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ABSTRACT: The Financial Services Industry plays a key role in our national security and prosperity by providing much needed credit and capital to the Defense Industrial Base and all aspects of the economy. Seven years after the worst financial crisis in recent history, regulations have increased transparency and raised liquidity, capital and leverage standards. By many measures the system is now safer, particularly in terms of stability. However, concerns remain that risk may be moving to unregulated areas and that post-crisis regulation designed to make the industry more stable is now potentially undermining its contribution to economic growth. Our recommendations focus on improving the balance between financial services sector stability and the necessary market liquidity to support a prospering US economy, as well as issues of political, transparency, cyber-security and ethical risks.

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Domestic:
Bank of America (BoA), Charlotte, NC
British Embassy to the United States, Washington, DC
Canadian Embassy to the United States, Washington, DC
Chinese Int'l Trust & Investment Corp (CITIC) Securities Int'l USA, New York City, NY
Congressional Budget Office, Washington, DC
Consumer Banking Association (CBA), Washington, DC
Consumer Financial Protection Bureau (CFPB), Washington, DC
Federal Bureau of Investigation (FBI): Financial Crimes Division, New York City, NY
Federal Deposit Insurance Corporation (FDIC), Washington, DC
Federal Reserve Bank of New York, New York City, NY
Federal Reserve Board, Washington, DC
Financial Industry Regulatory Authority (FINRA), Rockville, MD
Financial Services-Information Sharing and Analysis Center (FS-ISAC), Reston, VA
Financial Stability Oversight Council (FSOC) Office of Financial Research, Washington, DC
Goldman Sachs, New York City, NY
International Monetary Fund (IMF), Washington, DC
Investors Exchange (IEX), New York City, NY
J.P. Morgan Chase and Company, New York City, NY
M&T Bank, Wilmington, DE
Moody's Investor Service, New York City, NY
New York Stock Exchange (NYSE) Euronext, New York City, NY
Pentagon Federal Credit Union, Alexandria, VA
Shadow Financial Regulatory Committee, Washington, DC
The Carlyle Group, Washington, DC
United States Commodity Futures Trading Commission (CFTC), Washington, DC
United States Securities and Exchange Commission (SEC), Washington, DC
United States Senate Committee on Banking, Housing and Urban Affairs, Washington, DC
Wells Fargo, Charlotte, NC
Wilmington Trust Company, Wilmington, DE

International:
Bank of England, London, UK
Barclays Bank, London, UK
European Bank for Reconstruction and Development, London, UK
Financial Times - Martin Wolf, London, UK
Her Majesty's Treasury, London, UK
TheCityUK Trade Association, London, UK
United States Embassy, Economics Section, London, UK

INTRODCUCTION

The United States (US) Financial Services Industry (FSI) is vital to the prosperity and national security of the country. It underpins the US economy and provides powerful levers with which to exert major global influence. As outlined in the 2015 National Security Strategy (NSS):

> The American economy is an engine for global economic growth and a source of stability for the international system. In addition to being a key measure of power and influence in its own right, it underwrites our military strength and diplomatic influence. A strong economy, combined with a prominent US presence in the global financial system, creates opportunities to advance our security.[1]

The US wields its robust economy as an instrument of national power, using a variety of tools to include economic sanctions, military funding, diplomatic funding, and international partnership building through foreign aid. These national security tools and the US economy as a whole are bolstered by a strong FSI, led by the commercial and investment banking sectors which provide credit and capital to all aspects of the economy. As well, US banks play a specific role in international finance through dollar payment clearing services, offering a precise instrument through which the US can impose foreign sanctions. For these tools to be reliable and effective, and for America to prosper, its financial system must be stable.

History shows the US has one of the most prosperous yet unstable financial systems of any developed country over the last 200 years, with significant financial crises occurring roughly every 15 years.[2] The 2008 financial crisis spread globally; it cost the US economy trillions of dollars and pushed most of the developed world into a major recession, from which it is still recovering. The system of lending long and borrowing short lies at the heart of basic bank operations, but is also its Achilles heel, creating a maturity mismatch that causes the FSI to be at risk of quickly running out of cash to pay debts. This can lead to bank runs, financial crises, and general instability in financial markets that pose risk to the country's wellbeing, with banking sector stability being essential to long-term prosperity. As a nation, we have created reforms and regulations to protect the system. Despite these efforts and much like an economic business cycle of inflation and recessions, history shows us that another crash is inevitable. There are no formulas that can accurately predict its cause in this innovative and adaptive industry, so the focus must shift from preventing financial crises to ensuring the system can weather any storm.

A stable financial system is not one without risk or shocks, but rather one where risk is transparent and shocks can be absorbed without cascading into a systemic crisis. One expert interviewed for this paper stated that risk in the FSI is like a balloon -- as government oversight squeezes risk out of one part of the industry, it simply moves elsewhere.[3] Higher liquidity (able to convert an asset to cash or sell it quickly without reducing its price) and capital reserve holdings (liquidity and designated assets that could be used to pay debts) are key post-crisis reforms already in place and act as shock absorbers. Coupled with increased transparency from annual government-led "stress tests," US banks are more resilient to systemic risk than at any time in decades. However, the pendulum between ensuring stability and providing market liquidity to the economy may have swung too far toward stability and is having unintended consequences.[4] New regulations and market forces are pushing risk into non-regulated areas, are causing increased concentration of the largest banks, and may be undermining the FSI's ability to contribute to economic growth and prosperity, thus damaging national security.

We have concluded that that the best approach to ensuring the health of the FSI is to focus on stability and resiliency to effectively mitigate risk regardless of its future shape, by maintaining and strengthening the post-crisis shock absorbers. With these robust liquidity, capital and debt/leverage standards firmly in place, Congress should conduct a comprehensive, bipartisan review of the 2010 Dodd-Frank Act to assess whether these additional post-crisis reforms are having the desired effect and which of its many elements are still required. We also recommend several actions for government and industry to improve cyber-security and the ethical culture within the FSI.

METHODOLOGY

The authors of this paper conducted an extensive literature review, including books and articles written by and interviews with academics, industry practitioners, and former government officials. Based on this research, each study team member wrote an individual paper on a host of different topics, all related to the financial system. They also conducted group research projects to examine the strategies and performance of six different major financial institutions: JP Morgan Chase, Goldman Sachs, Bank of America, Wells Fargo, MetLife and Barclays.

A rigorous field study program, consisting of more than three dozen visits to industry and government organizations complemented this academic research. The field studies provided access to senior officials and experts at government and industry regulatory bodies, major financial institutions, regional and community banks, market exchanges, and equity funds. An analogous set of financial organizations in the United Kingdom augmented the US field studies by providing a foreign perspective as well as the opportunity to assess the interconnectivity of the US FSI, and examine best practices. This robust academic study and personal engagement with highly diverse FSI organizations and experts provided a unique multi-dimensional and global perspective of the US financial system.

DEFINING THE INDUSTRY

The US FSI is large and diverse, providing a spectrum of institutions such as banks, credit unions, credit card companies, insurance companies, consumer finance companies, investment funds, and government-sponsored enterprises (GSEs). It conducts a wide array of financial transactions, from simple services such as consumer checking accounts and credit cards to incredibly complex products such as credit default swaps and synthetic derivatives. It facilitates commercial transactions in the US and around the world and is responsible for over ten percent of US GDP. The North American Industry Classification System (NAICS) provides a standardized method for identifying industries in North America and it divides the FSI into more than 40 different categories. This report will focus primarily on two of these categories – NAICS 52211 commercial banking and NAICS 52311 investment banking – due to their importance to the health of the US economy and their role in the 2008 financial crisis. While commercial and investment banking are responsible for approximately 2.2% of US GDP, their central role in providing credit and capital – the life blood of a modern economy – give them an even greater relative impact on the domestic and global economy. Commercial banking is predominately domestic and consists of individual loans, depository services, commercial loans, and real estate loans. Investment banking is highly globalized and consists of underwriting services, corporate finance, financial advising, asset management, brokerages, and stock option dealing.

BACKGROUND

The causes of the Great Recession have been widely discussed and documented; we studied this in detail and our analysis of the causes is included in Appendix A. The primary corrective measure enacted after the crisis is the Dodd-Frank Wall Street Reform and Consumer Protection Act (hereafter referred to as Dodd-Frank). Congress drafted Dodd-Frank with several strategic objectives in mind, but the overall goal was to increase the stability of the US financial system. These objectives included making major banking firms more resilient to shocks/crises, increasing transparency in the derivatives market, realigning the fragmented regulatory structure, and bolstering the US government's authority to deal with financial crises.[5]

Dodd-Frank mandated changes in mortgage lending standards; modified the supervision and trade of derivatives; placed limits on bank concentrations; and created the Consumer Financial Protection Bureau (CFPB), a new regulatory agency focused on protecting US consumers. It also established the Financial Stability Oversight Committee (FSOC), a new regulatory oversight body intended to address systemic threats, and introduced myriad other regulations.[6] In addition to Dodd-Frank and working with their international counterparts, US regulators also strengthened or introduced new liquidity, capital, and leverage standards, including increases on reserve requirements, to make banks more resilient to future financial crises (which we refer to as shock absorbers).

