

**LaSalle Street: Financial Markets Insights  
The Podcast of the Financial Markets Group  
at the Federal Reserve Bank of Chicago  
Episode 10 Transcript**

**Alessandro Cocco:** Welcome to the *LaSalle Street* podcast. I'm Alessandro Cocco, and I lead the Financial Markets Group, or FMG, at the Federal Reserve Bank of Chicago. In today's episode, FMG's very own senior policy advisor Robert Steigerwald discusses how key moments, such as the failure of Herstatt Bank, have shaped financial market infrastructures.

Robert has long contributed to FMG's research on clearing and settlement, payments, and other policy issues impacting financial market infrastructures.

Moderated by FMG senior markets analyst Nahiomy Alvarez, this conversation represents the views of the speakers only and not those of the Federal Reserve Bank of Chicago or the Federal Reserve System.

We at *LaSalle Street* wish you all a happy holiday season. *LaSalle Street* will be back in the new year. Thank you for listening.

**Nahiomy Alvarez:** Thank you, Alessandro. And welcome to another episode of the *LaSalle Street: Financial Markets Insights* podcast, everyone. I am Nahiomy Alvarez, and I'll be serving as the moderator of today's discussion. With me today in our virtual studio is one of my favorite colleagues, Robert Steigerwald. Welcome, Robert.

**Robert Steigerwald:** Thank you, Nahiomy. It looks like we're mutual admiration society members here.

**Nahiomy Alvarez:** [laughs]

**Robert Steigerwald:** So, uh, thank you for that kind remark.

**Nahiomy Alvarez:** Yeah. Why don't you share with our audience a little bit about your background and maybe what you do here at the Fed?

**Robert Steigerwald:** Sure. Well, I arrived in the practice of dealing with financial markets in various ways through a long circuitous path. I won't try to cover each journey along that way. Suffice it to say that a long, long time ago, I discovered a keen interest in all the stuff that happens behind financial markets—the stuff that you don't see in the quotation tables in newspapers that makes the system work. For me, it's an extension of thinking about philosophy and society, uh, very broadly. In a nutshell, that comes down to thinking about what makes people cooperate when there are so many impediments to cooperation in the world—so many of them are evident in global politics today, of course. I've been with the Chicago Fed now for 21 years.

**Nahiomy Alvarez:** Wow.

**Robert Steigerwald:** And I think there are some 20-plus years before that, that I can tack on and call a career of 40-plus years, either as a practicing lawyer or as in-house counsel and manager in various infrastructure projects.

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**Nahiomy Alvarez:** So, if my math is correct, you got your start in markets sometime back in the eighties. Is that right?

**Robert Steigerwald:** Yes. And in fact, my first acquaintance with financial markets came before I went to law school. One curious aspect of my resume that wasn't necessarily inclined to make me attractive to a Wall Street employer is that I had a degree in philosophy and religious studies as an undergraduate. So, of course I went to Wall Street to get a job at a very interesting time in financial history. That was in the late 1970s. The Hunt brothers had been busy manipulating the silver market. There was this thing called the Falklands or Malvinas War going on between the United Kingdom and Argentina, which was contributing volatility to various markets, especially precious metals markets, gold and silver. That came in the wake of the Hunt brothers' activities, so markets were really quite volatile. You may have heard the expression that gold and other precious metals are dealt with—or considered anxiety barometers. So, they are commodities that traders turn to in times of stress for various reasons.

So, at that time I was completely unaware of how financial markets operated. I got to see it firsthand sitting on the trading desk, the precious metals and foreign currency trading desks, at a significant broker dealer at the time. And that informed so much of my thinking. It introduced me to an entirely different world that I hadn't any appreciation of before.

**Nahiomy Alvarez:** You mentioned markets were going through all these various events. I assume some of those perhaps had an impact on markets as we know them. And so, when you think back to those years, what stands out to you? And specifically, how did these events impact the market structure that we know today?

