

THE FOOD BUBBLE

How Wall Street starved millions and got away with it
By Frederick Kaufman

The history of food took an ominous turn in 1991, at a time when no one was paying much attention. That was the year Goldman Sachs decided our daily bread might make an excellent investment.

Agriculture, rooted as it is in the rhythms of reaping and sowing, had not traditionally engaged the attention of Wall Street bankers, whose riches did not come from the sale of real things like wheat or bread but from the manipulation of ethereal concepts like risk and collateralized debt. But in 1991 nearly everything else that could be recast as a financial abstraction had already been considered. Food was pretty much all that was left. And so with accustomed care and precision, Goldman's analysts went about transforming food into a concept. They selected eighteen commodifiable ingredients and contrived a financial elixir that included

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cattle, coffee, cocoa, corn, hogs, and a variety or two of wheat. They weighted the investment value of each

Commodity Index. Then they began to offer shares.

As was usually the case, Goldman's product flourished. The prices of cattle, coffee, cocoa, corn, and wheat began to rise, slowly at first, and then rapidly. And as more people sank money into Goldman's food index, other bankers took note and created their own food indexes for their own clients. Investors were delighted to see the value of their venture increase, but the rising price of breakfast, lunch, and dinner did not align with the interests of those of us who eat. And so the commodity index funds began to cause problems.

Wheat was a case in point. North America, the Saudi Arabia of cereal, sends nearly half its wheat production overseas, and an obscure syndicate known as the Minneapolis Grain Exchange remains the supreme price-setter for the continent's most widely exported wheat, a high-protein variety called hard red spring. Other varieties of wheat make cake and cookies, but only hard red spring



element, blended and commingled the parts into sums, then reduced what had been a complicated collection of real things into a mathematical formula that could be expressed as a single manifestation, to be known thenceforward as the Goldman Sachs

makes bread. Its price informs the cost of virtually every loaf on earth.

As far as most people who eat bread were concerned, the Minneapolis Grain Exchange had done a pretty good job: for more than a century the real price of wheat had steadily declined. Then, in 2005, that price began to rise, along with the prices of rice and corn and soy and oats and cooking oil. Hard red spring had long traded between \$3 and \$6 per sixty-pound bushel, but for three years Minneapolis wheat broke record after record as its price doubled and then doubled again. No one was surprised when in the first quarter of 2008 transnational wheat giant Cargill attributed its 86 percent jump in annual profits to commodity trading. And no one was surprised when packaged-food maker ConAgra sold its trading arm to a hedge fund for \$2.8 billion. Nor when *The Economist* announced that the real price of food had reached its highest level since 1845, the year the magazine first calculated the number.

Nothing had changed about the wheat, but something had changed about the wheat market. Since Goldman's innovation, hundreds of billions of new dollars had overwhelmed the actual supply of and actual demand for wheat, and rumors began to emerge that someone, somewhere, had cornered the market. Robber barons, gold bugs, and financiers of every stripe had long dreamed of controlling all of something everybody needed or desired, then holding back the supply as demand drove up prices. But there was plenty of real wheat, and American farmers were delivering it as fast as they always had, if not even a bit faster. It was as if the price itself had begun to generate its own demand—the more hard red spring cost, the more investors wanted to pay for it.

"It's absolutely mind-boggling," one grain trader told the *Wall Street Journal*. "You don't ever want to trade wheat again," another told the *Chicago Tribune*.

"We have never seen anything like this before," Jeff Voge, chairman of the Kansas City Board of Trade, told the *Washington Post*. "This isn't just any commodity," continued Voge. "It is food, and people need to eat."

The global speculative frenzy sparked riots in more than thirty countries and drove the number of the world's "food insecure" to more than a billion. In 2008, for the first time since such statistics have been kept, the proportion of the world's population without enough to eat ratcheted upward. The ranks of the hungry had increased by 250 million in a single year, the most abysmal increase in all of human history.

Then, like all speculative bubbles, the food bubble popped. By late 2008, the price of Minneapolis hard red spring had toppled back to normal levels, and trading volume quickly followed. Of course, the prices world consumers pay for food have not come

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down so fast, as manufacturers and retailers continue to make up for their own heavy losses.

