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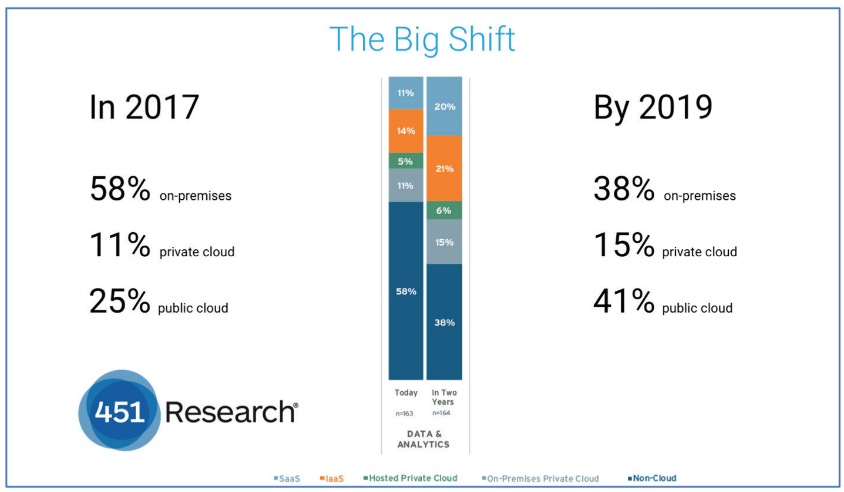
Cloud Concentration Risk: Will this be our next Systemic Risk event?

Dr. Richard L. Harmon, Global Industry Leader – Financial Services

The adoption of cloud computing in the financial services sector has grown substantially in the past 3 years on a global basis. Industry analyst firm 451 Research finds that the deployment models for many workloads are expected to shift significantly toward both public and private cloud environments. They project public cloud adoption will see a shift of critical data and analytic workloads from a 25% market share in 2017 to a forecasted 41% share in 2019. This coincides with a decline in on-premise data and analytic workloads from 58% in 2017 to 38% in 2019.



From a Cloudera perspective, we see this shift towards public cloud-based workloads being driven by several factors:

- Increased agility to more effectively support end-user self-service requirements
- Cloud compute and storage elasticity that optimizes infrastructure usage
- Lower overall TCO
- An executive mandate to minimize on-premises data center footprint and reduce legacy system dependencies

Given the circumstances that led to the 2008-2009 financial crisis, it should not be a surprise to expect global regulators to also be looking at the impact of a wide range of technology innovations, changes in market structure and business models on the future stability of the global financial system. Starting in 2017, the Financial Stability Board (FSB) has started to analyse these trends.

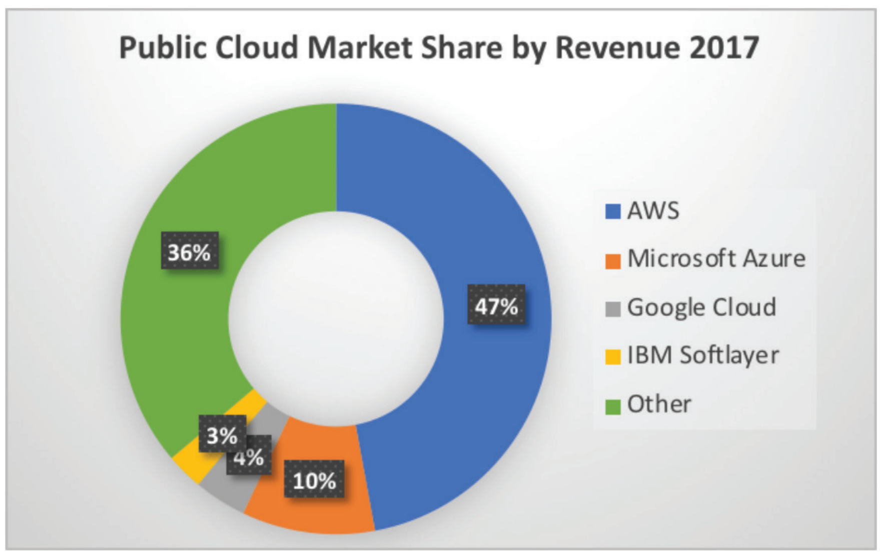
Mark Carney, the Governor of the Bank of England and Chairman of the FSB, summarized the current work being undertaken at the request of the G20 members;

"... the FSB is assessing how FinTech developments are affecting the resilience of the system; by identifying the risks associated with new and existing financial institutions and activities, and the supporting financial market infrastructure."

The first outcome of this work is a FSB report published on June 27, 2017 entitled, "Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention".

In studying the causes for Financial Instability, many academics and practitioners use the term **systemic risk** as defining a category of risk that describes threats to a financial system, market or economic segment. Systemic Risk has been largely the concern of the global regulatory institutions, but this is slowly being addressed by enterprise risk groups in several of the major global financial services institutions. While there are many types of triggers for systemic risk events, one that I want to focus on in this piece is Concentration Risk.

From a regulator perspective, concentration risk within any key business, market or technical area of the financial services sector is an area for concern and can trigger a more detailed evaluation of the potential global impacts. The global public cloud platform providers, such as Amazon, Microsoft and Google, have made incredible progress over the past few years around the security of their diverse cloud service offerings. This has helped drive cloud adoption across the financial services industry at a global scale. From Cloudera's market leading Big Data & Analytics position in the financial services sector, we see not only continued migration of work loads into the cloud but we anticipate an acceleration of this trend across all of the global banks in the coming years.



