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YPFS Lessons Learned Oral History Project: An Interview with Stephen King

Stephen J. King

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Program on Financial Stability

Lessons Learned Oral History Project Interview

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Introduction

The Yale Program on Financial Stability (YPFS) emailed Stephen King to request an interview regarding his experience at Barclays in the structured credit group during the years preceding the Great Financial Crisis.[2] A computer scientist trained in applied math, King began his finance career in 1997 with Bankers Trust in London. In 1999 Deutsche Bank acquired Bankers Trust and assigned King to New York. In 2005 he joined Barclays' structured credit group. In 2009, he launched C12 Capital Management, dedicated to relieving Barclays of its distressed subprime assets. In 2014 King founded Sardis Developments in partnership with C12 to finance and build luxury hotels and related real estate investments.

In this interview, King describes his experience leading Barclays' proprietary desk dedicated to asset-backed derivatives transactions. His discusses strategies that enabled his unit to survive and profit in the space that proved severely damaging, and in some cases fatal, to other large institutions.

This transcript of a telephone interview has been edited for accuracy and clarity.

Transcript

YPFS (Matt Lieber): How you did you come to be a proprietary desk manager in such a specialized realm of structured credit and asset-backed derivatives?

King: I was a computer scientist, engineer prior to going back to business school in my late twenties, and I was courted by Bankers Trust in 1997 to join them,

[1] The opinions expressed during this interview are those of Mr. King, and not those any of the institutions for which the interview subject is affiliated.
[2] A stylized summary of the key observations and insights gleamed from this interview with Mr. King is available in the Yale Program on Financial Stability's *Journal of Financial Crises*.

along with a number of other investment banks. I did not even know about credit and credit derivatives at that point, quite frankly. It was derivatives that were there quantitative in nature that was interesting. Bankers Trust approached me about being involved in some emerging market-related structured products. It sounded very entrepreneurial and innovative. I went to join them, and right out of the gate Long-Term Capital Management happened. There was a sudden left turn, and I was approached by the securitization desk at Bankers Trust, who said, "Well, listen, you've got the right pedigree to come and work as an associate on the desk here." We did some really fascinating non-derivative proper structured transactions – this is in the U.K. – Madame Tussaud's, Trafford Center, some of the water utilities, those transactions.

It was right at the dawn of structured asset-backed derivatives. I did not know what a CDO was at that point, but some of the balance sheet transactions under the corporate credit derivatives world. Steve, I think you were probably in CLOs or something at that point. It was this rapidly evolving world. And I found myself becoming involved in some very structured transactions, very novel, in the U.K. One of them was some very off-the-run credit derivative, regulatory capital driven transactions.

I was brought to the United States, after Deutsche acquired Bankers Trust, by Deutsche, which is where I met Steve. And we continued to do that. One of the first transactions I did there was – I think it was $9 billion – a synthetic ABS transaction called Rhombus for Bayerische Landesbank that involved selling some protection on a portfolio of asset-backed securities at Bayerische Landesbank, buying protection from a series of monolines and insurance companies and other counterparties around the world. Fascinating trade. I did another couple of things like that. And then we did another transaction that was using a lot of that technology. It was called Descartes, which was much more of a principal finance transaction. We would go and buy a portfolio of ABS securities, fund them in our conduit, buy protection on them and find a way to take out the carry as an arb.

Shortly after that I left Deutsche, and I continued to do the same thing thereafter at Barclays and did that right up through 2007 to 2008. We were looking at various ways of generating profits for the bank, whether those were in structured client transactions, proprietary trading, trading book profits, anything and everything related to credit derivatives that were associated with asset-backed securities.

And I did that right through the crisis and for many years beyond. And now I do not, thankfully. I do hotels. And I build stuff. It is much easier. And my kids know what I do, finally.

YPFS (Steve Kasoff): Maybe if we could drill down into a little bit more detail of what you were doing in 2005 through 2008 or so. In the questions, I called it an ABS correlation desk.

King: Yeah. I saw that.

YPFS (SK): You may agree or disagree with that characterization, but it was the best I could come up with.

King: Yeah. It is one of many monikers that we gave those desks at the time, right? It was called a principal mortgage trading desk in one caucus of people. It was a structured synthetic ABS desk in another, it was a synthetic CDO in another, it was a correlation desk in another. So, we had all those names, but essentially, you are right. For those years, we were not engaged in client origination transactions as a desk. That was a sister desk to mine. Our purpose was just to find a variety of different ways to put portfolios of securities together and generate securities that were related to those, whether they were cash or derivative securities that we could sell to other people. Between the arbitrage between those two sides of a transaction, it was a very substantial portfolio. There was profit whether that was mark to market or directional trading or basis or carry. That was what we did. So, you are right. You could call it a correlation desk because there was an element of the correlation between those various securities. But it felt one way or the other, it was related to structured credit securities and derivatives associated with those.

YPFS (SK): The reason I call it a correlation desk is that a traditional CDO structuring desk would accumulate risk, structure it and then sell the risk. And at the end of that process, it would literally have no positions…

King: No positions.

YPFS (SK): ... whereas if I understand what you were doing, which is comparable to what corporate correlation desks were doing, you were accumulating risk, and then you were distributing…

King: Something else.

YPFS (SK): ... you were distributing something that left you with a hedged book. You had the stuff that you accumulated and then you bought protection in some way that either flattened out your risk, at least to a first order approximation or left you with a principal position of risk that you chose to retain.

King: Yes. That is a hundred percent correct. And whether it is a correlation, I think is a perfectly adequate word, but let us face it, it was one of the many risks that the book had. It is a basis book. It was a derivative book. On the one hand, we would accumulate risk in one or a number of markets. We would seek to reference those risks and create instruments that referenced those risks and place those into another market. And as you say, we would hope to take out a mixture of profits from basis, carry and directional positions, and as much as possible as you'd expect an investment bank to do to minimize the risks we were taking in earning those arbitrage profits.

