

REGULATION 2.0: THE RIGHT DATA FOR STRESS TESTS AND OVERSIGHT OF FINANCIAL RISK

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- Crises as Inflection Points
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- Stress Tests and Financial Data
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- **Crises are inevitably inflection points – they demand a response**
 - **Panic of 1907**: Creation of the Federal Reserve System
 - **The Great Depression**: Creation of Deposit Insurance; separation of commercial and investment banking; limits on deposit interest rates; restrictions on gold ownership; new structures for funding housing, financial market regulation and disclosure requirements, etc.
 - **The 2008 Financial Crisis**: expanded international coordination for both policy and regulation; swaps trading pushed to clearing houses; stronger, higher, and more complex capital rules including higher quality capital, added capital buffers for globally significant international banks (G-SIBs), requirements for total loss absorption capacity (TLAC), leverage regulation, limits on liquidity risk with a Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio; and mandated **stress tests** for banks.

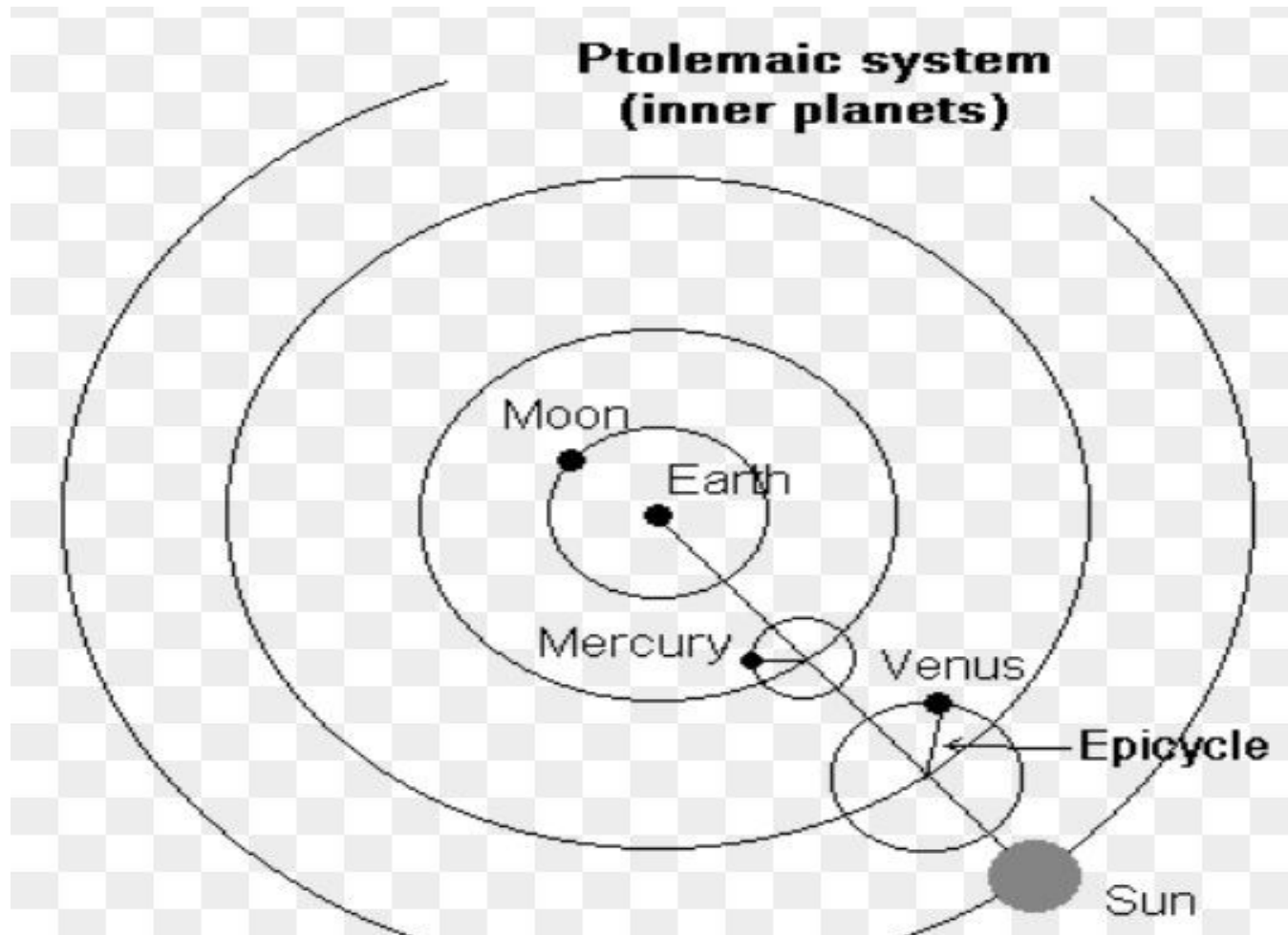
Time for a New Paradigm



The expansion of all these different and very complex specific regulations reminds me of the evolution of our understanding of the make up and structure of the solar system:

