

Testimony of Dr. Jimmie H. Lenz

Director, Master of Engineering in Financial Technology, Duke University

Salerno Visiting Professor of Financial Economics, Trinity College Duke University

Principal, Frontier Foundry- Advanced Research and Financial Services

The statements here and in my oral testimony represent my views only and may not represent those of my employers.

Introduction

I appreciate this opportunity to testify and thank Chairman McHenry, Ranking Member Waters, subcommittee Chair French Hill, subcommittee Ranking Member Stephen Lynch, as well as the members of the committee for inviting me. Additionally, I'd like to thank the tireless staffers who provide constant support to the committee members and individuals like me. It is an honor and a privilege to share my thoughts on the strategic part that innovation has played in the development of the financial services of the United States and, more importantly, on our path forward.

"Innovation distinguishes between a leader and a follower"- Steve Jobs

The United States has been the undisputed leader in financial services for the past 75 years, in no small part, due to the willingness of its various constituents to take chances and embrace innovation. In our time today, I hope to provide some context for our past successes (and innovations) in the financial services industry, the current state of innovation in the industry, and the paths that lie before us.

To summarize my experience, I have over three decades of experience in financial services as well as five years in academia, where I have focused on developing and leading a graduate engineering program in Financial Technology while teaching courses in decentralized finance, blockchain technology, and machine learning. In addition to teaching, I lead a digital asset lab at Duke University and, perhaps more to the point of my presence here today, is my work with Frontier Foundry, where I lead an advanced research team in the application of AI for financial services companies.

Testimony

It is important to note at the outset that the comments within this testimony are intended to support innovation, as well as to champion customer protection and access to financial services which, contrary to some popular opinions, are neither partisan issues nor mutually exclusive. Innovation, as we are all quite aware, is an extremely broad topic, even taken within the specific confines of financial services. As such, I'd like to start off by providing some historical context which will serve as both an initial point of reference for this testimony as well as a basis for benchmarking our progress thus far.

I mentioned earlier that the United States has been the undisputed leader in financial services for the past 75 years. That time reference, 75 years, was very specific: in 1948, the Marshall Plan was passed by the U.S. Congress and signed into law by President Truman. World War II had ended and the United States, in part through the Marshall Plan, was taking strides to rebuild a continent which had been hollowed out by

war. This initiative came on the heels of the Bretton Woods Agreement, a multilateral agreement signed by the United States and other Allied Nations in 1944. Among other things, Bretton Woods set the foundation for an international monetary system the crux of which would be both gold and the U.S. Dollar (“USD”). Between the Bretton Woods Agreement and the results of the Marshall Plan, the United States’ global dominance of financial services began to take hold, particularly evidenced by the growing dominance of the USD as a global reserve currency. Gold would, of course, also remain a global reserve currency until 1971, when the international monetary system began transitioning from the Bretton Woods system to today’s system of freely floating fiat currencies – but, long before this paradigm shift took place, innovation in the financial services space and, in particular, innovation which shaped the relationship of the financial services industry with retail consumers and institutions, was expanding.

One of the first examples of this innovation came in 1950, only a couple of years after the implementation of the Marshall Plan. The introduction of the Diners Club Card, a restaurant charge card conceived of by a restaurant patron, revolutionized consumer convenience and access to credit.¹ The Diners Club Card would, of course, go on to spawn the credit and debit card payments business – an industry which today is dominated by a few giant players and which accounts for about 91% of all purchases in the United States.²

In 1967, innovation – this time credited to a Scottish engineer – would again radically alter consumer access to financial services. Some of those present today may remember the initial excitement over the first Automated Teller Machine (“ATM”) being installed in their town. At the time, the idea of being able to withdraw cash from a bank 24 hours a day was incredible. After the first ATM was installed at a Barclay’s Bank branch in 1967,³ many companies started experimenting with ATMs, with the result that these machines became ubiquitous for decades.

Significantly, however, it was not only retail banking that was being innovated for the benefit of consumers. In 1971, a few years after the widespread introduction of ATMs, Nasdaq was established as the world’s first electronic exchange, using a computerized system to trade securities.⁴ This brought consumers new levels of both transparency and access to the securities listed on the new exchange. The Nasdaq is now the second largest exchange in the world by market capitalization, commanding about 20% of the global market capitalization and over three times the size of its nearest competitor, Euronext.⁵ This move to electronic trading provided my entry point into institutional electronic and algorithmic trading, and later becoming Co-President and Co-COO of the firm that would become Reuters US.