YPFS (SK): **Can you walk us through an example of what one of those transactions look like? Maybe one of the simpler ones.**

King: Sure. The simplest concept, I would say is very analogous to what you would be familiar with on the corporate side. Although, there is obviously several other unique risks to asset-backed related derivative structures. It would be that a counterparty and investor might approach us and say, "I'm interested in acquiring a hundred million dollars of exposure that is rated A, AA and AAA that references a portfolio of mortgage-backed securities."

And as Steve says, in a traditional cash CDO setting the arranger would then have to say, "That's useful, but unfortunately maybe that one tranche doesn't represent the whole capital structure. I still need to find some equity. I still need to find a BBB. I still need to find a AAA. I need to find some senior. And then anyway, I have got to accumulate over three to six months, a portfolio of $500 million of securities off of which I will be able to offer you that 100 million AAA. So, thank you very much, but that isn't the whole of the puzzle."

Desks like mine and a handful of others and said, "Listen, we ought to be able to break that supply and demand relationship. What about if we go out and we do talk to all those people that would say, 'I'd like to buy 100 million dollars of AAA' and say, 'OK, and what would you like it to reference?' And they say, 'I'd like it to reference 2006-vintage BBB's.' And we go back, and we say, 'OK, can we come up with a portfolio of 2006 BBB's? And can we issue a $100 million AAA tranche? What does that portfolio look like, and how much would we be willing to pay for that protection?' "

Let us say that we said that, and the investor said, "That's great." Then, unlike the cash transaction, we do not even have to accumulate all of those assets nor do we have to find the rest of the capital structure. What we do have to decide, though, is what the hell are we going to go and buy that is going to offset – just at that point, we just bought protection – so what are we going to buy that is going to allow us to justify having bought that protection? That could be a smaller portfolio of BBB credits, maybe it is a different portfolio of BBB credits.

In practice, what we did was we took many of those $10 and $100 million tranches and other pieces, we put them into a much larger book, and we tried to acquire single securities whenever we could. That allowed us to manage a whole book on a delta-hedged basis as close to full capital structure as we could get. But a lot less perfectly hedged than the cash CDO people would be, which is as Steve says, would have been doing. And not to say they were taking less risk, they would have accumulated a warehouse full of assets, placed liabilities and exit, and hopefully left themselves with no risk. We were not seeking to do that. You know at the moment that we said done on the tranche, we would have to go and hedge it. We did not have any warehouse risk. We did not have any liability that we had in place, but we did still have a derivative basis position.

YPFS (ML): Is that a synthetic tranche, a synthetic slice of a CDO, alone without the rest of it?

King: Yes. That is exactly it, that is what you would do. There were many investors that were saying, "Oh, I particularly want something with the other characteristics." And a cash desk would have had to have put the whole jigsaw puzzle together.

YPFS (SK): You generally did get an actual rating on that for the investors?

King: Almost certainly.

YPFS (SK): And by definition then, this business was generally driven by investors coming to you, looking for a long position?

King: Yes. And Steve you were involved in the CLO business, so you know exactly the normal process. The traditional banking desk approach to CDOs and CLOs would be to go out, court high quality managers and encourage them to engage with you, to open a warehouse and put their name on a selection of securities, which would be accumulated over a period of time. And then go on the road, place a set of liabilities associated with that portfolio. That was the traditional flow of work. These correlation desks – there were not many of them, but there were those like me and Deutsche and Goldman, and a couple of others – we did not take that approach. It was as much, find the people that said they wanted to buy the liabilities, and then work out how you were willing to purchase that protection through that issuance of that tranche. Therefore, we would want to go and purchase on the other side and consider how we would mitigate those risks.

YPFS (SK): So over time you do a couple of these. So, somebody asks you for a AAA tranche, somebody else asks you for a single A tranche, which would have a different portfolio behind it and lower attach and detach points. And if you did enough of these, hopefully all those pieces fit together. Like a puzzle that does not exactly fit together.

King: You jammed some of the jigsaw pieces in, they are not perfect, but they look OK.

YPFS (SK): **Yes. So, you started buying protection on all these different tranches at different levels of the capital structures. And then on the other side, are you generally just buying risk or selling protection on the underlying subprime bonds that were in those reference portfolios?**

King: Yes. And that was how it turned into a full proprietary trading business, right? At times we would therefore be running long or short. We would be running substantial basis positions. If somebody wanted to buy a $100 million AAA tranche, we would suddenly have a very large, short delta exposure, which we needed to hedge. We might have had to go out and buy the ABX index, right? As an immediate way to hedge out the first order delta. And then steadily through a variety of mechanisms, we would work to improve the hedge.

We were not in any way connected to the flow mortgage desk. We had to be viewed as a street-facing desks so that we were covered by every other dealer. So, they would come to us and say, do you want to sell protection on this one BBB, or do you want to buy this one BBB? So slowly we would hope to get back to a much more balanced, less basis driven position. Likewise, if we'd sold protection on, as Steve, you say, if we sold protection on a AAA tranche, we'd actually go out and market something that looked like a single A off a similar portfolio, or a BBB off a similar portfolio. We try and build the capital structure to minimize the basis risk. But along the way, we would be in a basis position.

YPFS (SK) **And presumably you would also try to sell protection on the bonds that were in that actual reference portfolio?**

King: More often than not.

YPFS (SK): **I would like to go back to the word correlation, which to me is one of the recurring themes as we analyze this whole market. I asked you a question about the rating agencies or getting ratings on these tranches for the long-side investor. And so the way you ran this book forced you to very much think about – more so than people that were doing full capital structure CDOs – really forced you to think about that question of correlation, because if you were delta-hedging, as opposed to running a matched book, correlation really mattered.**

King: Really mattered.