The gratuitous damage of the food bubble struck me as not merely a disgrace but a disgrace that might easily be repeated. And so I traveled to Minneapolis—where the reality of hard red spring and the price of hard red spring first went their separate ways—to discover how such a thing could have happened, and

if and when it would happen again.

The name of the Minneapolis Grain Exchange may conjure images of an immense concrete silo towering over the prairie, but the exchange is in fact a rather severe neoclassical steel-frame building that shares the downtown corner of Fourth Street and Fourth Avenue with City Hall, the courthouse, and the jail. I walked through its vestibule of granite and Italian marble, past renderings of wheat molded into the terra-cotta carouches, and as I waited for the wheat-embossed elevator I tried not to gawk at the gold-plated mail chute. For more than a century, the trading floor of the

Minneapolis Grain Exchange had been the place where wheat acquired a price, but as I stepped out of the elevator the opening bell tolled and echoed across a vast, silent, and chilly chamber. The place was abandoned, the phones ripped out of the walls, the octagonal grain pits littered with snakes of tangled wire.

I wandered across the wooden planks of the old pits, scarred by the boots of countless grain traders, and I peered into the dark and narrow recesses of the phone booths where those traders had scribbled down their orders. Beyond the booths loomed the massive cash-grain tables, starkly illuminated by rays of sunlight. In the old days, when brokers and traders looked into one another's faces, not computer screens, they liked to examine the grain before they bought it.

Now an electronic board began to populate with green, red, and yellow numbers that told the price of barley, canola, cattle, coffee, copper, cotton, gold, hogs, lumber, milk, oats, oil, platinum, rice, and silver. Beneath them shimmered the indices: the Dow, the S&P 500, and, at the very bottom, the Goldman Sachs Commodity Index. Even the video technology was quaint, a relic from the Carter years, when trade with the Soviet Union was the final frontier, long before that moment in 2008 when the chief executive officer of the Minneapolis Grain Exchange, Mark Bagan, decided that the future of wheat was not on a table in Minneapolis but within the digital infinitude of the Internet.

As a courtesy to the speculators who for decades had spent their workdays executing trades in the grain pits, the exchange had set up a new space a few stories above the old trading floor, a gray-carpeted room in which a few dozen beige cubicles were available to rent, some featuring a view of a parking lot. I had expected shouting, panic, confusion, and chaos, but no more than half the cubicles were occupied, and the room was silent. One of the grain traders was reading his email, another checking ESPN for the weekend scores, another playing solitaire, another shopping on eBay for antique Japanese vases.

"We're trading wheat, but it's wheat we're never going to see," Austin Damiani, a twenty-eight-year-old wheat broker, would tell me later that afternoon. "It's a cerebral experience."

Today's action consisted of a gray-haired man padding from cubicle to cubicle, greeting colleagues, sucking hard candy. The veteran eventually ambled off to a corner, to a battered cash-grain table that had been moved up from the old trading floor. A dozen aluminum pans sat on the table, each holding a different sample of grain. The old man brought a pan to his face and took a deep breath. Then he held a single grain in his palm, turned it over, and found the crease.

"The crease will tell you the variety," he told me. "That's a lost art."

His name was Mike Mullin, he had been trading wheat for fifty years, and he was the first Minneapolis wheat trader I had seen touch a grain of the stuff. Back in the day, buyers and sellers might have spent hours insulting, cajoling, bullying, and pleading with one another across this table—anything to get the right price for hard red spring—but Mullin was not buying real wheat today, nor was anybody here selling it.

Above us, three monitors flickered prices from America's primary grain exchanges: Chicago, Kansas City, and Minneapolis. Such geographic specificities struck me as archaic, but there remain essential differences among these wheat markets, vestiges of old-fashioned concerns such as latitude and proximity to the Erie Canal.

Mullin stared at the screens and asked me what I knew about wheat futures, and I told him that whereas Minneapolis traded the contract in hard red spring, Kansas City traded in hard red winter and Chicago in soft red winter, both of which have a lower protein content than Minneapolis wheat, are less expensive, and are more likely to be incorporated into a brownie mix than into a baguette. High protein content makes Minneapolis wheat elite, I told Mullin.

He nodded his head, and we stood in silence and watched the desultory movement of corn and soy, soft red

winter and hard red spring. It was a slow trading day even if commodities, as Mullin told me, were overpriced 10 percent across the board. Mullin figured he knew the real worth of a bushel and had bet the price would soon head south. "Am I short?" he asked. "Yes I am."

