

INTRODUCING THE SYSTEMIC INSTITUTIONAL RISK EVALUATION PROCESS (SIREP)



2020

Calculating Portfolio Exposure

Irrespective of whether another 2008-like event happens tomorrow, next year or never, long term investments such as pensions and endowments seek to evaluate their exposure to even the most infrequent events as part of their fiduciary responsibilities.

Introducing the systemic institutional risk evaluation process (SIREP)

CALCULATING PORTFOLIO EXPOSURE

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EXECUTIVE SUMMARY

- In times of systemic crisis many portfolios may not be as diversified as managers think. The majority of assets may share a single point of failure – the fiat system itself.
- This single point of failure is primarily due to the dependence of leading fiat institutions upon each other for their solvency.
- Ironically this singularity has evolved from the desire to reduce risk through the use of derivatives. While risk is indeed reduced for small shocks, it has created system-wide fragility when faced with larger shocks such as the collapse of a bank.
- This fragility (systemic institutional risk) is structured into the system and will not go away.
- A portfolio's exposure to systemic institutional risk can be evaluated through SIREP.

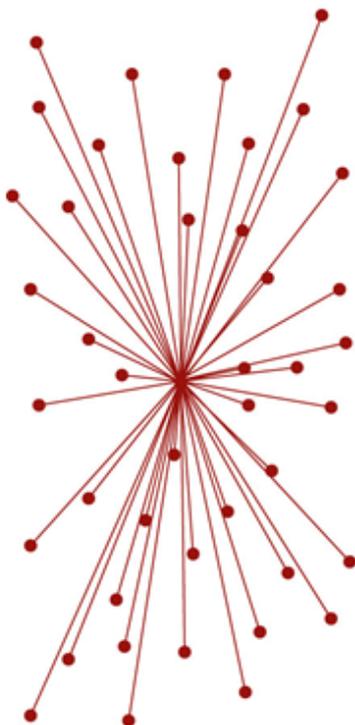
WELCOME TO SIREP

The Systemic Institutional Risk Evaluation Process (SIREP) is designed to do two things:

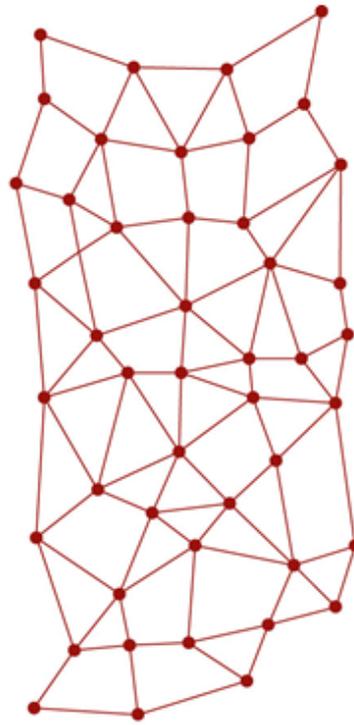
- Raise investor awareness a portfolio's exposure to the risk of the systemic collapse of major banks and insurers.
- Provide fund managers with a metric with which they can better allocated to reduce systemic institutional risk (SIR) within a portfolio.

The OECD estimates \$27.6 trillion is held in private pensions.¹ To what extent is a pension exposed to SIR? If these institutions collapse what value is likely to remain in a portfolio for beneficiaries? SIREP is designed to help answer these questions.

WHAT IS SYSTEMIC INSTITUTIONAL RISK (SIR)?



Centralised Network e.g. assets dependent upon the fiat system



Distributed Network e.g. a portfolio comprised of stand-alone systems of value

Systemic institutional risk is the risk of the fiat financial system collapsing through the loss of its key financial institutions. These include banks, insurers, exchanges, clearing houses and brokers. The risk lies in the fact that the solvency of major institutions, and banks in particular, depends upon other major institutions they trade with. If one institution fails, as did Lehman Brothers on 15th September 2008, the loss of counterparty for other institutions can also render them insolvent. The contagion spreads through the fiat system. Each insolvency increases the likelihood of other institutions going under.

¹ <https://www.oecd.org/pensions/private-pensions/Pension-Funds-in-Figures-2019.pdf>

A DESIGN ISSUE

In effect, during a crisis, the institutions of the fiat financial system act in unison – as a single system. The problem of SIR is therefore a design issue – the way the fiat system is currently built. In times of crisis the system behaves as a centralised network. Failure of any major institution can bring the system down as they function as aspects of a single point of failure. Centralised systems cannot survive if their central node fails. The central node for the fiat system are its major institutions.