The overall intent of these legislative and regulatory changes was to make the system "safe for failure" by reducing the risk of financial contagion and revising the "too big to fail" phenomenon that necessitated massive taxpayer bailouts for the largest US banks during the 2008 financial crisis. The Dodd-Frank Act did address some issues of systemic risk, mainly through additional buffers and new oversight; however, it also created risk by generating market liquidity issues and potentially pushing capital to even riskier areas of the economy. Furthermore, it's complexity and costliness has caused uncertainty in the financial sector, damage to smaller banks, and credit issues for businesses and consumers. Perhaps the greatest challenge for Dodd-Frank is the manner of its implementation. The final version of the Act received virtually no Republican votes (only three Republicans in both the Senate and House of Representatives voted for it) making it the most partisan vote of any major financial regulation in US history.[7] As good as many of its elements may be, it has become tainted as partisan and simply punitive to Wall Street, which threatens its potential to survive future changes in Government and aggressive industry lobby efforts. In making the system safer, regulation unintentionally created new risks and challenges for the industry.

CURRENT STATE AND FUTURE TRAJECTORY OF THE FINANCIAL SERVICES INDUSTRY

To better understand the commercial and investment banking industry and its future trajectory, and to analyze where the industry is headed in the future, we conducted a detailed Structure, Conduct and Performance (S-C-P) analysis. The Structure component of this analysis examined the degree of market concentration and its causes, including associated market failures. It also included Porter's Five Forces methodology to determine which factors impact FSI competitive dynamics and the potential for (and division of) profit within the industry at large.[8] The Conduct analysis focused on details of key FSI firm and business strategies, whereas the Performance analysis reviewed key balance sheet and financial ratio information to determine whether firms were making adequate profit under adequate risk for the economy.

Key takeaways from our structure analysis highlight that the commercial and investment banking industries have developed high market concentrations, with the top four firms in each industry capturing 52% and 43% of market share in 2014 respectively, and we see a future trend towards increased concentration. This is indicative of high barriers to entry driven by increased regulation after the financial crisis, in the form of higher capital holding requirements and increased compliance costs. Larger banks are better able to meet these requirements. As Dodd-Frank implementation continues, the industry will become even more concentrated, contributing to concerns raised in the 2014 Office of Financial Research (OFR) Annual Report that banks may not be able to provide sufficient market liquidity to properly support US economic growth.[9]

We also used Michael Porter's Five Forces in our Structure analysis. This showed that the main forces of competition within the banking industry are the threat of substitution, the intensity of rivalry between firms, and the bargaining power of suppliers (which we defined as employees). This highlights industry concern over shadow banking and the backward looking nature of Dodd-Frank, as increased regulation on some traditional bank products has created incentives for non-banks to offer substitute products, many of which are not subject to government regulation. It also helps explain some aspects of FSI firm strategy. Most banks offer very similar products and services; little product differentiation means banks are constantly competing with each other for loyal customers and talented employees.

Our conduct analysis further examined FSI firm strategy, indicating that banks generally compete in the right places, in the right ways, and at the right times. If profit levels are being constrained, it's not from this. The primary strategy of the most accomplished banks is to attract high quality customers and employees while balancing implementation costs. Although some have made strategic errors in merger and acquisition activities during and after the financial crisis of 2008, they have since adapted and focused in better areas, (e.g. fee based product lines and services that require less capital) to remain competitive. However, we also observed that the largest banks are holding more capital in reserve, lending less, and contributing less to market liquidity. In 2014 Wells Fargo experienced an 8 percent rise in deposits yet only increased the amount they loaned by 5 percent.[10] Wells Fargo is taking in more money but holding more in reserve. Similarly, Bank of America grew average deposits by roughly $25 billion while reducing their average loans by approximately $2.5 Billion in 2014, as compared to 2013.[11]

To further understand whether adequate profit is being made at adequate risk in the FSI, we need to first identify the best performance ratios to use. While many industries look at Return on Investment (ROI) and compare that to cost of capital to measure profitability, the FSI has such a low amount of equity capital and high amount of debt capital that a more commonly used profitability ratio is Return on Equity (ROE). Additionally, the corresponding cost of equity is an informative measure of the level of risk that bank investors are willing to support. Prior to the 2008 financial crisis, FSI cost of equity was about 13.5%. Today, on average, US banks' cost of equity is around 11.5%[12] as investors now see the industry as safer.[13] As depicted by Figure 1, ROE has improved since the financial crisis; however, Wells Fargo is the only major commercial bank that has achieved an ROE above 11.5%. Furthermore, returns have reached a plateau well below pre-crisis levels. This decline further contributes to concentration of banks since many smaller banks are unable to remain competitive while earning such low ROE.

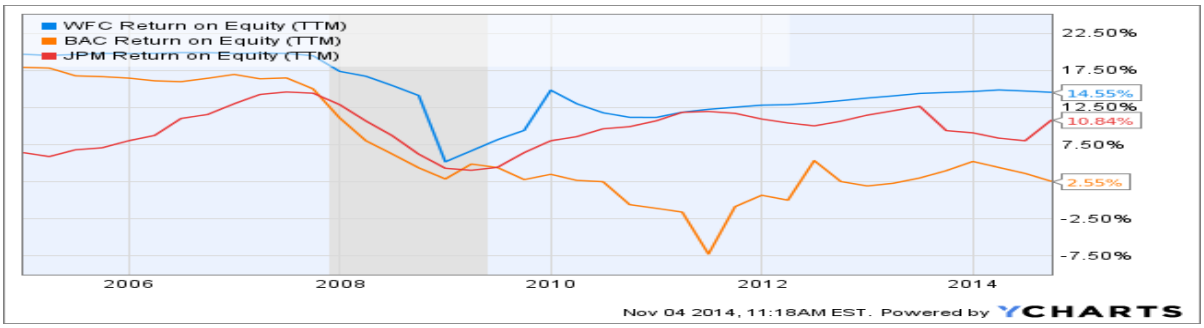

Figure 1: ROE since 2008 crisis

There are two primary causes for this reduced ROE from pre-crisis levels. First, the Federal Reserve Bank (the Fed) has stimulated the overall US economy through both traditional measures to bring the Fed funds rate near zero, and non-traditional monetary policy such as Quantitative Easing (QE) to bring longer-term rates lower resulting in an extremely flat yield curve. This reduces the amount of profit banks can achieve by "borrowing short and lending long" and creates interest rate risk, which will be discussed in more detail later in this paper. The senior economist of one of the largest banks in the US estimates that the prolonged low interest rate environment accounts for approximately two thirds of the reduction in ROE performance.[14] The remaining reduction in ROE is due to the higher cost of compliance levied on firms since the passage of Dodd-Frank. Those costs are significant for big firms, but even harder on smaller banks, which cannot afford the overhead and still remain profitable; this once again contributes to increasing market concentration and large firms growing relatively larger. In addition, some banks have suffered from huge fines in the past two years for misconduct leading to the financial crisis, further constraining ROE. Data on regulatory fines is provided in Figure 2, Appendix B.[15]

In summary, our S-C-P analysis indicates that the FSI continues to be profitable, albeit nowhere near as profitable as it was prior to the 2008 financial crisis. Over time regulatory fines will settle and the government will implement new processes and procedures to meet Dodd-Frank legislative standards of compliance. The industry's concern is that further Dodd-Frank implementation may dilute profitability beyond being able to earn a net return on equity, or at least to the point where its ability to innovate and adequately contribute to economic prosperity is constrained. Our analysis also highlights an increasing market concentration that worsens "too big to fail" (that Dodd-Frank was meant to fix), as well as the backward looking nature of Dodd-Frank in a very adaptive industry where risk has already moved outside of existing regulation or the regulatory structure to such things as substitute products and shadow banking. The end of this paper contains an essay titled "High Frequency Trading," which describes two examples of the adaptive nature of this industry and how risk migrates accordingly, in these cases to marketplace liquidity and transparency. The above concerns will be addressed later in our recommendations.

"YES, IT'S MORE STABLE…"

This paper examined not only whether the post-crisis FSI is adequately profitable, but also whether firms achieve this profitability at adequate risk to the economy, which we examined in terms of stability. The detailed analysis of six globally significant financial institutions and the consensus of the complementary field studies led us to conclude that the FSI is more stable and resilient to future financial shocks than at any time during the last several decades. The government has established new organizations to monitor the emergence of new kinds of systemic risk. New regulations bring more transparency to several financial markets that were previously opaque (e.g., tri-party repo markets and derivatives markets). This should allow firms to identify and price risks

more accurately. Most importantly, banks hold far more assets in reserve to address liquidity and capital risks; most have passed stringent tests designed to assess their ability to withstand economic and financial shocks. The two key factors behind this newfound stability - structural focus and shock-absorbers - are described in more detail below.

