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The Beautiful Machine

Greed on Wall Street and blindness in Washington certainly helped cause the financial system's crash. But a deeper explanation begins 20 years ago with a bold experiment to master the variable that has defeated so many visionaries: Risk.

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First of three parts

Howard Sosin and Randy Rackson conceived their financial revolution as they walked along the Manhattan waterfront during lunchtime outings. They refined their ideas at late-night dinners and during breaks in their busy days as traders at the junk-bond firm of Drexel Burnham Lambert.

Sosin, a 35-year-old reserved finance scholar who had honed his theories at the famed Bell Labs, projected an aura of brilliance and fierce determination. Rackson, a 30-year-old soft-spoken computer wizard and art lover, arrived on Wall Street with a Wharton School pedigree and a desire to create something memorable.

They combined forces with Barry Goldman, a Drexel colleague with a PhD in economics and a genius for constructing complex financial transactions. "Imagine what we could do," Sosin would tell Rackson and Goldman as they brainstormed in the spring of 1986.

The three men had earned plenty of money through short-term deals known as interest-rate swaps, a clever transaction designed to protect banks, corporations and other clients from swings in interest rates that threw uncertainty into the cost of borrowing the money necessary for their business operations.

They believed their revolution could never happen if they stayed at Drexel. Swaps in those days typically lasted no longer than two or three years. The trio envisioned deals lasting decades that would lock in profits and manage risks with unprecedented precision. But the junk-bond firm's inferior credit rating sharply raised its borrowing costs, making it a dubious and risky partner for such long-term deals.

Sosin and his team needed the backing of a company with deep pockets, a burnished reputation and the very top credit rating, a Triple A institution as unlikely to default as the U.S. Treasury itself. One name topped their wish list that fall: American International Group, or AIG, the global insurance conglomerate considered one of the world's safest bets.

They would find a partner for their venture. They would create an elegant and powerful system that earned billions of dollars, operating in the seams and gaps of the market and federal regulation. They and their firm would alter the way Wall Street did business, particularly in the use of derivatives, and eventually test Washington's growing belief that capitalism could safely thrive with little oversight.

Then, they would watch in disbelief as their creation -- by then in the hands of others -- led to the most costly rescue of a private company in U.S. history, triggering a federal investigation into AIG's near-collapse and making AIG synonymous not with safety and security, but with risk and ruin.

Over the past two decades, their enterprise, AIG Financial Products, evolved into an indispensable aid to such investment banks as Goldman Sachs and Merrill Lynch, as well as governments, municipalities and corporations around the world. The firm developed innovative solutions for its clients, including new methods to free up cash, get rid of debt and guard against rising interest rates or currency fluctuations.

Financial Products unleashed techniques that others on Wall Street rushed to emulate, creating vast, interlocking deals that bound together financial institutions in ways that no one fully understood and contributed to the demise of its parent company as a private enterprise. In the panic of mid-September's crash, the Bush administration said that AIG had grown too intertwined with the global economy to fail and made the extraordinary decision to take over the reeling giant. The bailout stands at $152 billion and counting -- almost 10 times as large as the rescue for the American auto industry.

Many of the most compelling aspects of the economic cataclysm can be seen through the story of AIG and its Financial Products unit: the failure of credit-rating firms, the absence of meaningful federal regulation, the mistaken belief that private contracts did not pose systemic risk, the veneration of computer models and quantitative analysis.

At the end, though, the story of Financial Products is not about math and financial formulas. It is a parable about people who thought they could outwit competitors and market forces alike, and who behaved as though they were uniquely positioned to sidestep the disasters that had destroyed so many financial dreams before them.

2: 'We Are The Tide'

Sosin, Rackson and Goldman could hardly contain themselves as they labored over a business plan at Sosin's kitchen table in his apartment on Manhattan's Upper East Side. Their timing happened to be exquisite. The staid Wall Street of their fathers' generation was gone, replaced by an anything-goes culture that applauded the kind of path they were charting during the final months of 1986.