From ancient times until the beginnings of the scientific era in the 16th century the Ptolemaic System was accepted truth. In this model the sun and the planets revolved around the earth. When this model was first conceived only a limited number of heavenly bodies could be observed and the model was easy to represent:

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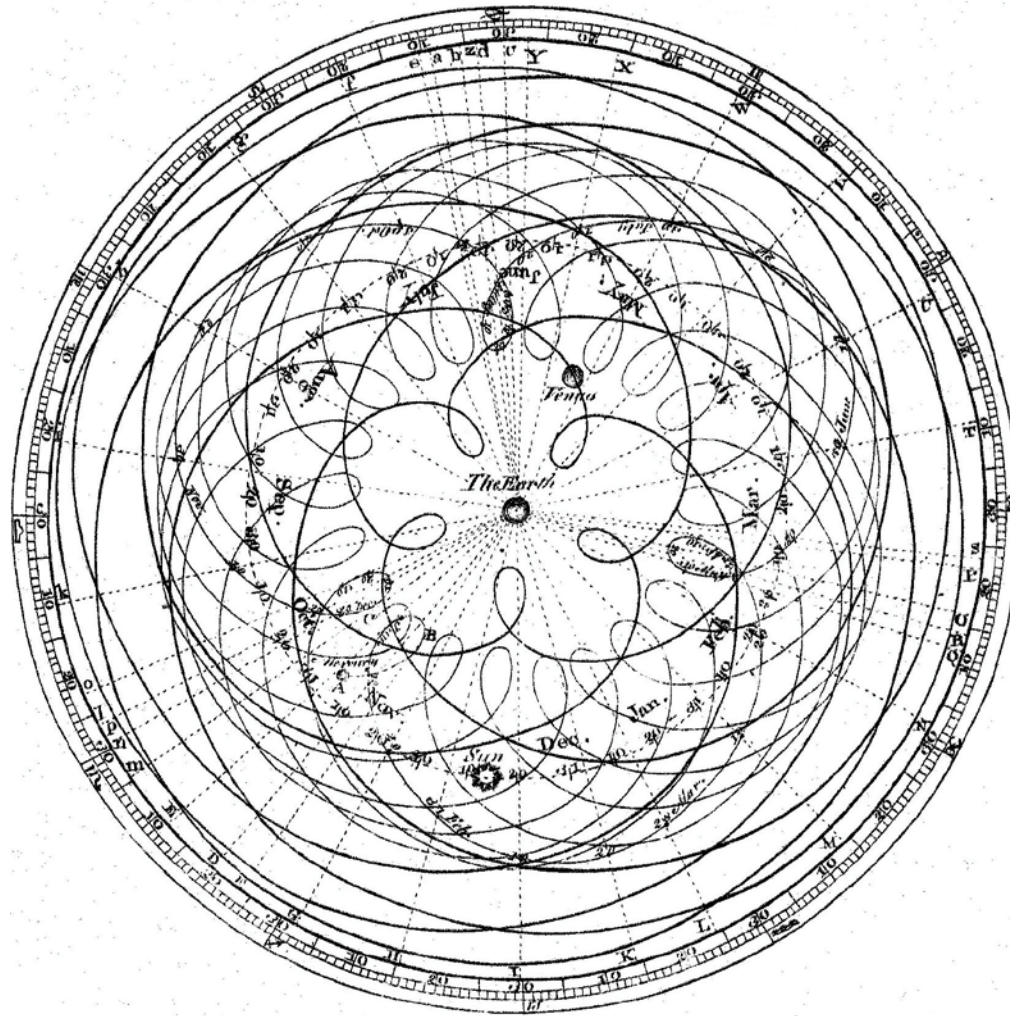


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However, as the centuries passed, more and more heavenly bodies were identified and it became harder and harder to incorporate them into the Ptolemaic Model of the earth centric system.