**Robert Steigerwald:** The period following World War II was an incredibly rich period for changes in the financial system and the economy more broadly. There were some key developments, I think, that relate to what I ultimately saw in the issues that I chose to focus on. First, there was this important transition from depending upon bank lending to support productive activities to the raising of capital in capital markets, through bonds and equity issuance. That has become a hallmark of the American financial system, in particular. It's less developed in other places that are more dependent on the traditional bank lending model, but the U.S. quickly made that transition and that implied greater volume of activity, the potential for volatility in markets—so many of the detailed things that we'll be discussing today really come from this fundamental effort to seek efficiency in the way that capital is raised for business.

Together with that, I think, it was a transition from reliance on insurance, traditional modes of insurance, uh, for dealing with a variety of risks and liabilities to more active forms of risk management. I don't want to try to get into too much detail here, but basically the commodity markets, especially the grain markets, provided a very useful example of how markets can be used to allocate risk to those who are best able to bear it—or think they are. So, you can have hedgers interacting with speculators in a way that serves the interests of both. And that becomes an important model originally limited to traditional agricultural commodity markets and precious metals markets and such. It becomes expanded in the 1980s to what we will call financial futures and options, and important institutional developments take place there.

And then I think it's probably important to remember some of the geopolitical events that were going on at the time. All this is happening against the background of the collapse of the Bretton Woods regime for fixed exchange rates, the collapse of U.S. dollar convertibility to gold in 1971, the formation of the

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Organization of [the] Petroleum Exporting Countries, or OPEC—which really transferred power which had been in the hands of major Western oil companies to the exporting country. So, from consumers to exporters. That, of course, had sweeping consequences; it fueled conflict in the Middle East. And the United States was embroiled in a war in Southeast Asia, in Vietnam, which had really profound social and political consequences, in addition to complicating the economic picture. It would be totally incomplete and misleading to fail to recognize the introduction of computerized data processing during the period. And a couple of things that, uh, I'll just mention are the introduction in 1971 of a mainframe computer to support the Fedwire payment system at the Federal Reserve Bank of New York—that of course colors everything, and, uh, it makes a huge impact on how we do business from that point forward.

**Nahiomy Alvarez:** There is so much there that we can get into. It's crazy, you know, on one hand we think about markets being uniquely interconnected today, and yet here we have all these examples of even 30, 40 years ago, these geopolitical events still had implications in our, in our backyard, if you will. So I, I love that. On the topic of crises, right? You mentioned a few that we had. You know, over the years I've heard you reference one that you actually didn't mention in this list [laughs], which is the failure of Bankhaus Herstatt. Will you talk to us a little bit about, you know, what happened there and how that ties into the evolution of markets that we've been discussing?

**Robert Steigerwald:** Sure, so a small Cologne-based bank in West Germany failed in June 1974, and the effect of that event remains with us today. It colors much of the infrastructure development that I have witnessed, and it certainly has affected international regulatory coordination and cooperation. I guess the, the reason why it's important to remember what happened in the Herstatt case is, is that it was probably the first post-World War II systemic risk event—and an event which showed the inadequacy of the then existing mechanisms for regulatory cooperation and coordination.

It's not coincidental that immediately following the failure of Herstatt in June '74, what was to become the Basel Committee on Banking Supervision was formed to enhance supervisory activities and standards for supervision and also international interaction. So, to set a s-, context for understanding why this event was so important, le-, let me mention a couple of things. Bankhaus Herstatt, as I mentioned, was, was based in Cologne, had been formed in 1956, so right in that postwar period. It was only the 35th largest West German bank at the time. So, hardly too big to fail in any sense. But it had a notorious reputation for excessive trading relative to its capital base.

I will describe that in a little bit more detail, but I wanna also put into context that the dominant model for payment system operations at the time is what we call a deferred net settlement system. And in particular, some deferred net settlement systems operate as end-of-day systems. So, the idea here is that deferred net settlement systems economize on liquidity. That's a function of how it operates. It's a batch payment system. So, payment instructions are fed into the system during the day, but those payment instructions are merely provisional. They have no final effect. At the end of the day, all of the debits and all of the credits are offset and a single net payment, to or from particular participants in the in the system, is made with final effect. That all works very nicely, as long as everything works nicely. It breaks down if it turns out that there are events during the day that call into question the integrity of the payment instructions that have been submitted for settlement. Globally, and even domestically, payments systems operated in this deferred nets basis that I've described. Critically, the Clearing House Interbank Payments System [CHIPS] that was operated by the New York Clearing House Association at that time was the primary payment system for settling the U.S. dollar leg of cross-border transactions.

