

FINANCIAL SERVICES AND GENERAL GOVERNMENT APPROPRIATIONS FOR FISCAL YEAR 2009

WEDNESDAY, MAY 7, 2008

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 3:02 p.m., in room SD-192, Dirksen Senate Office Building, Hon. Richard J. Durbin (chairman) presiding.

Present: Senators Durbin, Brownback, and Allard.

COMMODITY FUTURES TRADING COMMISSION

STATEMENT OF HON. WALTER L. LUKKEN, ACTING CHAIRMAN

OPENING STATEMENT OF SENATOR RICHARD J. DURBIN

Senator DURBIN. I call to order this meeting of the Senate Appropriations Committee Subcommittee on Financial Services and General Government. The hearing this afternoon will consider funding requests for two Federal regulatory agencies that are part of the jurisdiction of our subcommittee. My colleagues will be joining me a little bit later.

I am pleased to welcome Acting Chairman Walter Lukken of the Commodity Futures Trading Commission (CFTC), and I am told that CFTC Commissioners Mike Dunn—please indicate, Mike, where you are. Mike, good to see you again. Bart Chilton; is Bart here? Bart, thank you for joining us. Jill Sommers, present. Jill, thank you for attending. I also understand that Chairman Chris Cox of the Securities and Exchange Commission, if he's not here—he's enroute.

I'm going to waive the reading of my opening statement in the interest of having more time to ask questions, and ask consent that it be put in the record. Without Senator Brownback's objection, it will be. So, Senator, if you would like to make any kind of an opening statement, you're welcome to.

Senator BROWNBACK. Before I start, Senator Shelby has submitted a statement that he would like to be included in the record. [The statements follow:]

PREPARED STATEMENT OF SENATOR RICHARD J. DURBIN

Good afternoon. I am pleased to welcome you to this hearing to consider the funding requests of two Federal regulatory agencies within the jurisdiction of the Appropriations Subcommittee on Financial Services and General Government.

I welcome my colleagues who have joined me on the dais today and others who may arrive.

I am pleased to welcome Acting Chairman Walter Lukken of the Commodity Futures Trading Commission (CFTC). I also note that CFTC Commissioners Mike Dunn, Bart Chilton, and Jill Sommers are present. Thank you for attending and for your service.

I welcome Chairman Chris Cox of the Securities and Exchange Commission (SEC), and members of his staff. Thank you all for being here.

The CFTC and the SEC enjoy unique histories, hold specialized and independent responsibilities, and take different approaches to markets that serve differing purposes. Yet the CFTC and the SEC both occupy pivotal positions at the forefront of stimulating and sustaining economic growth and prosperity in our country. Through their vigilance, the United States is better equipped to compete in today's evolving global marketplace.

As the subcommittee prepares to make difficult funding decisions for the next fiscal year, I look forward to hearing from our witnesses about the particular challenges their respective agencies face in today's tumultuous economic environment. I welcome input on how we can best address those needs.

Before hearing from our panelists, I'd like briefly outline the missions of these agencies and their budget proposals:

First, the CFTC: It is charged with protecting the public and market users from manipulation, fraud, and abusive practices. It is also responsible for promoting open, competitive, and financially sound markets for commodity futures. The CFTC regulates the activities of nearly 70,000 registrants—from sales people to trading advisors to floor traders.

The CFTC helps ensure that the futures markets are equipped to better perform their vital function in the U.S. economy—providing a mechanism for price discovery and a means of offsetting price risks.

The CFTC's oversight and enforcement mission becomes tangible when you consider that futures prices impact what we pay for the basic necessities of our daily lives: Our food, clothing, shelter, fuel in our vehicles, and heat in our homes.

We have witnessed a remarkable transformation in the nature and type of products listed by exchanges since the CFTC was established in 1976. Thirty-two years ago, the vast majority of futures trading occurred in the agricultural sector—cattle, grains and crops, and the proverbial pork bellies.

Today, novel and highly complex financial contracts are emerging, based on such things as foreign currencies, interest rates, Treasury bonds, weather, real estate and economic derivatives, and stock market indices. These now surpass agricultural contracts in trading volume. And the ever-expanding complexities pose ever-demanding challenges as new futures products emerge.

For the CFTC, the President's budget requests funding of \$130 million, representing an increase of \$18.7 million—a 17 percent hike—over the fiscal year 2008 enacted level of nearly \$111.3 million.

Of the \$18.7 million in increased funding for next year, \$3.2 million is slated for increased compensation and benefit costs for a staff of 465; \$13.6 million will be devoted to increased operating costs for information technology modernization, lease of office space, and other services; and \$1.9 million will support the salary and expenses of 10 additional full-time staff.

Currently, with the \$111.3 million provided for fiscal year 2008 (a 14 percent increase over the \$98 million in fiscal year 2007), CFTC is beginning an intensive hiring process to boost staffing from 447 up to 465 and is making some initial investments to upgrade its information technology to keep pace with the rapidly-evolving technology-driven futures markets.

In the past decade, trading volume has increased more than ten-fold—reaching well over 3 billion trades in 2007, and actively traded contracts have quintupled—from 258 in 1997 to 1,540 in 2007. CFTC oversees \$4.2 trillion of daily trades. But despite this phenomenal surge in activity, staffing levels have not kept pace, and in fact, have dropped 21 percent. As I pledged last year, I am committed to addressing this resource deficiency.

I also understand that various components of the CFTC reauthorization, included as part of the farm bill, would impose new responsibilities for the CFTC. Among these elements are regulation of energy derivatives markets and increased penalty authorities for market manipulation violations, which may require additional resources not contemplated in the fiscal year 2009 request.

I look forward to hearing more about CFTC's budgetary needs today, and the opportunity to discuss with Chairman Lukken a variety of issues, including the oversight and regulatory challenges and opportunities presented by rising commodity prices, particularly for agricultural items and oil.

Turning to the SEC, its three-prong mission is to protect investors; maintain fair, orderly, and efficient markets; and facilitate capital formation.

The SEC is responsible for overseeing more than 12,000 publicly traded companies, over 10,000 investment advisers that manage more than \$38 trillion in assets, nearly 1,000 fund complexes, 6,000 broker dealers with 172,000 branches, and close to \$44 trillion worth of trading conducted each year on America's stock and option exchanges.

The strength of the American economy and our financial markets depends on investors' confidence in the financial disclosures and statements released by publicly traded companies. Investors expect the SEC to be the vigilant "cop on the beat." This subcommittee wants to make certain that the SEC has the necessary resources to effectively fulfill its obligatory singular mission: protecting shareholders.

Crucial to the SEC's effectiveness is its enforcement authority. Each year the SEC brings hundreds of civil enforcement actions for violations of the securities laws. Typical infractions include insider trading, accounting fraud, and providing false or misleading information. Serious, thoughtful questions have been raised about whether the proposed enforcement budget is adequate to keep pace with the growing demands.

The SEC's budget request for fiscal year 2009 totals \$913 million, a slight \$7 million (0.8 percent) increase over the agency's fiscal year 2008 enacted level of \$906 million. Part of the \$913 million will be provided through \$42 million of prior year balances, resulting in an appropriated level of \$871 million. These funds are offset by registration and transaction fees. The fiscal year 2009 budget would fund 3,409 permanent staff, a reduction of 94 staff (a 2.7 percent cut) below the SEC's fiscal year 2008 level.

What is troubling about the paltry increase is that it is insufficient to sustain the agency's salary needs at SEC's authorized personnel level and will actually require cutting nearly 100 staff. This reduction of personnel comes at a time when developments and trends in the market call for more, not less, vigilance to protect investors. Resources devoted to enforcement are declining in both dollar terms and proportionality.

I am concerned this bare-bones budget will hinder the SEC's ability to accomplish its mission. I look forward to exploring this topic more fully with Chairman Cox. In addition, I also plan to delve into other issues including the recent SEC-CFTC Memorandum of Understanding, Sudan divestment disclosure, SEC's role with subprime mortgage markets, expediting Fair Fund disbursements to investor-victims, plans for greater oversight of credit rating agencies, and how availability of interactive data is simplifying investor understanding and access to corporate filings and financial information.

I look forward to hearing from our witnesses about the resources they require to keep pace with change and achieve success in a 21st century world, while responsibly managing taxpayer dollars.

PREPARED STATEMENT OF SENATOR RICHARD C. SHELBY

Chairman Cox, in your testimony today you state your support for providing dedicating funding for the SEC's Consolidated Supervised Entities (CSE) program. However, this program has never been explicitly authorized by Congress. Rather, it was created by the SEC. Unlike the Fed's regulation of bank holding companies and the OTS's regulation of thrift holding companies, the SEC's regulation of investment bank holding companies under the CSE program is not authorized by statute. The CSE program is entirely the SEC's creation.

Normally, Congress is responsible for making policy, while the SEC implements that policy. In this case, however, the SEC decided that the CSE program was needed and then took it upon itself to create the program. Before the SEC now decides that a CSE program needs dedicated funding, I believe the SEC needs to take a step back and let Congress decide how investment banks should be regulated.

STATEMENT OF SENATOR SAM BROWNBACK

Senator BROWNBACK. I appreciate your way and means of doing this, and I'm going to do similarly because I've got a lot of questions.

I would like to, though, point out two things very quickly if I could. First, welcome, Chairman Lukken. I appreciate you being

here. And Securities and Exchange Commission (SEC) Chairman Cox is on his way.

We put these in the record last week at the Joint Economic Committee on ending stocks of wheat and rice. I think it's important to get some factual basis out there. We are at a 27-year low on ending stocks of wheat, I believe. We had a terrible crop last year in the Midwest. You guys don't grow any wheat, but we do, and we didn't grow much last year. And then they didn't in Australia and a number of other places. A similar thing happened on the rice markets as well.

But you can look at other markets that didn't have much of a problem, and yet you've seen this huge rise in prices. I want you particularly to address some of that if you would, because it strikes me that we do have people taking resources and putting them into commodities which drives up some commodities, not based on the fundamentals. There are crop movements that are based on the fundamentals; there are some that are not based on it.

I really hope we can look at that particular issue and the potential manipulation of the market by large hedge funds or index funds, of taking money that they would normally put in other places, maybe even put it in commercial real estate, but with the declining value of the dollar shifting into the commodity markets, and then driving up those market prices above what the fundamental would support. I want to ask you what you anticipate doing to try to address that issue.

Mr. Chairman, thanks for the hearing.

Senator DURBIN. Thanks.

Chairman Lukken, your opening statement. We'll put whatever you like officially in the record and invite you now to give us a few minutes of the introduction to your statement.

SUMMARY STATEMENT OF WALTER L. LUKKEN

Mr. LUKKEN. Thank you, Mr. Chairman and other Senators of the subcommittee. I am pleased to be here to testify on behalf of the Commodity Futures Trading Commission. The CFTC is the agency charged with overseeing and regulating the U.S. commodity futures and options markets. These markets play a critical role in the U.S. economy by providing important risk management tools for market participants. The futures markets also serve to discover prices that accurately reflect supply, demand, and other economic factors.

These are extraordinary times for our markets, with commodity futures prices at unprecedented levels. In the last 3 months the agricultural staples of wheat, corn, soybeans, rice, and oats have hit all-time highs. We've also witnessed record prices in crude oil, gasoline, and other related energy products. Broadly speaking, the falling dollar, strong demand from the emerging world economies, global political unrest, detrimental weather, and ethanol mandates have driven up commodity futures prices across the board.

On top of these trends, the emergence of the subprime crisis last summer led investors to increasingly seek portfolio exposure in commodity futures. As the Federal regulator of these products, the CFTC is closely monitoring these growing markets to ensure they are working properly for farmers, investors, and consumers.

To date, CFTC staff analysis indicates that the current higher futures prices generally are not a result of manipulative forces. That said, we continue to probe, investigate, and gather information from the entire marketplace and welcome outside analysis and perspectives so that we can ensure that we have an accurate and full view.

For example, the agency convened an industry agricultural forum 2 weeks ago to have a full public airing of views as to the driving forces in these markets. The comment period for that event ends today and we hope to announce in the near future agency initiatives to address the concerns we heard at that forum.

The CFTC also recently announced the creation of an energy markets advisory committee and scheduled its first meeting for June 10 to review the functioning of the energy markets.

Despite this tumultuous time in our markets, the agency continues to make advancements on important policy initiatives. Last fall, the Commission delivered an extensive report to Congress recommending additional authorities for the agency in overseeing exempt energy trading. Through bipartisan efforts, these recommendations became a part of the CFTC reauthorization bill, which is contained in the farm bill conference report. The enactment of that legislation will improve our oversight of the energy markets with the addition of new authorities at the agency. The President's fiscal year 2009 budget does not take into account these new powers.

The U.S. futures and options markets of today bear little resemblance to the industry of 1976, the Commission's first year of operation, in terms of complexity, globalization, volume, and economic importance. Yet, staff resources and operating funds over time have not kept pace.

Figure 1 on the monitor shows the growth in trading volume on the U.S. futures exchanges from 1996 to present. Trading volume has increased sixfold during the last decade, while at the same time Commission staffing levels have fallen to 447 full-time employees. That's 50 fewer staff today than the agency had 30 years ago.

Figure 2 lists many of the different components of the futures industry. As you can see from the chart, the growth of these categories from 1976 to present is stunning. For instance, total contract volume has increased more than 8,000 percent in 30 years, compared to CFTC's staffing and overhead expenses, which have decreased 12 percent and 5 percent respectively.

On behalf of the entire Commission, I would like to express my appreciation for the support provided to the CFTC in the fiscal year 2008 budget. The \$111 million appropriated by Congress for the current calendar year is already being put to good use to address critical needs in two major areas: personnel and technology. That focus will continue with the fiscal year 2009 budget.

The Commission employs highly trained individuals who work within three program divisions: market oversight; clearing and intermediary oversight; and enforcement. The Division of Market Oversight ensures that the markets are operating efficiently and free from manipulation and fraud. The Commission's staff economists utilize the Commission's Large Trader Reporting System and

one of the Commission's main technology systems, the Integrated Surveillance System (ISS), to detect and deter market manipulation. As you can see in figure 3, the current atmosphere of rising futures prices across a wide range of products makes these anti-manipulation efforts ever the more important.

The Division of Clearing and Intermediary Oversight ensures the financial integrity of the futures industry as a whole. The amount of funds handled by clearinghouses has increased significantly of late. During this time, all exchanges have experienced record settlements, including one day in January 2008 in which the Chicago Mercantile Exchange cleared and settled more than \$12 billion worth of transactions in 1 day, nearly six times its normal load. Despite these spikes in cash flow, the clearing system has worked well.