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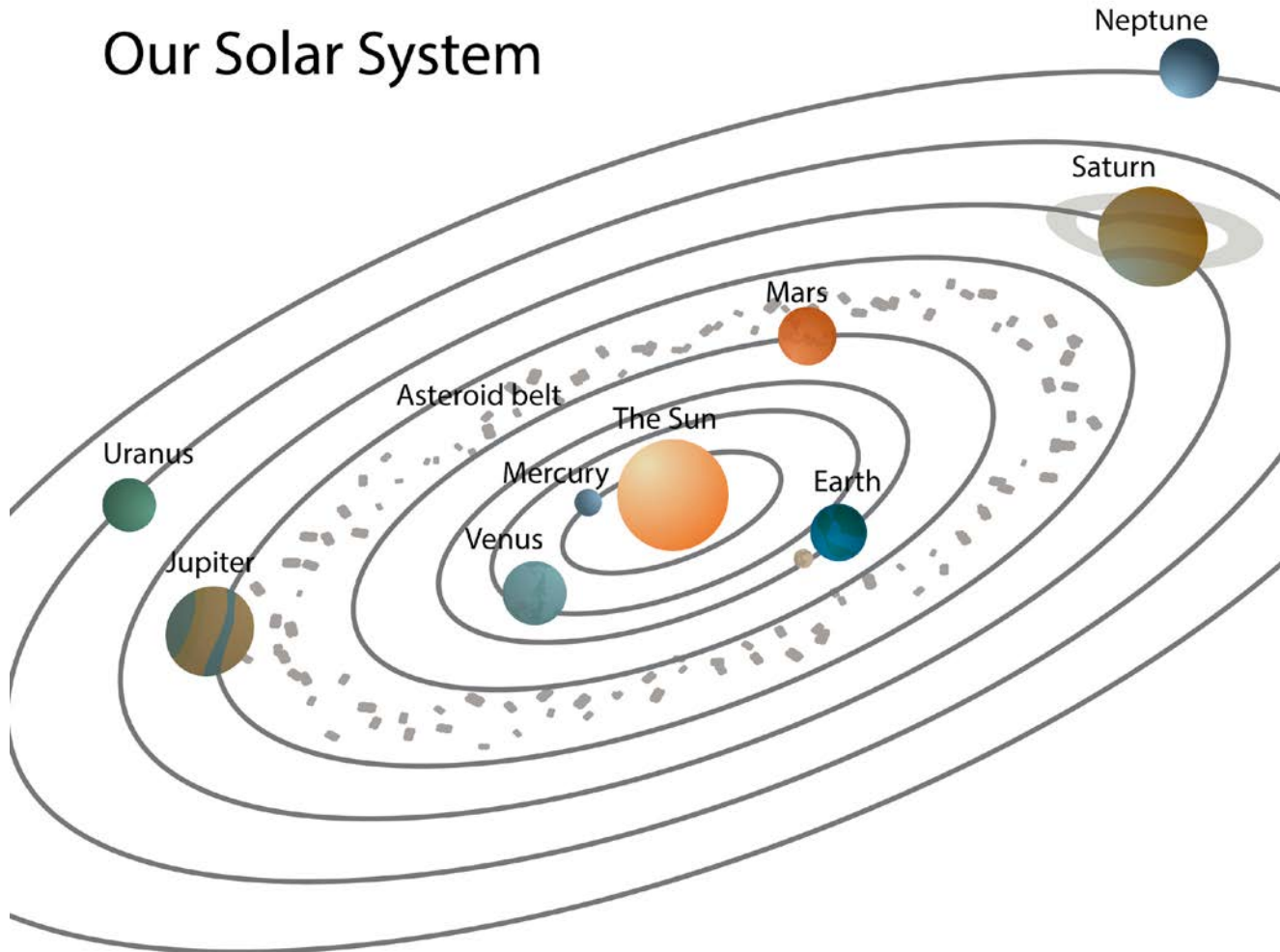
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The inability of the Ptolemaic System to reasonably account for the large number of new heavenly bodies that were identified (along with the sacrifices of a few stalwart scientist who were charged with heresy) led to our modern scientific understanding of the solar system.

Time for a New Paradigm

Our Solar System



Is there an alternative approach to the regulation of financial institutions and markets that:

- Represents a significant improvement over the approaches that failed during the 2008 Financial Crisis
- Addresses critical weaknesses that were not "fixed" by post crisis reforms
- Imposes less of a burden on the regulated industry.
 - This later point is of great importance. It has only been 10 years since the crisis and the massive taxpayer funded bailout of the financial sector. However, the push back from industry has already led to 2018 legislation that has weakened the reach and restrictions of the ***Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA)*** enacted in 2010.