YPFS (SK): **So how do you think about that? How did you think about rating agencies and how they looked at it, how investors thought about it? It was a topic that was talked about a lot back then and even at the time identified as an area where there was difference of opinion.**

King: Well, at some level you were dealing with two different probability distributions. You had the real world, largely historical-based rating agency distributions for loss and default. And then you had market-implied ones. This is no different than if we were looking at interest rate derivatives or in any other book and trying to imply what those two worlds would say. And if you use a loss and default mechanism to back out from market prices what seemed to be the implied loss and default parameters, you get a very different number from anything that you've ever seen historically, because there's risk premium embedded in them. And that is why we call them risk neutral probabilities.

And so, as you carried around two separate views of the world: 1) What is our real-world view, and how does that impact how we're putting portfolios together for the investors that are buying them for the ratings, and what are the rating agency's view of those real worlds? And then 2) What models are we using to extract that same information from the market? And therefore, how are we going to manage the positions?

So, you are dead right. Correlation is one of a handful of parameters that became very important. Prepayment speeds were very important. Correlation was very important. And obviously the less of the full capital structure that was hedged or seemingly roughly hedged, then the more that you were exposed that to correlation number.

It was our guess, and this turned out to be right, that the market implied correlations would be massively higher than the historical correlations that you could derive from looking at default and asset correlations or that the agencies were using. And that's why senior securities that seemed to have very low loss expectations on a historical basis still traded at very substantial spreads. And the only way you could get the spreads to be anything other than zero was to assume that both portfolio losses were much higher than historically and so were the correlations.

YPFS (ML): Did you know that mark? You did not have that reliable mark, did you, for the underlying?

King: Well, that is what people always said. I had taken an approach which was that I did not like to kid myself, I was not going to rely on month-end marks from a price testing service or anything like that. I refused to do that. There were so many models, right? So, do not get me wrong. We used to have one that we liked, it was called Matrix Price, and Matrix Price used to take in every single piece of color that we could generate that we could gather every day on every bond, whether it was a AAA, single A, whether it was a cash bond, whether it was a BBB, every single thing that we could see, and it went into that Matrix Price, and it tried as best as possible to create a surface of pricing from good quality bonds to bad quality bonds from '05 vintage to '07 vintage.

And listen, sometimes it came up with some things that would cause us to scratch our heads. But for the most part, it was not bad. If the index moved, single names would move. Prepayments sometimes changed. If cash bonds went down and the index did not, that meant that expected prepayment speeds must have slowed down. We did not allow ourselves just to say, at the end of the month, price testing will tell us that nothing is changed, right?

And that created a framework. We went to add some basis positions in, we had to do all sorts, but we tried to gather every single piece of information. Therefore, we tried to be in the flow as much as possible. Listen, that was a huge asset. And that does not have much to do with correlation.

In the corporate market, there were some specific names that were quoted at specific maturities on homogeneous contracts. This ABS world was not like that. So, we were trying to piece together as best as possible fragmented pieces of information to come up with something, but not be naive and say, "if that bond moved over there, nothing else moved." That does not seem right. We better try and fix that. So that was one area.

Then the second area, as Steve says, we had tranches. We also needed to have an assessment of how losses within those tranches themselves were likely to happen and were they going to be correlated. The single names themselves did not tell you anything about that. You could try and show what the correlation of asset price movements was, but there was no real useful information. So, you had to make an assumption about what losses in portfolios of securities would be like when they happened together. And that is where the correlation number came in. From our side, we tried to originate as many tranches over as large an area of the portfolio as possible, so that we could just reduce the portfolio's dependency on that correlation number. Because as we said, we had that historical number that looks low and the market implied number that seems to be pretty high.

YPFS (SK) **In the market in 2006, as I'm sure you remember ABX had already been launched, in early '06. By late '06, ABX prices had dropped significantly, spreads on single name CDS referencing subprime BBBs were much wider, and even a little higher up the capital structure had moved a lot. However, the pricing on most of the capital structure of a CDO backed by that stuff had not really moved. And deals were still getting done, which validates it. But at the same time, you had this weird, I do not like to use the word arbitrage, but the sum of the parts did not really add up on one side versus the other. And you were in a position of creating one from the other.**

And so, what were you seeing? How were you thinking about that environment? Buyers coming to you asking for a single A rated tranche backed by mezzanine subprime tranches, how were they viewing that time period? Or even higher up the capital structure, where it was even more pronounced?

King: More pronounced. It is interesting. I think really what we quickly realized was that because of the math, mostly what you saw in the market were what were called par swaps, right? You said a BBB bond was going to trade at a spread of 300bp. You issued it at par and charged 300 or whatever for it. And so, the index could trade down, it seemed to be trading at a spread that was different to the single-name par swap. But then if you tried to show out the non-par swap, you got a completely different price.

And we concluded, we did not have to actually necessarily say that there was some error in the markets, or it was liquidity or anything. In fact, if you just said that the prepayment speeds were going to be considerably slower, you could reconcile all the prices. So, the net result of that was, even though you have seen the spreads were not moving as much as they maybe should on single names, the index was selling off. But actually, portfolio expected losses were already increasing significantly because it was 300bp and a seven-year average life, not 300 for three years. And that meant that those risk-neutral expected losses on portfolios were increasing considerably in 2006.

YPFS (SK) As the portfolio expected losses were going up significantly, you would have expected that tranches that were backed by that portfolio, including tranches that attached well above the expected loss, even the new expected loss, still should have been widening out.

King: And they did let us face it, Steve, they did widen out, right? And they widened out quite a lot, but they did not widen out enough. And they did not widen out enough because, let us face it, there was a tremendous amount of demand. That was weird, actually, because you had an enormous number of parties, some new, because they were structured investment vehicles or they were investment banks that came and decided, "Well, this is great, I can buy AAA rated tranches at 200, 300 basis points, versus buying a similar rated corporate at 5bp" right? "And by the way, that will supplement my middle market lending business over on the other side." So, this sounds great.