Their plan fit perfectly with another revolution they saw unfolding in Washington. Ronald Reagan's unwavering belief in free markets -- and his distaste for regulation that put hurdles in the way of entrepreneurs -- had steadily spread through the government. "The United States believes the greatest contribution we can make to world prosperity is the continued advocacy of the magic of the marketplace," Reagan told a U.N. audience that fall.

As eager as the three dreamers were, they had to confront certain realities. They had no backing, no inside track to the top levels of the corporate world that controlled the money they needed.

They had passed AIG headquarters at 70 Pine St., a few blocks from Drexel's offices, many times. Now, they wanted an entrée to the 18th floor, where legendary 61-year-old chairman and chief executive Maurice "Hank" Greenberg presided over the nation's largest insurance company, with operations in scores of countries. Greenberg was proud and protective of his company's AAA credit rating, one of only a handful in the world.

The AAA, awarded after an examination by the bond-rating firms, sent a resounding signal to clients that they could always sleep well at night, that AIG was in no danger of failing. The more secure a company, the more cheaply it could borrow money -- a fact that would be pivotal to Financial Products' success.

AIG's roots went back to 1919 and Shanghai, where founder Cornelius V. Starr built a business around a lucrative, relatively untapped insurance market. Starr's company later received an unorthodox boost when he worked with the U.S. Office of Strategic Services during World War II to create an intelligence unit that gleaned information from insurance documents.

When Greenberg took the reins in 1968, AIG was a privately held company. Greenberg, a compactly built son of a taxi cab driver, eventually became a figure in both New York and Washington, where he counted Henry Kissinger and Reagan CIA director Bill Casey among his confidantes. The World War II and Korean War veteran had a temper, a gift for growth and a restless mind. He had transformed AIG into a global titan and now wanted to do more.

Few people thought of AIG as a financial innovator. Greenberg kept his stockholders happy by striving for an annual 15 percent increase in profits. He instructed his deputy, vice chairman Edward E. Matthews, to explore how AIG could get more involved in Wall Street's realm.

"This is never going to get any better than it is today," Greenberg told Matthews. "We're so big, we're never going to swim against the tide. We are the tide."

3: 'It Wasn't The Money'

At the law offices of Kaye Scholer in Midtown Manhattan, former Sen. Abraham Ribicoff had a match to make.

Sosin had come to the firm -- where the 76-year-old Ribicoff was a senior adviser -- seeking guidance on how to leave Drexel. As he mentioned his interest in getting AIG's backing for a new venture, a Kaye Scholer lawyer told him to see Ribicoff, an old Greenberg friend.

Ribicoff was happy to introduce the inventive Sosin to the ambitious Greenberg, and let them figure out whether they could do business together. But he warned Sosin that any partnership, no matter how productive, can sour. "I'll only call Greenberg if you let us plan your divorce while we're planning your marriage," Sosin remembers Ribicoff saying.

Sosin came to the negotiation with conditions. He wanted the kind of autonomy that Greenberg rarely granted. Greenberg wanted assurances that Sosin's venture would do nothing to harm the gold-plated rating he had spent two decades building.

Greenberg had little extra time for the nuts-and-bolts details that Sosin sought to negotiate. "I don't really know much about this," he told Matthews. "You go talk to these people."

The morning after AIG and Sosin signed their joint venture agreement, Jan. 27, 1987, word spread rapidly through Drexel's trading floor in lower Manhattan: Sosin, Rackson and Goldman were leaving. Discreetly, the three men had invited some of their colleagues to a recruitment meeting. Ten eventually signed up for the ride.

Michael Milken, the junk-bond king who was Drexel's star trader, tried to stop the breakaways. But the pull of innovation, and the promise of even greater pay, was too strong.

At Drexel, Sosin, Rackson and their band of brainy followers didn't have much say in how bonuses were doled out. At Financial Products, they would keep 38 percent of the profits, with Greenberg and AIG getting 62 percent. (Greenberg remembers AIG's share as 65 percent.)