Deficiencies in Financial Data



The 2008 financial crisis made one thing indisputably clear: financial policy officials, regulators, and company executives lacked the right data and analytics to understand what was happening and to predict the outcome of critical policy decisions.

- For example, the data and analytics were not available to understand the interconnectedness of Lehman and to anticipate the consequences of its collapse. Even at the individual firm level data were often stored in non-standard, difficult to access, data structures

Since 2008 specific regulations have been adopted to address virtually every problem identified after the crisis, with one glaring exception – DATA

For example: the Dodd-Frank Act pushed the clearing and settlement of swaps onto clearing houses and required the reporting of swaps data to Swaps Data Repositories (SDRs)

- Vast amounts of data have been reported to the SDRs
- In 2014 the CFTC's Technical Advisory Committee held a public hearing in which CFTC executives reported that the data reported to the SDRs was not in a form that could be analyzed
- And, little has changed since

Only last week the Commodity Futures Trading Commission (CFTC) was grappling with the issue of the *de minimis* threshold for swap dealer registration. The metric used to establish that threshold is the notional value of swaps.

In a statement on August 28, 2018 CFTC Commissioner Brian Quintenz states:

- ***“Notional value is a poor measure of activity and a meaningless measure of risk, and therefore is an inadequate metric by which to impose the large costs and achieve the substantial policy objectives associated with swap dealer regulation.”***

Stress Tests and Financial Data



Lets dig deeper into the issue of financial data and regulatory effectiveness with the example of the regulator mandated Bank Stress Tests

A valid criticism of pre-crisis regulation was that it was too static and too backwards looking when determining the safe capital levels for banks.

Attempts to introduce risk into the calculations with “risk-based capital” regulation foundered on the shoals of model calibration.

- From month to month the risk-based capital calculations of a bank could jump around by an order of magnitude, which did not inspire confidence in the risk-based capital approach.

It was into this confused state that stress testing the capital adequacy of banks was introduced as one of the first responses to the 2008 financial crises.

The regulatory and policy communities faced a dire situation after the September 2008 collapse of Lehman Bros.

- Financial markets had frozen up and money ceased to flow
- Economic activity slowed and U.S. unemployment rose rapidly
- No one had confidence in the solvency of financial institutions, and the absence of confidence meant no lending could take place
 - Finance is a unique business – other businesses enter into contracts to exchange a payment for a good or service. However, all financial contracts involve an agreement to exchange only cash flows. (I give you some money today and in return you agree to give me back some money at some future point.)
 - Absent the restoration of confidence there was no possibility of avoiding a descent into a second Great Depression.

The first use of Stress Tests

- In February 2009 the U.S. Treasury Department announced the Supervisory Capital Assessment Program (SCAP). The Federal Reserve under the SCAP subjected the 19 largest banks in the U.S. to a stress test, that is, assessing what the balance sheets of the banks would look like under adverse economic conditions.
- The SCAP stress test had two primary objectives:
 - Identify those banks that had sufficient capital to remain solvent under adverse conditions
 - Identify which banks needed more capital to survive the adverse scenario and to quantify how much additional capital was needed.

This first large scale use of stress tests was essentially a public relations exercise intended to restore confidence in the banks in order to unfreeze the financial markets.

The original SCAP has been replaced by two stress test regimes:

- The Federal Reserve's comprehensive Capital Analysis and Review (CCAR) for bank holding companies, and
- The Dodd-Frank Act Stress Test requirements (DFAST) which mandated annual stress tests that reached down to banks as small as \$10 billion in assets.

The banks pushed back against the stress test requirements, claiming

- They took months to perform
- They were excessively costly

In defense of the stress testing regime I believe that:

- Stress tests should be an integral part of a bank's risk management
- Stress tests should be part of a bank's capital planning process
- Stress tests provide bank executives with insight into tail risks that might otherwise escape their purview
- The extent to which banks had a steep learning curve when carrying out the initial stress tests is an indication that critically important components of sound bank management were lacking.

Nevertheless, 2018 legislation weakened the application of stress tests, now subjecting only those institutions with more than \$250 billion in assets to annual stress tests.

This legislation weakened provisions of DFA without improving on the recognized weaknesses of the stress tests:

- Stress tests, despite their origins in the midst of a systemic crisis, are essentially micro-prudential exercises
 - Banks conduct their stress analysis in isolation
 - There are no spillover effects or contagion
 - A bank's performance cannot be compared to its peers because each bank determines its own approaches to modeling and the application of accounting rules.
 - Level 1 assets, Level 2 assets, Level 3 assets
 - Insight into **liquidity** of the banks is absent
 - The stress tests provide no insight into the interconnectedness of banks, a factor that is so critical in a crisis. To monitor systemic risk regulators need data on interconnectedness that supports meaningful financial analysis

Lack of liquidity plays a major role in the spread of any fast moving crisis. When lenders are unable to assess the credit risk of borrowers the flow of borrowed funds stops.