YPFS (SK): Now you had mainly bought protection on the tranches, so you probably didn't get the kinds of questions that a lot of hedge funds that had shorted tranches were asking, which was that if a hedge fund was short, synthetically, a relatively senior tranche, they were complaining that the marks were wrong. That the spreads had widened out, as you said, but not nearly enough. And there was a lot of complaining going on at the time.

King: But I think that some of it was, you complained that the spreads have widened, but actually if you typed in a much slower market-implied duration, you'd get a much higher expected loss and there was lower sensitivity to it. So, we had Matrix pricer and we could defend the marks. There were various things we are factoring into that. So, we worked very hard on that. But you are right. The

AAA tranches, then you could pay a lot more for somebody who said, "I'd like a AAA tranche." And you say, "OK, fine." Because now it was in the market-implied expected, loss therefore you could pay more. Now from the desk point of view, it was a good and a bad thing. Remember we still at that point could not really, even once TABX came out, you still could not point to the TABX as a deep market to tell you, and you certainly could not hedge correlation.

YPFS (SK): **My questions are leading up to TABX.**

King: At this point, my mandate with the bank, and I am sure other peoples were the same. If you had an unhedgable risk, that was a huge consumption on the capital that I had available to me as a desk. So, we did everything humanly possible to reduce our exposure to variables like correlation. Because otherwise I would consume all my capital, and that limited the size of my book. So that is why we did. I think we had, $1.7 billion of those tranches, from AAA down to BBB, which we were short. And we would try to get as low down as possible and as high up in the capital structure as possible. And then we had $3 billion of a single name longs on the other side. That was the scale of the book. I do not know how big your book was, but ours got pretty big, but we were constantly chopping away at that correlation exposure. Even once TABX traded, we did not want that risk at all.

YPFS (SK): **I always think about it as this time of year approaches. Most people, when they think about Valentine's Day, think about buying a card or flowers. Somehow what I was thinking about around Valentine's Day is the launch of TABX, which occurred on Valentine's Day in 2007. Were you trading it on that day? Do you remember the pretty amazing price moves immediately after launch?**

King: Yes. I remember that, although I thought you were going to refer to Peloton Capital going out of business in 2008, which was probably almost as material a February. Because that was the time that we realized the prime mortgages were not any better than subprime mortgages and that the basis did not work out, but you are right.

YPFS (SK): **The reason I point to the launch of TABX is that I think there was a big segment of the market that was surprised by the price moves of the more senior tranches. That was the moment where all of the banks that had super senior risks on their books marked at 27 basis points or whatever – way too low – finally had no place to hide.**

King: No, I think that happened a lot later. The TABX certainly resulted in a lot of conversations, right? And you could already start to imply some of those correlations from looking at the prices of CDO tranches relative to single names. There were ways to get at it. But yes, it became clear, that certainly put it on everybody's radar. But a lot of the super senior positions, they were either hedged out with Ambac or MBIA and basis positions and that made them safe because you didn't have to worry about the counterparty or they were in non-mark to market liquidity facilities so that meant you didn't have to worry about it. There were any number of places for people to hide.

Ironically from my book, we did not do that. I wanted to mark my seniors. My super senior positions had attachment points 15% or 20% higher than anybody else's. Because I was running a 60%, 70% correlation stress and saying, "Well, what's going to happen to my delta if that turns out what is right? Because I'm in a negatively convex position." That saved my bacon, completely. Because otherwise you were in those basis positions, and then you had a poor counterparty, or you had a non-mark to market book, and you did not do anything until it was too late.

YPFS (SK): **When you say, "saved your bacon," do you mean that your hedge ratios were higher before the market move, and so you hedged more?**

King: Well, I'll tell you in early '07, I got patted on the back for how much money we were making because we were net short. And I said, "I wouldn't pat me on the back yet because I'm in a negatively convex illiquid position. And we are going to blow through all of our gains, and then add losses." If the expected losses are anything remotely like what is being implied by these price movements. So, I am going to keep going. I am going to hedge and hedge and hedge. And thank heavens I did. If I would have sat and just taken price testing, or just said, do not worry, it is in a non-mark to market book, just wait for the steam roller to ride over me.

That is why we are here today. Some of it was because we wired ourselves up to those Matrix prices and had marked to market our super seniors. We had to react because we were marked to market. And if we were not marked to market, it was tough.

But I do think you are right that TABX was the first sign that things were really problematic. And then the index price kept on moving, yet the price testings at the end of month, cash bonds did not seem to be moving even though the ABX was selling off and selling off and selling off. And the excuses: "It's just because that bond is better than the index." It cannot just be that bad bond. It does not add up, does its Steve? It did not matter. And by early 2008, then that was really it.

YPFS (SK): **So, along the way, you were having interactions with the people that were asking to take on these risks, the tranche rated single A, or the tranche rated AAA. What buyers were those? Those were real buyers, right? Because of the structure of your product, unlike an actual CDO tranche, presumably that stuff was not going into other structured vehicles, right? They were going into actual real entities.**

King: Yes. At the very late stage, there were some that we did end up doing that we had tranches in tranches. I did not want to take on, did not particularly want to reference that. Some of the portfolio managers and buyers wanted to include CDO tranches inside CDOs. And I thought, well, "The problem is that's going to leave me trying to delta hedge CDOs. How the hell am I going to do that?" Right? So, I did not really want to do that. So, I said, maybe the thing I will do is I will just create some synthetic tranches inside tranches. I only really wanted to trade. There were about a hundred single names, which we were trying to trade, right? That we were trying to get back to. So, we did do some of that towards the end – because that was what investors wanted – and got the price. But you are dead right for the most part. We were really referencing single names, and synthetic tranches were still very much a negotiated trade.

YPFS (SK): Who were you selling the risk to predominantly? What class of investors were they?

King: I would say there were some of the structured investment vehicles. There were a variety of the bank balance sheets, mostly non-U.S. bank balance sheets.

