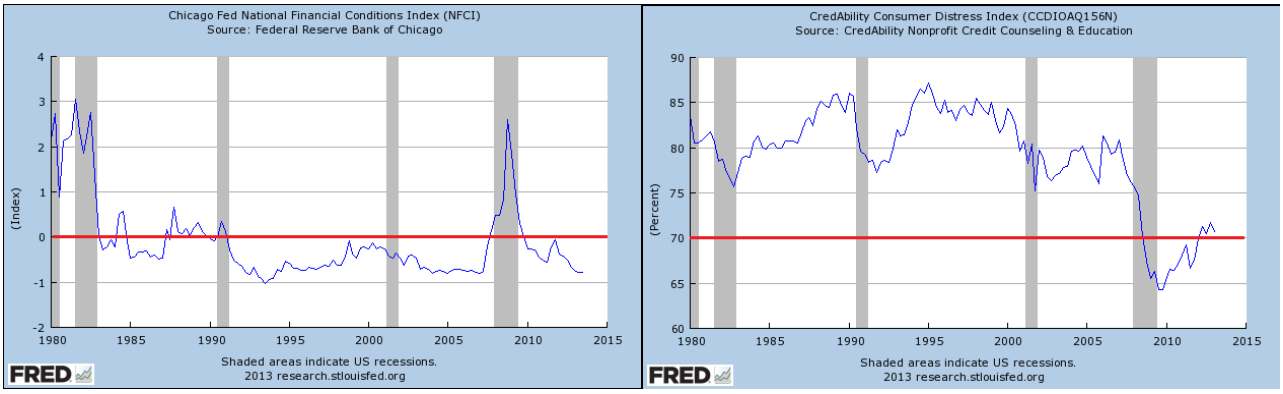

Figure 6: Financial Distress Index (left) and Consumer Distress Index (right)

In essence, the different ways in which the consumer and financial sectors react to the aforementioned three phenomena causes them to have an inverse relationship: if the phenomena cause financial indexes to increases then it eventually leads to a decline in consumer indexes. Various uncertainties of the value of assets, along with the behavior of other investors, lead to an increased volatility in asset prices. This volatility causes firms to become more cautious, delaying important investment and hiring decisions until the uncertainty is resolved (Bloom, 2007). Thus, the uncertainties increase financial stress as well as consumer stress, leading to economic issues and likely a recession.

During times of high financial stress, banks are reluctant to tighten their credit standards. They are also much less willing to hold risky and illiquid assets, stagnating economic activity. These factors reduce banks' incentives to make loans. In such situations, banks tend to cut back on lending in two ways (Lown and Morgan, 2006). First, they raise interest rates charged on new loans, reducing the quantity of loans demanded by borrowers. Second, banks raise their

minimum credit standards, making it harder for borrowers to qualify for loans. Both actions by banks lead to a decline in spending which in turn harms the economy.

The Sub Prime Mortgage Crises is a good example of a recession caused by an increase in uncertainty in investor behavior which resulted in banks tightening their credit standards, ultimately leading into the 2008 recession. Shown in *Figure 7*, the financial index's beginning 2007 until 2009 demonstrates an increasing trend. This increase is caused by the stability within the economy, which essentially allowed more banks and other financial sectors willingness to take larger risks and make loans to people and companies who were more likely to default on their loan payments. Just as well, financial companies allowing an unstable economy to participate in bad investing decisions automatically caused the consumer stress to worsen causing consumer conditions to weaken during the periods of 2007-2009.

When the borrowers were no longer able to make payments, they defaulted on their loans and a recession was triggered. The recession is a continuum of firms becoming more uncertain in the behavior of investors and making more cautious investments. This caution resulted in the firms decrease willingness to hire, causing employment to fall to 53 percent--an emergency/crises state. Simultaneously, the credit score was decreased to 7 percent, also leaving it in a risk state. Third, net worth was put in an unstable state. The overall decrease in American household financial conditions caused the Consumer Index to fall. It is evident how the economic activity within the financial conditions can directly be a cause and effect within the consumer stress.

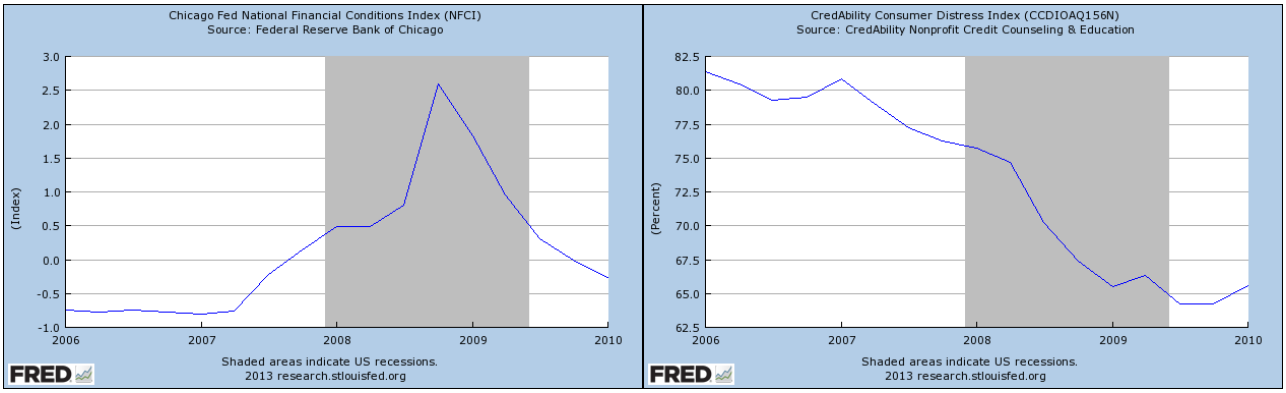

Figure 7: Financial Distress Index (left) and Consumer Distress Index (right)

CONCLUSION-

The Consumer Distress Index computes a level of consumer stress at every quarter based off of five large components which are given equal weight: employment, housing, credit, household budget, and net worth. Any quarter with a score above 70 indicates a lack of consumer financial stress while a score of below 70 indicates consumer financial distress. Consumer Distress is highly volatile and falls significantly during each of the four recessions experienced in the United States since 1980, when the Index was first implemented.

The Financial Stress Index is also measured on a quarterly basis, but uses a different measurement than the Consumer Distress Index. Where the Consumer Distress Index is based on a score out of 100 possible points, the Financial Stress Index measures on scale indicating 0 is average. Those which had more stress are above 0 and those which had less stress were below 0, a feat that is not possible in the Consumer Distress Index.

The Financial Stress Index fluctuates based on three phenomena: increased uncertainty about the fundamental value of an asset, increased uncertainty about the behavior of other investors, and the decreased willingness to hold risky and illiquid assets. As these uncertainties

are increased, the flow of money in the economy is less liquid and a recession takes place, leading to a score of above 0. When the money in the economy is liquid, the opposite occurs.

Because of the method by which the two indexes are calculated, the Consumer Distress Index and Financial Stress Index have a negative relationship. For example, when looking at the Consumer Distress Index, an upward slope in the graph indicates an increase in economic growth because of improvements in at least one of the five components of the index. Contrastingly, when looking at the Financial Distress Index, an upward slope in the graph indicates a decrease in economic growth due to a rise in financial stress.

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