I asked him what he knew about the commodity indexes, like the one Goldman Sachs created in 1991.

"It's a brainless entity," Mullin said.



His eyes did not move from the screen.

"You look at a chart. You hit a number. You buy."

Grain trading was not always brainless. Joseph parsed Pharaoh's dream of cattle and crops, discerned that drought loomed, and diligently went about storing immense amounts of grain. By the time famine descended, Joseph had cornered the market—an accomplishment that brought nations to their knees and made Joseph an extremely rich man.

In 1730, enlightened bureaucrats of Japan's Edo shogunate perceived that a stable rice price would protect those who produced their country's sacred grain. Up to that time, all the farmers in Japan would bring their rice to market after the September

harvest, at which point warehouses would overflow, prices would plummet, and, for all their hard work, Japan's rice farmers would remain impoverished. Instead of suffering through the Osaka market's perennial volatility, the bureaucrats preferred to set a price that would ensure a living for farmers, grain warehousemen, the samurai (who were paid in rice), and the general population—a price not at the mercy of the annual cycle

of scarcity and plenty but a smooth line, gently fluctuating within a reasonable range.

While Japan had relied on the authority of the government to avoid deadly volatility, the United States trusted in free enterprise. After the combined credit crunch, real estate wreck, and stock-market meltdown now known as the Panic of 1857, U.S. grain merchants conceived a new stabilizing force: In return for a cash commitment today, farmers would sign a forward contract to deliver grain a few months down the line, on the expiration date of the contract. Since buyers could never be certain what the price of wheat would be on the date of delivery, the price of a future bushel of wheat was usually a few cents less than that of a

present bushel of wheat. And while farmers had to accept less for future wheat than for real and present wheat, the guaranteed future sale protected them from plummeting prices and enabled them to use the promised payment as, say, collateral for a bank loan. These contracts let both producers and consumers hedge their risks, and in so doing reduced volatility.

But the forward contract was a primitive financial tool, and when demand for wheat exploded after the Civil War, and ever more grain merchants took to reselling and trading these agreements on a fast-growing secondary market, it became impossible to figure out who owed whom what and when. At which point the great grain merchants of Chicago, Kansas City, and Minneapolis set about creating a new kind of institution less like a medieval county fair and more like a modern clearinghouse. In place of myriad individually negotiated and fulfilled forward contracts, the merchants established exchanges that would regulate both the quality of grain and the expiration dates of all forward contracts—eventually limiting those dates to five each year, in March, May, July, September, and December. Whereas under the old system each buyer and each seller vetted whoever might stand at the opposite end of each deal, the grain exchange now served as the counterparty for everyone.

The exchanges soon attracted a new species of merchant interested in numbers, not grain. This was the speculator. As the price of futures contracts fluctuated in daily trading, the speculator sought to cash in through strategic buying and selling. And since the speculator had neither real wheat to sell nor a place to store any he might purchase, for every “long” position he took (a promise to buy future wheat), he would eventually need to place an equal and opposite “short” position (a promise to sell). Farmers and millers welcomed the speculator to their market, for his perpetual stream of buy and sell orders gave them the freedom to sell and buy their actual wheat just as they pleased.

Under the new system, farmers and millers could hedge, speculators could speculate, the market remained liquid, and yet the speculative futures price could never move too far from the “spot” (or actual) price: every ten weeks or so, when the delivery date of the contract approached, the two prices would converge, as everyone who had not cleared his position would be obligated to do just that. The virtuality of wheat futures would settle up with the reality of cash wheat, and then, as the contract expired, the price of an ideal bushel would be “discovered” by hedger and speculator alike.

No less an economist than John Maynard Keynes applied himself to studying this miraculous interplay of supply and demand, buyers and sellers, real wheat and virtual wheat, and he gave the standard futures-pricing model its own special name. He called it “normal backwardation,” because in a normal market for real goods, he found, futures prices (for things that did not yet exist) generally stayed in back of spot prices (for things that actually existed).

Normal backwardation created the occasion for so many people to make so much money in so many ways that numerous other futures exchanges soon emerged, featuring contracts for everything from butter, cottonseed oil, and hay to plywood, poultry, and cat pelts. Speculators traded molasses futures on the New York Coffee and Sugar Exchange, and if they lost their shirts they could head over to the New York Burlap and Jute Exchange or the New York Hide Exchange. And despite the occasional market collapse (onions in 1957, Maine potatoes in 1976), for more than a century the basic strategy and tactics of futures trading remained the same, the price of wheat remained stable, and increasing numbers of people had plenty to eat.