When a manipulation or fraud occurs in the futures markets, it is the job of the Enforcement Division to prosecute the offenders. Since the collapse of Enron, CFTC has brought 39 cases involving energy markets and charged 64 entities or persons with manipulation, attempted manipulation, and false reporting. The collective civil monetary penalties levied in these energy market enforcement cases has exceeded \$444 million.

Unfortunately, these programs have felt the effects of turnover at the agency. The Commission lost 58 experienced employees in fiscal year 2006, 49 in 2007, and 15 in 2008. Replenishing these losses is critical if this agency is to continue to meet its responsibilities in overseeing the futures markets.

The fiscal year 2009 President's budget request, as seen in figure 5, is an appropriation of \$130 million and 475 full-time staff, an increase of approximately \$18.7 million and 10 staff over the fiscal year 2008 appropriation. Key changes in the fiscal year 2009 budget are: \$3.2 million to provide increased compensation and benefits for current employees; \$1.9 million to provide for salary and expenses of 10 additional full-time employees. This increase, although modest, will allow us to build on current key hiring efforts. And \$13.6 million to provide for increased operating costs for technology modernization, office space, and all other services.

In fiscal year 2009, the requested increased funding will continue to target technology upgrades and staffing increases. It would permit the Commission to improve existing critical technology systems, such as the ISS and E-Law systems. The funds requested would also permit the development of the new Trade Surveillance System, or TSS. Soon, with these investments, we will have the capability to more quickly monitor and analyze traders' intraday trading activity.

In conclusion, I am very proud of the agency and our highly skilled staff. Every day they carry out the agency's mission of protecting the public and market users from manipulation, fraud, and abusive practices. If the futures markets fail to work properly, all Americans are impacted. Accordingly, it is critical that the CFTC have sufficient resources to hire and maintain skilled talent as well as to provide a steady stream of technology investment commensurate with the agency's expanding and evolving global mission.

PREPARED STATEMENT

Thank you for this opportunity to appear today and I welcome any questions.

[The statement follows:]

PREPARED STATEMENT OF WALTER L. LUKKEN

Thank you, Mr. Chairman and members of the subcommittee. I am pleased to be here to testify before you on behalf of the Commodity Futures Trading Commission.

BACKGROUND AND CURRENT MARKET EVENTS

The CFTC is the agency charged with overseeing and regulating the U.S. commodity futures and options markets. These markets play a critical role in the U.S. economy by providing risk management tools that producers, distributors, and commercial users of commodities use to protect themselves from unpredictable price changes. The futures markets also play a price discovery role as participants in related cash and over-the-counter markets look to futures markets to discover prices that accurately reflect information on supply, demand, and other factors.

As you are well aware, these are extraordinary times for our markets with commodity futures prices at unprecedented levels. In the last 3 months, the agricultural staples of wheat, corn, soybeans, rice, and oats have hit all-time highs. We have also witnessed record prices in crude oil, gasoline and other related energy products. Both macro-economic factors as well as micro fundamentals for specific markets are at play in these prices. Broadly speaking, the falling dollar, strong demand from the emerging world economies, Mideast political unrest, detrimental weather and ethanol mandates have driven up commodity futures prices across-the-board.

On top of these trends, the emergence of the sub-prime crisis last summer led investors to increasingly seek portfolio exposure in commodity futures. As the Federal regulator of these products, the CFTC is monitoring these growing markets to ensure they are working properly for farmers, investors, and consumers. To date, CFTC staff analysis indicates that the current higher futures prices are generally not a result of manipulative forces. That said, we continue to gather information from the entire marketplace—and welcome outside analysis and perspectives—so that we can ensure that we have an accurate and full view.

For example, the agency recently convened an agriculture forum 2 weeks ago in which we brought together a diverse group of market participants to have a full airing of views and opinions as to the driving forces in these markets. The comment period for that event ends today and we hope to announce in the near future agency initiatives to address the concerns we heard at the forum. The CFTC also recently announced the creation of an Energy Markets Advisory Committee and named the public members of the Committee just last week. Our first meeting is scheduled for June 10th to look at issues related to the energy markets and the CFTC's role in these markets under the Commodity Exchange Act. I am confident that these public forums will benefit our ability to make informed decisions as we strive to improve our oversight of these important markets.

Despite this tumultuous time in our markets, the agency continues to make advancements on several important policy initiatives. Last September, the Commission held a public hearing on the regulation of exempt markets, resulting in an extensive Report to Congress recommending additional authorities for the agency in overseeing this type of trading. Through bipartisan efforts, these recommendations became a part of the CFTC's reauthorization legislation, which is contained in the Farm Bill conference report now being debated. The enactment of that legislation will mean increased responsibilities for the agency—and accordingly, will mean a need for additional CFTC staff to carry out the new authorities. The President's fiscal year 2009 budget for the \$130 million funding level does not take into account the new authorities included in the Farm Bill. The legislation would also raise penalties for market manipulation violations and close a legal loophole that has developed due to adverse court decisions that are hindering the CFTC's efforts to combat retail off-exchange foreign currency fraud.

The CFTC has also worked to strengthen its relationship with the Securities and Exchange Commission (SEC) over the last year, given our shared responsibilities over certain products that affect the regulatory interests of both agencies. In March, our respective agencies entered into a memorandum of understanding (MOU) that will help the agencies share information as well as coordinate our review of novel derivative products that have attributes of both securities and futures. Two Chicago exchanges, the Chicago Board Options Exchange and OneChicago, are the first

beneficiaries of this new framework as both seek to list for trading derivative products based on gold ETF products.

Last year was busy on the enforcement front as well with the agency assessing record penalties against those seeking to manipulate the markets and defraud the public, culminating in the CFTC and Department of Justice reaching a record settlement against British Petroleum for manipulating the propane market. I am confident that the CFTC's dedicated staff will continue this productive effort in the coming year.

EVOLUTION OF THE MARKETS

Congress created the CFTC in 1974 as an independent agency. The CFTC's primary mission under our governing statute, the Commodity Exchange Act, is to ensure that the commodity futures and options markets operate in an open and competitive manner, free of price distortions. In December 2000, Congress reauthorized the Commission with passage of the Commodity Futures Modernization Act of 2000 (CFMA). This landmark legislation established a flexible, principles-based regulatory regime. Today, the CFTC is the only U.S. principles-based financial regulator. This flexible approach has allowed the regulated futures industry to flourish. The same flexibility also allows alert and responsive oversight by the CFTC to fulfill the agency's mission.

The U.S. futures and options markets of today bear little resemblance to the industry of 1976 in terms of complexity, globalization, volume, and economic importance—and these differences will continue in fiscal year 2009. Yet, staff resources and operating funds over time have not kept pace.

For example, Figure 1 shows the growth in trading volume on U.S. futures exchanges from 1996 to present. Trading volume has increased six-fold during the last decade, while at the same time, Commission staffing levels have fallen to 447 full-time employees. That's 50 fewer staff today than the agency had 30 years ago in 1976—the Commission's first year of operation.

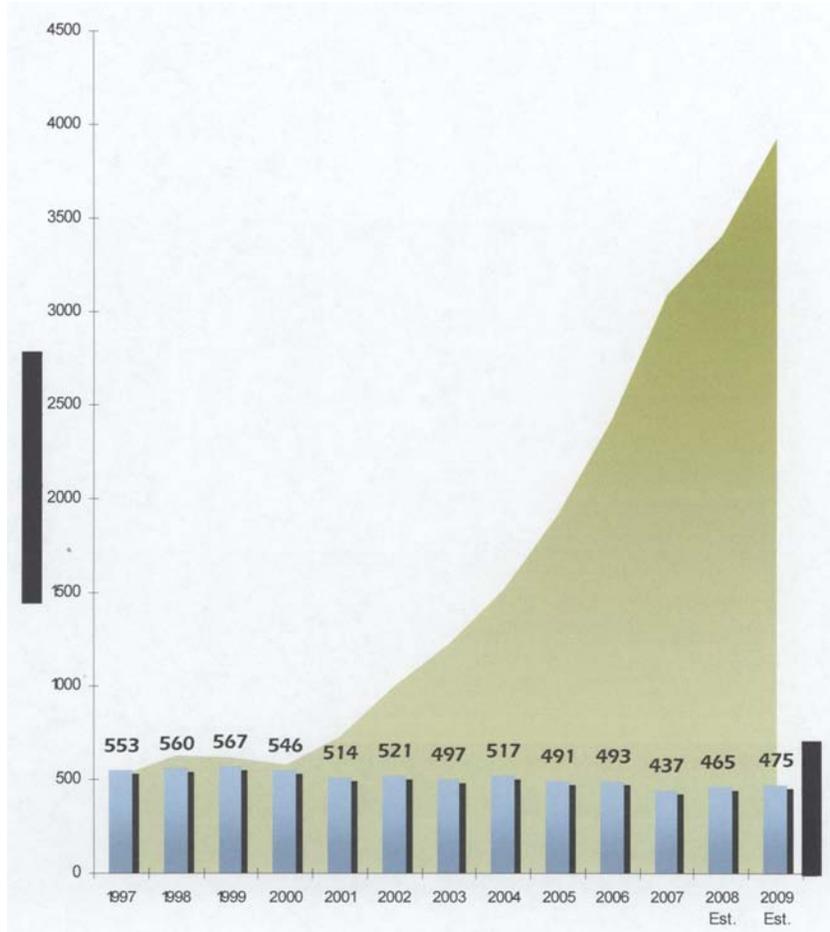


FIGURE 1.—*Growth in Volume of Futures & Option Contracts Traded & FTEs.*

Figure 2 lists the many different components of the futures industry, including the number of contracts traded, the volume of trading, the number of futures industry participants, the number of exchanges and other trading facilities, and the overall notional value of these markets.

Indicator	1976	2007	Percent change
CFTC Staff	497	437	-12
Overhead Expenses as a Percentage of Budget	34	29	-5
Total Contract Volume	37M	3.085B	+ 8,238
Types of Contracts Traded	66	1,365	+ 1,968
Commodity Trading Advisors	447	2,601	+ 482
Commodity Pool Operators	544	1,416	+ 160
Floor Brokers	2,591	8,038	+ 210
Associated Persons (Sales Persons)	25,579	53,844	+ 110
CFTC—Regulated Exchanges	10	12	+ 20
CFTC—Registered Clearing Organizations		11	(¹)
Exempt Boards of Trade		9	(¹)
Exempt Commercial Markets		20	(¹)
Notional Value of Contracts Traded (Per Day)	\$4B	² \$4.78T	119,400
Customer Funds in FCM Accounts	\$577M	\$155B	26,763

¹ Not available.
² Estimate.

FIGURE 2.—Indicators of Industry Growth.

As you can see from the chart, the growth in these categories from 1976 to present is stunning—with percentage increases in the triple, quadruple, and quintuple digits. For instance, total contract volume has increased more than 8,000 percent in 30 years. Contrast that with the CFTC staffing and overhead expenses over time, which have decreased -12 percent and -5 percent, respectively. Looking at the growth in all sectors, it's clear that CFTC is doing a lot more with a lot less.

FISCAL YEAR 2008 BUDGET

On behalf of the entire Commission, I would like to express my appreciation for the support provided to the CFTC in the fiscal year 2008 budget. The \$111 million appropriated by Congress for the current calendar year was the first substantial increase for the Commission in recent years and is already being put to good use. It is important to explain how the CFTC is using the fiscal year 2008 funding to address critical needs in two major areas—experienced professionals and a modern technology infrastructure—because the fiscal year 2009 funding will build on that foundation.

Additional Staff Hires

The Commission is implementing an intensive hiring program for the first time since October 2005. This program seeks to fill the loss of experienced, long-time Commission employees, as well as address new skill sets required by the rapidly evolving industry we regulate. The Commission employs highly-trained, expert staff who works within three major program divisions—Market Oversight, Clearing and Intermediary Oversight, and Enforcement. These divisions are complemented and supported by the Offices of the Executive Director, General Counsel, Chief Economist, International Affairs, and External Affairs.

The Division of Market Oversight ensures that the markets are operating efficiently and without manipulation and fraud. One of the keys to Market Oversight is market surveillance. The Commission's staff economists utilize the Commission's large trader reporting system and one of the Commission's main technology systems, the Integrated Surveillance System (ISS), to detect and deter market manipulation and disruption. As you can see in Figure 3, the current atmosphere of rising futures prices across a wide range of products makes these anti-manipulation efforts all the more important.

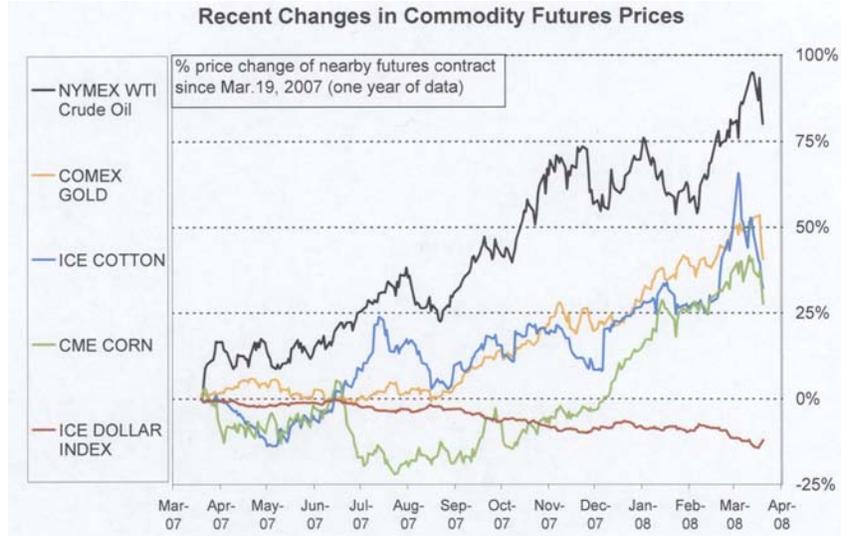


FIGURE 3.—Recent Commodity Price Changes by Percent Change.

The Division of Clearing and Intermediary Oversight ensures the financial integrity of the futures industry as a whole. Futures and options trading on U.S. contract markets increased by approximately 27 percent in 2007 over the prior year and remains at consistently high levels. Not only has the volume of trading increased and the futures prices of some commodities increased to record levels, the amount of funds handled by the clearing houses has increased as well. In this regard, all exchanges have experienced record settlements during this time period, including one day in January 2008 in which the Chicago Mercantile Exchange cleared and settled more than \$12 billion of transactions—nearly six times its normal load. Despite these spikes in cash flow, the clearing system has worked extraordinarily well. Nevertheless, with the rising need for risk management by businesses and the rising importance of futures markets to the Nation's economy, the Commission's financial integrity programs must be continually strengthened. A key component of the Commission's financial integrity program is the required segregation of all customer funds from those funds of Futures Commission Merchants (FCM). As shown in Figure 4, the level of required segregated customer funds has more than doubled since the end of 2000.