Structural Focus

Although the US regulatory structure remains fragmented, Dodd-Frank introduced several important changes to improve the government's ability to oversee the risks taken on by the largest US commercial and investment banks. As discussed earlier, one of the major elements of the Dodd-Frank Act was the creation of the FSOC. The FSOC is charged with identifying and responding to emerging risks to the stability of the US financial system. It is chaired by the Secretary of the Treasury and includes representatives from each of the key regulatory agencies. The FSOC holds the power to designate financial institutions as systemically important financial institutions (SIFIs). SIFI designation brings a host of additional regulations and special oversight to bear, including Fed oversight. The FSOC's ability to take decisive action is limited due to being a council and thus operating by consensus. That it meets periodically and issues an annual report is important because it focuses attention of its members on "macro-prudential policy" - the safety and soundness of the financial system as whole – rather than on the more narrow functions of its constituent agencies (monetary policy, micro-prudential regulation, consumer protection, etc.).

Dodd-Frank also created the Office of Financial Research (OFR) to serve as the FSOC's permanent data collection and analysis arm. As the only federal entity whose primary day-to-day mission is financial stability, the OFR provides an important new mechanism for improved oversight of the overall financial system. The OFR is chartered "…to shine a light in the dark corners of the financial system to see where risks are going, assess how much of a threat they might pose, and provide policymakers with financial analysis, information, and evaluation of policy tools to mitigate them."[16]

"Shock Absorbers" -- Liquidity, Capital, Leverage Standards and Stress Tests

After the 2008 crisis, Secretary of the Treasury Timothy Geithner stated that the most important factor in preventing another financial catastrophe was "capital, capital, capital."[17] Geithner's view was consistent with that of many regulators and economists around the world. Ensuring banks had higher capital levels became the highest priority of post-crisis financial reforms, both in the US and globally. From this perspective, the goal of financial reform was not to prevent the failure of individual firms that take on too much risk but to make the aftershocks of failure less threatening to the system as a whole; to make the system safe for failure.[18] This would be accomplished by strengthening what Geithner called the financial system's "shock absorbers" - more capital, less leverage, and more liquidity.[19]

In his book *Stress Test*, Geithner provides a succinct description of why US and international regulators made the strengthening of financial "shock absorbers" the priority for reform in the aftermath of the 2008 financial crisis:

> By forcing financial institutions to maintain a larger cushion of capital to protect themselves from potential losses, restricting their ability to borrow to finance risky investments, and making sure they could meet their short-term obligations if their funding ever dried up, we would limit their vulnerability to runs, while also limiting the systems' vulnerability to contagion if a major firm did fail.[20]

Dodd-Frank, by design, did not set these new capital and liquidity requirements but instead gave new powers to the Fed and other regulators to set new, more stringent requirements.[21] In addition, new international agreements such as Basel III gave these and similar requirements global force.[22] Dodd-Frank also required new annual stress tests to test the resiliency of large banks to severe economic and financial tremors.[23]

First instituted in the midst of the 2008-09 financial crisis, the Fed administered stress tests to identify whether the largest US banks had sufficient capital to meet their obligations amid anticipated losses and continue lending. This approach proved incredibly effective to calm the worldwide panic that caused banks to stop lending to each other and threatened runs by depositors. It was subsequently institutionalized in the aftermath of the crisis. Today, regulators use annual stress tests to run banks' holdings through a variety of dire economic and financial scenarios to make both quantitative and qualitative assessments about the bank's ability to deal with various shocks. Failing a stress test may mean that banks must withhold dividend payments to shareholders or use capital to buy back its own shares. All of the major US banks passed the latest round of stress tests in March 2015.[24]

The new liquidity, capital, and leverage standards that have been introduced in recent years are already making individual US banks much more resistant to liquidity and solvency threats. Geithner estimated that from 2009 through 2012, the largest US banks more than doubled their common capital, reduced the amount of runnable short-term funding by half, and increased their holdings of highly liquid assets from 14 percent to about 23 percent.[25] *The Economist* estimates that under the new capital standards, the largest, or 'systemically important,' banks should be able to endure a 20% fall in the value of their assets.[26]

By making individual firms more resilient to unanticipated liquidity and solvency risks, as well as testing firms' performance in severe economic and financial scenarios, these shock absorbers will make the overall US financial system more resistant to future financial crises. Since predicting from where the next crisis will emerge is extremely difficult, creating and periodically assessing the adequacy of buffers within the financial system can provide protection against unanticipated threats.

"…BUT CONCERNS REMAIN."

Although the FSI has demonstrated that it is healthier and more resilient to crisis than the years leading up to the 2008 financial crisis, there are still major challenges that need to be addressed to further strengthen the industry. First, as mentioned earlier, there are indications (including in the most recent OFR Annual Report[27]) that post-crisis regulation is constraining FSI's capacity to provide the necessary market liquidity to the US economy. The challenges below are indicative of additional major risks the FSI currently faces and is likely to face in the long term. Not all challenges are systemic, but, if taken together in a perfect storm, these challenges could test the strength of the FSI and its true resilience. Each are addressed with our recommendations.

Structure - Fragmented Regulation, Unintended Consequences and Concentration

Although the FSOC and OFR have improved the oversight and regulatory structure within the US FSI, the regulatory system as a whole remains overly complex, fragmented, and often duplicative. Figure 3 depicts the current regulatory relationships between a large financial institution and the numerous regulatory agencies throughout US and international markets.[28]

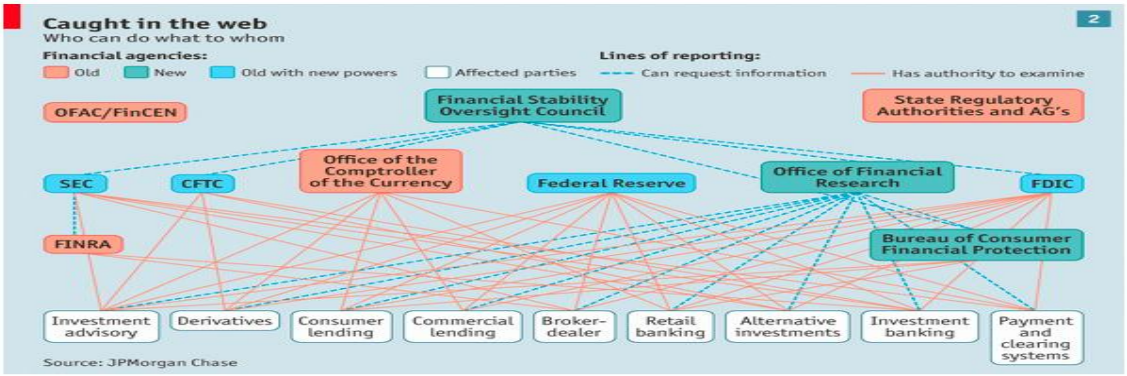

Figure 3: FSI Regulatory Relationships

This convoluted web of regulation imposes high compliance costs on banks, leading to further concentration within the industry and creating a significant barrier to entry for new participants. At one large bank, a high level executive explains that the current regulatory regime "has created wide protective moats around the largest banks."[29] In essence, the regulation designed to make the system safer has provided an unintended benefit to the large, systemically important banks.

Though large banks have survived these regulatory headwinds, the overall number of banks in the US has fallen to the smallest level since the Great Depression. There are now less than 7,000 banks in the US, falling from a peak of over 18,000 banks 30 years ago. While economic factors have certainly contributed to this concentration, several industry members commented that new regulations intended to discourage banks from becoming "too big to fail" had inadvertently raised the compliance burden so high that many banks have become "too small to succeed." Some argue that concentration may not necessarily be a negative trend, as many experts considered the US to be "overbanked."[30] From this perspective, the concentration of banks may result in healthier banks that can survive. Moreover, with fewer banks the system may be easier to regulate. However, concentration may result in more severe consequences should one of these larger banks fail. It may also have a profound impact on small and mid-size lending, as small banks service a significant share of this market. These small banks serve the small suppliers within the DIB; fewer small banks could mean fewer loans and fewer financial services for companies that directly support our national security. This could be problematic for national security if large banks don't meet the needs of the DIB, and the US loses the capabilities they provide. It could be slow and costly to rebuild lost DIB assets in the future.

Political Risk

Given the current political climate within the US Congress, there is increased uncertainty and political risk concerning future regulatory changes. Public anger directed towards the big banks has waned since the financial crisis, and some legislators have expressed interest in winding back some of the provisions of Dodd-Frank. At the same time, other legislators are publically campaigning to impose additional regulations and controls on the banking industry. In nearly every financial institution we visited, the regulatory uncertainty caused by this political risk was a major concern that constrained the bank's ability to make good strategic plans. Many UK banks have already experienced this political phenomenon.