YPFS (SK): Were they typically looking for AAA ratings?

King: Looking for AAA or AA or something at that rating. And they were looking for spreads that quite frankly, at that time in the corporate world, spreads were ludicrously tight at that point. And they were not making any money in their middle market lending businesses. And so, they would grow these enormous CDO positions – cash, and synthetic CDOs, anything that seemed to generate yield – and attract almost no capital. And then they would get a pat on the back as a job well done, look how much you are supporting the so-and-so's country middle market lending. But you are actually accumulating this vast portfolio of CDOs.

YPFS (SK): So, what does that look like? So, a European bank enters into... There was no cash funding, right?

King: These would usually be cash funded. We take a special purpose company and we would deposit some Treasuries and some amount of collateral into the vehicle. The investor would pay a hundred million dollars. The hundred million dollars would go into the vehicle. It would be invested in something, cash, a GIC (guaranteed investment contract) or something. And then that vehicle would sell us protection.

YPFS (SK): OK then, so the bank then had to fund the purchase?

King: So, the bank would fund it on their balance sheet, where they funded at A1+/P1 commercial paper markets. In the cash markets under that rating, that is why it then attracts no capital. They would earn a spread, and they would use that spread to subsidize other unprofitable lending activities.

YPFS (SK): Or they would fund it through an ABCP (asset-backed commercial paper).

King: Or use a SIV (structured investment vehicle) or one of those vehicles.

YPFS (SK): Yeah. Got it. OK.

King: Some of the CDOs, a few of the CDOs bought tranches, but not really, they want it to be able to say, "I want to buy the BlackRock managed so-and-so."

YPFS (SK): And so lower down at the single A, AA level were there other classes of risk takers – mutual funds or pension funds?

King: No. I do not think we did any business. It was more hedge funds, other people that were... there was a lot of different views at that time. Steve, if you imagined, I won't talk about the trades that we did, but there were a lot of potential, "well, I buy protection from you on this, if you sell me protection on that." If you think actually at the time corporates traded like that, right? Corporates, if you bought a single name tranche, you traded with its delta, so it wasn't really a peculiar concept to say, all right, I'll sell you this and I'll buy protection on that, because that way I didn't have to cross two bid-offers to get it back into a hedged position.

YPFS (SK): A hedge fund, that is a trade that I think they are used to making. I would think that somebody that is buying a rated product is not really equipped to think about the world that way.

King: And as I say I do not think it was really, there were a couple of the banks that were looking at BBB portfolios rather than AAA. As you got further down the capital structure, it was tough. If you think about what was happening at that time, if you take the prices and the implied losses I was describing, we were a lot less worried about placing the BBB or the equity tranche, right? I will deal with that loss. I think my correlation assumption was that the implied correlations are so high, so the expected losses are high. I was always trying to buy protection higher and higher in the capital structure.

YPFS (SK): Right. Well, the way your book was structured, you were probably naturally short that junior part of the capital structure.

King: Naturally, short it. So, that was part of the reason we started the business. Everybody else seemed to be struggling, to place BBBs. And then what they do is they do their cash CDO and then guess what they do. We did it, it was Barclays, Lehman, everybody keeping the BBB, but did they actually succeed in placing it? So, the model is warehouse and exit, but actually look at what we found on Lehman's balance sheet, 50% of every deal, including all of the BBBs, Right? So, we did not have to worry as much about that. We were kidding ourselves and actually we needed to get further up the capital structure. So, it was a natural response in fact, to what was happening in the market.

YPFS (SK): And it's interesting to think that that inadvertently some of those dealers probably had the inverse book that you did and they were getting forced to take that on BBBs, they couldn't sell during the syndication process and then try to hedge them through liquid parts of the market or ABX. Because your hedge ratio would never have been large enough.

King: Or actually arguably what happened was it looked for a while like it was a brilliant trade, right? Because they did not mark down the CDOs and the ABX kept moving, congratulations. And then all of a sudden, their CDO is now worth zero, and by the way, how do I get out of this basis position?

YPFS (SK): Right. Although some of those, just by virtue of waiting, they all disappeared on their own.

King: That was the other thing. You lose your job, disappear or the whole firm vanishes. It was not very funny at the time, right? It was a pretty scary time.

YPFS (SK): So, one class of market participants that I have been having trouble connecting with on this project are people like what you've just described, people at the unnamed European banks that were buying this risk. You have been very helpful in shining some light on what motivated them to want to do it. But please elaborate. What do you think was driving them? How were they looking at the market both before prices really moved and then as prices were moving?

King: Well, as I said I think they were still attracted to the short-end funding rates, A1+/P1 commercial paper was still trading through Libor at the time.

YPFS (SK): Just before you get too far on this, you commented earlier that these banks were getting a AAA rated piece of paper at a massively wider spread than they could get in any other market. And despite what some have said, these were not unsophisticated people. So, what were they thinking about at the time? How were they analyzing this risk and what do you think that they knew or did not know at the time?

King: It is really tough, right? Listen, we discussed why I got into this business. Part of it was there's incredibly smart people and hardworking, smart, creative people. I enjoyed it. And for the most part, I do not think the people I worked with were intentionally evil or trying to do strange things, or even trying to screw each other. They just were able to articulate their views and get on with it and make some money. And if there was a way to arbitrage the rule, they would do. I think it was pretty face-up to be honest with you.

YPFS (SK): So, when the European banks, for instance, buying something that rating agencies put a AAA rating on, did they believe that that was really a AAA?

King: That's what I was trying to get to. It was good. I cannot say these guys were stupid. I do not think you can say that people were getting the wool pulled over their eyes. They were trying to operate corporate lending businesses in a very competitive setting. They had obligations to lend in other divisions of their banks that were not very profitable, if at all. And all of a sudden, and I don't know when this happened in the early 2000s or something, Steve, the banks started turning up and saying "Listen, we could do this corporate CDO tranche, and it's a single A or double AA, or AAA and corporate credits trading at 20, but we'll sell it to you for 80, right?" And then a little desk starts to emerge.