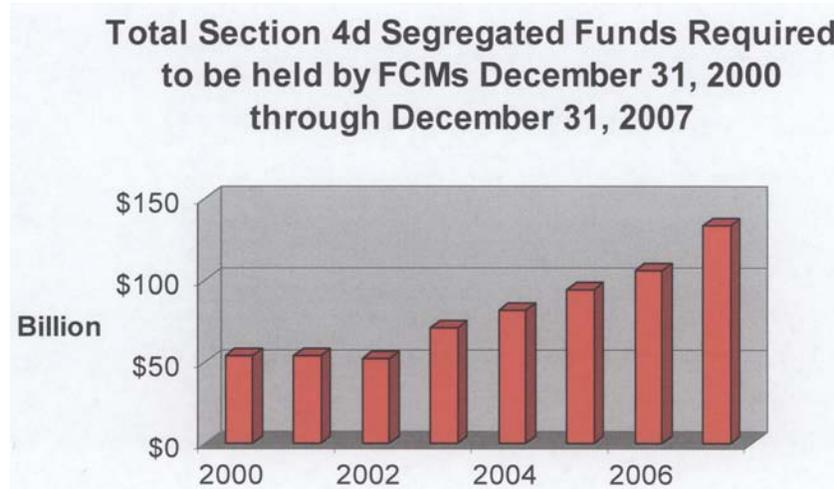


FIGURE 4.—*Segregated Funds Required.*

When a manipulation or fraud occurs in the marketplace, it is the job of the Enforcement Division to gather information, build a case and prosecute the offenders. In the foreign currency or FOREX markets, the CFTC has filed 98 cases involving 374 entities or persons with more than \$562 million in civil monetary penalties levied and more than \$453 million in restitution awarded. Since the collapse of Enron, CFTC has brought 39 cases involving energy markets and charged 64 entities or persons with manipulation, attempted manipulation, and/or false price reporting. The collective civil monetary penalties levied in these energy market enforcement actions exceed \$444 million.

As our financial markets become more complex, global, and interwoven, the Commission is increasingly called upon to co-ordinate and co-operate with other agencies domestically and world wide. Internationally, these activities involve the Commission's participation in multilateral bodies, such as the International Organization of Securities Commissions (IOSCO), as we strive to raise global regulatory standards. This is complemented with specific bilateral information sharing arrangements with other nations as we try to coordinate our enforcement and oversight efforts. Domestically, the Commission staff works with several Federal and State agencies, including USDA, FERC, and DOJ, to harmonize our mutual regulatory efforts. The Commission recently signed an MOU with the SEC to further co-ordinate our efforts, given the additional convergence of the futures and equities markets. In addition, our agency has an information sharing MOU with FERC to enhance cooperation in the policing of the energy markets.

All of these important responsibilities and priorities require qualified personnel in their execution. Unfortunately, recent turnover at the agency has been significant. Throughout the agency and its divisions, the Commission lost 58 experienced employees in fiscal year 2006, 49 in fiscal year 2007 and 15 to date in fiscal year 2008. The Commission currently has 447 full-time employees onboard and with the recent increased funding, we are actively recruiting toward a target of 465 FTEs for fiscal year 2008. Such personnel additions are critical if this agency is to continue to meet its responsibilities in overseeing the futures markets.

Technology Investments

The other focus of the fiscal year 2008 budget allocation is technology. The CFTC primarily uses technology in the surveillance of the markets and the monitoring of the financial integrity of the clearing organizations and firms. The Commission's fiscal year 2008 appropriation enables the agency to undertake a long-delayed modernization of capital investments in Information Technology (IT) software and hardware, such as computers, servers, routers, switches and other critical communications components. The modernization of our surveillance systems will pay off with enhanced transparency and detection tools for the oversight of our markets.

The CFTC receives and analyzes millions of data points everyday that come in from the exchanges and firms, which allow us to monitor the marketplace. Once aggregate position levels are determined, CFTC staff not only monitors daily positions of all large traders, but also has the ability to analyze the minute-by-minute trades of these market participants, including hedge funds and other speculators, during times when there is a heightened risk of manipulation. To do this job, the CFTC's market surveillance staff uses its ISS system to organize and group the information into meaningful categories.

With the exponential growth of these global electronic markets, the CFTC must continue to devote significant portions of its budget to technology in order to stay on top of this sector. This year the agency will increase its technology budget by almost 37 percent with the hope of almost doubling the overall technology budget by fiscal year 2009. These resources will be primarily used to enhance the agency's surveillance tools—making these programs faster, more functional and better able to detect wrongful activities across markets and jurisdictional borders.

Clearly, technology and personnel investments are keys to the agency's success and the fiscal year 2009 budget builds on the foundation that has been enhanced this year. I am grateful for the administration's and appropriators' recognition of the need for increased funding for our agency in these two key areas.

FISCAL YEAR 2009 BUDGET

The fiscal year 2009 President's budget request, as seen in Figure 5, is for an appropriation of \$130 million and 475 full-time staff, an increase of approximately \$18.7 million and 10 staff over the fiscal year 2008 appropriation.

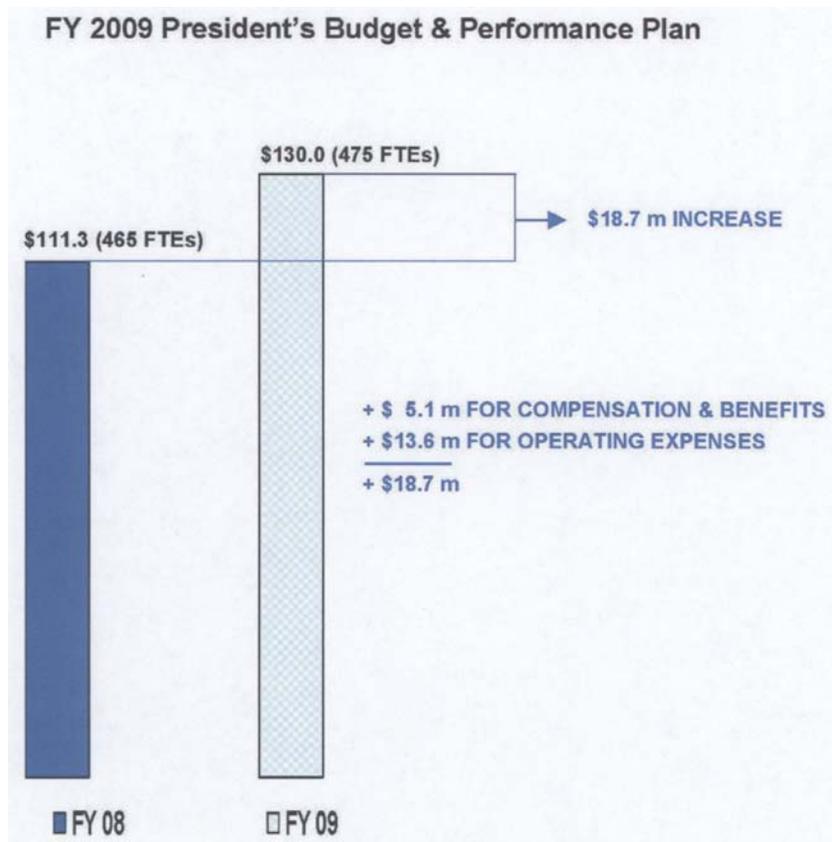


FIGURE 5.—Fiscal Year 2009 Budget Request Provides for an Increase of \$18.7 Million and Additional 10 FTEs.

Compared to the fiscal year 2008 appropriation, key changes in the fiscal year 2009 budget are:

- \$3.2 million to provide for increased compensation and benefit costs for a staff of 465 full-time employees;
- \$1.9 million to provide for salary and expenses of 10 additional full-time employees. This portion of the budget also includes \$200,000 to establish a student loan program that is designed to help with retention and recruitment of young, qualified professionals. The agency has not had the resources in previous years to be able to support this program and we're pleased to have this program planned for in our budget.
- \$13.6 million to provide for increased operating costs for information technology modernization, lease of office space, and all other services.

This funding increase provides the Commission with the financial wherewithal to build on the fiscal year 2008 investments by continuing to hire additional staff and make critical investments in technology.

Additional Staff Hires

For fiscal year 2009 the Commission is requesting ten additional positions. This increase—although modest compared to industry growth—will allow us to build on the hiring we are undertaking as a result of the fiscal year 2008 appropriation. The ten positions requested for fiscal year 2009 are spread throughout the Commission because our needs cut across all of our responsibilities. For example, in the Division of Market Oversight, we will allocate an additional surveillance economist to focus

principally on the complex issues and changing practices in the energy cash and derivatives market. In the Division of Clearing and Intermediary Oversight, we will allocate two additional staff to enhance the expanding financial and risk surveillance functions. In the Enforcement program, two additional staff will focus mainly on allegations of manipulation, trade practice violations, and false reporting, but the additional staff will also enhance our ability to address a wide range of violations of Federal commodities law. One additional staff is planned for the Office of the Chief Economist to conduct market research and analysis commensurate with the growth in new types of exchanges, new trading execution methods, and the role of speculators in our markets. For the Office of Proceedings, we are requesting one additional position to fill the long vacant directorship. For the Office of General Counsel, we are seeking one additional position to replace a loss in expertise among senior staff in areas such as bankruptcy and anti-trust law. Finally, in the Office of Information Technology, we are requesting two additional positions to enhance in-house expertise to assist the major program Divisions in monitoring, auditing, and investigating increasingly sophisticated technologically driven markets.

Technology Investments

In fiscal year 2009, additional funding would permit the Commission to upgrade telecommunications systems and to expand and improve existing critical systems, such as the Integrated Surveillance System and eLaw. Also in fiscal year 2009, funds requested would permit continued development of the new Trade Surveillance System (TSS), which will be used for trade practice surveillance on all exchanges, including new and emerging electronic exchanges. TSS will use state-of-the-art, commercially available software to enhance both intra-exchange and inter-exchange trade practice surveillance. We can now obtain and analyze the trading activity of our large traders in a mere fraction of the time it used to take—minutes instead of days. Soon, with these investments, we will have the capability to monitor and analyze even more quickly and efficiently a trader's intraday trading activity.

The Commission's ability to fulfill its mission depends on the collection, analysis, communication and presentation of information in forms useful to Commission employees, the regulated industry, other Federal, State, and international agencies, the Congress, and the American public. The resources allocated in fiscal year 2008 and fiscal year 2009 to Information Technology will permit a secure modern information technology infrastructure and the development of a Document Management System to modernize, centralize and automate the management of the Commission's information resources. These comprehensive enhancements will enable the Commission to serve these stakeholders effectively.

The fiscal year 2009 budget, if approved, will largely enable completion of the CFTC's technology modernization initiative—barring unforeseen industry developments or new statutory requirements. The Commission is making a concerted effort to use commercial best practices in developing and maintaining its IT systems and ensuring that our IT staff is focused on increasing efficiency and controlling costs.

All of the technology improvements have one commonality; they help increase the availability of one of our most critical resources—time. That is, technology allows our growing staff to become more productive by spending additional time on qualitative analysis rather than quantitative processing and compilation.

CONCLUSION

I am very proud of the agency and our highly-skilled staff. Everyday, they carry out the agency's mission of protecting the public and market users from manipulation, fraud, and abusive practices and promoting open, competitive and financially sound markets. If the futures markets fail to work properly, all Americans are impacted.

When looking at the increased volume of activity across all areas of the CFTC mission and the scope of the industry changes, the resulting increase in specialized workload is demonstrable. Accordingly, it is critical that the CFTC have sufficient resources to hire and maintain skilled talent, as well as provide a steady stream of technology investment commensurate with the agency's expanding and evolving global mission.

Thank you for the opportunity to appear before you today on behalf of the CFTC. I would be happy to answer any questions you may have.

ADEQUATE STAFFING TO MEET VOLUME INCREASES

Senator DURBIN. Chairman Lukken, your graphs tell the story about a dramatic increase in trading that you are responsible to

oversee. As I understand it, if you're able to replace employees that have left, the President's new budget request will give you an additional 10 employees over the 465 that you're targeting. I can't imagine that gets close to matching the volume increase that this agency faces in terms of the markets that you supervise. Does it?

Mr. LUKKEN. Well, our fighting weight as an agency historically has been in the mid-500s, and we're trying to build up over a series, a period of years, to get to those levels, and we're hopeful to reach that. I think the 10 that we've requested in 2009 is the minimum we need to ensure our responsibilities at the agency. The technology is very important in ensuring that we're productive in those 10 individuals.

So we're looking over a long-term horizon to make sure that we get to where we need to be, but we think 10 is a good start in that venture.

SPECULATION IMPACT ON ENERGY FUTURES

Senator DURBIN. So let me try to be more specific in the next question about another issue. As I understand your testimony and your agency's responsibility, you look for illegal conduct, market manipulation, evidence of corruption, and obviously do your best to keep transparency and credibility, integrity in the marketplace, and that is an important part of your role.

But you've also initiated several discussions that relate to the overall market and the role it has in our economy as it relates to specific commodities. Now being more specific, when it comes to energy contracts, that's one that's in the news. And there are a lot of people, including some of my colleagues that I respect very much, who think that the speculation and trading in energy futures has driven up the price of oil, for example. One of my colleagues today said he thought that of the \$120 a barrel, maybe \$30 of it or more was attributable just to speculators driving up the price of the commodity.

There's also a question about margin requirements when it comes to these energy futures.

Let me throw in the third element, of course: global competition. In London, ICE is selling many of these same contracts or contracts similar to them.

That's as soft a pitch as I could throw you on this, but I'd like your feedback on the speculation on this issue.

Mr. LUKKEN. Well, certainly we closely follow the market participants and track what speculators may be doing in our markets. As I mentioned, we receive every day the trade positions of all traders in our markets above a certain threshold. That ensures that we can see what sort of controlling positions they may have as traders on a given market.

Our economists also closely follow fundamentals of those markets to ensure that those types of traders aren't using their positions in order to manipulate or cause some sort of illegal behavior in our markets. So we closely follow that. Like I said, every day we're looking at who the large traders might be and whether they're either themselves or colluding with others to try to manipulate the markets.

Senator DURBIN. Do you think that that's happening now? Do you think that the observation that \$20 or \$30 on a barrel of oil can be attributed to speculation is a valid observation?