In the near-term, banks will continue to devote enormous amounts of time and money to comply with new regulations and oversight from a multitude of government agencies. One member of the industry described the current environment as a "regulatory Olympics," in which prudential market and consumer regulators are trying to outdo each other in terms of who can implement the most onerous restrictions and impose the largest fines on banks.[31] A number of industry sources

commented that constantly changing rules as well as different agency interpretations of regulations harm efforts to innovate and may keep firms from profitable ventures. These rules have also forced banks to dramatically increase the size of their risk management and compliance staff in order to keep up with all of the new post-crisis regulations. The overall cost to the industry from new regulations may be difficult to correctly ascertain, but it is likely a staggering sum.

One area where political risk impacts the FSI is mortgage lending standards. In studying the causes of the 2008 crisis, government policies encouraging home ownership clearly made an impact. Political pressure to expand the availability of low-income home ownership led companies to seek profits in the mortgage markets, specifically in the sub-prime housing market. The end of this paper includes an essay titled "Political Risk in the Mortgage Market" which describes how government involvement in the housing market may lead to additional areas of risk for the FSI.

Yet another recent example of political risk occurred on December 11, 2014. A last minute inclusion to the 2015 Continuing Resolution (CR)-OMNIBUS Bill repealed a critical element of Dodd-Frank. A bank lobbyist successfully pushed for the abolishment of a provision in Dodd-Frank that prevented derivatives trading by banks covered by the Federal Deposit Insurance Corporation (FDIC). This example shows that a "death by a thousand cuts" scenario based on hyper-partisan politics and lobbying efforts has the potential to reverse Dodd-Frank. It also shows that much of the political risk discussed here could be mitigated through a bi-partisan and independent review committee empowered to determine which parts of Dodd-Frank need adjustment or possibly elimination.

Interest Rate Risk

The traditional banking model starts with banks accepting deposits from clients in exchange for interest, then loaning most of that same money to other customers at a higher interest rate. The difference between the interest rates banks charge on loans and pay on deposits is known as the spread and is how banks have traditionally earned money.[32] As discussed earlier, some deposits are liquid; they are made with the expectation by customers that they may withdraw those deposits at any time. However, the bank is not able to immediately collect all loans. This creates a liquidity risk for the bank. Should all depositors simultaneously request to withdraw their deposits from the bank, the bank is unlikely to have enough cash on hand to pay everyone. This risk has been effectively mitigated through long standing entities such as the FDIC and through newer regulation such as higher capital and liquidity standards. Ideally, banks price liquidity risk through the magnitude of the spread. However, since many loans are offered with a fixed interest rate, and many deposits pay a floating interest rate, banks are exposed to interest rate risk, as well. Banks lend for long terms and borrow for short terms. This "maturity mismatch" creates a situation where, as interest rates rise, banks may end up stuck with low interest rate loans that earn less than the banks must pay their depositors.[33] Should interest rates rise unexpectedly or at a higher rate than anticipated, the bank will eventually run out of capital and face a liquidity crisis. The higher capital reserve requirements and liquidity ratios enacted by Dodd-Frank, coupled with a flat yield curve, have created an extremely challenging situation for banks to earn money through traditional banking practices (Figure 4 in Appendix C amplifies). As such, many commercial banks have transitioned from a model where profits are earned through interest rate spreads to a fee based business model. These banks lend less and charge more fees on things like ATM usage, overdraft charges, and loan origination fees. While this business model reduces interest rate risk exposure, it also reduces the availability of credit to individuals and firms. In other words, banks are not able to contribute sufficient market liquidity to the economy. Non-banks that can operate outside of

most government regulation have stepped in to fill the void, but they do not provide the transparency that regulated banks do.

Credit provided to corporations has increasingly come from non-bank sources such as pension funds, insurance companies, asset managers, and hedge funds. According to a McKinsey Global Institute analysis, the majority of new corporate credit issued since 2007 has come from non-bank sources.[34] Most of this credit comes in the form of corporate bond issuances. In isolation asset managers and hedge funds should not pose systemic risk. However, given low interest rates and low yields of other income generating investments over the last six years, investors have poured money into asset managers and hedge funds in a search for higher yields. Whereas the average duration of fixed income portfolios was high in 2013, it was even higher at the end of 2014.[35] This indicates that fixed income portfolios have purchased more long term bonds and have become increasingly vulnerable to interest rate hikes despite multiple signals from the Fed that they intend to raise interest rates soon.[36] As interest rates rise, bond prices fall, and other investment vehicles begin to provide better earnings. As this happens, long duration funds will lose value and may see increased withdrawals from investors. These funds will have to find liquidity to pay withdrawals.

Hedge funds and asset managers utilize bank margin accounts, lines of credit, and repurchase agreements to maintain short-term liquidity and to increase their leverage. This "liquidity illusion" is a main risk to these funds and the banks that support them.[37] Some of the largest hedge funds are also some of the most highly leveraged funds, meaning that they borrow money from banks and prime brokers in order to invest more capital than they actually possess.[38] Through preferential financing agreements, many banks are exposed to the interest rate risk, credit risk, and market risk of asset managers and hedge funds. There is a lack of sufficient transparency in the asset management and hedge fund market to fully evaluate the level of risk such financing arrangements pose to the financial industry writ large.[39] This is a prime example where Dodd-Frank has pushed risk from a regulated sector into unregulated and less transparent entities, where the possibility of contagion remains.

Some elements of interest rate risk are mitigated through the Fed communicating its intentions with regard to interest rate hikes. It must continue to do so as transparently as possible. As interest rates reach more normal levels, banks will be able to return to lending and ensuring market liquidity. The issue of interest rates pushing risk to unregulated entities would be mitigated through the resiliency created in our recommendations later in this paper.

Cyber security risk

The threat of cyber attack is another significant concern for the FSI. Although a large number of cyber threats come from common criminals, a successful cyber attack on the FSI could have a devastating impact on the global economy. A significant attack against one or two major systemic banks has the potential to grind the global economy to a halt, if the systems that move global funds freeze up. Kaspersky Labs, a leading cyber security firm, uncovered a string of over 100 cyber-attacks on financial institutions in 30 countries, to include Russia, Japan, China, Europe and United States, with confirmed losses exceeding $300 million and an expectation that when the investigation is complete, as attacks are still ongoing, the total stolen by cybercriminals may be $1 billion.[40] The cyber threat is one of the most daunting issues facing the FSI and US government as a whole; however, the FSI dedicates more resources to cyber security and data integrity than many other industries. Financial services firms will spend $4.1 billion on cyber security this year and they have plans to boost those numbers by an additional $2 billion over the next two years.[41]

Most of the firms we visited cited the Financial Services-Information Sharing and Analysis Center (FS-ISAC) as a positive partner in the fight against cyber attacks. They provide the US public-private partnership inside the cyber domain. FS-ISAC details personnel to the Sector Operations Center inside the Department of Homeland Security National Crime Information Center to serve as the link between the public and private sectors, but this effort could be improved.

The interconnectedness of financial institutions is a large part of the cyber threat; as one bank representative stated, "they are part of the geopolitical landscape."[42] Banks can no longer assume they are invulnerable from regional issues just because they do not conduct business in that region. In 2013 a group of Muslim hackers posted a YouTube video announcing an incoming distributed denial of service attack on the FSI. They listed specific banks that would be affected and included both large and medium sized banks.[43] The funding and personnel required to implement strong cyber security programs may pose no problem for a large financial institution but may be completely unaffordable for a small community bank.

There is no single entity responsible for handling cyber attacks or cyber policy. This makes it particularly hard during and after an attack to determine attribution and to generate a cogent response. Another difficulty for the FSI is that during a cyber attack, the government agencies that do become involved in the response are often reluctant to share information with the company due to security classification restrictions. Both the domestic and overseas banking communities cited cyber threats as a significant problem. Recommendations to address this issue include improving information sharing policies, enacting cyber stress tests and conducting targted red team activities. These actions, which will be discussed in further detail in the recommendations section of this paper, can help improve cyber defenses in the FSI.

Ethical risk

One of the most difficult challenges to address is ethical behavior. The 2008 financial crisis revealed a number of questionable and non-transparent behaviors in the areas of mortgage offerings and trading procedures. The most striking part of this is that almost all of these practices were technically legal. One of the clearest examples of non-transparent, deceptive behavior is the Lehman Brothers' practice of altering the accounting books to influence credit rating agencies and consumer groups and generally communicate a better financial picture than they really had. According to the Seven Pillars Group:

> By utilizing Repo 105, Lehman Brothers raised cash by selling assets to a behind-the-scenes phantom company called Hudson Castle, which appeared to be an independently run organization but was actually controlled by Lehman Brothers executives. In accordance with Repo 105 terms, assets were sold to Hudson Castle and repurchased between one and three days later (3). Because the assets were valued at 105 percent of the cash received, generally accepted accounting principles (GAAP) accounting rules allowed the transactions to be treated as sales, thus removing the assets from Lehman Brothers' balance sheet altogether.[44]

The law did not specifically prohibit this practice, which is why Lehman was not held legally accountable for it. Nonetheless, it certainly reflects intent to deceive and not provide a clear view of the state of Lehman's financial status.