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So FX trades, where the dollar was one of the legs of the trade would typically, during that time, have been settled at CHIPS, and CHIPS was an end-of-day deferred net settlement system.

**Nahiomy Alvarez:** OK, so what happened with Bankhaus Herstatt? And how does this deferred net settlement system that you're discussing play a role?

**Robert Steigerwald:** OK, back to Herstatt: In 1973, it looks like the losses generated by foreign currency trading at Herstatt were four times exceeding its capital base. And that is apparently because of unanticipated changes in the dollar currency rate. In early 1974, the German supervisor discovers that Herstatt has incurred open foreign currency positions valued at deutsche marks 2 billion, which was 80 times in excess of Herstatt's limit of 25 million.

**Nahiomy Alvarez:** Did you say eight or 80?

**Robert Steigerwald:** This is eight-zero: 80. So, a special audit of Herstatt took place. And in June 1974, the German authorities discover that Herstatt has incurred losses amounting to 470 million deutsche marks on its foreign currency operations, and the regulators terminate Herstatt's license. That was June 26, 1974.

Now that day is of critical importance to the understanding of the story that follows. Because of the way the earth turns, the banking day in Frankfurt occurs earlier than the banking day in New York. So, think about how a foreign currency trade works; in this case, Herstatt had agreed to pay U.S. dollars in return for the receipt of deutsche marks. So, the counterparties to Herstatt are making payments during the Frankfurt banking day for the benefit of Bankhaus Herstatt. At the end of the banking day, as is customary among bank regulators, the action is executed to terminate Herstatt's license and close its operations. That was approximately 3:30 in the afternoon Frankfurt time. It was only about 10:30 in the morning New York time. So, all the payments that have been made to the benefit of Herstatt in Frankfurt were now to be paid for by countervailing dollar payments on Herstatt's behalf to its counterparties. But of course, the news came across the wire that the German regulators had closed Herstatt and its New York correspondent banks decline to honor the payment instructions that it was expected to make on behalf of Herstatt.

Now, most people who know the Herstatt story at all know only that part of the story. In other words, there was an asynchronous settlement of deutsche marks and dollars. And because, just because of the way the world works and the absence of integrated payment system operations at that time, the party paying the currency in the earlier time zone had to pay first and await the corresponding payment when the later banking system opens in the, in the later time zone. This is a concept that has a name now—it's, it's called Herstatt risk, but it's, it's more technically known as principal risk. It's the idea that no party gives away its value without receiving the value it, it expects.

**Nahiomy Alvarez:** Interesting. Let me ask you this: How do we deal with Herstatt risk today? In other words, has anything changed since then?

**Robert Steigerwald:** In 1974, there was no global mechanism for synchronizing the exchange of one currency for another. Today there is such a mechanism. It's called the CLS Bank. The losses that occurred with the withdrawal of Herstatt's license could not have occurred had a similar system been in place because CLS is a mechanism for assuring that no party who has to pay will not receive the counter value—the corresponding value that is expected. It's possible the settlements will not take place at all. But if a euro payment is to be made in expectation of receiving dollars, either both legs of the

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transaction will occur with finality or the system will reject the payment. So, at a high level, that's where we are, but with lots of implications for how that developed and how that relates to broader phenomena, like, uh, what I've called time-critical liquidity.

**Nahiomy Alvarez:** That's helpful. I have a lot of follow-up questions, but of course not a whole lot of time. As we start to wrap up, Robert, can you tell me more about how all of this has informed your thinking on today's issues? In particular, what do you think about some of the new developments we've seen in payments and financial markets, such as stablecoins and other forms of digital assets?