Mr. LUKKEN. Well, I think as far as illegal behavior, where an individual or a set of individuals are trying to manipulate the market, I can say with a high degree of confidence that we are not seeing that. With regard to speculation, we also have controls in place for speculators. Each month as the contract is about to expire, they have to get down to certain positions in agricultural markets and other, energy contracts so that there's a less chance that they may be able to manipulate the markets, and those controls are currently in place.

So between seeing the transparency of the reporting that we receive, plus the controls, the position limits we have in place, we have a high degree of confidence that people are not manipulating the markets.

MARGIN REQUIREMENTS

Senator DURBIN. And what are the margin requirements on these energy contracts?

Mr. LUKKEN. The margin requirements—as you know, in the futures industry, margin is set based on a risk modeling that the exchanges perform, and this is meant to cover a 1-day price move, so that the losers can pay the winners every day, and the markets mark to market at least twice a day. This wrings the risk, credit default risk, out of the marketplace, so that losses can't accumulate over a period of days. So every day everybody starts afresh.

So this has worked very well to—

Senator DURBIN. Is there a margin requirement?

Mr. LUKKEN. For?

Senator DURBIN. Energy futures.

Mr. LUKKEN. Yes, there is. There is to cover a potential 1-day price move. Again, this is based on statistical, historical and statistical evidence of what that might be.

Senator DURBIN. How does that compare with other commodities, the actual margin requirement?

Mr. LUKKEN. It's based on volatility. I'll have to ask our staff whether we can get you figures on percentages. But oil, I think, is sort of middle of the pack as far as volatility compared to some of the other commodities. But we can give you specific numbers.

Senator DURBIN. The last question—I'm sorry to go over a minute, but I didn't get my entire opening statement, so I can have an extra minute here. So if we passed a law calling on you to substantially increase the margin requirements on energy futures, particularly as they relate to crude oil, what impact would that have in your estimation on migration to another marketplace, like ICE in London, as an alternative market to pursue the same type of future?

Mr. LUKKEN. I think there would be migration off exchanges. It would be a tax on a type of trader. These traders—I know that there's a lot of people who have disparaging remarks about speculators, but they do provide liquidity for a lot of these markets and have for years, and that's necessary to make sure that the commer-

cial participants in the markets, the producers, the farmers, and everybody, has a buyer for every seller and a seller for every buyer.

Senator DURBIN. What percentage of those who trade, for example, in these energy commodities actually take possession?

Mr. LUKKEN. Very few. Very few actually ever deliver. The vast majority of the contracts never deliver the physical commodity. The futures markets are not a marketing tool for product. It is a risk management tool and people utilize it as a risk management tool. There has to be delivery as part of the mechanism to ensure that the cash price and the futures price eventually converge, but the truth is that most people get out of these contracts way before delivery ever occurs.

Senator DURBIN. Senator Brownback.

Senator BROWNBACK. Thank you, Mr. Chairman.

MONITORING MARKET FUNDAMENTALS

Years ago when I was a farm broadcaster, I thought I was really smart on these markets, so I speculated a little bit, lost my shirt. My dad would not listen to anything I ever said again from that point. He farms and he said: All right, we're just going to keep it in the bin now; I'm not listening to you any more.

So I know those things move on you. I was long in the wheat futures when the Soviets invaded Afghanistan, if anybody remembers that period, and we lock-limited down the markets for 3 days. I'll never forget it. It was quite an experience for a young man.

You mentioned, though, earlier, Chairman, that your economists track the fundamentals and what the market should be. What should the price of oil be now, according to what your economists are saying?

Mr. LUKKEN. Well, we make sure that the markets are reflecting as best they can and they are functioning efficiently and performing. We can't predict what prices may be. That's the function of a free market.

Senator BROWNBACK. Do you do a range? Do you do a range and say, on these fundamentals, this supply, this demand, there is a range that this price should in normal circumstances trade in? Do you do any historical view of that?

Mr. LUKKEN. We do not.

Senator BROWNBACK. There's been a number of articles out lately thinking that these markets are being driven heavily.

Mr. LUKKEN. We do closely follow what the Department of Energy and the U.S. Department of Agriculture, the numbers that they're putting out, looking at a holistic approach to make sure the fundamentals are supporting the general prices that are being put out by the markets. And if we see—

Senator BROWNBACK. Well then, answer that question: Do the fundamentals support the general prices being put out by this oil market?

Mr. LUKKEN. I think, based on supply and demand that we're seeing—and a lot of people in the markets agree—that yes, the fundamentals do support largely what the prices are at today.

Senator BROWNBACK. So you disagree with what the chairman said, that there's as much as \$30 in these markets that's based on speculation?

Mr. LUKKEN. Well, I have not seen that study, so we'd have to look at that. But we have not seen that speculators again are driving—are a major factor in setting these prices.

Senator BROWNBACK. You're familiar, and I'll enter into the record, there's a Barron's article that cites that they believe that they are.

[The information follows:]

[From Barron's, Monday, March 31, 2008]

COMMODITIES: WHO'S BEHIND THE BOOM?

(By Gene Epstein)

China, as everyone knows, is a big force in the extraordinary boom in commodities. Its voracious appetite for everything from corn and wheat to copper and oil has helped push up U.S. commodities prices by some 50 percent over the past 12 months.

But China is by no means the whole story. Speculators—including small investors—are also playing a huge role. Thanks to the proliferation of mutual funds and exchange-traded funds tied to commodities indexes, speculative buying has gone way beyond anything the domestic commodities markets have ever seen. By one estimate, index funds right now account for 40 percent of all bullish bets on commodities. The speculative juices are even more plentiful—nearly 60 percent of bullish positions—if you count the bets placed by traditional commodity “pools.”

Here's the problem: The speculators' bullishness may be way overdone, in the process lifting prices far above fair value. If the speculators were to follow the commercial players—the farmers, the food processors, the energy producers and others who trade daily in the physical commodities—they'd be heading for the exits. For right now, the commercial players are betting on price declines more heavily than ever before, says independent analyst Steve Briese.

For example, in the 17 commodities that make up the Continuous Commodity Index, net short positions by the commercials have been running more than 30 percent higher than their previous net-short record, in March 2004.

Briese, author of the recent book *The Commitments of Traders Bible* and editor of the *Website CommitmentsOfTraders.org*, was one of the first to recognize that information on the bets made by the commercials could provide rare insights into how the “smart money” views the price outlook. These days, the data suggest, the smart money clearly believes that the market's exuberance has turned irrational.

Indeed, the great commodities bubble started springing its first leaks two weeks ago: Oil, gold and other major commodities posted their steepest weekly drop in half a century. Though prices have since firmed, they could eventually drop 30 percent as speculators retreat. The only real question is when.

It's not easy to size up the influence of the index funds. But based on their known cash commitments in certain commodities, and the commodity indexes their prospectuses say they track, it is possible to estimate the size of their commitments in all commodities they buy. Using this method, analyst Briese (pronounced “breezy”) estimates that the index funds hold about \$211 billion worth of bets on the buy side in U.S. markets.

Applying a similar method, but with slightly different assumptions for indexes tracked, Bianco Research analyst Greg Blaha puts that figure at \$194 billion. Either figure is enough to turn the index funds into the behemoths of the commodity pits, where total bullish positions now stand at \$568 billion.

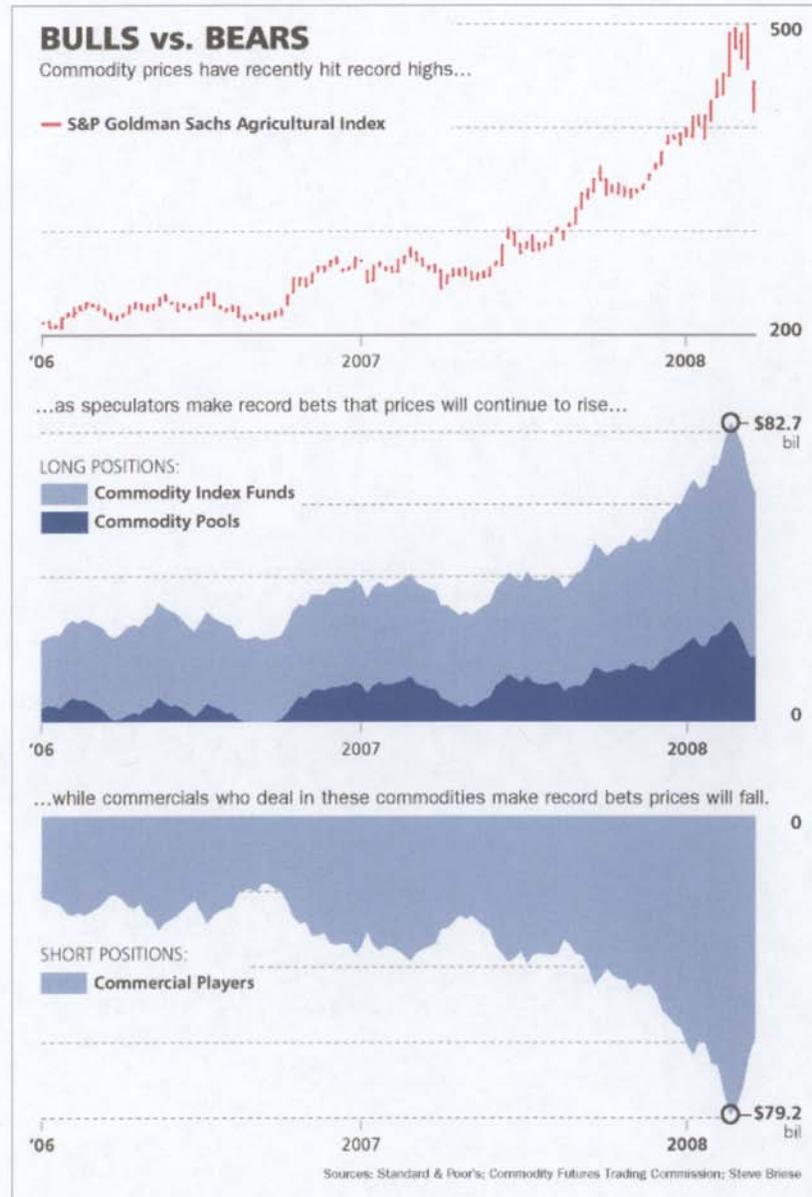
Commodities index funds, which arrived on the scene in the late 1990s, have come into their own in the past several years. The biggest index fund, Pimco Real Return (ticker: PRTNX), has seen its assets swell to \$14.3 billion from \$8 million since its inception in January 1997.

Index funds offer investors an easy, inexpensive way to gain exposure to a segment of the commodities markets or a broad-based basket of commodities. Result: The funds have drawn many private investors who have never ventured into futures, along with pension funds and other institutional players looking to diversify. But for all the virtues that the funds hold as a way of spreading bets across commodity markets, they take only long, or bullish, positions, avoiding short-selling. In other words, they trade on the naive and potentially fatal assumption that commodities have the same tendency as stocks to rise over the long run.

That this large, bullishly oriented group of funds is flourishing is partly a result of a regulatory anomaly. In recognition of the fact that the commodity markets are

too small to absorb an excess of speculative dollars, the Commodity Futures Trading Commission, in conjunction with exchanges, imposes position limits on speculators. But the agency has effectively exempted the index funds from position limits.

The dislocations caused by allowing so much money into markets that have limited liquidity is now causing alarm in the trading pits. That, in turn, is prompting the CFTC to call for an industry gathering April 22 at its Washington headquarters "to hear firsthand from participants to ensure that the exchanges are functioning properly." On this and related issues, CFTC Acting Chairman Walter Lukken declined to comment to Barron's.



Unless regulators clamp down, the index funds could become an even bigger force in the markets. In the midst of the recent sell-off, commodity bull Jim Rogers made that very point in an interview with Bloomberg News. Referring to the “over 70,000 mutual funds in the world” compared with the “fewer than 50” that now invest in commodities, he held out the prospect of a speculative bubble that could last for years.

In Rogers’ view, the bull market is in the “fourth inning” of a “nine-inning baseball game.” To which commodity bear Steve Briese counter-quips, “Maybe, but can’t the game be called for a year or two, on account of rain?”

In the organized commodity markets, trading is in futures and options, which are essentially two-way bets on the outlook for prices. For every buyer (a “long”) of a future or options contract betting on a price rise, there is a seller (a “short”), taking the other side of the contract by betting on a price decline. Since speculators and commercials as a group can be either short or long, the charts (see the last page) track the net position—longs minus shorts—held by either group. Courtesy of Briese, the charts track net long or short positions in dollars, based on the dollar value of the commodity each futures or options contract covers.

The speculators, now so bullish, are mainly the index funds. To see how their influence on the market has become outsized, just look at how they operate. Nearly \$9 out of every \$10 of index-fund money is not traded directly on the commodity exchanges, but instead goes through dealers that belong to the International Swaps and Derivatives Association (ISDA). These swaps dealers lay off their speculative risk on the organized commodity markets, while effectively serving as market makers for the index funds. By using the ISDA as a conduit, the index funds get an exemption from position limits that are normally imposed on any other speculator, including the \$1 in every \$10 of index-fund money that does not go through the swaps dealers.

The purpose of position limits on speculators, which date back to 1936, is clearly stated in the rules: It’s to protect these relatively small markets from price distortions. An exemption is offered only to “bona fide hedgers” (not to be confused with “hedge funds”), who take offsetting positions in the physical commodity.

The basic argument put forward by the CFTC for exempting swaps dealers is that they, too, are offsetting other positions—those taken with the index funds.

Position limits on speculators, in some commodities specified by CFTC rules and in others by the exchanges, are generally quite liberal. For example, the position limit on wheat traded on the Chicago Board of Trade is set at 6,500 contracts. At an approximate value of \$60,000 worth of wheat per contract, a speculator could command as much as \$390 million of wheat and still not exceed the limit.

But at least one index fund that does trade the organized commodity markets directly and must therefore abide by the rules—PowerShares DB Multi-Sector Commodity Trust (DBA)—recently informed investors that it was bumping up against position limits and therefore would change its strategy.

No such information is available from individual swaps dealers. But based on CFTC data on their total position in a commodity like wheat, together with the fact that only four dealers account for 70 percent of all the trading from the ISDA, it is quite clear that if the exemption were ever rescinded, the dealers’ trading in these markets would no longer be viable.

Speculators also use the older commodity pools, whose position is likewise tracked on the charts. The pools, open to sophisticated investors, are flexible enough to sell short as well as buy long and are subject to position limits. But since they are generally trend-followers, they will almost always go long in bull markets. Through most of the recent period, then, the pools have been adding to the price distortions caused by the index funds. Add the pools’ bets to those of the index funds, and speculative money forms 58 percent of all bullish positions.