Source: Cameron Coles, "Overview of Cloud Market in 2017 and Beyond", Skyhigh Networks Blog, 2018.

The chart above provides a breakdown of public cloud market share based upon Q4-2017 revenues. While this is not Banking specific, it shows that Amazon has a substantial share of this market.

In their June, 2017 report, the Financial Stability Board (FSB) analysed potential systemic risk factors from FinTech that merit authorities' attention, both from a supervisory and regulatory perspective. The FSB identified 10 issues that merit authorities' attention, of which three are considered priorities for international cooperation:

The FSB defines FinTech as technologically-enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.

Richard Harmon & Justin Lyon, "Computational Simulation - the next frontier for better decision-making". Cloudera White Paper, 2017. (https://www.cloudera.com/solutions/gallery/simudyne.html)

"Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention", Financial Stability Board, 27 June 2017.

(i) the need to manage operational risk from third-party service providers;

(ii) mitigating cyber risks; and

(iii) monitoring macrofinancial risks that could emerge as FinTech activities increase.

Of these three key international concerns, the need to manage operational risk from third-party service providers is worth taking note. In particular, the report concludes that,

"Third-party service providers to financial institutions are quickly becoming more prominent and critical, especially in the areas of cloud computing and data services. The fact that many third-party providers may fall outside the regulatory perimeter places increased emphasis on the importance of managing related operational risks, which could ultimately undermine financial stability. In this regard, authorities should determine if current oversight frameworks for important third-party service providers to financial institutions are appropriate, e.g. in cloud computing and data services, in ***particular if financial institutions are relying on the same third-party service providers****. This may entail greater coordination globally across financial authorities, and with non-traditional partners such as authorities responsible for IT safety and security."*

One should note their concern about concentration risk in the area of cloud computing and data services.

In another section of the FSB's report regarding **Ongoing Monitoring of FinTech** they emphasize that;

"While there are currently no compelling signs of macrofinancial risks materialising, experience shows that they can emerge quickly if left unchecked. ***The importance and prevalence of complex networks and associated contagion effects could increase as FinTech gains prominence; indeed this may be an outcome of cloud computing services and DLT.*** *Systemic importance may surface, including interconnectedness and centrality issues."*

One clear implication is that the expanding role that Cloud Computing will play in the future landscape of the Global Financial Services System warrants careful monitoring at an international scale. If the regulators determine over time that there exist systemic risk implications for concentration of public cloud service providers, they could "recommend" that the major banks follow a multi-cloud vendor structure to diversify this risk.

What might be the potential long-term implications for a firm's public cloud strategy?

While regulatory focus on public cloud concentration risk is an important factor to take into consideration, I would argue that all financial institutions should be looking at the long-term implications of a single public cloud strategy. Diversification of risk is always a key concern for financial institutions and the seeming safety of having a single cloud provider is not being properly measured from a systemic risk AND operational risk perspective.

This lack of diversification can quickly become a key regulatory concern with some non-optimal impacts on the enterprise - e.g., forced multi-cloud environments! Should a specific cloud provider have significant issues, this could not only impact the functioning of a specific institution but could easily spread to the wider market with potentially catastrophic consequences globally!

One of the key advantages of having the Cloudera platform as your Big Data and Analytics foundation is that we enable our customers to have a flexible and diversifiable cloud strategy. This typically starts with a hybrid on-premise and cloud configuration coupled with the ability to enable a multi-cloud strategy at any time rather than being locked into a single provider with proprietary data schemas and formats. Cloudera enables workloads to be moved across clouds or to on-premise clusters, preventing cloud lock-in and ensuring diversification of cloud platform risks.

About Cloudera

Cloudera delivers the modern platform for machine learning and advanced analytics built on the latest open source technologies. The world's leading organizations trust Cloudera to help solve their most challenging business problems by efficiently capturing, storing, processing and analyzing vast amounts of data.

Learn more at cloudera.com

Bibliography

"The Promise of FinTech – Something New Under the Sun?", Speech given by Mark Carney Governor of the Bank of England & Chair of the Financial Stability Board. **Deutsche Bundesbank G20 conference** on "Digitising finance, financial inclusion and financial literacy", Wiesbaden 25 January 2017.

"Voice of the Enterprise: Workloads and Key Projects, Cloud Transformation", **451 Research**, 2017.

"Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention", **Financial Stability Board**, 27 June 2017.

Cameron Coles, "Overview of Cloud Market in 2017 and Beyond", **Skyhigh Networks Blog**, 2018. (https://www.skyhighnetworks.com/cloud-security-blog/microsoft-azure-closes-iaas-adoption-gap-with-amazon-aws/)

Richard Harmon & Justin Lyon, "Computational Simulation - the next frontier for better decision-making". **Cloudera White Paper**, 2017. (https://www.cloudera.com/solutions/gallery/simudyne.html)

Rayna Hollander, "The global cloud market jumped 46% in Q4". **Business Insider**, Feb 6, 2018.

(http://www.businessinsider.com/global-cloud-market-q4-2018-2)