A little portfolio emerges in one or more of the more aggressive corporate banks. And then the other corporate banks that are near those corporate banks say, "Hold on, how are they managing to price their middle market lending two basis points inside what we're doing? Look, they have got this frigging portfolio with CLOs and CDOs and things and other ABS over there. Well, we better have one of those desks too." And they all follow each other as they are trying to maintain an overall commercially viable bank lending business. And by the time you got to ABS CDOs and CDOs of CDOs, now, all of a sudden, I got corporate credit over a AAA at 20, and I can get 350 to 400 on this synthetic tranche. Well, I do not even need to do much of that now to offset a huge amount. So, let us allocate some more capital to that. Well, now we are even more successful now.

Does that mean that was dumb? I do not know. I think that the people that were originating it, the agencies that were analyzing it, I think all genuinely would have said, "We're not trying to do something that's crazy or corrupt here. There's an illiquidity and a complexity and a structuring that means these kinds of securities aren't available to those general corporate traders over there." That would be the reverse of the dumb thing. "They're too dumb to be able to buy something as complex as this, but therefore we'll get paid a lot more for it."

YPFS (SK): So, they knew that they were getting something that was probably not a AAA risk?

King: I would not have gone as far as that, Steve. I think they could easily have defended that, "Do you know what? It's illiquid and it's complex and the agencies are really good, and they agencies reckon they'd mapped this AAA to that AAA, and that therefore it's correct." I do not think so.

YPFS (SK): What level of analysis or diligence do you think that they were doing on the underlying mortgages or ABS tranches that were in these structures? Do you think that they were doing real work to properly understand whether it was AAA or not and answer that question for themselves?

King: I cannot think of many that I know that really did nothing. I cannot think of any. Whether it is just saying, I do not like HELOCs, and I do not like seconds, and I do not want '07 vintage and I do not want so and so, right? There were parameters, right? That people had. I do not want bank shelf-issued paper. You could probably think up the same criteria. Could kind of cause herding, but if it was a healthy shelf from a mid-'06 vintage or something, then it was trading at half the spread of some of the other stuff. So, I think there was that level of analysis.

I think the reality was the housing market underpinning that allowed you to feel that it was a hell of a lot healthier than it really was. Somehow in the prices, the prices kept deteriorating in the markets that people like you and me could access to short. I was incredibly bearish, right? But I still have to run a pretty neutral book.

I wasn't anywhere near bearish enough in part because I'd look at the underlying loan performance and I'd worry that the only reason these loans are not defaulting is because of the availability of refinancing and the moment refinancing isn't available, they'll neither be able to pay their interest let alone repay their balance. And so those regression models that do not have a factor in them, which is "refinancing not available," cannot possibly pick this up. And even if you turn "refinancing not available" to one, I now do not have any models to calibrate it. So, I think the underlying loans allowed you to say, "It's all pretty healthy, and this is just because of supply and demand." So, you could hide behind that.

But if you try to really do the work that prop desks, that structured desks like mine were doing, yours were doing Steve, you could not get to that answer. Could you? Now you had the ability to more take an outright, substantial position. I did not really, we were still a bank. We still had to make a profit. We had to earn. So, I was very constrained into basis positions unfortunately. Right now, I am here and you are there.

But still we understood there was something wrong in the underlying loans. If you did not make that decision and there were plenty of people saying, "There's nothing wrong with the affordability of these properties, there's nothing wrong with this loan market that will perpetuate these financing rates are low. Look, they can be afforded, right?" If you believe that, then no HELOCS, and no bank shelves and no seconds, that was probably a pretty good start. All right, now I am getting paid 400 for a AAA tranche on a portfolio that is expected losses 3% or 5%, and I am attaching at 15%.

YPFS (SK): I do not know if these guys thought in a conscious way about correlation, but by definition, if they are asking for something that has a bunch of subordination, then subconsciously they are thinking about correlation.

King: Maybe, but that change of measure is pretty tough... it is easy for you and me to talk about it. I do not know what Matt thinks about it. That is a pretty big leap. I think people came to start to talk about correlations and expected losses because the corporate desk over there, they learnt it from them, but I am not sure they really understood what it meant.

YPFS (SK): The buyers may have started from the premise of, "We need something rated AAA and therefore it will by definition have some reasonable amount of subordination." My impression is that they also believed that that subordination gave them real tangible protection. Do you agree?

King: Listen, when I think about those people that were in those institutions that we are talking about, I could say, I genuinely do not think that they were shooting from the hip. I do not think they thought they had any chance of taking losses on those portfolios. I think they were in non-mark-to-market books. I think they said, "Listen, we've got multiples of subordination to the expected losses on these loan portfolios in the worst scenarios that we've ever had over the last 20 years."

There was any amount of backward-looking analyses that you could do that said, "We are golden, as long as we don't have to mark to market, we are golden," right? But what you didn't expect was that "Oh shit. If the borrowers cannot refinance, then one, those historic numbers are garbage." But worse, if I all of a sudden get a tap on my shoulder to say, "Can you get rid of that portfolio?" because now it is starting to attract capital because it has been downgraded. So that all of a sudden, "Jesus, I said it was no mark to market, but now we've just crystallized the loss. And 'Oh, by the way, that's going to have an enormous hit to bank capital, which means we've got to sell more of it.' "

And those effects that happened after the period we are talking about, I think were just not even considered. I am not even sure we considered quite the way it would have gone from the mortgage market to the banking to the sovereigns. Did we, Steve? We were bearish. Did we start off by saying there was going to be all banks gone and all sovereigns burst? I do not think so. We were pretty damn bearish. Right. But we did not get to that.

YPFS (ML): Steve, didn't we hear from one of the managers that the European buyers were interested in a CDO tranche rather than getting the underlying, because they felt more leery about some risk buying a particular RMBS.