To get a further idea of the impact of these speculative bets, Barron’s asked Briese to measure them against production in the underlying markets. He calculates that in soybeans, the index funds have effectively bought 36.6 percent of the domestic 2007 crop, and that if you add the commodity pools, the figure climbs to 59.1 percent. In wheat, the figures are even higher—62.3 percent for the index funds alone, and the figure jumps to a whopping 83.6 percent if you add the pools. Betting against them as never before are the commercials, who deal in the physical commodity.

The CFTC provides these figures on index trading for only 10 commodities. Why are such major commodities as crude oil, gold, and copper excluded? The agency’s rationale, which even certain insiders question, is that it would be hard to get reliable information on these other commodities from the swaps dealers.

What might finally trigger the bursting of the commodities bubble?

One possible trigger was cited in a Barron's interview with Carl Weinberg of High Frequency Economics, published last week. Weinberg anticipated a break "some time this year" in industrial commodities, including crude oil, copper and natural gas once there is news of "even the slightest slowdown in the Chinese economy," the country whose insatiable demand, together with that of India, has been a rallying cry of the bullish speculators. When industrial commodities prove vulnerable, speculative money could start fleeing agricultural commodities, also.

Société Générale analyst Albert Edwards goes much further. Based on his view that the "Commodity bubble is nonsense on stilts," Edwards holds the "very strong conviction that before the end of this year, commodity prices . . . will be unraveling." He believes the triggering events will be the "unfolding U.S. consumer recession" and likelihood of "negative CPI [consumer price index] inflation rates."

A sudden turnaround in the dollar could be another trigger, notes Briese. By making dollar-denominated commodities ever cheaper in terms of other currencies, the collapsing dollar has been a legitimate bullish factor. "But the buck won't go down forever," Briese argues. "The same cycles that coincided with the dollar's major bottom in 1992 are due to make a low later this year. A rebounding dollar would pinch demand for dollar-denominated commodities."

Alternatively, to borrow a quip from the late humorist Art Buchwald—who once explained that his candidate lost the election owing to "not enough votes"—the bubble could burst from not enough buying. Brokerage houses have been advising their clients to allocate part of their portfolios to commodities, compared with allocations of zero several years ago. Even a shift of five percentage points would have been more than enough to account for the dollars that have fueled the "nonsense on stilts."

But what if the U.S. economy proves more resilient than currently thought, doesn't fall into recession, and instead starts growing again? The resulting rally in the stock market could send the allocation share back to zero and the bubble could burst, not with a bang, but with a whimper.

The CFTC could also prick the bubble by enforcing its own rules. If the agency were to rescind the exemption on position limits given to the index funds (say, on a phased basis, so that the funds could make an orderly retreat), prices would probably fall back to reflect their true supply-demand fundamentals.

Briese's analysis of commercial hedger positions leads him to believe that commodities in general were fully valued in terms of the fundamentals as of early September 2007. Based on the 24-commodity S&P Goldman Sachs Commodity Index, that would mean about a 30 percent collapse from present levels. But, he adds, "Given the tendency for prices to overshoot, commodity values could be cut in half before they stabilize."

Maybe it's time to start listening to the smart money.

LIMITATIONS ON OPEN POSITIONS

Senator BROWNBACK. I would ask you as well: You have limitations on what one individual can control as far as the number of open positions in a commodity; is that correct?

Mr. LUKKEN. That is correct.

Senator BROWNBACK. Does that same limitation apply to a hedge fund?

Mr. LUKKEN. It does.

Senator BROWNBACK. To an index fund? To a hedge fund?

Mr. LUKKEN. Well, a hedge fund is in our terms somebody who is a speculative trader. An index fund is somebody like Goldman Sachs or AIG, which is a fund that brings in passive long-only investments into our markets. We typically call speculators those that are buying and selling over a short-term horizon. These are long-term investments in which pension funds such as CALPERS or retirement funds and endowment funds come into our markets in a buy and hold type strategy.

Senator BROWNBACK. And there is no limitation on the amount of open positions they can maintain?

Mr. LUKKEN. They receive an exemption from us for those position limits.

Senator BROWNBACk. Now, in one article that I read—only long position?

Mr. LUKKEN. Only long.

Senator BROWNBACk. But in one of the articles I read, that they were holding as much as 40 percent of some of the near-term long positions in these index funds.

Mr. LUKKEN. Well, they normally never get into the spot month. They roll before the spot month occurs. So they again are seeking long-term exposure.

But in our analysis—and this is something that was discussed quite a bit at the agricultural forum we held 2 weeks ago—we've seen evidence where the largest percentage of index fund trading is in live cattle right now, about 45 percent of the market, and yet live cattle is down 6 percent, 8 percent on the year. So we have not seen high levels of correlation. In fact, Minneapolis wheat contract has no index fund trading—

INDEX FUNDS IN OIL MARKETS

Senator BROWNBACk. What about oil?

Mr. LUKKEN. Unfortunately, because of the way that index funds enter into the oil markets, we're not able to pull out that data separately. But it's something we're looking into trying to drill down to find out how the index funds enter into those markets.

Senator BROWNBACk. It sure seems like that's one you really ought to be, as you say, no pun intended, drilling down into.

Mr. LUKKEN. Well, it's something we want to look into further, how we can do it. It's a resource question because many of these index funds do a variety of types of trading. They don't separate the two, and so for us to try to find out that type of data, it would be very resource-intensive. But it's something we're interested in finding out.

Senator BROWNBACk. Why wouldn't you want to limit the number of open positions, open long positions, that an index fund could maintain? I mean, it seems to me, and maybe I'm looking at this too simply, but that people are parking money in these areas, which is fine, but you're taking a bunch of product off the market then and you're letting one entity control it, which you would not let an individual do. But an individual runs this fund and so you've got an individual sitting on top of a big hedge fund that's controlling a lot of positions.

Mr. LUKKEN. Yes.

Senator BROWNBACk. I think back to when somebody was trying to capture the silver market two or three decades ago. It seems like you could get very much in the same spot, just only now the name's an index fund rather than an individual, but it's still a person that controls it.

Mr. LUKKEN. Our markets are risk management markets. Financial institutions who are selling these products to pension funds and others have a risk. They have risks that they're trying to offlay in the futures markets. They are exposed to a long or short position when they do sell these products. Our markets try to help them to offset that risk.

That's why I think there's been some discussion of whether we should call them a hedger, such that a producer or a grain elevator

is a hedger. But they are hedging some type of financial risk, and it's been the position of the Commission for 20-plus years to allow them to have that type of an exemption.

But I think this is something that came out in this ag forum and something that we're closely looking at to make sure that we're categorizing them correctly.

I would point out that, even though they are not subject to these position limits, we still see all the positions. We see who they are. The transparency is complete for us. So we're able, if we think they have a position that's going to manipulate the markets, we as regulators can see that. They just don't have hard limits as they do maybe with the position limits. But we certainly can see and exercise judgment on whether they're trying to control the marketplace.

Senator BROWNBACK. It seems to me that you could see where this could happen, where they could drive the market up just by having a big quantity of open positions on long positions. I mean, it just seems, on its face, something that really we ought to be deeply concerned about. I hope you do look at the amount of positions you let them hold, long positions in those months.

Mr. Chairman, thank you for being generous with my time.

Senator DURBIN. Senator Allard.

Senator ALLARD. Thank you, Mr. Chairman. I do have a statement I'd like to put in the record, with unanimous consent to do that.

Senator DURBIN. Without objection.

[The statement follows:]

PREPARED STATEMENT OF SENATOR WAYNE ALLARD

I would like to thank Chairman Durbin and Ranking Member Brownback for holding this hearing to examine the fiscal year 2009 budget requests of the Commodities Futures Trading Commission (CFTC) and the Securities and Exchange Commission (SEC). I appreciate the opportunity to more closely examine the regulation of our securities and futures markets.

American capital markets are predicated on openness and fairness, and that fairness is only assured through careful, prudent, consistent regulation. The SEC and CFTC are at the heart of the effort to protect market participants and investors and to ensure market integrity.

The financial markets have seen a great deal of growth and evolution during recent years. Regulation is becoming all the more challenging as the agencies must not only adapt to changing times, but try to anticipate future trends. The SEC and CFTC budget requests for fiscal year 2009 are an important part of helping the agencies meet those challenges.

I place a strong emphasis on outcomes, particularly in the area of budgeting. Budgets are not, or at least should not, be simply a sign of how much we like a particular program. Rather, it should be tied to need and the results that are being achieved with past funding.

I am concerned that neither budget before us today strikes the right balance. The CFTC is requesting a very large funding increase, yet according to the PART assessment is demonstrating no results. By contrast, the SEC, at least in some of its programs, has been shown to be effective. We have also heard repeated testimony in the authorizing committee about the need for a stronger SEC presence, yet, this budget actually proposes reduced staffing levels.

I will be eager to hear from the chairmen to see how they square their budget requests with the facts on the table.

Thank you, Mr. Chairman.

Senator ALLARD. Just for the record of this subcommittee, I think if we were ever to look at a place where there is some market control it would be the OPEC countries. Obviously, we're not going to be able to control them, but you know, they produce oil, I'm told,

in Iran for \$15 to \$17 a barrel. In Saudi Arabia they produce it out of the ground for \$1 to \$3 a barrel. We're paying \$115 a barrel.

I think that has more to do with the OPEC cartel and what they're doing, their markup. I think that's where the real problem is. So I just wanted to make that point for the record.

PROGRAM ASSESSMENT RATING

One thing that you're doing that does concern me in a big way, and that is that I don't see you having a satisfactory score on the PART program. If you refer to the PART program, you understand which program I'm referring to? Well, you need to know about it. The PART program is where the administration measures objectives and results.

You are scored as not making any effort—your score on that is that you haven't done anything to measure results and outcomes. Many of the agencies have. The SEC, which we'll be hearing from, has a good PART score. You have "no results demonstrated."

Why is that?

Mr. LUKKEN. I have to admit, Senator, this is something—I just got handed a note. This is dealing with the enforcement program?

Senator ALLARD. Well, it's "CFTC." That's the way it's listed, I think, on the PART program. How is it listed?

Mr. LUKKEN. "CFTC?"

Senator ALLARD. It's listed as "CFTC" in general, a line item, "CFTC."

Your evaluation comes from the Office of Management and Budget (OMB). As a policymaker, we look at that to see whether the taxpayer dollars or the fees that you're collecting are being put into an efficient and effective program. If we look at yours, where "no results demonstrated," what is this? I mean, it's the CFTC; they're supposed to be a good business. They're not even practicing good business. Most good-managed businesses use management by objectives. That's what we're talking about.

I see from "no results demonstrated," which tells me you're not even bothering to set goals and objectives and trying to reach those. Those are measurable goals and objectives.

If you go onto the Internet on expectmore.gov, enforcement of commodity futures and options, your rating is "not performing, results not demonstrated; the program lacks performance measures that illustrate whether the program meets its overall objectives. The program demonstrates through the existing performance measures that it brings substantive cases in a timely manner. The program is well-designed to meet its objectives and examine the use"—those are the three classifications.

You're classified as "results not demonstrated." So a question I have is, why aren't you doing this?

Mr. LUKKEN. Well, that's something I'll commit to you to look further into. I just got handed a note that we rated 80 out of 100. But this is something—

Senator ALLARD. Well, it's not showing up on expectmore.gov.

Mr. LUKKEN. It's my understanding that we did score, and on the enforcement program I know there was something we were trying to get a line item in the budget on so we can try to find measurable outcomes for the enforcement program. It's something I know we

want to look into, but I commit to you today that this is something we'll try to improve on.

Senator ALLARD. I've pulled into the second page. It's commodity futures trading—it's "Enforcement of commodity futures and options markets," and that's where the "results not demonstrated" is. That's the way it comes up on the report.

Mr. LUKKEN. Well, we'll make this a priority.

Senator ALLARD. You know, I think it's important. You know, if you can't demonstrate results and effectiveness, maybe you ought to be combined with the SEC, where they know how to do that. I served on the Agriculture Committee and I know you don't want to hear that suggestion. But I've tried to say something that catches your attention.

Mr. LUKKEN. I understand.

Senator ALLARD. I think things need to change there and it's something that I watch very closely. Whenever you show up—you've never had an opportunity to show up before me, but whenever you show up before me you can always expect me to have looked at your PART score to see what you're doing, because it's something I think that's quite helpful as policymakers for us to review.

I served on the Agriculture Committee. I've been pretty impressed actually with your programs, and I understand why you have speculators there and how important they are. I understand that most of your dealings that you have on commodities futures and trading are, they're hedging. They're buying and selling in a timely way so that they reduce their risk. And I think you serve a good and valuable function in that way and you help our markets a lot.

You want to increase your fees. Have you looked at how a fee increase might impact your global marketing?

Mr. LUKKEN. A fee increase has been suggested by OMB to try to help us with raising money. This is not something, a position that the Commission has taken, whether it's in support or not in support of a fee. I think we believe, and different Commissioners can talk about this, their own personal view, that this is something that Congress and OMB should have a discussion about, how to raise the money.

From my point of view, I'm here to describe how we spend the money, the types of programs we need to ensure illegal activity is not occurring on the marketplace.

Senator ALLARD. You're the only regulatory agency that doesn't collect a fee.

Mr. LUKKEN. That's my understanding, we're the only agency that does not have a fee.

Senator ALLARD. And I think your input is important. I wouldn't just leave it up to the OMB and Congress, because we don't understand the world markets. You're out there dealing in the world markets. You're dealing with other exchanges throughout the world and you understand, I think, the impact, how the impact would be on your customers and whether you continue to do business in a competitive way. So I hope you don't back away on that.

Thank you, Mr. Chairman.

Senator DURBIN. Senator Allard, I'm going to pass down this performance and accountability report. I had not seen it before, but the staff shared it with me. And we'll let you take a look at it. It may address some of your earlier questions, and see if it does.

Senator ALLARD. We just pulled this off the Internet before I came here to the subcommittee meeting. So maybe it's not updated there.

Senator DURBIN. Okay. Thank you.

Senator ALLARD. It's probably the same as what we've got in here.

IMPACT OF BIOFUELS MANDATE ON PRICE INCREASES

Senator DURBIN. Chairman Lukken, last month you had a roundtable at CFTC to talk about changes in the marketplace. I'm glad you did it. In your opening remarks you said: "During the last year the price of rice has increased 118 percent, wheat 95 percent, soybeans 88 percent, corn 66 percent, cotton and oats by 47 percent. These price levels, combined with record energy costs, have put a strain on consumers as well as many producers and commercial participants that utilize the futures market to manage risk and discover prices."