The decline of volatility, good news for the rest of us, drove bankers up the wall. I put in a call to Steven Rothbart, who traded commodities for Cargill way back in the 1980s. I asked him what he knew about the birth of commodity index funds, and

he began to laugh. “Commodities had died,” he told me. “We sat there every day and the market wouldn’t move. People left. They couldn’t make a living anymore.”

Clearly, some innovation was in order. In the midst of this dead market, Goldman Sachs envisioned a new form of commodities investment, a product for investors who had no taste for the complexities of corn or soy or wheat, no interest in weather and weevils, and no desire for getting into and out of shorts and longs—investors who wanted nothing more than to park a great deal of money somewhere, then sit back and watch that pile grow. The managers of this new product would acquire and hold long positions, and nothing but long positions, on a range of commodities futures. They would not hedge their futures with the actual sale or purchase of real wheat (like a bona-fide hedger), nor would they cover their positions by buying low and selling high (in the grand old fashion of commodities speculators). In fact, the structure of commodity index funds ran counter to our normal understanding of economic theory, requiring that index-fund managers not buy low and sell high but buy at any price and *keep* buying at any price. No matter what lofty highs long wheat futures might attain, the managers would transfer their long positions into the *next* long futures contract, due to expire a few months later, and repeat the roll when that contract, in turn, was about to expire—thus accumulating an everlasting, ever-growing long position, unremittingly regenerated.

“You’ve got to be out of your freakin’ mind to be long only,” Rothbart said. “Commodities are the riskiest things in the world.”

But Goldman had its own way to offset the risks of commodities trading—if not for their clients, then at least for themselves. The strategy, standard practice for most index funds, relied on “replication,” which meant that for every dollar a client invested in the index fund, Goldman would buy a dollar’s worth of the underlying commodities futures (minus management fees). Of course, in order to purchase commodities futures,

the bankers had only to make a “good-faith deposit” of something like 5 percent. Which meant that they could stash the other 95 percent of their investors’ money in a pool of Treasury bills, or some other equally innocuous financial cranny, which they could subsequently leverage into ever greater amounts of capital to utilize to their own ends, whatever they might be. If the price of wheat went up, Goldman made money. And if the price of wheat fell, Goldman still made money—not only from management fees, but from the profits the bank pulled down by investing 95 percent of its clients’ money in less risky ventures. Goldman even made money from the roll into each new long contract, every instance of which required clients to pay a new set of transaction costs.

The bankers had figured out how to extract profit from the commodities market without taking on any of the risks they themselves had introduced by flooding that same market with long orders. Unlike the wheat producers and the wheat speculators, or even Goldman’s own customers, Goldman had no vested interest in a stable commodities market. As one index trader told me, “Commodity funds have historically made money—and kept most of it for themselves.”

No surprise, then, that other banks soon recognized the rightness of this approach. In 1994, J.P. Morgan established its own commodity index fund, and soon thereafter other players entered the scene, including the AIG Commodity Index and the Chase Physical Commodity Index, along with initial offerings from Bear Stearns, Oppenheimer, and Pimco. Barclays joined the group with eight index funds and, in just over a year, raised close to \$3 billion.

Government regulators, far from preventing this strange new way of accumulating futures, actively encouraged it. Congress had in 1936 created a commission that curbed “excessive speculation” by limiting large holdings of futures contracts to bona-fide hedgers. Years later, the modern-day Commodity Futures Trading Commission continued to set absolute limits on the amount of wheat-futures contracts that could be

held by speculators. In 1991, that limit was 5,000 contracts. But after the invention of the commodity index fund, bankers convinced the commission that they, too, were bona-fide hedgers. As a result, the commission issued a position-limit exemption to six commodity index traders, and within a decade those funds would be permitted to hold as many as 130,000 wheat-futures contracts at any one time.

“We have not seen U.S. agriculture rely this much on the market for almost seventy years,” was how Joseph Dial, the head of the commission, assessed his agency’s regulatory handiwork in 1997. “This paradigm shift in the government’s farm policy has created a new era for agriculture.”