There are also significant cultural issues that lead to a propensity for unethical behavior; some parts of this industry feel an individual may need to break the rules in order to be successful. Labaton Sucharow, an investor protection law firm, conducted an ethics survey in 2012. They

analyzed interview data from 250 UK financial professionals and 250 US financial professionals. The results of the survey were staggering; in one area they found that "25% of UK respondents believed financial services professionals may need to engage in unethical or illegal activity to get ahead; US respondents were only slightly less inclined to engage in wrongdoing at 22%."[45] In another case, 16% of respondents said they would commit a crime (insider trading) if they could get away with it.[46] It is important to note that this survey comes four years after the biggest financial crisis of our time.

After the crisis, many Americans were outraged at the FSI, seeing the banks as the worst examples of corruption and avarice in recent history. Even six years beyond the crisis, banks still need to rebuild that trust, lest they risk losing significant customers and shareholders. Shareholders and investors should assess whether FSI executive compensation rates are appropriate; notably, the FSI provides significantly more compensation for its executives than any other industry (see Figure 5 in Appendix C). Many firms are well aware that they need to improve ethical behavior or it will be mandated and supervised by a regulator. There are a number of ways to improve ethics within the financial services industry. Some of these recommendations are low cost such as consumer education; actions such as executive compensation reform, personal accountability, and tying ethics to performance evaluations will require a commitment from bank executives, boards of directors, shareholders and line employees. These recommendations will be explored in further detail in the next section.

RECOMMENDATIONS

While it may not be possible to fully prevent another financial crisis, there are a number of actions that should be taken in order to create a more resilient and productive financial services system. The following recommendations are submitted to address long term and systemic risks that threaten the health and viability of the FSI and therefore its capacity to support national security and American prosperity in general.

1) Fine-Tune financial buffers and shock absorbers

Since the crisis, a major focus of global regulators has been to ensure that capital and liquidity ratios are sufficient to withstand a future jolt or crisis in the financial system. Regulators have also implemented stress tests to ensure the system is working properly. These actions are among the strongest taken by regulators since the crisis and are likely sufficient for now. As time passes, however, regulators may either excessively weaken these actions or make them too stringent. What follows are a number of recommendations to maintain the consistency, political balance, and viability of these new shock absorbers.

Continue to implement a "dual system" of shock absorbers

The set of shock absorbers taking shape includes risk-weighted liquidity, capital standards, and a simple leverage ratio. This "dual system" makes for a somewhat more complicated regulatory architecture but it also creates more robust protection against banks' or regulators' ability to game standards. The industry should maintain these absorbers as a permanent fixture in the FSI.

Bifurcate responsibility between regulators and Congress

Shock absorbers are the new backbone of financial stability; therefore, it is important to have a two-pronged approach to ensure these ratios are set correctly and in line with current financial environments. Regulators often have more flexibility to respond to evolving market conditions; they should be authorized to set the risk-weighting for liquidity and capital standards.

Congress should codify the leverage standard into legislation in order to raise its visibility and allow the legislative branch some oversight of this critical part of financial regulation.

Create an independent "Financial Shock Absorber Panel"

Congress should establish an independent panel of academic and industry experts to periodically review the risk-weightings used in liquidity and capital standards. This would serve as an important transparency measure and could help ensure regulators use realistic risk weightings. It also provides another means of communication between the industry and its regulators, bridging the gap between an industry that evolves quickly and government oversight entities that tend to lag behind current innovations in the industry.

2) Conclude Dodd-Frank and assemble a comprehensive Review Committee

At this stage, regulators should finalize the new rules created by Dodd-Frank. This action alone would go a long way toward ending the uncertainty in the FSI. In addition, the US government should establish a committee to conduct an independent, comprehensive, and bipartisan review of the Dodd-Frank Act. Congress created Dodd-Frank in the midst of a crisis and it passed in a hyper-partisan fashion. While acknowledging that further uncertainty of future regulation is not ideal, a reassessment from a bipartisan group comprised of experienced regulators, former legislators, and diverse representation from different banking sectors will serve to strengthen and streamline the regulatory system. In chartering this committee, Congress should agree that its recommendations will automatically be submitted for an up or down vote without modification, similar to the way the Base Realignment and Closure (BRAC) commissions operate. In this manner, the review can be empowered to act more boldly to determine which parts of Dodd-Frank need revision, augmentation or removal. The independent committee can also study the highly fragmented regulatory structure that was not addressed by Dodd-Frank. While the committee will review the entire act, the priorities of this committee should be to define "stability," reorganize the regulatory structure, and look at the effects of Dodd-Frank on small banks and financial services firms, all while enhancing market transparency. Transparency throughout the industry will help all parties to view where risk has migrated (to include interest rate risk) and mitigate that risk appropriately. The UK has an independent banking commission, which provides a similar function for UK banks, and it is a successful model to emulate.

Since the new liquidity, capital and leverage standards were not a specific Dodd-Frank mandate, those shock absorbers should be finalized and left in place. In addition, the committee should review the results of this study every 10 years to update the regulations and ensure the requirements placed on the highly innovative and rapidly evolving FSI are still relevant.

3) Take action to improve cyber security

Although the cyber issue is particularly vexing, there are some areas where the government and the FSI can make progress. The first is in the realm of information sharing. One bank stated that the FS-ISAC provides a valuable service to the industry, but they could be timelier in sharing critical information. Cyber incidents happen quickly and spread quickly. Information about the type of attack and the origin of attack needs to be shared as quickly as possible in order to mitigate the issue. An expansion of FS-ISAC would speed up the information sharing process as well as help banks deal with security classification issues and share the data they need while still protecting US government critical information.

Another recommendation to address cyber threats is to enact cyber stress testing, similar to what the Bank of England enacted with the "CBEST" program. CBEST is a vulnerability testing

framework which uses actual threat intelligence to ensure the tests are realistic and accurate.[47] Since banks already undergo capital sufficiency stress tests in order to assess their performance during financial crisis scenarios, a cyber stress test would assess individual bank and FSI performance during cyber attack scenarios. Tests should incorporate how a bank will manage its business lines during an attack that takes them offline; this may be through agreements with other unaffected banks to continue providing services until the affected bank is able to get back up and running. These tests could then generate best practices and potentially even government-wide policies surrounding industry cyber attacks. Along with stress tests, the FSI could conduct red team activities designed to test an individual firm's performance and help shore up vulnerabilities. One firm we visited discussed their process for red team attacks and cited this as one of their more useful tools in the cyber security realm. These recommendations are not designed to solve the cyber security issue entirely but will help improve the issues that the FSI faces with regard to cyber threats.

4) Improve ethical culture

Improving ethics and promoting a culture of integrity within the FSI is one of the hardest areas to address. Much of what constitutes unethical behavior is really as simple as purposely hiding information and intentionally trying to deceive customers. Improvements in transparency of information can help. To address this, the SEC should finalize the Dodd-Frank required rules to make executive pay transparent as well as formalize the repayment of executive compensation bonuses when it becomes clear that executives engaged in illegal behavior. Known as the "claw back" policy, it will help to hold executives accountable for longer-term performance results as well as consequences for their actions.

More importantly, the industry must regain the trust of its shareholders and customers by shifting companies away from a mindset of simple regulatory compliance to an organizational culture of ethics and integrity. This is an incredibly difficult action to take, and if a financial institution has significant ethical problems, it may take a very long time to see results. A recent Barclays initiative serves as an excellent example of how to tackle this challenging problem. In January 2013 Barclays Chief Executive Officer told his employees to agree to a new ethical code of conduct, which is directly tied to performance bonuses.[48] Employees who don't like the new code of conduct can leave. This firm's management is making ethics a priority by tying it to a performance metric. They are using a specific part of performance to change the ethical mindset of the company. Initiatives like this can help to ensure firms remain viable for the long term and continue to provide needed stability and growth for our economy and our national security. In addition, creation of a "most ethical firm" award program may incentivize the FSI to make ethics a priority. The award program could be based on specific actions taken to improve ethics in measurable ways such as through performance measures. Firms that win the most ethical financial firm of the year could tout ethics and trust as a significant competitive advantage.