YPFS (SK): Well, I think some got a lot of comfort. I know the comment you are thinking of, which came from a CDO manager, so perhaps it is self-serving. But I think they got comfort from knowing that there was a CDO manager actually making the selection. So, in your example, Stephen, you would have people say, "Well, here are my portfolio constraints, no dealer

shelves, no seconds, no HELOCs, et cetera." I think other buyers, instead of creating their own criteria, took the view that if they vetted a CDO manager, who's going to be picking the bonds, that gave them a similar amount of protection from being exposed to the handful of "bad deals."

King: Well, and also to be just further away from the expected losses on the underlying portfolios. If you had AAA tranche of a portfolio of single A's, that felt a lot better than being in a BBB. And that AAA on top of that, or AA on top of those single A's was trading wide of the BBB on the underlying by quite a lot.

YPFS (SK): When you're not physically close to where the risk is located and you don't have the ability or desire to become an expert in it yourself, it is a reasonable strategy to go and hire an expert to do it for you.

King: Yes, especially when it seems that you can earn what looks like an extraordinary spread over buying a corporate risk. You could say we were in some stage of the cycle or those kinds of words. I can get paid a hundred over here, or 20, that felt a lot less. I could therefore buy one fifth of the exposure to achieve the same objective. And we are being paid for that because there is an illiquidity premium. But we do not care about illiquidity because we are buy and hold, and it's in a buy and hold book. And that seems to be normal.

And as I say, I think that the dialogue about bullish and bearish, particularly once spreads had started to move ... listen, if we were bearish at a particular point, there were plenty of people who were bullish. And let us face it, in 2007, when I was sure mortgages and the equity markets were at an all-time high in 2007, trust me, I looked an idiot. I did not look so much of an idiot by the end of the year. But there were plenty of diverse views. It is easy to look back now and say it was all very obvious. It was not very obvious.

YPFS (SK): Agreed. A lot of the people that were buying the mortgage-related CDO tranches were the same people that also bought corporate CDOs and CLOs. And for those people, those were the old CDOs that were done in the nineties. When you looked at the performance of those during the 2000-02 recession at the top of the capital structure, the AAA, AA, and a lot of the single A's that went down significantly in price in 2001 and 2002, particularly after 9/11, for the most part they recovered and paid off in full. You would not have been unreasonable to take the view that the structure operated the way it was supposed to. Unless you had a very strong view about lack of correlation in these new deals.

King: Yes. The correlation ... listen, that is a murky world, right? We had a David Li working for me for quite a long time, who was supposedly the father of the copula model, right. And the amount of time I have spent on the mathematics and thinking about asset correlations versus default correlations and the way that can lead to really weird results, like two perfectly correlated assets can have two different default correlations. And some of that stuff's mind-blowing, right?

I do not think it was necessarily wrong for some of these securities and markets to come into existence because as a free market participant, I liked the idea of competitive markets. I thought what we were doing was healthy. I do not think we were trying to blow stuff up. Even Paulson. Everybody thought Paulson was a bit crazy at the particular ABS tranches he was shorting because he was long high yield, and when you are long high yield and short ABS, maybe that ABS hedge will not work. Hey, turned out he had his hedge ratio wrong and made a fortune. It is so very circular, right? I am sure there is a starting point because it is very hard to say it was regulator or originator or CDO desk or bank or rating agency. It is very hard to spot because it certainly kept feeding back.

YPFS (SK): **Yeah. Very early on, it became clear, there is not one thing that you can point to that is responsible for what happened. There are a lot of contributors and putting weightings on those contributors is not easy but knowing that there were a lot of them is pretty clear.**

King: Yeah. A lot of them. Competitiveness of banks, desire to make money, pressure from shareholders for banks to have a better price to book or earnings ratio or a higher dividend. Where do you start?

YPFS (SK): **Some people that are well-known in the markets have commented, including Paul Singer who said publicly that one of the biggest contributors and failures was the amount of leverage the banks were permitted to run. And in the absence of that, all of this bad stuff would still have happened, but it would not have been systemic.**

King: I really believe that is true. I do not think we even realized, there were very few metrics. I did not become involved in this until 2008, right? But from 2008 onwards, I was very involved in this aspect of it. And there were not very good numbers inside a bank to understand how much leverage it was running even at a relatively simple method, let alone at an advanced level, if you looked at portfolios of securities and tranches. it was constantly, try and pack it down into as low a regulatory capital as possible. That was really, I think, a big piece. If you could get that regulatory capital number down, then you could earn a high yield to regulatory capital. And that meant that your equity returns looked great. So that definitely, I think there is a big hole there that motivated everything.

YPFS (SK): **So, you probably know more about post-crisis bank regulations, certainly more than Matt and I combined, and probably more than most people on this planet. When you think about to what extent some of those**

problems were fixed, post-crisis, things like the supplemental leverage ratio jumps out as a big improvement to me. How do you feel about the potential for this happening again? How much have we improved?

King: Truthfully, I know the triage in 2008 through maybe 2011 or '12. I do not really know much beyond that period. So, some of the remedies and what has been put in place over the last 10 years, you are probably in a better position than me, quite frankly. I know how we dealt with the triage of it.

All I could really say is, I think as I look out across financial institutions and I'm not as anywhere near as involved, not involved like I was, but I don't see the same sources of leverage or systemic risk. I do not see the volumes. I do not see the ratios of those portfolios to the capital supporting them. I cannot spot them. I cannot find them. Maybe I just do not know that there is an energy problem or that there is a Japanese economy problem, but maybe I just do not know, and I will not see.

I used to say that I think part of what saved us was the fact that we were so close to the bomb blowing up. But we could see the bomb. So, we ran. And if we would have been a bit further away, we would have just stood there and it would have blown up and killed us. And so, I might not know of other horrific incendiary devices that are lying around the world. I do not see it. I think in some ways, I don't think there looks like there's the same thing, whether or not the technology sector or something is bringing its own – whether or not wealth concentrations amongst a handful of families is a wrong thing – those things, I don't really know.