It may seem incredible to us sitting here today, but of these three examples of innovation – the first widespread use credit cards, expanded access to customer’s bank accounts via the use of ATMs, and increased transparency and access to securities through computerized trading platforms – none were driven by then-current entrenched financial services companies. Perhaps less surprisingly, that trend has

1

https://americanhistory.si.edu/collections/search/object/nmah_1445317#:~:text=Founded%20by%20Frank%20McNamara%20in,the%20country's%20earliest%20charge%20cards.

² <https://www.forbes.com/advisor/credit-cards/credit-card-statistics/#:~:text=More%20recently%2C%20a%20Forbes%20Advisor,physical%20or%20virtual%20credit%20card.>

³ <https://history-computer.com/the-complete-history-of-the-first-atm-cash-machine/>

⁴ <https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/nasdaq/>

⁵ <https://www.visualcapitalist.com/largest-stock-exchanges-in-the-world/>

not changed in more contemporary times either. But, perhaps we should not expect otherwise – economists have illustrated time and again that industry incumbents (in this case, established financial services companies) not only prefer, but also have pursued, regulation to deliberately protect themselves from competition by new entrants (Tullock [1967](#); Stigler [1971](#); Peltzman [1976](#)).⁶

As is demonstrated by these examples, the general trend of innovation in the financial services industry has been to increase consumer access to, and information about, the financial markets. This is perhaps nowhere more evident than in the rise of electronic banking, which we might consider the basis of the contemporary financial services industry. Again, the development of the first electronic banking system was not pioneered by one of the giants of the financial industry, but rather by a community bank in Knoxville Tennessee: the rather aptly named United American Bank. In 1980, United American Bank worked with a retail company [that some of you may remember, called] Radio Shack, to develop a custom security modem for the TRS-80 computer. Banking customers who purchased the modem would then be able to securely access their bank accounts using the modem hardware with their home computers. Even though home computers were not as common in the 1980s as they are today, this innovation represents a dramatic paradigm shift, especially when we recall that the internet would not be available to the public for another decade⁷. Home access to bank accounts continued to become more widespread and in 1994, Stanford Federal Credit Union became the first bank to provide all of its customers with internet banking. This trend continued and, in the following year, Presidential Bank also provided customers with access to their accounts, all online.

Providing customers with online account access, however, was only the beginning of electronic banking. While non-bank innovators continued to look for ways to increase customer access and transparency for financial services, lawmakers debated the pros and cons of establishing branch banking (i.e., national bank charters). However, although this debate continued on Capitol Hill, the need for bank branches – or indeed brick-and-mortar banking businesses – was arguably rendered less urgent by the rise of peer-to-peer payments processors. The crucial part played by non-bank innovators was made more apparent in 1998, when PayPal (originally Confinity) launched a digital payment platform that allowed small businesses and individuals to make purchases through online marketplaces, like eBay, without the use of checks or money orders. Later, Venmo would take electronic banking a step further, offering all consumers the ability to transfer money between bank accounts using only their cell phones; major banking institutions would launch Zelle, a few years later. As cell phone technology continued to develop, and as consumer preference towards the use of cell phones was made abundantly clear, Plaid took electronic banking a step further by providing access to client's banks via their phones. But, while these innovations in electronic banking benefitted the individual consumer, the demand for increased access to banking services wasn't limited to individuals – it also came from small businesses, millions of them. The same year that Plaid came to market, another service that would become so commonplace that we don't even notice it anymore, was rolled out – Square reduced friction for small businesses by providing the technology for businesses to serve their customers using just a cell phone, thereby eliminating the perpetual security issue faced by small businesses forced to carry or keep large amounts of cash on premises, helping them to avoid large transaction fees, and allowing businesses to meet their customers where they lived.

⁶ <https://link.springer.com/article/10.1007/s11149-017-9343-9>

⁷ [Nine Young Bankers Who Changed America: Thomas Sudman | ABA Banking Journal](#)

While payments transfer services like PayPal, Square and Plaid are now common, day-to-day tools used by millions of individuals around the country, it's important to also recognize that electronic banking now has a reach that is far beyond the simple transfer of payments. Today, there are few banking services that cannot be accessed or obtained electronically. Indeed, even the most ubiquitous (and, arguably, foundational) banking service – the mortgage loan – has been available online to consumers since the early 2000's, when Rocket Mortgage launched the first fully online mortgage application. Rocket Mortgage is now the largest mortgage lender in the United States, with the online lending model now being preferred, and used, by a majority of the clients and most firms involved in the “closing” of mortgage loans.⁸