One way to address the ethical culture from outside the financial institutions is to provide consumers the information they need to make better financial choices. To this end, the CFPB should continue to aggressively provide consumer education. In looking at the "predatory lending" of subprime mortgages, it is clear that these were specifically used to mislead consumers into buying mortgages they could not afford; conversely, those consumers had nowhere to go for an understandable explanation of what they were buying or what it would mean in the long term. The CFPB home webpage says "Owning a Home: We want to help consumers make smarter decisions about mortgages." [49] By approaching financial decisions as a partnership with companies,

consumers can be a part of holding financial institutions to high ethical standards and re-establishing solid trust relationships.

Another way to address ethical concerns is to enact a law that holds individuals financially accountable for their actions. One of the complaints heard from some banks is that the bank (and by extension, the shareholders) must pay the fines that come as a result of the actions of one or two people, but there is no individual punishment for the employee other than what the company can do from a human resources perspective. In addition to the bank and chain of command, individuals should be fined for their actions. Board Members and Chief Financial Officers are responsible for their decisions, and Section 302 of the Sarbanes-Oxley Act of 2002 requires senior management within corporations to certify their financial statements. Sarbanes-Oxley, in and of itself, does not adequately address individual wrongdoing within corporations; therefore, the government should amend Section 302 of Sarbanes-Oxley to include personal pecuniary liability for senior management officials. Actions such as this serve to mitigate many of the industry's difficult ethical situations.

CONCLUSION

Overall, the US financial system is stronger and safer from systemic risk than it was in 2008, due to new shock absorbers and stress testing; however, risk may now be moving to new areas outside of traditional investment and commercial banks. If the "perfect storm" of an economic recession, major regulatory changes, and near-zero interest rates is passing, then US banking firms may now be poised to return to a more profitable business environment. They are also able to contribute economic value while maintaining the stability needed to enable the global economy. Shock absorbers may be able to keep damage out of the FSI, but they cannot make the risk go away entirely. Establishment of a committee to finalize Dodd-Frank will go a long way toward bringing certainty to the financial environment. Proactive measures are necessary to address cyber risks and ethical culture concerns. Neither of these problems has a simple solution, there is certainly much more we should do to mitigate the threats posed in these areas. Our national security and prosperity may well depend on it.

Additional Financial Services Industry Topics

This section reproduces two individual essays, High Frequency Trading and Political Risk in the Mortgage Market.

Individual Essay #1- High Frequency Trading (HFT)

High Frequency Trading (HFT) and off-market dark trading (dark pools) are two examples of how the FSI innovates its way out of backward looking regulation such as Dodd-Frank. As they result in market failure and increased systemic risk for the FSI, they warrant closer scrutiny, require smart regulation and underpin the importance of industry resiliency in order to mitigate risk in whatever shape it may take.

HFT uses a number a of strategies, centered on complicated mathematical formulas and models known as algorithmic trading. The driving force behind the change in equity trading, "almost every financial institution with significant capital employs some form of algorithmic trading."[50] The idea is to use speed, to create a trading advantage. The 2010 Flash Crash where, on May 6 the Dow lost almost 1,000 points in 20 minutes,[51] raised concerns that, sensing a market crisis, HFT firms rapidly withdrew from the market and exacerbated the liquidity crisis.[52] In another instance, the Knight Capital Group trading debacle where a rogue program that was supposed to have been deactivated, blasted out trade orders costing Knight nearly $10 million a minute[53] and "triggered widespread concern that algorithms could behave in unexpected ways and impair the market."[54] Events such as these lend further credence to claims that the market's dependence on automation and its interconnectedness create a greater potential for systemic risk propagation resulting from the untimely removal of liquidity.[55] The Knight debacle indicates that ever-changing algorithms can override the "circuit breakers resulting in contagion that could cause a chain reaction by pulling liquidity out of the general financial markets, thus resulting in another 2008 financial meltdown.

The Commodity and Futures Trading Commission (CFTC) Subcommittee on Automated and High Frequency Trading recommends a working definition of:

> (1) algorithms for decision- making, order initiation, generation, routing, or execution, for each individual transaction without human direction; (2) low-latency technology designed to minimize response times, including proximity and co-location services; (3) high speed connections to markets for order entry; and (4) recurring high message rates, including orders, quotes, and cancellations.[56]

Based on complicated mathematical formulas and models, HFT algorithms use incredibly powerful computers to analyze and execute trading opportunities.[57] Low-latency is the time measured between the command to execute the trade and the time it actually happens at the exchange. Many exchanges sell co-location services to trading firms to allow them to place their servers in close proximity to the exchange's matching engine.[58] In the book Flash Boys, Larry Tabb, an industry consultant, estimates that a 3-millisecond advantage in response time would allow a firm to take advantage of the miniscule price differences between the different exchanges and make the firm approximately $20 million annually – he was right.[59]

In the past, equity exchanges used market specialists to match buyers and sellers of specific equities. The specialist would procure the required shares from numerous parties in the market place, bundle the equities into the desired quantity, and then resell them to the buyer, usually at a

25-cent premium known as the spread. The spread recompensed the specialist's service and the risk of holding the equity between the initial purchase and the final sale.[60] Now, "the US equity market is a vast, decentralized electronic network that depends on matching engines to generate and match order flow at great speed."[61] This electronic market has brought about high message rates, including orders, quotes, and cancellations resulting in increased market volume. While George Sauter of Vanguard maintains "HFTs provide liquidity and 'knit' together our increasingly fragmented marketplace, resulting in tighter spreads that benefit all investors,"[62] the flash crash and the Knight debacle indicate that HFT algorithms pull liquidity from the market at the very point when the market truly needs it further exacerbating the liquidity crisis that HFT proponents say it was designed to bring to the market. To contend with this increase in trading volume, equity trading is spilling out of the traditional "brick and mortar" exchanges like the NYSE or NASDAQ and into less regulated, private electronic markets or trading centers. Often labeled dark trading, these new platforms are "currently dispersed over 13 electronic communications networks (ECNs) exchanges, more than 30 dark pools, and more than 200 broker/dealers."[63] Unlike registered exchanges that publicly display orders, off-market ECNs and dark pool transactions are not displayed to other market participants and are matched anonymously.[64] Broker/dealer internalization, commonly referred to as "proprietary trading," is the internal execution of client orders against the broker/dealer's own accounts.[65]

HFTs use a number of strategies, all based on speed, to create a trading advantage. These approaches range from legitimate market motivated techniques of wave-riding, arbitrage, and other defensive strategies to unfair strategies and market manipulation of front-running, order spoofing, and quote-stuffing.[66] Regardless of the motivation, these strategies create greater volatility and introduce two market failures, information asymmetry and principle-agent problems. Wave-riding is an algorithm built to sense price movement in the market and trade accordingly. The biggest issue with this technique is the risk of market herding, where a few trading algorithms follow a stock pricing direction and buy and sell so fast that the price becomes disconnected from the company's underlying market value, resulting in another flash crash. Arbitrage uses an algorithm to identify price differences between markets and then buy and sell in between for a small profit.[67] Another type of arbitrage strategy involves trading against "price differentials between two correlated stocks in either the same or a different market."[68]

Defensive strategies attempt to disguise the equity trade so other firms can't capitalize on it or change the market price until after the trade is complete. Order chunking attempts to minimize an order's impact by decreasing the apparent size of the order or spreading the overall order across a number of different markets or split the order up over time.[69] Dark pools don't publicize the order quality or price until after the trade is complete to minimize the movement of prices against the trading interest and thereby reduce trading costs."[70]

Front-running is the practice of determining the price that a seller will pay in one market and before the seller's order is routed to another market, essentially beating the seller there and buying the equity at a lower price. Order spoofing creates a fictitious situation to trick other algorithms into believing that the market is moving in a particular direction. Then the spoofer would cancel its buy orders and sell the shares it held at a profit.[71] Quote stuffing is both a form of manipulation in its own right and a byproduct of legitimate and illegitimate market motivated strategies. HFT firms submit these offers to "test the market, to confuse or subvert competing algorithms, or to slow trading in a stock by clogging the system."[72] "On the Internet, this is called a denial-of-service attack, and it's a crime. In HFT quants, it's considered bad manners."[73]

The speed and vast amount of transactions now taking place have added both capacity and complexity issues that both the SEC and CFTC are struggling with. The SEC has developed Market Information Data Analytics System (MIDAS), a collection tool to gather and analyze data in as close to real time as possible and, in response to the recent flash crashes, also instituted market-wide circuit breakers. These fail-safe procedures halt cross-market trading if they sense an equity's price is outside its daily norms. This short break allows the market to recover and remain liquid.[74] The CFTC's Dodd-Frank based requirements require futures commission merchants, swap dealers, and major swap participants that are clearing members to ensure that all positions in a customer's account that could pose material risk are stable and meet minimum requirements.[75] The CFTC, like the SEC, is instituting commodity market circuit breakers to halt cross-market trading if they sense threats to commodity market stability.[76]

The current financial regulatory process "is built on reaction, precedent, and predictability, but HFT finance is built on initiative, innovation, and change."[77] Therefore, the primary recommendation is to follow the HFT market's lead and create, as coined by Adam Adler, High Frequency Regulation. Rather than relying on the aforementioned three-step forensic approach, in this concept regulatory agencies would monitor the markets in real time using algorithms similar to the programs that HFT firms use to trade both in registered and off-markets. "These algorithms would scan the market for improper or anomalous trading behavior in the same way that HFT algorithms scan the market for trading opportunities. The primary issue with HFT algorithms is the cost. The solution is a transaction tax-an ultra-small fee, .0001 cents per offer. The tax has two benefits. Primarily, the funds collected can be used to hire a vendor, like the SEC used to develop MIDAS to design, maintain, and update the algorithms. A secondary benefit is the added cost of a transaction, which would most likely help reduce the market manipulation practice of order stuffing.