**Robert Steigerwald:** Well, that's a very interesting question and one that our colleagues and I have been pondering recently in a variety of contexts. There is this curious progression in the development of financial technology that I can't hope to describe adequately or completely for our purposes today, but I'm tempted to try, at least to share some elements of it. There is this profound question that is endlessly entertaining, at least to people like me, concerning what money really is and how it all operates and why it doesn't work on occasion. It's a remarkable thing to realize the many forms that money has taken over time. You know, the, the traditional idea of a nugget of gold or a piece of silver. And, and there've been endless variations on that theme: cattle, tobacco, cowrie shells, seashells. What I wanted to try to suggest is the long arc of history, where we have moved from money as a tangible item to a thing that represented tangible items, to paper form, to electronic form, and now emerging in new digital forms. But, but it's not a strictly unidirectional progression.

So, it turns out that one of the consequences of digital technology is to give us assets that we can move electronically in a way that mirrors many of the features of money or securities as tangible items. So, it becomes decentralized. I, I have this bitcoin—I'm not especially knowledgeable about how that works, but I, I understand you have to hold on to your private key. And if you lose your private key, you might as well kiss your assets, uh, goodbye. If I want to send you a payment, I have to interact with my bank and my bank has to interact with your bank. That's simpler if your bank is my bank, but most often that, that may not be the case. So, you see, the law of financial accounts or the, the structure of financial accounts is highly centralized—it requires lots of interaction among different parts of the system that was absent from the old money-as-a-nugget-of-gold environment, and may be absent from the new emerging money-as-a-digital-token world. So, there are these crazy repetitions of certain features of the financial system that occur with changes in technology.

**Nahiomy Alvarez:** That is so interesting. So, I've heard people say, um, for all these new crypto developments and what have you, a, a good use case would be in this FX space. And so, I, I'm just trying to figure out what is your take on whether, you know, these things are actually solving a problem.

**Robert Steigerwald:** Yeah, so I think this relates to what I was saying before about the way that financial technologies evolve, but not in a strictly linear or unidirectional fashion. And as new technologies emerge, they pose new, I'm tempted to call it, framing questions.

The promise of digital money and securities is that we can eliminate centralization and many tiers—perhaps all the tiers—of intermediation, and simply have, uh, a system whereby the party who has U.S. dollars and wants to pay them to another party can do so—without all of the rigmarole associated with a banking relationship and the central bank and “is the payment system open or not?” It can happen in a, in a very direct way. The combination of digital money and digital securities allows for the duplication of some of the risk-reducing mechanisms that I've been describing, like delivery versus payment or payment versus payment. Once you have one asset and another related asset, you can, in principle,

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exchange them in some electronic fashion that I couldn't describe, without bothering with the existing apparatus for making those transactions happen in the current world.

Now, that's the promise, so it's a very decentralized, back-to-bearer-assets kind of model. It's, it's like I have an electronic nugget of gold that I can deploy as I wish. And there are many attractions to that—I mean part of the problem that we see on, on days such as 9/11, when operational systems are devastated in New York, is that all transactions cease because of the inability of the system at the core to carry on operations. In principle—leaving aside the operation of the power grid that this new digital technology is dependent on and all, all kinds of other things—in principle, the decentralized environment avoids those kinds of single points of failure that, that could concern us. On the other hand, there's an awful lot that goes on in the current intermediated system for clearing and for other operations, including the extension of credit, the monitoring of creditworthiness, the setting of limits, signaling creditworthiness—there are all kinds of functions that intermediaries perform that may not be easily duplicated in the digital space.

**Nahiomy Alvarez:** Yeah, and you mentioned sort of briefly the whole energy consumption side of it, which is a larger conversation in of itself. But, Robert, we, we covered a lot of ground today. So, the question for me, as we conclude is, where does this leave us? How have some of these improvements shaped markets today, and, and, and what outstanding issues should we think about?

**Robert Steigerwald:** We've done these things in securities settlement, in payments system operations, in foreign currency settlement operations, and a whole host of other things. Are we better off? There can be a debate about that. What I would say is that we should not expect to undo the credit-risk-mitigating mechanisms that have been devised to date and expect not to incur credit risk. For example, it concerns me that there are complaints about margin setting at central counterparties, which may have procyclical effects, but which at the same time mitigate credit risk.

**Nahiomy Alvarez:** Thank you, Robert, for taking the time. It has been a pleasure to hear your perspective and insight. And special thank you to our listeners for tuning in. Until next time.