Now, the big question we're facing is the impact of the biofuels mandate on this phenomenon. I wonder if you could tell me whether or not you considered that element and have an opinion as to whether this biofuels mandate can be linked to any of these price increases?

Mr. LUKKEN. I think the economists that follow those markets very closely, our agricultural markets, believe ethanol is a factor that is affecting the price of not only corn, but other commodities around that may substitute acreage from corn. So this is something that we closely—I can't comment on the mandate itself, but certainly when nearly one-third of corn production is going now for biofuels, that's going to have an impact on corn, on wheat, on soybeans and others that may be involved or be interrelated to the price of corn.

Senator DURBIN. Have you considered—I'm told that there's still more American corn exported than converted to ethanol. Have you considered why that element is still there if in fact we have a short domestic market in corn?

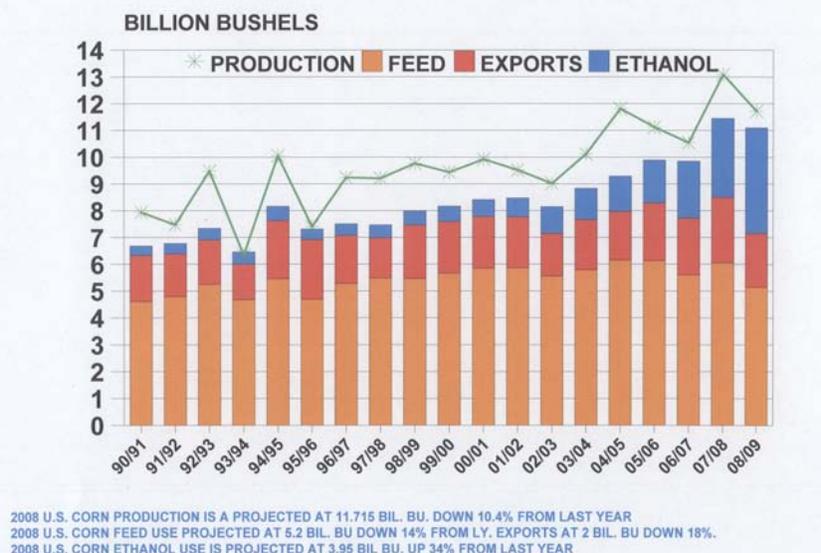
Mr. LUKKEN. I'm not sure if that's something we've studied intensively or not. But it's something we can get back to you on later.

Senator DURBIN. Would you, please.

Mr. LUKKEN. Yes.

[The information follows:]

U.S. CORN PRODUCTION AND SELECTED USE 1990 THROUGH 2008



CFTC—SEC COORDINATION

Senator DURBIN. The last question I have relates to the next panel and that is the memorandum of understanding (MOU) that I understand that you and SEC Chairman Cox have worked on. Could you comment on that and how you are trying to coordinate the activities of your two agencies?

Mr. LUKKEN. I think both Chairman Cox and I recognize how our agencies have to collaborate more as our markets become more intertwined. So this was the fruits of that labor, to sign an MOU that allows for information-sharing and for us to discuss the possibility of allowing novel derivative products to get to market quickly.

So we've taken it out for a test ride. There's a couple of Chicago exchanges, in fact, that have submitted products to us that we are—that are out for comment, on ETF gold products. We hope that those are finalized in the coming months. But we also hope to tackle other big issues, such as portfolio margining. To allow more efficient use of margin between the two marketplaces I think would be enormously helpful, and allowing more product choices to consumers.

Senator DURBIN. Have you run into any conflicts with the SEC trying to figure out where a new product coming to market should be regulated?

Mr. LUKKEN. Well, certainly we have differing missions. Theirs is capital formation. They have insider trading provisions that they have to think about. Ours are risk management markets. So we come at this from different angles. Certainly we have to discuss our

mandates and make sure that we can align those mandates properly.

Certainly we have differences of opinion, but we try to work through them, and understanding that collaboration is the way forward for both of our agencies.

Senator DURBIN. Thank you.

Senator Brownback.

Senator BROWNBACK. Thank you.

LONG CONTRACTS HELD BY INDEX FUNDS

What percentage of open long contracts are held by index funds? Do you have that number?

Mr. LUKKEN. I think it's about 30 percent across, 30 percent across the agricultural sector.

Senator BROWNBACK. Do you know about it in other sectors as well?

Mr. LUKKEN. Again, we only break this out for agricultural products at the moment. We're looking into whether we can do that, given resources, for energy complex.

Senator BROWNBACK. I really want to urge you to do that in the energy complex. But it's 30 percent of the positions across agriculture. Does that vary substantially based on what it is in—corn or wheat or beef?

Mr. LUKKEN. We do have a graph that we can give to your staff, but it ranges anywhere from about 45 percent in live cattle, which again I mentioned actually was in negative territory this year, down to around 15 percent in other commodities.

But they typically are somewhere in the range of 25 to 30 percent in the agricultural commodities.

Senator BROWNBACK. And what were they several years ago, if you'd know? Do you know any of those historic numbers?

Mr. LUKKEN. I think when we started tracking this they were about 27 percent, 27 to 28 percent. So they've grown slightly over the last couple years, but not significantly. We haven't seen a huge uptick in growth since we started tracking this in the agricultural area.

ETHANOL IMPACT ON GAS PRICES

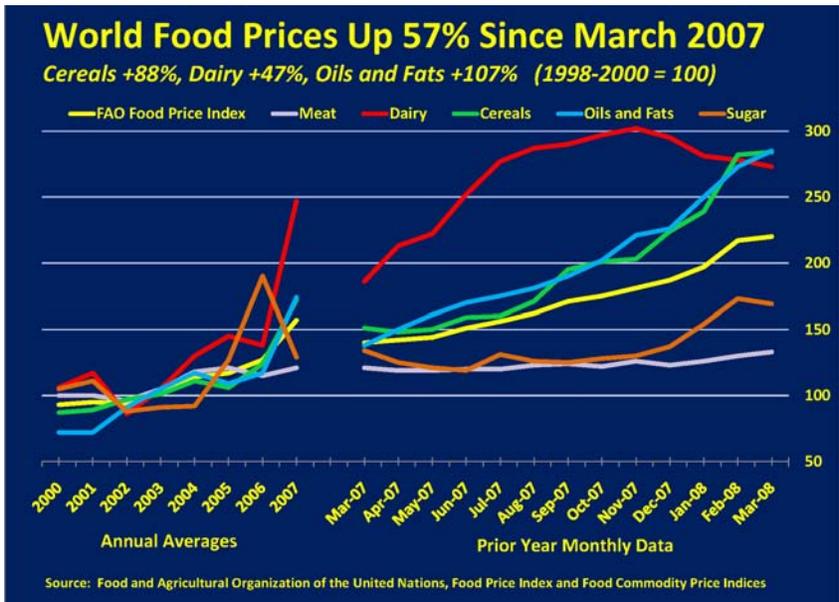
Senator BROWNBACK. You've noted that you think the price of corn is being impacted by ethanol, and certainly the ethanol consumption of corn would have an impact on corn prices. I don't know if you've tracked the impact of ethanol on gasoline prices. Do you track that at all?

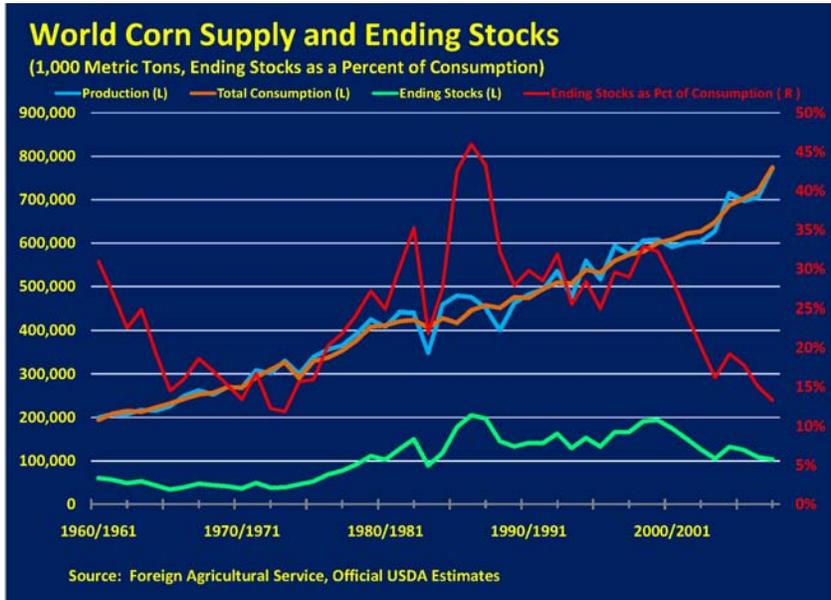
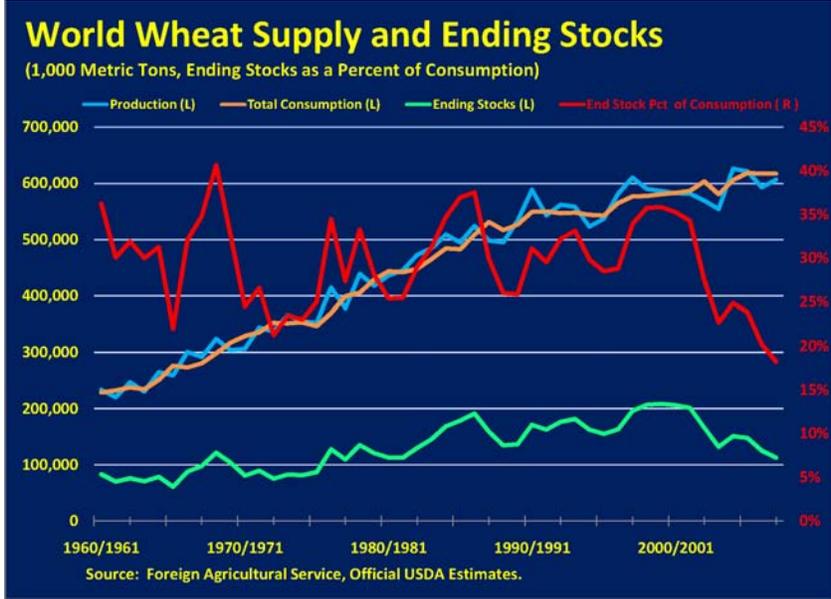
Mr. LUKKEN. I'm not sure this is something—no, I don't think so.

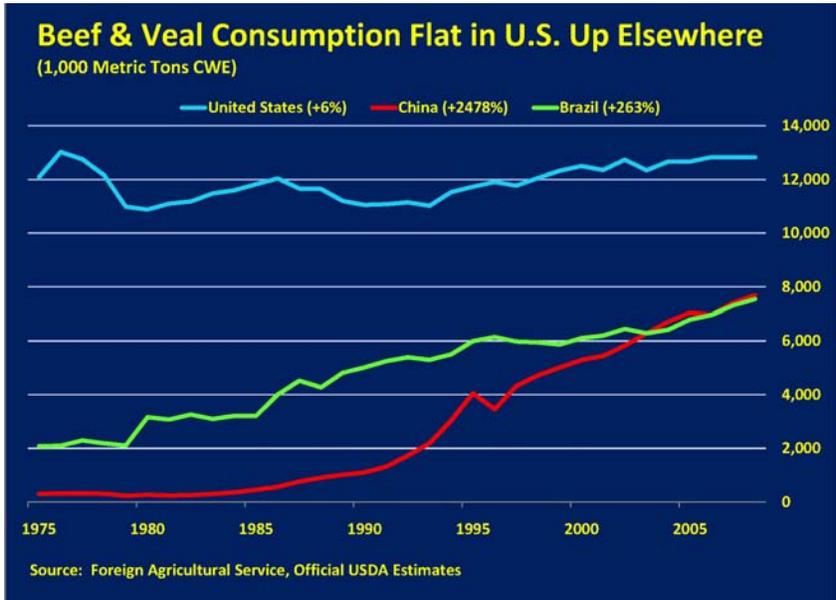
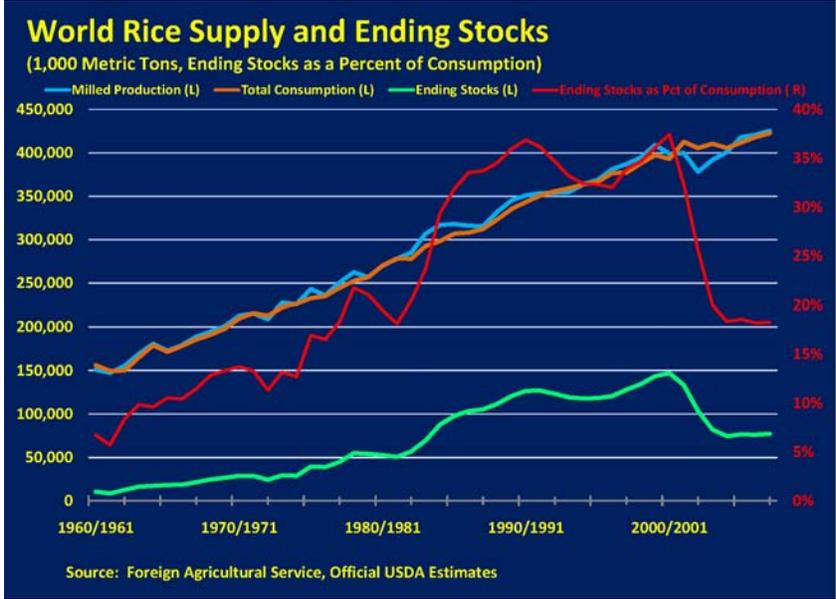
Senator BROWNBACK. Just for the record, I would put this out, and I've got a couple of charts and articles, Mr. Chairman, I would like to put in the record.

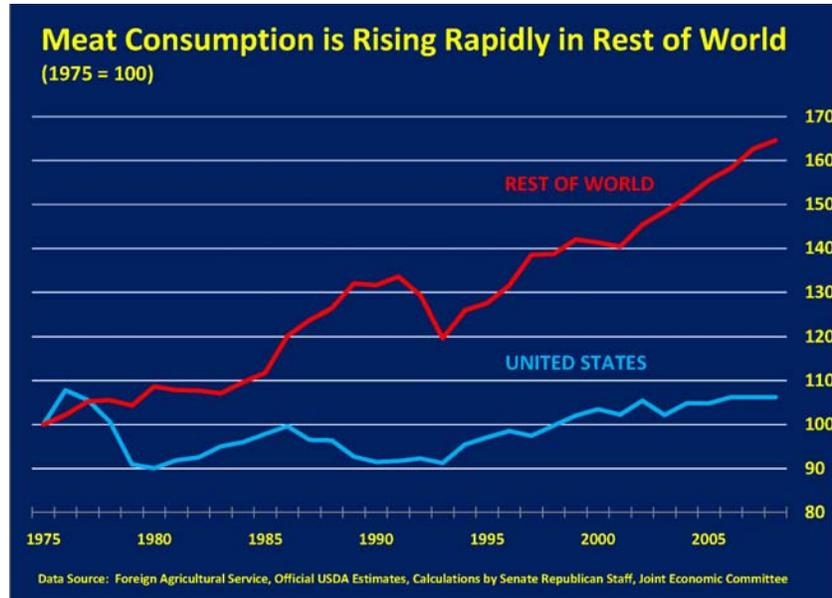
Senator DURBIN. Without objection.