As shown, many industry experts attest that HFT, through speed and multi-market complexity, has created information asymmetry and a principle-agent problem. HFTs and off-market dark pool trading results in market failure and increased systematic risk for the financial industry, so they require closer scrutiny, smart regulation and underpin the importance of resiliency in an industry of migrating risk. The fundamental recommendation is a bifurcated approach to inhibit malfeasance and mitigate systemic risk without causing harm to the industry.

Individual Essay #2-Political Risk in the Mortgage Market

We see it all over the news – easy credit is becoming available once again, the Federal Housing Finance Agency (FHFA) has lowered mortgage-lending standards, and banks[78] are once again advertising subprime mortgage loans. By all accounts, this looks a lot like the same slippery slope that led us into the financial crisis of 2008, and so we must surely be headed toward another mortgage crisis. Well, not so fast. Housing *is* one of the last markets to recover from the 2008 financial crisis, and the mortgage industry still faces some major challenges, but we are beginning to see the market entering a "more stable phase which economists are calling the new normal."[79] Government and industry are working hard to mitigate risks so as not to repeat the perfect storm that led to the 2008 mortgage crisis. That said, the mortgage industry is a prime example of how political risk, interest rate risk and liquidity challenges create additional systemic risks to the FSI and will continue to be worth monitoring closely.

Americans still see home ownership as the culmination of the American dream, and the US Government appears to have adopted a policy that every American should achieve it. During the 2008 financial crisis, the government put its mortgage GSEs Fannie Mae and Freddie Mac into conservatorship to both save the mortgage industry and to ensure proper credit underwriting on

future loans. Additionally, Dodd-Frank meant more stringent lending standards for banks. Unfortunately, while much of the economy has recovered, the housing market has been slower to rebound. Regulation in the form of credit, liquidity, and capital requirements has caused lenders to tighten their standards so that many creditworthy people have been unable to obtain mortgages. The government recently adjusted regulations in an attempt to boost mortgage lending, but these changes are controversial, as they appear to open the door for homebuyers to get into trouble again. Government and banks must be prudent, lest their actions lead to another mortgage crisis before the economy has fully recovered.

Several economic factors could lead to another crisis sooner than expected, including relaxation of lending standards, impending reset of home loan modifications, and restructure or elimination of the GSEs. In 2014 the FHFA relaxed mortgage lending standards in order to boost the housing market and the economy. However, relaxed standards such as three percent down payments (or even zero in some cases), weak credit scores, higher debt-to-income ratios, and the resurgence of subprime loans like adjustable rate mortgages (ARM) is concerning.

Of primary concern is the low down payment standard. With only three percent down, it makes sense to believe that if one can afford to put so little toward a home in the first place, a homeowner may not be able to pay for everything else that goes along with homeownership. As such, homeowners with such little invested would be more willing to default when times get tough. Unfortunately, "there were a number of factors in 2007 that created incentives to simply foreclose and not work things out".[80] This scenario is less likely to happen now because "the dynamics that led people to walk away from their homes are different."[81] For example, as a result of Dodd-Frank, the CFPB implemented the Ability to Repay Rule, requiring lenders to look at all aspects of a borrower's financial information to determine whether he/she will be able to afford the loan. So, despite lower lending standards in one area, lenders now look at other factors of a person's financial health more stringently. Documentation is paramount. As long as lenders "thoroughly document borrowers' income, assets," and maintain the standard on other qualifications, "risk remains relatively low."[82]

Another related concern is the resurgent advertising of subprime mortgages, a major contributor to the 2008 financial crisis. If banks are willing to be this risky again, surely this will lead to another disaster, right? No, because again, the dynamics are different. In 2008 over half of Fannie Mae and Freddie Mac mortgages were subprime, which, in addition to poor underwriting standards, led to excessive risk in Fannie's and Freddie's portfolios. Not knowing where risk lay was one of the biggest reasons for the financial crisis. The GSEs now, however, have a much better understanding of risk and where it resides.

Regarding the resurgence of ARMs, consider for a moment that "banks cannot hedge a 30-year mortgage but can easily offset a [shorter term] ARM."[83] An ARM is not a bad instrument in itself - it's all in how it is used – and it "can make a lot of sense for some people."[84] Banks are issuing more ARMs again because they are better able to "match assets with liabilities"[85] and although the government has not introduced regulation to prevent banks from going down a slippery slope,[86] both banks and the GSEs now appear to approach subprime mortgages with more caution and awareness of the risk involved.

The motivation for lowering lending standards is questionable as there is great debate about the government's apparent policy that every American should be able to own a home. In a strange twist, however, relaxing standards has not made banks more willing to lend. After being hit hard by the fallout from the financial crisis, banks have in fact been more conservative in their lending

practices than the government requires them to be, but they are working with both government and consumers to establish the right balance.

The second major concern is the impending reset of millions of home loan modifications at higher interest rates. Programs like the Home Affordable Modification Program (HAMP), that reduced either the principal or interest rate, were only temporary, and many will experience resets beginning this year that could result in interest rate increases as much as one percent per year.[87] The government will extend HAMP out to 2016, but the Mortgage Forgiveness Debt Relief Act expired in 2013. The Senate Finance Committee renewed it through 2015, but if not renewed again, these relief funds will be taxed as income, which could lead to tax-induced loan defaults.[88]

The third major concern is the future of the GSEs. Since their role in the 2008 financial crisis, critics have questioned the need for Fannie Mae and Freddie Mac to provide liquidity for banks. The Congressional Budget Office (CBO) explored four options for the future of GSEs and provided its findings to Congress, who has yet to decide on a course of action.[89] One plan would consolidate Fannie and Freddie into one Federal Mortgage Insurance Corporation with private capital absorbing the first ten percent on default losses.[90] The concern here is that banks will not want to sell 30-year mortgages, especially to low-income (and perhaps more likely to default) homebuyers.[91] Another option is to do away with GSEs entirely and let the private sector determine the necessity for this service. The mortgage industry is nervous that if the GSEs go away, housing prices will fall, and this would cause another crisis.[92]

According to a former Chairman of the Federal Housing Finance Board, there were no structural defects with Fannie and Freddie that led to the 2008 financial crisis.[93] Rather, lack of sound credit underwriting in the private sector caused a shift from GSEs to private sector alternatives.[94] Throughout their history, Fannie and Freddie "held all the credit risk of the mortgages they purchased" and so had been the "gatekeepers of credit quality."[95] Problems only arose when they lowered their standards in order to compete with private sector firms.[96] Since entering into government conservatorship, Fannie and Freddie have put stops in place to prevent the same credit, liquidity, and interest rate risk problems from occurring again. Furthermore, according to CBO, eliminating Fannie and Freddie would actually show up as a cost in the budget.[97] For these reasons, the government may be reluctant to do away with the GSEs that guarantee the uniquely American 30-year mortgage, which has become the expectation of so many homebuyers. While the closing of Fannie and Freddie is a possibility several years from now, the demand for their services continues today. As long as the GSEs exist, they are under increased scrutiny to practice good underwriting and will not trigger another mortgage crisis by falling prey to pre-crisis practices. History tells us there will be another financial crisis; however, it will not be caused by the same factors as the 2008 crisis. That said, political risk in the mortgage industry and within the greater FSI remains a risk worth watching. Politics could force short-term decisions by policy makers to expand the ease of home ownership the further we get away from the 2008 lessons learned.

The mortgage industry can have an enormous effect on the impact of financial crises in the US. The following recommendations may mitigate the frequency and severity of future issues.

~ Do not relax standards in an effort to push banks to lend. Banks are concerned about regulation uncertainty and will slowly begin to lend again as they are comfortable with regulatory risks. The government should not risk forcing banks back into questionable practices.

~ Hold off on making structural changes to the GSEs, which will likely increase liquidity requirements further, until the housing market has shown a steady pace of health and stability.