Their revolution began with a whisper. They set up shop in a windowless, makeshift room at an accounting firm on Third Avenue. Until the rental furniture arrived, they sat on cardboard boxes. When it finally showed up, someone had made a mistake and so for a short time, they perched on children's chairs and worked at tiny tables. When Matthews escorted Greenberg there for a visit, the chief executive chewed him out. "You can't have them in such terrible quarters," Greenberg said.

Sosin and Rackson hoped that everyone would get rich, but they had their sights set on something more. They wanted to tear down walls they saw as impediments to innovation, the "fiefdoms" that were standard practice at other Wall Street firms. Their vision required a collaborative culture and a computer system that no one else had. For six months, the group worked on constructing "the position analysis and storage system," or PASS. They called it simply "the system."

It enabled Financial Products to bring a rare discipline to complex trades. By maintaining market, accounting and transaction details in one place, Sosin and his people could track the constantly changing value of a trade's components in a way no other firm could.

Put more simply, they could see opportunities in the marketplace for taking on risk that others couldn't, squeeze out profits where no one had before and protect themselves in the process.

They exploited the developing realm of derivatives, financial jargon for a contract settling in the future that is based on something trading now. A futures contract is a common derivative: A farmer might agree to sell wheat next spring for a price set today. If the price goes up, the farmer misses out on greater profits; if it goes down, the farmer is protected against loss. Essentially, the contract guarantees enough money to keep the farm going.

For its clients, Financial Products found ways to create more lucrative and longer-term derivative deals tied to all sorts of underlying assets, neutralizing the constant gyrations of prices in stocks, currencies and commodities. Behind each transaction was the cushion of AIG's AAA rating.

Precision was the key to tamping down the risk of these derivatives to the firm. Using another computer program to monitor the minute fluctuations in various rates, Financial Products could place offsetting trades on all sides of a transaction, so it almost didn't matter what the markets did. That was the beauty of their evolving machine: The firm won either way, as long as it stuck to its commitment to keep hedging its bets.

But it took more than technology to realize their vision. It took a culture of skepticism. The firm set up a committee to examine all transactions at the end of each workday, searching for flaws in logic, pricing and hedges. "Everyone kind of understood what the nature of the game was. . . . This was not a company that involved speculating," said Tom Savage, a mathematician from Drexel who joined the firm in 1988. "So it was everybody's job to criticize and double-check other people's opinions about what was appropriate business and what wasn't."

Sosin and his colleagues worked to create a finely balanced system that married technology, intelligence, verve and cultural discipline.

"We were all kind of artists," Rackson said recently. "The excitement of it wasn't the money. The money was the scorecard. The drive behind it was creating something new."

4: 'We Regret to Inform You . . .'

In July 1987, Sosin phoned Ed Matthews at his vacation house in the Adirondacks, where the AIG executive often went to escape Manhattan's summer heat. It was a phone call both would remember for a long time.

Financial Products was about to close its first significant deal, a $1 billion interest-rate swap with the Italian government, 10 times larger than the typical Wall Street swaps deal in those days.

The elements of the transaction might seem arcane to those outside the financial world. The contract involved an exchange of floating and fixed rates that gave Italy advantages in how it paid bondholders. Financial Products engaged in a separate set of transactions to offset the risk it was taking on. As Sosin explained to Matthews, the firm made money, over the life of the contract, on the spread between the cost of the deal and the cost of its hedge.

This one swap, Sosin told him, would pay the firm more than $3 million -- as much as AIG's two other small financial operations each earned in a year.

"I was stunned," Matthews said.

That first year, Financial Products brought in millions for the company -- $60 million in the first six months alone, as Sosin recalls. He and his team left behind their ad hoc digs for a swanky Madison Avenue address, a temporary stop en route to their eventual headquarters in suburban Connecticut.

Competitors hustled to keep pace. Sosin pressed to find niches where others weren't playing and provide cost-saving solutions for clients. Standard interest-rate swaps were no longer enough. The firm moved into more exotic deals, involving stocks, currency and municipal bonds.