No, in fact I think it is unfortunate in some ways that some of that innovation to try to complete markets has been stopped. I get the idea that it is good that they copy some of these products, but on the other hand, some of it is actually bad in my mind. I think.

YPFS (ML): We need a name for that state. The state of coming so close to system collapse. You cannot call it the collapse; we call it the global financial crisis. A brewing storm. And then almost going off the cliff. So, what is that? A crisis, then near collapse?

King: I do not know it is hard, right? But it certainly was the case that in some ways, the only place that you could be to survive would to be in seats like Steve's and mine, where you really were looking at multiple markets and information and saying, "Hold on a minute, I don't quite get this." And by the way, Steve, I do not know what your risk management was. But I was obliged to do something about it. I had bosses that say, do something about it. We had to do stuff about it. So, we did. It worked out OK. But my God what carnage.

YPFS (SK): **It is a little discouraging and scary to think that unless you are in a very well-placed seat, very close to the problem, you would be totally blindsided by it.**

King: Very blindsided.

YPFS (ML): **Near meltdown. That is the best moniker I have heard.**

King: Near meltdown.

YPFS (ML): **On your comments about triage and the restructuring, the chief lawyer of the U.S. Fed told us, echoing what Paul Singer said that the leverage factor is central, that he credits more than anything the Basel reforms. I think it is a sort of rolling grinder of technical things that have created what you described, Stephen, that the banks you look at, and you just can't see major areas of vulnerability. You have got the shadow banking things and dodgy aspects, but they are relatively minor. So that is the first point.**

The counterpoint is, as Steve has said, it is going to come from somewhere we do not know.

King: And we are all a bit, we have got post-traumatic stress disorder, right? Maybe I am not even the right person to spot it or I would look for it everywhere. And then I will not see it. I do not really quite see it at the moment. I do not know what you feel, Steve. I do not see that same catastrophic, systematic risk. And I think the leverage factor is an important part. I think the banks themselves became quite gun shy. Yes, some of it was regulated out of existence.

I am not in this business anymore because, I do not want to be in this business anymore. It was suddenly not enjoyable. It was let us go and build hotels and stuff. So, some of it was regulated out of existence. Some of it was just that I don't think there was any appetite by the new class of CEOs, the risk managers or any of those people to push the boundaries, whether it be those middle market lending banks that were having small buckets of high risk stuff – that was gone. If it was in the investment banks, I don't want to know. I do not want to be the executive that has underwritten a trading book that might have a problem in it. So, its kind of killed itself as well. Even if it had not been, I do not know whether you agree, Matt and Steve. OK, some of that has gone away now. But it does not seem to have... Banks have not. Do you think banks have completely reversed and they are back to old characteristics? I do not think so.

YPFS (SK): **No. I have certainly seen products that I have been involved in post-crisis, whether it is subprime or non-QM mortgages, which is the new polite term. It is not anywhere near as bad as subprime. In fact, I think it is actually a sensibly underwritten product. At least as of a year ago, which the last time I was really connected to it.**

But you could see over 2015 through '20, you could see that the underwriting standards becoming less conservative, you're right. In 2015, everything was underwritten super, super conservative. And in 2016, it was well, you know what, we can afford to push the LTVs a couple of points higher, right? The next year is something else. That is how it starts.

And you are right, I don't think anything is remotely close to the way it was pre '08. And bank leverage, my sense is, is also in a more manageable place. So, you may be right, but the next crisis may be one that is not a financial crisis, may be a political crisis. Or it may be if it is financial, it may be from a completely different segment. The thing I worry about right now is currency debasement and inflation, right? That is almost the polar opposite of a deflationary financial crisis that blows up bank balance sheets.

King: Right. Sovereigns 10 years from now. That seems to be a baseline.

YPFS (SK): Yes. And public markets, if they are the source of the problem, it's going to take a very different path than what happened in '08. It is unpredictable what that path is. But the scary part about it is the public sector is what bailed out the financial markets in '08. If the public sector is the source of the problem on a global basis, there is no backstop.

King: Well, that was what was quite scary. If you remember when we were trading sovereign credit spreads, in 2011 and '12, that was pretty damn scary, right? Because then you definitely did have that problem that that the Fed is not going to bail out Europe and ECB.

YPFS (SK): When you look at European banks and the interconnectedness of exposure to peripheral sovereigns, particularly Italian government credit, because that is the largest. I have no particular reason to think that Italy is going to have a problem, but if it does, right – that's a big if – that's one of the things that would have that chain reaction type effect through the financial system.

King: Yes. That is for certain. And I also do not know that much about some of the mega-hedge fund balance sheets and how much leverage on leverage or illiquid long duration securities funding done with short duration borrowing. I just do not know that world anymore. I would not even be able to guess it. But listen, in some ways the pandemic to me was an interesting stress test, right? You had an exogenous shock that just meant the security started to plunge in prices and it could have had just unknown consequences. But interestingly the pandemic TARP was executed much faster than TARP was executed by the guys back in '08 and now you have actually got an asset bubble if anything.

YPFS (SK): **Well, they say generals fight the last war. And that is certainly the case. The flooding of the system with just incredible amounts of liquidity, the speed and the size of what happened in the second quarter of '20, when you lined it up versus these programs were in multiples even adjusted for the size of the economy relative to '08, and they're not over.**

King: And they are not over. There seems to be a panacea in a problem that is being.

YPFS (SK): **And to say it is worked; I think is premature because you do not know. It is worked to stem the immediate emergency, but you do not know whether it is created bigger problems that are out into the future.**

King: I think in fact, you know it is created problems. Refinancing risk in five to 10 years' time seems like, well, that is there. And how that one gets solved I do not know, people I guess say "Don't worry about it yet."

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