By Alec Feinberg
Based On Chapter 1, From the book
The Truth of the Modern Recession - Root Causes and Reliable Solutions

Introducing Reliability Economics
Safeguarding the Economy in the Same Way Industry Does Products

Reliability engineers understand the concept of being proactive rather than reactive in order to ensure reliable products. Yet our economy more often than not appears to lack reliability in its design. Logic dictates that if industry spends millions of dollars each year ensuring viable products using the science of reliability, it might make sense to utilize this same set of tools in a similar manner to safeguard our economy. This is the concept that I have tried to convey in my recent book, "The Truth of the Modern Recession – Root Causes and Reliable Solutions".

Often, it makes sense to utilize existing applied sciences in one area to those in a different arena. Economics, after all, is just a set of tools for understanding our working economy. Here we look at a new concept, that of reliability macroeconomics (also referred to here as reliability economics).

In the science of reliability, there are three basic activities that we can adapt from industry for applying reliability to the economy:

- Perform root-cause analyses of failure modes supported by facts.
- Design-in reliability improvement for the economy.
- Perform verification testing of corrective actions.

Implementation of these methods can make enormous sense, just as it does in industry. First, ensure that we identify the root-cause economic issues, and then look to make improvements, focusing on designing-in reliable solutions for the economy (as opposed to short term solutions). The key method that can be utilized to design-in reliability is the method of Failure Modes Effects Analysis (FMEA). FMEA provides an excellent structural method that can be applied by a multidisciplinary team. It is easy to understand the potential importance of cross-disciplinary experts in different areas coming together though a structural method, and the power it can have to brainstorm an economic issue, the potential failure modes, the effects of the failure modes, identify potential root causes, the feasible design controls and corrective actions.

Finally, as in product reliability, feedback is required through verification testing. Testing takes time, especially when we are dealing with the economy, and should be done in phases throughout any significant design change to the economy. For example, if Alan Greenspan had performed stress-related testing of bank deregulations over time, he would likely have observed the subprime mortgage abuses by lenders and the irresponsible banking irregularities occurring; had he done so, perhaps he would not have allowed this widespread deregulation policy that has led to our housing crisis.

We know that during our recession, the economy has in fact been under a stress test and many failures have surfaced. Our economy's engine uses too much wasteful oil, is inefficient on gas, has too many parts not made in America, and our economy's designers/advisors have, over time, failed to build-in reliability. We have gone into debt trying to fix the economy's engine with needed improvements. Our economists and politicians have taken and continue to take enormous risk without safeguarding and building in reliability macroeconomics. In part, that is what the national debt indicates; it is a measure of fiscal irresponsibility and unreliability. It is reasonable to expect that reliability methods when applied to the economy, can turn out to be surprisingly easy to apply, would be unavoidably logical, and would provide an additional measure of certainty to our economy.

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One key to success would also be to maintain a proactive, not reactive approach. That is, our economic policies cannot afford to be reactive any longer, putting out fires in the economy as they occur. We need to be proactive and design reliability into our economics, so that these fires do not occur in the first place.

As one illustration, here is an FMEA from my book the Truth of the Modern Recession performed on the key issue, "Federal Tax Structure".

Failure Modes and Effects Analysis on the Federal Tax Structure

Key Issue	Potential Failure Modes	Potential Effect of Failure	Root Cause(s) (RC)	Root Cause Rating	Design Controls	Possible Corrective Actions
Tax Struc-ture (Federal Income)	1) Loss of needed government revenue 2) Separation of wealth increase 3) Wealthy may have no income to tax	1a) Poor monetary circulation 1b) Governmental national debt increases 2) Reduce money for average worker 3) No income tax revenue from wealthy retirees	1a) Tax bracket stops at 35% 1a) Excess tax write-offs 1, 2) Government administrative issues 3) No tax on wealthy retiree assets 4) Nonresident alien tax issues	1) 9 2) 9 3) 7 4) 3	1a) Assess extending bracket 1b) Review and close loop holes 1, 2) Investigate administrative issues with fair tax implementation Review possible salary cap 3) Asset tax review 4) Increase on export serviceable tax	1a) Extend brackets fairly 1b) Close loop holes 2) Do FMEA on govt. admin issue 3) Asset tax 4) Service export tax increase—Ex. foreign athletes

In this FMEA, we provide a simple rating system (1-10) on root cause importance rather as traditionally done for failure modes. This is because an economic failure mode tends to have many root causes. All the suspected root causes need to be substantiated with facts. This, however, provides an initial launch to our investigation. For example, one basic root cause discussed for the failure mode "Loss of government revenue" is that the 2009 tax structure currently stops at 35%. We seem to accept this limit. Yet logic dictates otherwise. That is, prior to 35% the more money a person makes the higher his tax bracket, except after upper limit of $372,950. The question is, why does it stop there? It should continue to be consistent and fair. This indicates that a disproportionate tax is removed at the lower end compared to the upper income tax bracket (i.e. it is unequal at the upper and lower ends). It also appears the upper tax bracket is not adequate to deal with today's rising income for highly compensated individuals (one person actually made $3.7 billion dollars in a year and was actually taxed at the 15% rate) and this poses a long term reliability economic hoarding threat. This not only prompts concern regarding the tax structure, but one has to question why the government has ignored it. This is one reason in the book that another suspect key item, "administration tax issues" is addressed using FMEA analysis.

We see that problem solving requires a multi-disciplinary approach that could easily be done using the FMEA structural approach. Relying on the perspective of our congressmen, who are mainly wealthy lawyers—or by our economists, who also have narrow perspective on finance—is a limited way to find solutions for multiple complex issues. If the lawyers and economists were enough, we would not have the results which have transpired.

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The idea is that reliability science not only holds excellent tools but also prompts a different mindset approach forcing reliability focus, to address economic issues in a new light which are exposed to life hazardous conditions including potential wrong-doings and policy problems (such as tax misconduct, Wall-Street improprieties, lobbyist issues, global free trade failures, economic hoarding, war, etc.). This mindset and its tools should be applied to our economy. Just as reliability engineering seeks to predict and ensure the future. Similarly, we would want our economy to demonstrate a measure of "reliability growth." Such growth in reliability is measured by a reduced rate of product failure over time. In a similar manner, we need to have measurable and meaningful reliability metrics for the economy consisting of our unemployment rate, home and business failure rates, and so forth. Such rates of failure can be modeled using traditional reliability mathematics such as Weibull analysis. These measures, when tracked frequently, can help warn us prior to a crisis, so that corrective actions can be applied in a timely manner. This is analogous to quality field-data tracking of a product, which is done by industry. However, here we work with these field quality metrics in a similar manner through the science of reliability mathematics that is also capable of modeling any phase with an increase in the failure rate, steady state, or economic reliability growth.

If we seek unbiased facts and apply logical analyses that stem from real root causes, and if fixes are aimed at efficient reliability in the economy, with tests planned over time to verify that improvements are working; we will then end up with a more trustworthy economy. After all, we ideally want an economy whose engine runs dependably over time without failures. That's the goal of Reliability Economics.