Goldman and all the other banks that followed them into commodity index funds had figured out how to safeguard themselves, but there was a lot more money to be made if the banks could somehow convince everyone else that an inherently risky product designed to protect the banks—and only the banks—was in fact also safe for *investors*.

Good news came on February 28, 2005, when Gary Gorton, of the University of Pennsylvania, and K. Geert Rouwenhorst, of the Yale School of Management, published a working paper called “Facts and Fantasies About Commodities Futures.” In forty graph-and-equation-filled pages, the authors demonstrated that between 1959 and 2004, a hypothetical investment in a broad range of commodities—such as an index—would have been no more risky than an investment in a broad range of stocks. What’s more, commodities showed a negative correlation with equities and a positive correlation with inflation. Food was always a good investment, and even better in bad times. Money managers could hardly wait to spread the news.

“Since this discovery,” reported the *Financial Times*, investors had become attracted to commodities “in the hope that returns will differ from equities and bonds and be strong in case of inflation.” Another

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study noted as well that commodity index funds offered “an inherent or natural return that is not conditioned on skill.” And so the long-awaited legion of new investors began buying into commodity index funds, and the food bubble truly began to inflate.

A few years after “Facts and Fantasies” appeared, and almost as if to prove Gorton and Rouwenhorst’s point, the financial crisis hit mortgage, credit, and real estate markets—and, just as the scholars had predicted, those who had invested in commodities prospered. Money managers had to decide where to park what remained of their endowment, hedge, and pension funds, and the bankers were ready with something that looked very safe: in 2003, commodity index holdings amounted to a not particularly awe-inspiring \$13 billion, but by 2008, \$317 billion had poured into the funds. As long as the commodities brokers kept rolling over their futures, it looked as though the day of reckoning might never come. If no one contemplated the effects that this accumulation of long-only futures would eventually have on grain markets, perhaps it was because no one had never seen such a massive pile of long-only futures.

From one perspective, a complicated chain of cause and effect had inflated the food bubble. But there were those who understood what was happening to the wheat markets in simpler terms. “I don’t have to pay anybody for anything, basically,” one long-only indexer told me. “That’s the beauty of it.”

Mark Bagan, CEO of the Minneapolis Grain Exchange, invited me to his office for a talk. A self-proclaimed “grain brat,” Bagan grew up among bales, combines, and concrete silos all across the United States before attending Minnesota State to play football. As I settled into his oversize couch, admired his neatly tailored pinstriped suit, and listened to his soft voice, it occurred to me that if the grain markets were a casino, Mark Bagan was the biggest bookie.

Without him, there could be no bets on hard red spring.

“From our perspective, we’re price neutral, value neutral,” Bagan said.

I asked him about the commodity index funds and whether they had transformed the traditional wheat market into something wholly speculative, artificial, and hidden. Why did anyone except bankers even need this new market?

“There are plenty of markets out there that have yet to be thought of and will be very successful,” Bagan said. Then he veered into the intricacies of running a commodities exchange. “With our old system, we could clear forty-eight products,” he said. “Now we can have more than fifty thousand products traded. It’s a big number, building derivatives on top of derivatives, but we’ve got to be prepared for that: the financial world is evolving so quickly, there will always be a need for new risk-management products.”

Bagan had not answered my question about the funds, so I asked again, as directly as I could: What did he make of the fact that speculation in commodity index funds had caused a global run on hard red spring?

Bagan slowly shook his head, as though he were an elementary-school teacher trying to explain a basic concept—subtraction? ice?—to a particularly dense child. The Goldman Sachs Commodity Index did not include a single hard red spring future, he told me. Minneapolis wheat may have set records in 2008 and led global food prices into the stratosphere, but it had nothing to do with Goldman’s fund. There just wasn’t enough speculation in the hard red spring market to satisfy the bankers. Not enough liquidity. Bagan smiled. Was there anything else I wanted to know?

Plenty, but there was nothing more Bagan was about to disclose. As I left the office, I remembered the rumors I’d heard at a grain-crisis conference in Washington, D.C., a few months earlier. Between interminable speeches about price ceilings and grain reserves, more than one wheat expert had confided, strictly on background, that at the height of the bubble, Minneapolis wheat had been

cornered. No one could say whether the culprit had been Cargill or the Canadian Wheat Board or any other party, but the consensus was that as the world had cried for food, someone, somewhere, had been hoarding wheat.