By way of analogy the design of the fiat system is similar to Google plugging all its servers into a single socket. The socket represents a single point of failure. Google would never contemplate such a design as the risk of catastrophic failure is too great. Instead it opts for a distributed network of independent servers located in server farms in various countries. Individual servers will fail but their failure does not bring down the entire system.

THE IRONY OF SIR

The irony of systemic institutional risk is that the singularity of the fiat system has come about largely from the desire to reduce risk. If an insurer takes on a large risk, for example the insurance of a new satellite, it will sell a portion of that risk to other insurers through the re-insurance market in order to reduce its own exposure. The result is many insurers carry a small portion of the risk.

Exposure to debt is managed in the same way through derivatives such as collateralized debt obligations (CDOs) which enable a lender to reduce their exposure to particular loans by spreading the risk among other institutions. As a further way to reduce risk a lender can also take out insurance on the debt it has issued with another derivative called a credit default swap.²

In each case financial dependencies between institutions develop through the use of derivatives to reduce the risk of any given transaction.

In their often cited paper *Systemic Risk and Stability in Financial Networks* Daron Acemoglu, Asuman Ozdaglar, and Alireza Tahbaz-Salehi have modeled these mutual dependencies to show that they do indeed create robustness in the financial system when minor shocks such as default on a specific loan occur. The loss is readily absorbed by the system's liquidity. However they also demonstrate that if the shock is large enough, for example the failure of a bank, the same network of dependencies actually escalate the shock producing the possibility of system wide collapse. A network that functions like this is called "robust yet fragile".

² <https://www.thebalance.com/role-of-derivatives-in-creating-mortgage-crisis-3970477>

“[As] long as the magnitude of negative shocks affecting financial institutions are sufficiently small, a more densely connected financial network (corresponding to a more diversified pattern of interbank liabilities) enhances financial stability. However, beyond a certain point, dense interconnections serve as a mechanism for the propagation of shocks, leading to a more fragile financial system.”³

In 2009 Andrew Haldane⁴, Executive Director for Financial Stability at the Bank of England suggested this could well describe the way the financial system is built.

THE RISE OF DERIVATIVES

The fiat system began to morph into the current system of dependencies in the mid-1990s with the great expansion of derivatives as trading instruments between institutions.

To give an indication of the scale of derivative-generated dependencies in 2017 the lower end estimate of the derivatives market was \$544 trillion. The upper end estimate was \$1,200 trillion. By way of comparison the global value of stock markets was \$73 trillion and the value of global real estate \$217 trillion.⁵ That is to say the value of derivatives, and hence the dependencies they create in the financial system, far exceed any other asset class. Because Institutions will always wish to mitigate their risk SIR is not going away.

REDUCING EXPOSURE TO SIR

The only solution to reducing a portfolio’s exposure to systemic institutional risk is to allocate to assets who are not exposed to this risk. This represents a return to genuine portfolio diversification, the foundation of sound risk management.⁶

When evaluating an asset for inclusion into a portfolio a manager needs to ask:

“Does the value of this asset depend upon the functioning of the major institutions of the fiat system?”

In other words, is the value of the asset independent of these institutions so that most or all of it would remain in the event of general financial collapse?

³ <https://www.nber.org/papers/w18727>

⁴ Andrew G. Haldane 2009. “Rethinking the Financial Network.” Speech presented at the Financial Student Association, Amsterdam.

<http://www.bankofengland.co.uk/archive/Documents/historicpubs/speeches/2009/speech386.pdf>

⁵ <https://www.visualcapitalist.com/worlds-money-markets-one-visualization-2017/>

⁶ <https://medium.com/the-capital/introducing-genuine-portfolio-diversification-gpd-a4e2f49068b>

If the asset is dependent upon the fiat system then it provides no diversification away from SIR. If the asset has intrinsic stand-alone value then it does diversify the portfolio away from SIR.

EVALUATING EXPOSURE TO SIR

THE SIR SCORE

Evaluating exposure to SIR involves the same question as allocation to diversify away from its risks. The result is a percentage score of the value of the portfolio exposed to systemic risk.

A PRECAUTIONARY APPROACH

The evaluation process takes a precautionary approach. Assets in a class generally exposed to SIR are assumed to carry systemic risk until proven otherwise. This has the benefit of incentivizing further information concerning an asset as it may reduce the portfolio's SIR score. The exception to this precautionary approach is property. We assume property is owned outright and hence has intrinsic value until demonstrated otherwise.

HIGH LEVEL VIEW

At the high level the following asset classes are considered free of SIR.