[The information follows:]









[From The Wall Street Journal, Mar. 24, 2008]

AS BIOFUELS CATCH ON, NEXT TASK IS TO DEAL WITH ENVIRONMENTAL, ECONOMIC
IMPACT

(By Patrick Barta)

The world's economy is acquiring a new energy addiction: biofuels.

Crop-based fuels such as ethanol and biodiesel are quietly becoming a crucial component of the global energy supply, despite growing concerns about their impact on the environment and world food prices.

Biofuels production is rising rapidly, while other fuel sources are failing to keep pace with demand. As a result, biofuels are making up a larger portion of the world's energy-supply gap than many analysts expected. That means the debate over biofuels probably will shift from whether they are good or bad to the more difficult question of how to make sure their production keeps growing—without wreaking economic and environmental havoc.

Global production of biofuels is rising annually by the equivalent of about 300,000 barrels of oil a day. That goes a long way toward meeting the growing demand for oil, which last year rose by about 900,000 barrels a day.

Without biofuels, which can be refined to produce fuels much like the ones made from petroleum, oil prices would be even higher. Merrill Lynch commodity strategist Francisco Blanch says that oil and gasoline prices would be about 15 percent higher if biofuel producers weren't increasing their output. That would put oil at more than \$115 a barrel, instead of the current price of around \$102. U.S. gasoline prices would have surged to more than \$3.70 a gallon, compared with an average of a little more than \$3.25 today.

Biofuels are playing "a critical role" in satisfying world demand, says Fatih Birol, chief economist of the Paris-based International Energy Agency. Without them, "it would be much more difficult to balance global oil markets," he said.

The implications are huge. After an initial burst of enthusiasm in 2005 and 2006, environmentalists and some economists now blame biofuels for a host of global problems. These include a sharp jump in the price of corn and other biofuel crops, which has triggered a rise in global inflation and protests in poor nations.

Many environmentalists now believe biofuels contribute substantially to greenhouse gases—those responsible for global warming—instead of reducing them, as was previously believed, in part because farmers clear forest land to grow biofuel

crops. Scientists say deforestation causes a large, quick release of carbon into the atmosphere when existing plant life is destroyed.

International agencies, including the Food and Agriculture Organization of the United Nations, have called on governments to deal with problems caused by biofuels, and some countries have started to rethink their support for the fuels. But cutting back on them won't be easy. Just as developing nations continue to gobble up coal, despite the high environmental cost, Western consumers seem to want whatever it takes to ensure enough fuel for their cars.

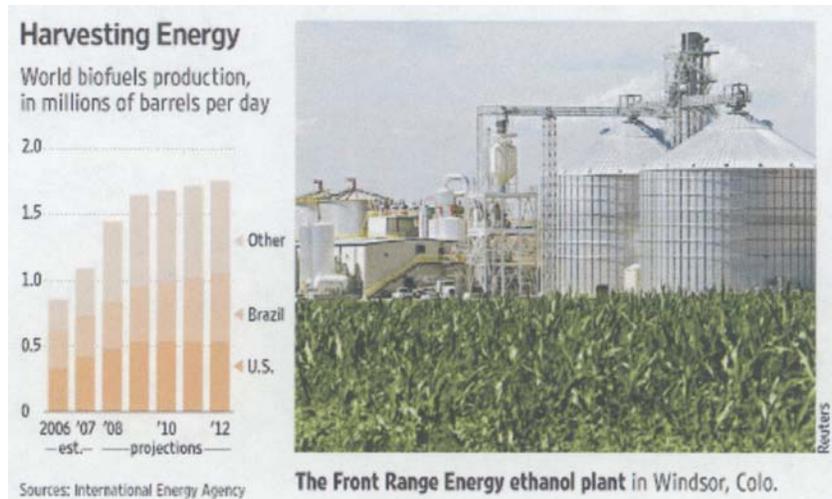
As global energy consumption grows, "there will be pressure to continue relying on these sources regardless" of their negative impacts, says Jeff Brown, a Singapore-based economist at consulting firm FACTS Global Energy Group. "The only other choice is higher [oil] prices."

It's possible newer biofuels will be developed that pose fewer problems. In India and Africa, farmers are expanding production of jatropha, an inedible shrub that is grown on marginal land and requires relatively little water. There also is rising interest in miscanthus, a perennial grass grown in Britain and elsewhere that can be used to generate energy without driving up the cost of crops needed for human consumption.

Still, most farmers prefer to grow biofuel crops they are familiar with, such as corn. And most "second-generation" biofuels are coming on more slowly than many experts had hoped, meaning it might be several years, if ever, before they are viable on a large scale.

It is also possible that "first-generation" biofuels like palm oil-derived biodiesel will run into constraints that would make it difficult to boost their production. The cost of raw materials like palm oil has shot up over the past year, cutting into profits for biofuel producers and forcing some to idle refineries or cancel new ones. It is also unclear whether there is enough land or water left to keep boosting biofuels' production at their current rate of increase.

But a slowdown in biofuel production would only tighten world energy markets—and further highlight the world's dependence on the fuels, especially as producers of traditional crude oil struggle to crank up their supply.



Earlier this month, Exxon Mobil Corp. said it planned to boost capital spending by several billion dollars in 2008 to roughly \$25 billion, and yet production levels will likely stay about the same this year. Mr. Blanch at Merrill Lynch says he expects new oil from producers outside the Organization of Petroleum Exporting Countries to taper off to as little as 300,000 barrels a day by 2011—about the equivalent of today's annual increase in biofuels production.

Production from OPEC is tougher to forecast, in part because of the unpredictable political forces that shape the group's decisions. Last year, however, the cartel's output, including that of new members Angola and Ecuador, declined by about 400,000 barrels a day, according to the IEA. OPEC has lately decided to hold production at its current levels despite oil prices in excess of \$100 a barrel.

All of that can only mean one thing: With so many challenges ahead for increasing oil supplies, the world will have to get used to relying on biofuels—or find yet another alternative, at a time when there aren't many.

THE RELATIVE IMPACT OF CORN AND ENERGY PRICES IN THE GROCERY AISLE

(John M. Urbanchuk, Director, LECG LLC, June 14, 2007)

Retail food prices measured by the Consumer Price Index (CPI) for food have begun to accelerate and are beginning to approach rates of increase last seen in mid-2004. Critics of renewable fuels are blaming the recent increases on high prices for corn caused by increasing ethanol production. They fail to point out that corn prices are only one of many factors that determine the CPI for food, and in fact, directly affect a small share of retail food prices. Increases in energy prices for example exert a greater impact on food prices than does the price of corn. A 33 percent increase in crude oil prices—which translates into a \$1.00 per gallon increase in the price of conventional regular gasoline—results in a 0.6 percent to 0.9 percent increase in the CPI for food while an equivalent increase in corn prices (\$1.00 per bushel) would cause the CPI for food to increase only 0.3 percent.

The purpose of this study is to examine and compare the impact on consumer food prices resulting from increases in petroleum and corn prices.

Background

The ethanol and corn industries are under attack by a wide range of critics for causing everything from sharply higher food prices for American consumers to shortages of and high prices for Mexican tortillas and even potentially higher tequila prices. Expansion of the ethanol industry to meet clean air standards and reduce dependence on imported petroleum has boosted demand for corn, the primary feedstock for U.S. ethanol. This increased demand has caused corn prices to rise to their highest levels since the drought of 1995. Critics contend that the recent increase in retail food prices measured by the CPI for food is the direct result of higher corn prices caused by ethanol demand and that an even larger increase in food prices is in store for American consumers.

The actual record on the relationship between ethanol, corn, and retail food prices is less clear. Over the past 5 years, ethanol production has more than doubled, increasing from 2.14 billion gallons in 2002 to 4.86 billion gallons in 2006. Over this same period, the demand for corn to produce ethanol has grown from 996 million bushels to 2.2 billion bushels. Over most of this period, cash market corn prices were relatively stable. From January 2002 through September 2006, corn prices averaged \$2.18 per bushel. However, between September 2006 and May 2007, corn prices jumped 61 percent to \$3.56 per bushel in May 2007.

During this same period, the CPI for food averaged a year-over-year increase of 2.4 percent. In fact, the inflation rate for food declined from a 5-year peak of 4.1 percent in May 2004 to a 2.5 percent year-over-year rate in September 2006. However, since September 2006 the CPI for food has accelerated to a year-over-year rate of 3.7 percent in April 2007, an increase of 1.2 percent. During this same period, cash market corn prices increased \$1.15 per bushel. While it is tempting to blame the entire increase in food price inflation over the past 8 months on higher corn prices, most of the increase in food prices was the result of foods not impacted by corn such as fish, fruits and vegetables, sugar and sweeteners, and food away from home. Meat, poultry, eggs, and dairy products—the foods where corn is a major input and are most affected by rising corn prices—accounted for about 0.2 percent of the 1.2 percent acceleration in food price inflation between September 2006 and April 2007. Rising energy prices had a more significant impact on food prices than did corn.

Year-over-year increases in the CPI for all items, CPI for food and selected components are shown in Table 1.

TABLE 1.—CPI URBAN WORKERS
[Percent change, year-over-year]

	All items	All food	Cereals and bakery products	Meat, poultry, fish	Beef and veal	Pork	Poultry	Eggs	Dairy
2002	1.6	1.8	2.2	0.5	0.1	-0.4	1.3	1.3	0.6
2003	2.3	2.2	2.4	4.0	9.0	1.9	1.3	13.8	-0.1
2004	2.7	3.4	1.6	7.4	11.5	5.6	7.5	6.2	7.3
2005	3.4	2.4	1.5	2.4	2.6	2.0	2.0	-13.7	1.2
2006	3.2	2.4	1.8	0.8	0.8	-0.2	-1.8	4.9	-0.5
January 2007	2.1	2.4	2.7	1.7	0.2	1.4	0.2	11.8	-0.1
February 2007	2.4	3.1	4.1	1.7	1.4	0.5	1.0	29.1	0.2
March 2007	2.8	3.3	3.6	2.8	2.3	2.2	2.1	20.8	1.5
April 2007	2.6	3.7	4.5	3.7	4.7	0.7	4.6	18.6	2.5

Annual average and recent monthly average market prices for corn, soybean meal, Distiller's grains, and regular gasoline are shown in Table 2. The shift in corn prices that occurred in late 2006 is clearly evident and has been mirrored by soybean meal and Distiller's grains. During this same period energy price also accelerated rapidly. For example, the national average price of conventional regular gasoline increased 89 cents per gallon (39 percent) between October 2006 and May 2007.

TABLE 2.—MARKET PRICES FOR FEED AND GASOLINE

Calendar year	Corn No. 2 Yellow central Illinois (\$/bushel)	SBM High Pro decatar (\$/cwt)	DDG L'burg (\$/cwt)	Regular gasoline (\$/gallon)
2002	\$2.17	\$167.36	\$81.55	\$1.38
2003	2.29	200.00	91.66	1.60
2004	2.39	237.01	105.18	1.89
2005	1.90	188.08	75.71	2.31
2006	2.41	175.85	89.01	2.62
January 2007	3.66	190.56	118.00	2.29
February 2007	3.90	208.81	129.00	2.32
March 2007	3.76	205.26	130.88	2.61
April 2007	3.36	.....	.....	2.89
May 2007	3.56	.....	.....	3.19

Livestock and poultry producers are beginning to respond to higher feed costs by slowing the growth in animal numbers and market prices are reflecting these changes. However, corn prices are only one of several factors that impact livestock and meat production.

—Heavy cow and calf slaughter and early placement of feeder cattle in feedlots have combined with poor fall and winter pasture conditions and higher grain prices to set the stage for slower growth in cattle numbers through early 2008. This will in turn slow growth in beef production in 2008 and support higher beef prices.

—Growth in hog inventories are expected to be constrained by higher feed costs. However, this will be offset by growth in domestic demand supported by a stronger consumer economy and increases in exports as China turns to the U.S. to offset sharply reduced domestic pork production.

—Higher feed costs will dampen broiler producer's zest to sharply expand production. However, producers will respond to higher prices for red meat and growth in real disposable income that will support demand growth. This will moderate any potential sharp increases in broiler prices in 2008.

Recent data for beef, pork, and broiler production and market prices are summarized in Table 3.

TABLE 3.—SELECTED LIVESTOCK, POULTRY PRODUCTION, AND PRICES

	Cattle on feed (thousands of head)	Beef and veal production (millions of pounds)	Steer price Omaha direct (\$/cwt)	Pork production (millions of pounds)	Barrows and gilts national base	Hog and pig inventory (thousands of head)	Broiler production (millions of pounds)	Broiler price 12-city average (\$/cwt)
2002	9,910	27,090	\$67.04	19,664	\$34.91	59,722	32,240	\$55.52
2003	9,124	26,238	84.69	19,945	39.45	59,554	32,749	62.00
2004	11,253	24,547	84.75	20,511	52.48	60,444	34,063	74.10
2005	11,299	24,682	87.28	20,685	50.01	60,975	35,365	70.80
2006	11,726	26,071	85.41	20,999	47.28	61,449	35,752	64.30
January 2007	11,974	2,178	86.75	1,898	44.04	62,149	3,015	70.43
February 2007	11,726	1,965	88.68	1,636	48.60	.....	2,656	75.89
March 2007	11,599	2,131	96.39	1,861	46.00	.....	2,903	78.66
April 2007	11,644	2,027	98.04	1,711	48.43	.....	2,905	78.63
May 2007 .....	.....	2,279	95.90	1,759	54.00	.....	3,259	80.50

Analysis

Retail food prices are not likely to accelerate significantly in 2008 and beyond, even as ethanol production continues to expand. In fact, consumers will be more severely affected by rising gasoline and energy prices than by increases in corn prices.

Increasing petroleum prices have about twice the impact on consumer food prices as equivalent increases in corn prices. A 33 percent increase in crude oil prices—the equivalent of \$1.00 per gallon over current levels of retail gasoline prices—would increase retail food prices measured by the CPI for food by 0.6 to 0.9 percent. An equivalent increase in corn prices—about \$1.00 per bushel over current levels—would increase consumer food prices only 0.3 percent.