- Previously solvent institutions may suddenly be at risk of collapsing as losses rapidly ripple through the market and liquidity dries up.
- Regulators would benefit greatly from being able to see in real time how the various banks in the financial markets are connected – not in terms of essentially meaningless measures such as the notional value of derivatives – but in terms of the actual cash flow obligations between the banks that make up the financial system.

Stress tests that can provide a better understanding of systemic risks need to be able to:

- Provide better insight into the interconnectedness of major institutions in the market,
- Include a way of analyzing the important role of liquidity and the lack thereof, and
- Enable new modeling approaches that are able to capture the dynamic aspects of a crisis (for example, Agent Based Modeling)

The implication is that what is needed is a new approach to regulatory oversight and data collection

- Instead of collecting accounting based data (that is not a risk metric), regulators should collect granular data in a standard that enables the full range of financial analytics
- Such data will enable regulators to understand what is going on at the individual bank level and the financial system as a whole

The Two Challenges:

- Despite the associated progress, the regulated banks are complaining about the costs and burden of the post-crisis regulation and stress tests.
- The regulators have made progress in strengthening the resiliency of the financial system. However, there are still major gaps and substantive criticism about what has not been achieved.

Is there a way to reduce the burden on the regulated banks and improve the quality of the regulatory oversight of risk?

The Win/Win Solution: Regulation 2.0

Reducing the regulatory burden and improving the effectiveness of both micro-prudential and macro-prudential regulation of financial institutions and markets requires implementing a fix for the major weakness identified during the crisis and about which little has been done:

Understand and Solve The Data Problems in Finance In A New Way

The win/win solution starts with the recognition that regulation should start with the collection and analysis of granular transaction and position data. However, in order for the data to be meaningfully subjected to financial analysis the data has to in a standard that supports such analysis.

In finance the **starting point for all analysis** is knowing who owes what to whom, and when those payments are due. These are the same data needed to assess risk on the balance sheet of a bank, conduct individual bank stress tests, and perform stress tests of the entire network of financial institutions.

To get data that enables you to conduct such analysis you need

- **A universally accepted data standard that provides each counterparty to a financial contract a unique and unambiguous identifier, and**
- **A Financial Contract standard that generates precise contractual obligations between counterparties with respect to both the amount and timing of payments that are due.**

Counterparty Identifier Standard: this standard exists in the form of the **Global Legal Entity Identifier (Global LEI)**

Financial Contract Standard: the ACTUS Financial Research Foundation has created an **algorithmic standard for financial contracts** that supports financial analysis, including the stress testing of banks and financial networks. The **standard** is created for granular data and includes 1) a data dictionary with clearly defined contract terms, and 2) a software implementation of algorithms that generate the cash flow obligations for almost all financial contracts/instruments extant in the market. The **Algorithmic Contract Types Unified Standard (ACTUS)** is being made available as tested and validated fee-free open-source software released by the ACTUS Financial Research Foundation.

The win/win solution is the result of:

- **better regulator analytics,**
- the **reduced regulatory burden** on regulated financial institutions, and
- the **significant operating cost savings** that banks can realize by adopting the ACTUS Financial Contract Standard for all operational and analytical purposes – transaction processing, risk management, ALM, capital management and planning, and forward business planning

Project ACTUS has benefited from the financial support of:

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- Stevens Institute of Technology
- Ariadne Business Analytics

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- Online Access to 6 of the most important ACTUS algorithms, so that anyone can take ACTUS for a test drive.

Dr. Allan I. Mendelowitz is the President of the ACTUS Financial Research Foundation. Previous positions include: Chairman of the Federal Housing Finance Board; Executive Vice President of the U.S. Export-Import Bank; Managing Director for International Trade, Finance, and Competitiveness of the U.S. GAO; and Economic Policy Fellow at the Brookings Institution. Articles by him have appeared in The Journal of Risk Finance, The Journal of Business, the National Tax Journal, The Journal of Policy Analysis and Management, and other scholarly and popular publications. He has lectured widely and appeared as an expert witness before committees of the U.S. Congress 150 times. He holds a BA degree in economics from Columbia University, and a Ph.D. in economics from Northwestern University.

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