Assets of Intrinsic Value
Property – owned outright
Commodities, including precious metals, owned outright and preferably physically held
Natural Resources – owned outright
Digital currencies – actual currencies such as Bitcoin and Litecoin with no collateral.
Self-Managed Investments (SMIs) – a digital form of hedge fund

Assets that are likely to depend upon the fiat system and hence could lose most or all of for their value in the event of systemic collapse include:

Assets of Dependent Value
Equities
Bonds – corporate, municipal and central government
Private Equity
Infrastructure
Property – purchased with debt or publically traded
Venture Capital
Derivatives
Alternative Assets (Hedge Funds)
Cash

INITIAL SIR SCORE

The initial SIR score involves analysing a portfolio according to this split between assets of Intrinsic and Dependent Value. This can generally be conducted using publically available information.

For example this is the 2018 asset allocation the Austin Police Retirement System. APRS is a typical pension fund in the United States.⁷

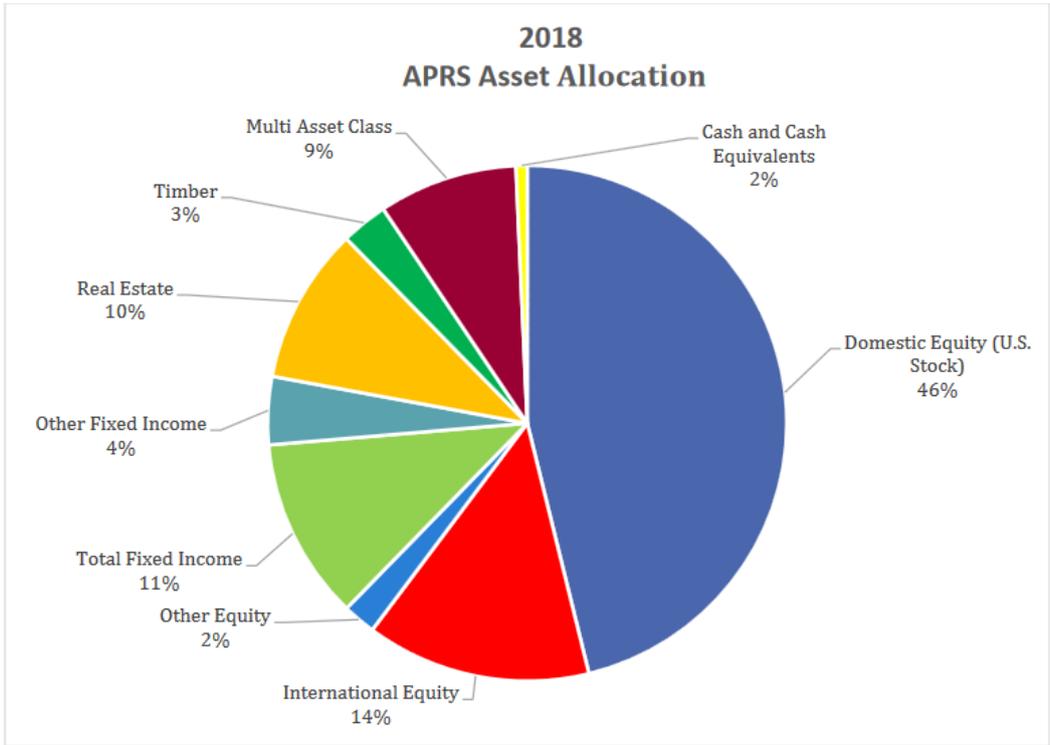


Figure 1 Source: <https://www.ausprs.org/>

⁷ <https://www.ausprs.org/>

Dependent asset classes make up 87% of the portfolio. Only Timber (3%) and Real Estate (10%) do not require the fiat system for their value. The initial SIR Score for the portfolio is therefore 87%. This is the per cent of assets in the portfolio at risk of their value falling to zero during the systemic collapse of the fiat system.

IMPROVING AN SIR SCORE

There are two ways to improve an SIR Score:

- Further information concerning individual assets in the dependent classes that shows they are likely to survive general financial collapse
- Changes to portfolio allocation towards assets with intrinsic value.

The first step is to improve the SIR Score with further information. This has the twin benefits of:

- Providing a more detailed analysis of the exposure of a portfolio to SIR at the individual asset level. What can be measured can now be effectively managed.
- Providing the portfolio manager with a means to measure and hence reduce SIR.

The Systemic Institutional Risk Evaluation Process (SIREP) takes a modular approach. Each module provides the means to evaluate assets in a particular class for their exposure to SIR.

MORE INFORMATION

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Disclosure – Kenton-Dau LLC is the developer of the SMI asset class. A number of SMIs are available for allocation.

Disclaimer - The information presented here is not personalised advice and is intended for general informational purposes only.