Looking back at the past 75 years, it is incredible to think how far we've come: from the establishment of an international monetary system to the increasingly integrated and transparent financial system that we have today, evidenced by credit cards and bank accounts which can be monitored through cell phone applications, money that can be transferred from customer to vendor with the tap of a finger, and financial services that can be accessed by an increasingly large percentage of the population. I've touched on only a fraction of the technologies that have been developed and put to work in the financial services sector in that time but, even taking that small proportion into account, ask yourself: if any of these previous technologies came to market in the regulatory environment that exists today, how many would actually make it into the hands of consumers and businesses?

When given the choice of more or less regulation, almost all ventures will choose “less”. While some may claim that the reason for this is a simplistic avoidance (or strategic leveraging) of “regulatory arbitrage”, I believe the reason that we should opt for less regulation is much deeper. Beyond *avoiding* certain outcomes (i.e., opportunities for regulatory arbitrage), I believe that in most cases, choosing “less” will result in:

1. Dramatically lower costs, thus a better return to the builders and investors,
2. Increased speed to market, providing consumers with the best choice and access, and
3. Continued United States leadership in financial services.

Innovations have increased consumer access to financial services and markets, and although those innovations have changed the way that financial institutions interact with the retail public, invariably, few of such innovations were pioneered by the incumbent institutions. Had we enacted a regulatory regime that was less accepting of innovation, we may have quashed the new entrants into financial services, perhaps also resulting in a decreased competitive environment and harming the United States' position as the undisputed global leader in financial services.

Looking ahead, it is crucial that we move forward with the understanding that the United States primacy in financial services is through innovation, and for purpose regulation. Supporting and encouraging innovation through policy, like that proposed regarding a Federal Sandbox and discussed at length in a recent editorial in *American Banker*⁹ by Reiners and Lenz, is important. But, while these efforts supporting experimentation and innovation are being embraced in areas that understand the value they provide to consumers, there are simultaneous efforts underway to significantly curtail and even halt innovation. Specifically, the efforts to regulate Artificial

⁸ <https://www.bankrate.com/mortgages/largest-mortgage-lenders/>

⁹ <https://www.americanbanker.com/opinion/us-lags-in-financial-innovation-regulatory-sandboxes-are-the-answer>

Intelligence or “AI”, an extremely broad term that encompasses much more than most debating this topic can even imagine, risks creating an environment which is as resistant to innovation as what we’ve witnessed in the incumbent financial services industry and, further, which may damage our interests domestically and internationally.

Consider the printing press, possibly one of the most important innovations in the modern world and surely the most significant factor in the transference of information in human history. Had its innovation been successfully stifled by a regulator, how might the course of history have been affected?

The same may be true in the case of artificial intelligence tools (yes, these are tools). My experience over the past decade using tools like machine learning (also yes, some of these tools have been available for quite some time), has proven to be invaluable in the work that I have and am currently engaged in. This technology is being applied to any number of issues and opportunities which continue to unfold, including in financial services. Constraining AI and machine learning innovation is fraught with problems.

Summary

“As a result, technological development will be the motor for economic growth in the long run...if continuous technological progress can be assumed, growth in real incomes will be exclusively determined by technological progress.” -Robert Solow, Nobel Prize in Economics

Providing consumers and the economy of the United States with the most innovative financial services sector has been the hallmark of this industry for the past 75 years, it is no accident that we are the benchmark by which the rest of the world is measured. Congressional Bills promoting innovation in financial services and supporting the development of these technologies through the use of structures like Federal Sandboxes are crucial to the continued development of this industry.

But, as the former Chief Risk Officer of one of the largest brokerage firms in the country, I would be remiss if I didn’t address the risks at stake. Innovation will always involve some level of risk. However, if you ask any first-year economics student, the one lesson they take away is that there is no reward without risk. The key is to understand the risk, and how much is appropriate, not to eliminate it. Throughout my career as a trader, a Chief Risk Officer, Chief Credit Officer, and now as the leader of an advanced research group, the notion of risk has never been distant. I’ve championed customer protection constantly, through the clear and concise description of products, at times rejecting products that I deemed to be beyond the risk appetite of the average client. But again, my tack has always been to understand and quantify the risks so that they can be assessed accordingly. The United States is a country of risk takers, and it’s my opinion that innovation is a risk worth taking.