Imaginary wheat bought anywhere affects real wheat bought everywhere. But as it turned out, index traders had purchased the majority of their long wheat futures on the oldest and largest grain clearinghouse in America, the Chicago Mercantile Exchange. And so I found myself pushing through the frigid blasts of the LaSalle Street canyon. If I could figure out precisely how and when wheat futures traded in Chicago had driven up the price of actual wheat in Minneapolis, I would know why a billion people on the planet could not afford bread.

The man who had agreed to escort me to the floor of the exchange traded grain for a transnational corporation, and he told me several times that he could not talk to the press, and that if I were to mention his name in print he would lose his job. So I will call him Mr. Silver.

In the basement cafeteria of the exchange I bought Mr. Silver a breakfast of bacon and eggs and asked whether he could explain how index funds that held long-only Chicago soft red winter wheat futures could have come to dictate the spot price of Minneapolis hard red spring. Had the world starved because of a corner in Chicago? Mr. Silver looked into his scrambled eggs and said nothing.

So I began to tell him everything I knew, hoping he would eventually be inspired to fill in the blanks. I told him about Joseph in Egypt, Osaka in 1730, the Panic of 1857, and futures contracts for cat pelts, molasses, and onions. I told him about Goldman's replication strategy, Gorton and Rouwenhorst's 2005 paper, and the rise and rise of index funds. I told him that at least one analyst had estimated that investments in commodity index funds could easily increase to as much as \$1 trillion, which would result in yet another global food catastrophe, much worse than the one before.

And I told Mr. Silver something

else I had discovered: About two thirds of the Goldman index remains devoted to crude oil, gasoline, heating oil, natural gas, and other energy-based commodities. Wheat was nothing but an indexical afterthought, accounting for less than 6.5 percent of Goldman's fund.

Mr. Silver sipped his coffee.

Even 6.5 percent of the Goldman Sachs Commodity Index made for a historically unprecedented pile of long wheat futures, I went on. Especially when those index funds kept rolling over the contracts they already had—all of them long, only a smattering bought in Kansas City, none in Minneapolis.

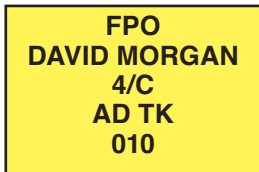
And then it occurred to me: It was neither an individual nor a corporation that had cornered the wheat market. The index funds may never have held a single bushel of wheat, but they were hoarding staggering quantities of wheat futures, billions of promises to buy, not one of them ever to be fulfilled. The dreaded market corner had emerged not from a shortage in the wheat supply but from a much rarer economic occurrence, a shock inspired by the ceaseless call of index funds for wheat that did not exist and would never need to exist: a demand shock. Instead of a hidden mastermind committing a dastardly deed, it was old Mike Mullin's "brainless entity," the investment instrument itself, that had taken over and created the effects of a traditional corner.

Mr. Silver had stopped eating his eggs.

I said that I understood how the index funds' unprecedented accumulation of Chicago futures could create the appearance of a market corner in Chicago. But there was still something I didn't get. Why had the wheat market in Minneapolis begun to act as though it too had been cornered when none of the index funds held hard red spring? Why had the world's most widely exported wheat experienced a sudden surge in price, a surge that caused a billion people—

At which point Mr. Silver interrupted my monologue.

Index-fund buying had pushed up the price of the Chicago contract, he said, until the price of a wheat future



had come to equal the spot price of wheat on the Chicago Mercantile Exchange—and still, the futures price surged. The result was contango.

I gave Mr. Silver a blank look. Contango, he explained, describes a market in which future prices rise above current prices. Rather than being stable and steady, contango markets tend to be overheated and hysterical, with spot prices rising to match the most outrageously escalated futures prices. Indeed, between 2006 and 2008, the spot price of Chicago soft red winter shot up from \$3 per bushel to \$11 per bushel.

The ever-escalating price of wheat and the newfound strength of grain markets were excellent news for the new investors who had flooded commodity index funds. No matter that the mechanism created to stabilize grain prices had been reassembled into a mechanism to inflate grain prices, or that the stubbornly growing discrepancy between futures and spot prices meant that farmers and merchants no longer could use these markets to price crops and manage risks. No matter that contango in Chicago had disrupted the operations of the nation's grain markets to the extent that the Senate Committee on Homeland Security and Governmental Affairs had begun an investigation into whether speculation in the wheat markets might pose a threat to interstate commerce. And then there was the question of the millers and the warehousemen—those who needed actual wheat to sell, actual bread that might feed actual people.