By 1990, Financial Products had offices in London and Tokyo. It would soon set up a small bank in Paris to improve its image and lower the cost of some European deals.

As in the Italian deal, the transactions were hedged and, if necessary, hedged again. The hedges involved precisely calibrated transactions, including the purchase of Treasury bonds or other swaps, that brought a cash flow in almost direct proportion to the money going out.

But with success came tension. Greenberg's love of his joint venture's revenue could not overcome his desire for greater control. He chafed at the deal, worrying that he had given Sosin too much freedom.

One detail in particular nagged at Greenberg. Under the joint-venture agreement, Financial Products received its profits upfront, even if the transactions took 30 years to play out. AIG would be on the hook if something went wrong down the road, not Sosin and his team, who took their pay immediately.

Greenberg's uneasiness grew into distrust, and not just about the numbers. Greenberg was a wink-and-handshake guy, while Sosin relied on the written agreement as his Bible. If Greenberg asked for something that wasn't stipulated, Sosin wouldn't comply.

"We ran our company very openly," Greenberg said. "Our word was our bond."

For his part, Sosin said the agreement gave both sides a clear understanding of the arrangement.

Early in 1990, Greenberg summoned Sosin to his office. Drexel had just imploded amid allegations of fraud and insider trading, and Greenberg had recruited several executives to start an AIG unit specializing in currency trading. That was a problem: Sosin interpreted the joint agreement as giving his firm exclusive rights to that business. Greenberg disagreed, and hoped to finesse the conflict.

"Howard, I'm sure you won't mind," Greenberg said.

"Mr. Greenberg, I mind very much," Sosin said.

"Howard, that isn't wise," Greenberg responded.

Days later, on March 13, 1990, Matthews sent Sosin a letter on Greenberg's behalf announcing their intention to terminate the agreement. "We regret to inform you. . . " the letter began.

Under the agreement, Sosin could take a duplicate of his computer system and his team with him. He began looking for backing from another AAA company. Greenberg heard about Sosin's efforts and got cold feet. After a series of meetings, including one at Greenberg's Florida retreat in Ocean Reef, they patched it back together, reasoning that there was too much money still to be made.

Greenberg's next letter had a different tone. "It is with great pleasure that, with this letter, we revoke any and all of our prior notices of termination," he wrote on May 31, 1990.

The peace wouldn't last.

5: 'Cave or Terminate'

In late 1992, Greenberg once again summoned Sosin to AIG headquarters. He was livid over two recent Financial Products deals with entities controlled by the Edper Group, a giant Canadian holding company owned by billionaires Edward and Peter Bronfman.

The first involved the purchase of bonds, which amounted to a loan to one of the Edper entities. The firm occasionally ventured into such credit deals as part of larger transactions, but only with highly rated companies and with provisions that opened an exit ramp if the bonds started to default. "We want to be the first rat to leave the sinking ship," Sosin told his troops, reflecting his unease with credit deals, which their system couldn't tame.

When this particular ship sank, Financial Products sold out as quickly as it could, but not before it lost $100 million. The second deal, involving a swap with extra layers of complexity, was going fine. But the $100 million loss in the first deal and the intricate machinations in the other had spooked Greenberg.

Sitting in an anteroom to his office, in a favorite red leather chair, Greenberg demanded that Sosin stop doing some of the deals that had made Financial Products a Wall Street darling.

Greenberg handed Sosin a document that would change the terms of their joint venture. Greenberg was daring Sosin to flinch. Instead, Sosin walked out.

He visited his lawyer, Ronald Rolfe, at Cravath Swaine & Moore in New York.

"I said, 'What can I do?' And he said, "Cave or terminate.' "

6: No Reconciliation Possible

Under the agreement, either man had the right to terminate the joint venture. Sosin notified Greenberg that he wanted out.