~ Government should not seek to make homeownership a right. Consumer protection programs are good for educating consumers not to make bad decisions and for protecting those who have been wronged by unscrupulous businesses, but individual accountability, not government policy, will improve credit scores and allow for down payments on the road to homeownership.
~ Phase out loan modification programs (over the next three years). Do not make new loan modifications under HAMP, and do not create a new program. This grace period will give homeowners time to either get their finances in order or sell the property.

As one of the last areas to recover from the 2008 financial crisis, the mortgage industry still has challenges to overcome on its path toward health and stability. Government regulations, relaxed lending standards, loan modification resets, and the future of GSEs are all issues that, if not managed properly, could lead the US into another mortgage crisis. Thankfully, none of these will singularly cause systemic risk to the FSI and envelop the nation's economy in another financial crisis. The mortgage industry is cyclic, and so the argument over *whether* there will be another mortgage crisis is moot. However, studying past crises helps us to better cope with the next one.[98] For the sake of the economy and our national security, we must mitigate the risks as best we can, for *this is the new normal.*

Endnotes

[1] The White House, "2015 National Security Strategy," (Washington, DC: White House, 2015), http://nssarchive.us/wp-content/uploads/2015/02/2015.pdf (accessed April 1, 2015).

[2] Charles W. Calomiris and Stephen H. Haber, *Fragile by Design: The Political Origins of Banking Crises and Scarce Credit. (*Princeton and Oxford: Princeton University Press, 2014).

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Appendix A: The Great Recession Causes

From the beginning of the crisis in 2007 to its depths in 2009, the "Great Recession" collapsed housing prices and financial markets, resulting in a loss of $19.7 trillion worth of assets owned by US households. From 2007 through 2010, the median US household lost nearly 40% of its owned wealth, effectively undoing 18 years of wealth accumulation.[18] The causes of the "Great Recession" are still hotly debated. Former Secretary of the Treasury Timothy Geithner commented that, in many ways, the 2008 financial crisis was a Rorschach test, allowing people to attribute the cause of the crash and judge the adequacy of the government's response based on ones own political views.[99] For example, small-government conservatives blamed the federal government and social activists for putting pressure on banks to make sub-prime loans to unworthy borrowers, while anti-capitalists blamed Wall Street greed and called for punitive measures to be taken to reign in financial excess. This study's analysis revealed that a number of factors caused the "Great Recession," including:

- Sustained low interest rates that lulled investors into risky areas of the industry in a search for better returns with an over reliance on credit agencies to correctly cost and price risk for investors and firms
- Poor risk management practices throughout the FSI which permitted large volumes of highly-leveraged bets on complex and risky derivative
- A fragmented regulatory system that could not keep pace with innovative financial products and failed to anticipate the overall threat to the financial system
- High industry interconnectivity and lack of firewalls between financial institutions throughout the globe
- Political pressure to expand the availability of low income home ownership and
- Beliefs that housing market prices would never suffer a nationwide decline

ENDNOTE

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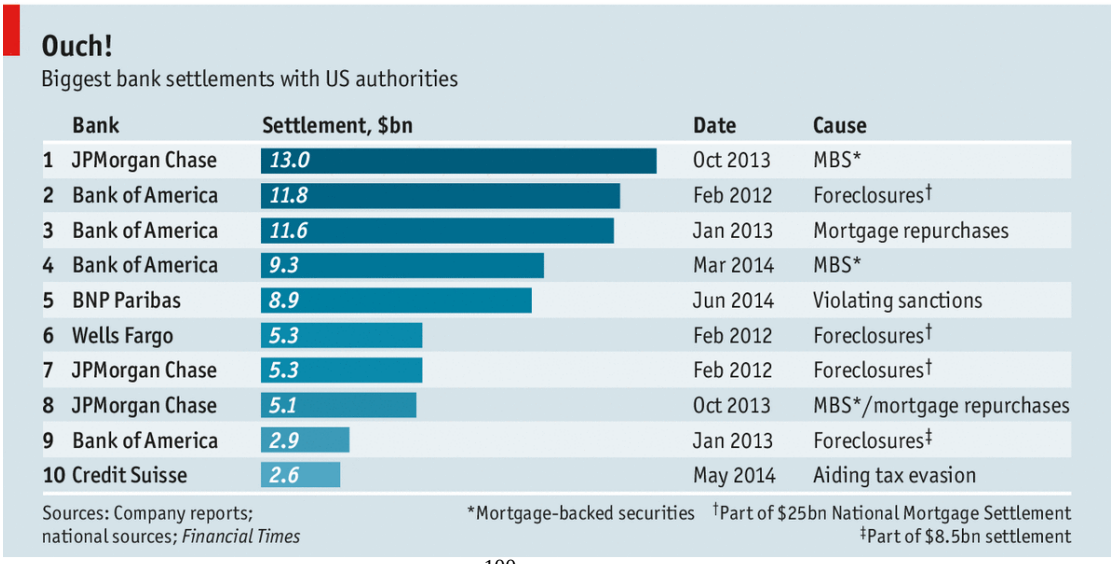
[99] Geithner, *Stress Test: Reflections on Financial Crises, 390.*

Appendix B: Regulatory Fines

Not only has the cost of compliance increased, some of the biggest banks in the US have paid significant regulatory fines over the past few years. In some cases, the fines were issued to the company as a result of an acquisition they made during the financial crisis; for example, Bank of America acquired Merrill Lynch during the aftermath of the crisis. Some of these fines were levied for activities that Merrill Lynch carried out.



Ouch!

Biggest bank settlements with US authorities

	Bank	Settlement, $bn	Date	Cause
1	JPMorgan Chase	13.0	Oct 2013	MBS*
2	Bank of America	11.8	Feb 2012	Foreclosures†
3	Bank of America	11.6	Jan 2013	Mortgage repurchases
4	Bank of America	9.3	Mar 2014	MBS*
5	BNP Paribas	8.9	Jun 2014	Violating sanctions
6	Wells Fargo	5.3	Feb 2012	Foreclosures†
7	JPMorgan Chase	5.3	Feb 2012	Foreclosures†
8	JPMorgan Chase	5.1	Oct 2013	MBS*/mortgage repurchases
9	Bank of America	2.9	Jan 2013	Foreclosures‡
10	Credit Suisse	2.6	May 2014	Aiding tax evasion

Sources: Company reports; national sources; *Financial Times*

*Mortgage-backed securities †Part of $25bn National Mortgage Settlement ‡Part of $8.5bn settlement

*Graphic provided by the Economist.[100]

Figure 3: Regulatory Fines

ENDNOTE

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[100] R.L.W. and P.K., "Daily Chart: Fine Times," The Economist, http://www.economist.com/blogs/graphicdetail/2014/07/daily-chart-3 (accessed April 7, 2015).

Appendix C: Yield Curves and Executive Compensation

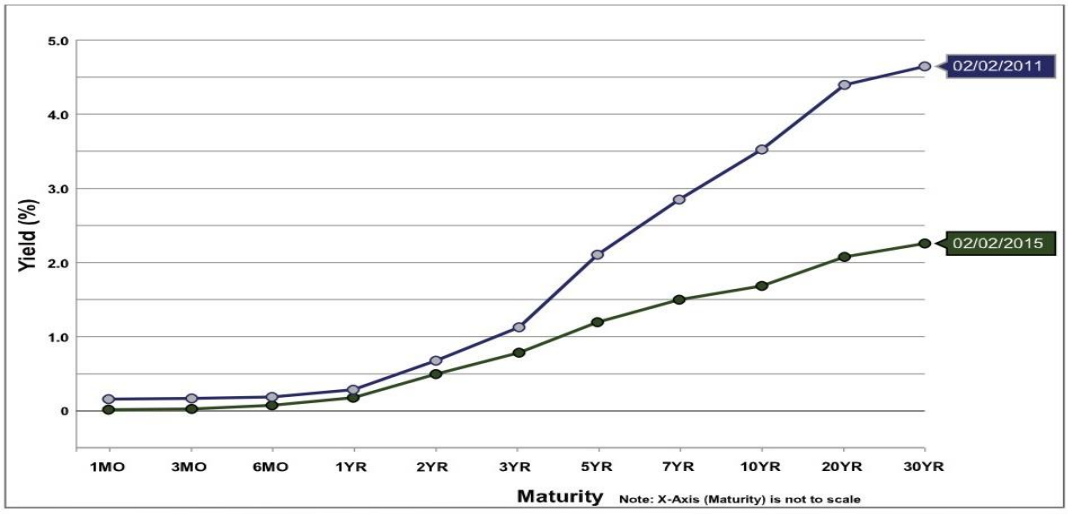

Figure 4: US Treasuries Yield Curve Comparison Feb 2, 2011 to 2015[101]

Figure 5: Executive Pay by Sector[102]

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[102] Elliot Blair Smith, Phil Kuntz, "The Pay Gap Between CEOs and Employees," (May 2013): accessed Jan 19, 2015, http://www.businessweek.com/articles/2013-05-02/disclosed- the-pay-gap-between-ceos-and-employees.