Mr. Silver lowered his voice as he informed me that as the price of Chicago wheat had bubbled up, commercial buyers had turned elsewhere—to places like Minneapolis. Although hard red spring historically had been more expensive than soft red winter, it had begun to look like a bargain. So brokers bought hard red spring and left it to the chemists at General Mills or Sara Lee or Domino's to rejigger their dough recipes for a higher-protein variety.

The grain merchants purchased Minneapolis hard red spring much earlier in the annual cycle than usual, and they purchased more of it than ever before, as real demand began to chase the ever-growing, everlasting long. By the time the normal buying season

began, drought had hit Australia, floods had inundated northern Europe, and a vogue for biofuels had enticed U.S. farmers to grow less wheat and more corn. And so, when nations across the globe called for their annual hit of hard red spring, they discovered that the so-called visible supply was far lower than usual. At which point the markets veered into insanity.

Bankers had taken control of the world's food, money chased money, and a billion people went hungry.

Mr. Silver finished his bacon and eggs and I followed him upstairs, beyond two sets of metal detectors, dozens of security staff, and a gaudy stained-glass image of Hermes, god of commerce, luck, and thievery. Through the colored glass that outlined the deity I caught my first glimpse of the immense trading floor of the Chicago Mercantile Exchange. The electronic board had already begun to populate with green, yellow, and red numbers.

The wheat harvest of 2008 turned out to be the most bountiful the world had ever seen, so plentiful that even as hundreds of millions slowly starved, 200 million bushels were sold for animal feed. Livestock owners could afford the wheat; poor people could not. Rather belatedly, real wheat had shown up again—and lots of it. U.S. Department of Agriculture statistics eventually revealed that 657 million bushels of 2008 wheat remained in U.S. silos after the buying season, a record-breaking “carryover.” Soon after that bounteous oversupply had been discovered, grain prices plummeted and the wheat markets returned to business as usual.

The worldwide price of food had risen by 80 percent between 2005 and 2008, and unlike other food catastrophes of the past half century or so, the United States was not insulated from this one, as 49 million Americans found themselves unable to put a full meal on the table. Across the country demand for food stamps reached an all-time high, and one in five kids came to depend on food kitchens. In Los Angeles nearly a million people went hungry. In Detroit armed guards stood watch over

grocery stores. Rising prices, mused the *New York Times*, “might have played a role.”

On the plane to Minneapolis I had read a startling prediction: “It may be hard to imagine commodity prices advancing another 460 percent above their mid-2008 price peaks,” hedge-fund manager John Hummel wrote in a letter to clients of AIS Capital Management. “But the fundamentals argue strongly,” he continued, that “these sectors have significant upside potential.” I made a quick calculation: 460 percent above 2008 peaks meant hamburger meat priced at \$20 a pound.

On the ground in Minneapolis I put the question to Michael Ricks, chairman of the Minneapolis Grain Exchange. Could 2008 happen again? Could prices rise even higher?

“Absolutely,” said Ricks. “We’re in a volatile world.”

I put the same question to Layne Carlson, corporate secretary and treasurer of the Minneapolis Grain Exchange. “Yes,” said Carlson, who then told me the two principles that govern the movement of grain markets: “fear and greed.”

But wasn't it part of a grain exchange's responsibility to ensure a stable valuation of our daily bread?

“I view what we're working with as widgets,” said Todd Posthuma, the exchange's associate director of market operations and information technology, the man responsible for clearing \$100 million worth of trades every day. “I think being an employee at an exchange is different from adding value to the food system.”

Above Mark Bagan's oversized desk hangs a jagged chart of futures prices for the hard red spring wheat contract, mapping every peak and valley from 1973 to 2006. The highs on Bagan's chart reached \$7.50. Of course, had 2008 been included, the spikes would have, literally, gone through the roof.

Would the price of wheat rise again?

“The flow of money into commodities has changed significantly in the last decade,” explained Bagan. “Wheat, corn, soft commodities—I don't see these dollars going away. It already has happened,” he said. “It's inevitable.” ■