Greenberg knew that Sosin's departure could cost him and AIG millions. But that wasn't his main concern. He didn't have a thorough understanding of how Sosin's system worked, and he wasn't going to let him get away without finding out.

In March 1993, as the two sides commenced a bitter arbitration battle, Greenberg formed what came to be known as a "shadow group." It verged on a covert operation. The group included AIG's auditors, now known as PricewaterhouseCoopers, which set up an office near Financial Products -- now in Connecticut -- and built a parallel computer system to track the firm's trades. Greenberg also held surreptitious conversations with some of Sosin's colleagues, recruiting them to stay.

Years later, Greenberg and Matthews still chafe visibly at the mention of Sosin. "One of the most difficult individuals I have ever dealt with in my entire life. Hands down," Matthews said. "Howard was in it for Howard."

Sosin, too, remains sensitive about what happened. "Greenberg took this very personally," he said. "He likes to be able to step in at any point and change things at his whim."

In Sosin's view, Greenberg and Matthews were envious of the profits that he and his colleagues were keeping for themselves. "It was peculiar to have something go so well," Sosin said, "and for him to have such suspicion."

In August 1993, with no reconciliation possible this time, the AIG board of directors installed a new leadership team. Sosin and Rackson took some employees with them to start another firm. Sosin later settled with AIG for a reported payout of more than $150 million; Rackson later received a share of the settlement.

Greenberg and AIG gained control of Financial Products and the beautiful machine. In the coming years, the firm would accelerate its profit-making ability, while forging into uncharted -- and ever riskier -- financial territory.

7: 'Honor the Trust'

Tom Savage stood before a room of anxious colleagues at the Four Seasons resort in Dallas, eager to reassure them that Greenberg was not going to pull the plug on their money-making machine.

Savage, a 44-year-old Midwestern math whiz, had just been named the new president of Financial Products. With the honor came explicit expectations, which Greenberg made clear: "You guys up at FP ever do anything to my Triple A rating, and I'm coming after you with a pitchfork."

It was spring 1994 and, on the surface, nothing much had changed since Sosin left the previous summer. Financial Products had come a long way from the days of sitting on cardboard boxes. The Dallas meeting was opulent in a way that had become customary for the firm: Lavish meals, open bars, luxurious rooms and rounds of golf, which was Savage's particular passion. Dallas's international airport allowed dozens of associates to fly direct from the firm's far-flung outposts.

The employees couldn't understand why there was any doubt about the firm's future. In just seven years, it had grown into a 125-person operation with annual profits comfortably above $100 million.

Like his predecessors, Savage knew the enterprise could not thrive without AIG's AAA rating, which continued to provide the leverage it needed to stay ahead.

"AIG has given us the license to work," Savage told his colleagues that day. "We have to honor the trust they have given us."

The catch? Financial Products would have to take more direction than ever from Greenberg.

8: 24 Hours A Day

Greenberg called Savage most days that first year. "I'd be changing a diaper at home," Savage recalled. "He'd say, 'What are you doing?' I'd say, 'Changing the diaper.' He'd say, 'Well, I don't think I can help you with that.' But he would say, 'What are you thinking about? What's going on?' He was always taking my temperature."

Savage knew that Greenberg hadn't been 100 percent sure about his ability to run Financial Products. Greenberg had told him as much when they sealed the deal at a Vermont ski resort that AIG owned in Stowe. "I don't know if you have all the buttons for this job," the AIG chairman had said. Greenberg managed the company by both charming and intimidating his subordinates. He said of himself recently, "I suffer fools very badly."

Greenberg also had no patience for anyone who didn't share his relentless work ethic. "You don't build a company like AIG from nine to five, five days a week. It just doesn't happen," Greenberg said recently. "And you've got to surround yourself with a group of people who share the same values, the same aspirations that you do. When I traveled, I could call somebody, I don't care what time it was, maybe two, three in the morning. As far as I'm concerned, I'm working 24 hours, they're working 24 hours."

Savage understood that, but he came at the job with a mathematician's love of the numbers and how they worked. He was among a growing number of "quants" -- short for quantitative thinkers -- who had worked their way into the heart of Wall Street. With a PhD from Claremont Graduate University in California, Savage had started his career at First Boston in 1983, where he wrote computer models for a then-arcane type of security called a collateralized mortgage obligation, or CMO. It is the kind of asset-backed security at the core of the current meltdown.

Savage respected Sosin, but saw no reason to follow Sosin and Rackson out the door. "I think what was clear was that, however things should work out, there was a business at AIG Financial Products and Sosin didn't need to be there for it to be successful," Savage said.

Immediately after Sosin's ouster, Savage and three others -- soon dubbed the Gang of Four -- ran Financial Products on an interim basis, with Matthews assigned to keep tabs on them. Savage remained committed to running the place under the same rigorous, risk-reducing code that Sosin's group had cultivated.

But not everything stayed the same. Under a new operating agreement imposed by Greenberg, AIG owned Financial Products as a subsidiary, and the parent company received 70 percent of the profits, up from 62 percent.

Greenberg also wanted to change the way Financial Products' employees divvied up its share of the profits. Under the previous arrangement, Sosin and his crew had the right to book immediate profits on the long-term deals. Greenberg thought there was a powerful incentive to go after millions of dollars in short-term gains while leaving AIG and its shareholders responsible for potential losses for years to come.

Savage agreed with Greenberg that Financial Products employees should defer half of their compensation for several years, depending on the length of the deals being done -- an arrangement that would still yield hefty paychecks as the firm's profits soared in the coming years.

Savage said he welcomed Greenberg's input. "I would give Greenberg a lot of deference," Savage said. "Hank Greenberg's a great man. And I'm willing, when I talk to him, to say, you know, I'm in the presence of a great man and that's worth something."

9: 'We're Not Hiding Anything'

Financial Products found its profit margins shrinking on some transactions as competitors succeeded in duplicating its services. Like Sosin, Savage urged his talented team to devise ever more complicated transactions, often in untapped areas.

Financial Products was becoming a chameleon, taking on the coloration of whatever problem it was solving for its diverse clients. The firm pushed further into structured investments, hedge fund deals and guaranteed investment contracts, or GICs. The GIC deals involved loans from municipalities that had temporary surpluses of cash. Financial Products reckoned that it could borrow that cash, pay state and local governments more than they could make otherwise and then use the money for lucrative deals for itself, somewhat like a bank.

The firm also began applying its complex formulas to the movement of single stocks. Using such structured finance enabled clients, such as Microsoft, to better manage their stock prices. It also helped Financial Products to more than double its profits in three years -- to $323 million in 1998, from $140 million in 1995.

A new unit, called the Transaction Development Group, did its part by taking advantage of gaps between securities regulation and tax laws in the United States as well as in other countries. Financial Products associates noticed, for instance, they could make money by exploiting differences between the U.S. and British definitions of stocks and bonds. A security that met the definition of stock in Britain could pay tax-free dividends to shareholders. The same security in the United States was regarded as a bond that provided tax-deductible payments. A Financial Products client would get both tax breaks. The firm used the capital raised from that line of business, in part, to finance other operations.

"We're the guys there who are going to try to exploit that," Savage said. "We dot our i's, we cross our t's, we tell everybody what we're doing. We're not hiding anything. . . . However, we're getting different treatments in different jurisdictions and we're making money as a result."

But even as Financial Products experimented, Savage said, he continued to stress the need to minimize risk. "That was one of the things that really marked this company, was the rigor with which it looked at the business of trading. . . . There was an academic rigor to it that very few companies match," he said.

"It was Howard Sosin who said, 'You know, we're not going to do trades that we can't correctly model, value, provide hedges for and account for.' "

Though the language of caution was the same, the firm's drive toward novel and ever more lucrative deals led down the path of greater risk. The beautiful machine was about to crack.

Tuesday: The dangerous fork in the road

Staff writer Bob Woodward contributed to this report.

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