The reason for the larger impact on food prices from petroleum and energy prices stems from the relative importance of energy in food production, packaging, and distribution compared to that of a single ingredient. While petroleum and energy prices affect virtually all aspects of agricultural raw material transportation, processing, and distribution of all finished consumer food products, corn prices affect only a segment of consumer foods—livestock, poultry, and dairy. Corn is an important feed ingredient for livestock and poultry producers and changes in corn prices can have significant impacts on profitability and production. However, meat, poultry, fish, eggs, and dairy products account for only one-fifth of the CPI for food which, in turn, is only 15 percent of the overall CPI.

Crude oil and refined petroleum prices have increased sharply over the past several years and have put considerable pressure on consumers. Energy plays a significant role in the production of raw agricultural commodities, transportation and processing, and distribution of finished consumer food products. Several studies have looked at the impact of increased energy prices on food prices.

—Reed, Hanson, Elitzak and Schluter utilized three different model structures to examine the impact of a doubling of crude oil prices on the CPI for food.¹ They conclude that the short run impact of a doubling (e.g., 100 percent increase) in crude oil prices would cause a 1.82 percent rise in average food prices in the short run and 0.27 percent in the long run.

—A more recent analysis published by Chinkook Lee examined the impact of energy price increases as an intermediate input for food processing and concluded that a 10 percent increase in energy prices results in a 0.2709 percent increase in the purchase (consumer) price of food and kindred products prices.²

As pointed out, earlier corn prices also have increased significantly over the past year as the markets have recognized the impact of increasing ethanol production on corn demand. The price of No. 2 Yellow corn at Central Illinois averaged \$3.56 per bushel in May 2007, nearly 60 percent higher than year ago levels. The USDA and many private sector forecasters project ethanol production to exceed 15 billion gallons by 2017, utilizing more than 4 billion bushels of corn and maintaining corn prices well above \$3.00 per bushel for most of the decade.

We evaluated the impact of an increase in petroleum prices on consumer prices food prices by applying the impact elasticities summarized above to an assumed 33 percent increase in crude oil (the equivalent of a \$1.00 increase in retail gasoline prices from current levels). To determine the impact of an increase in corn prices on livestock, poultry, dairy and consumer food prices we imposed a 33 percent increase in corn prices (about \$1.00 per bushel from current levels) on the current LECG agricultural sector baseline forecast over the 5-year period 2007 through 2012. This is consistent with the increase in corn prices that has occurred over the past year.

The analyses by Reed and Lee indicate that a 33 percent increase in oil/energy prices would increase retail food prices by 0.6 percent and 0.9 percent. Reed indicates that a 100 percent increase in crude oil prices results in a short-term increase of 1.82 percent in consumer food prices while Lee reports that a 10 percent increase in energy prices provides a 0.2709 percent increase in retail food prices. Restating these on an equivalent 33 percent basis (1.82 percent times .33 and 0.2709 times 3.3) provides the 0.6 to 0.9 percent range.

As shown in Table 4, the equivalent 33 percent increase in corn prices over the 5-year period is expected to reduce beef, pork, and broiler production by 2.6 percent between 2008 and 2012 and increase prices by 2.4 percent. Combined with higher turkey, egg, and dairy prices, the CPI for food is projected to increase an additional 0.3 percent. This result is consistent with the 0.2 percent contribution to food price

¹A.J. Reed, Kenneth Hanson, Howard Elitzak, and Gerald Schluter. "Changing Consumer Food Prices: A User's Guide to ERS Analyses". USDA Economic Research Service. Technical Bulletin 1862. June 1997.

²Lee, Chinkook. "The Impact of Intermediate Input Price Changes on Food Prices: An Analysis of "From-the-Ground-Up" Effects." *Journal of Agribusiness* 20, 1 (Spring 2002).

inflation between September 2006 and April 2007 from meat, poultry, fish, and dairy and the \$1.15 per bushel increase in cash market corn prices.

TABLE 4.—IMPACT OF A \$1.00 CORN PRICE INCREASE ON LIVESTOCK, POULTRY, AND CONSUMER FOOD PRICES

[Average 2008–2012]

	Baseline	Scenario	Percentage change
Corn Price, Average Farm (\$/bu)	\$3.10	\$4.10	33.0
Beef and Veal Production (millions of pounds)	25,778	25,749	−0.1
Pork Production (millions of pounds)	21,057	20,696	−1.7
Broiler Production (millions of pounds)	35,530	33,740	−5.0
Steer Price, Omaha Direct (\$/cwt)	\$98.41	\$98.59	0.2
Barrows and Gilts, Market (\$/cwt)	\$49.95	\$50.99	2.1
Broilers, 12-City Average (cents/lb)	\$77.90	\$82.09	5.4
CPI, Food (percent)	2.3	2.6	0.3
CPI, Food at Home (percent)	1.9	2.2	0.3
CPI, Meats, Poultry, Eggs (percent)	1.4	2.1	0.7

Conclusion

The days of cheap corn are more likely than not over. Livestock and poultry producers who enjoyed low and relatively stable corn (and other feed) prices over most of the past decade are now faced with the challenge of adjusting to an environment of higher feed prices. The new reality is that corn prices are likely to remain nearer to the \$3.00 per bushel than the \$2.00 per bushel mark for an extended period. The good news is that prices may be more stable as corn production expands to meet ethanol requirements and new ethanol feedstocks and technologies emerge. Livestock and poultry producers also will have an incentive to increase use of the ethanol coproduct Distiller's grains in order to control feed costs. This medium protein feed component can be used in place of corn in a substantial portion of the feed ration. As ethanol production expands, so will production of Distiller's grains and thus putting downward pressure on prices.

Corn and energy prices both affect consumer food prices. However, since increases in corn prices are limited to a relatively small portion of the overall CPI for food, an increase in corn prices resulting from higher ethanol demand or a supply disruption such as a major drought is expected to have about half the impact of the same percentage increase in petroleum and energy prices.

APPENDIX TABLE 1.—CPI ALL URBAN WORKERS
[Percent change from previous year]

	All items	All food	Cereals and bakery products	Beef	Pork	Poultry	Eggs	Dairy products	Fruits and vegetables	Fats, oils
January 2004	1.9	3.5	2.1	20.4	5.4	5.5	30.5	3.6	2.3	3.1
February 2004	1.7	3.3	1.3	16.1	3.6	4.1	31.2	2.9	2.9	2.3
March 2004	1.7	3.2	1.3	12.8	5.5	6.1	33.2	2.9	2.9	5.5
April 2004	2.3	3.4	1.8	13.2	4.8	5.9	26.4	4.9	3.2	6.5
May 2004	3.1	4.1	1.5	15.9	6.6	9.5	19.0	12.4	2.4	7.5
June 2004	3.3	3.7	1.5	16.0	6.3	8.9	10.1	15.2	-0.3	9.5
July 2004	3.0	4.0	1.3	15.4	7.0	9.5	6.3	14.0	-0.9	10.0
August 2004	2.7	3.5	1.3	14.2	7.4	10.5	-1.0	10.4	-0.4	7.6
September 2004	2.5	3.3	1.4	12.2	6.2	9.8	-9.6	6.6	0.7	8.1
October 2004	3.2	3.4	1.9	7.4	5.3	8.3	-12.4	6.0	6.1	6.6
November 2004	3.5	3.2	2.1	0.6	5.2	6.3	-21.1	5.7	9.1	6.7
December 2004	3.3	2.7	1.7	-0.9	4.7	5.1	-19.9	4.1	7.9	6.2
January 2005	3.0	2.9	1.8	1.5	5.5	5.3	-23.0	6.3	4.5	6.0
February 2005	3.0	2.6	2.0	3.5	6.3	4.5	-21.5	5.6	2.2	4.3
March 2005	3.1	2.5	1.8	6.0	4.5	4.0	-27.0	5.5	1.6	0.5
April 2005	3.5	3.1	1.8	5.3	7.0	3.4	-25.9	4.7	5.2	1.9
May 2005	2.8	2.4	1.7	5.0	2.8	1.2	-18.6	-1.4	5.6	-0.9
June 2005	2.5	2.2	1.3	3.3	1.8	1.3	-17.3	-4.1	5.2	-4.0
July 2005	3.2	2.1	1.1	0.8	0.1	0.5	-11.9	-3.2	7.0	-2.7
August 2005	3.6	2.2	1.4	0.8	-0.7	0.1	-12.2	-1.1	5.6	-1.2
September 2005	4.7	2.5	0.9	0.5	-1.0	1.3	1.4	0.1	6.5	-0.6
October 2005	4.3	2.2	1.2	1.4	-0.8	-0.2	-0.6	0.3	2.4	-0.9
November 2005	3.5	2.2	1.1	1.2	-0.2	2.3	5.3	1.4	-0.8	-1.0
December 2005	3.4	2.3	1.0	2.2	-0.1	0.3	1.4	1.7	0.6	-1.3
January 2006	4.0	2.6	1.4	2.8	-1.7	-1.3	8.3	0.2	6.4	-0.3
February 2006	3.6	2.8	0.9	1.3	-1.7	-0.3	-3.1	0.9	7.9	0.6
March 2006	3.4	2.6	1.2	1.2	-1.0	-1.6	5.5	0.9	6.3	0.9
April 2006	3.5	1.8	0.9	0.7	-1.9	-2.0	8.7	-0.5	2.7	-2.6
May 2006	4.2	1.9	1.0	-1.7	-0.8	-2.0	2.4	-1.3	1.3	0.5
June 2006	4.3	2.2	1.6	-1.9	-1.0	-1.4	8.9	-0.8	4.0	1.7
July 2006	4.1	2.2	2.5	-0.5	0.2	-2.7	0.5	-0.4	3.7	-0.2

APPENDIX TABLE 1.—CPI ALL URBAN WORKERS—Continued

[Percent change from previous year]

	All items	All food	Cereals and bakery products	Beef	Pork	Poultry	Eggs	Dairy products	Fruits and vegetables	Fats, oils
August 2006	3.8	2.4	2.1	1.4	1.1	-1.7	6.0	-1.6	5.3	-0.1
September 2006	2.1	2.5	2.5	1.6	1.3	-2.6	-0.8	-1.0	7.2	-0.9
October 2006	1.3	2.6	2.5	2.0	1.6	-1.9	1.5	-0.3	6.5	0.3
November 2006	2.0	2.3	2.6	2.4	0.1	-3.1	6.6	-1.6	4.2	1.1
December 2006	2.5	2.1	3.1	0.5	0.7	-0.7	14.1	-1.2	1.9	0.9
January 2007	2.1	2.4	2.7	0.2	1.4	0.2	11.8	-0.1	1.7	0.2
February 2007	2.4	3.1	4.1	1.4	0.5	1.0	29.1	0.2	6.0	0.8
March 2007	2.8	3.3	3.6	2.3	2.2	2.1	20.8	1.5	6.2	1.4
April 2007	2.6	3.7	4.5	4.7	0.7	4.6	18.6	2.5	6.2	2.9

THE IMPACT OF ETHANOL PRODUCTION ON U.S. AND REGIONAL GASOLINE PRICES AND
ON THE PROFITABILITY OF THE U.S. OIL REFINERY INDUSTRY

ABSTRACT

Using pooled regional time-series data and panel data estimation, we quantify the impact of monthly ethanol production on monthly retail regular gasoline prices. This analysis suggests that the growth in ethanol production has caused retail gasoline prices to be \$0.29 to \$0.40 per gallon lower than would otherwise have been the case. The analysis shows that the negative impact of ethanol on gasoline prices varies considerably across regions. The Midwest region has the biggest impact, at \$0.39/gallon, while the Rocky Mountain region had the smallest impact, at \$0.17/gallon. The results also indicate that ethanol production has significantly reduced the profit margin of the oil refinery industry. The results are robust with respect to alternative model specifications.

Keywords: crack spread, crude oil prices, ethanol, gasoline prices.

Introduction

Fuel ethanol production in the United States increased from 1.63 billion gallons in 2000 to 7.22 billion gallons in 2007 (RFA). In comparison, the United States consumed approximately 146 billion gallons of petroleum in 2007 (EIA). The purpose of this paper is to estimate the impact of this increase in ethanol supply on the U.S. gasoline market.

Ethanol is blended with gasoline to improve octane and performance in about 50 percent of the Nation's gasoline supply. Typically, a gallon of ethanol blend will have 10 percent ethanol and 90 percent gasoline. This gallon of ethanol blend will contain approximately 97 percent of the energy of a gallon of gasoline (Tokgoz et al. 2007) and will use approximately one-tenth as much fuel energy to produce as it contains (Wang et al. 2007). Therefore, ethanol has essentially added to U.S. gasoline supplies by utilizing solar energy to grow the crop, coupled with energy from natural gas and coal to manufacture the farm equipment and fertilizer used in crop production.

In order to identify the separate impact of ethanol on gasoline prices, we need to separate the impact of ethanol from the other forces driving gasoline prices. We do so by examining the price of gasoline relative to the price of crude oil. We also estimate the impact of ethanol on the profits made by refiners. Both estimates are calculated for the United States as a whole and for each of five regions within the United States. The motivation for conducting the regional analysis is that if ethanol is affecting gasoline prices, then we hypothesize that this impact will be largest in the Midwest where regional ethanol production and utilization is at its maximum.

The paper proceeds as follows. First, background information regarding previous work, relative gasoline prices, and the use of the crack spread as a measure of industry profitability are introduced. We then describe the five regional "Petroleum Administration for Defense Districts" (PADDs) that are the basis for the analysis. Next, we present a detailed description of and motivation for the explanatory variables. We also provide a description of and motivation for the three estimation methods that are used. The last section summarizes the results.

Previous Work

Quantitative analysis of the effect of ethanol on gasoline prices and on the profitability of the refinery industry has been largely neglected in the literature. Eidman (2005) points out that ethanol largely acts as a fuel extender. He also shows that there has been a strong positive correlation between ethanol and gasoline prices. Employing an international ethanol model consisting of behavioral equations for production, consumption, and trade, Tokgoz and Elobeid (2007) analyze the price linkage between ethanol and gasoline markets. They conclude that ethanol is mainly used as an additive to gasoline and that the complementary effect of ethanol dominates the substitution effect on gasoline prices. Szklo, Schaeffer, and Delgado (2007) conclude that by replacing methyl tertiary butyl ether (MTBE), which is a traditional additive used as an oxygenate to raise the octane number, ethanol blending will not reduce gasoline use until flexible fuel vehicles become widely available. Vedenov et al. (2006) apply a continuous-time option pricing method to calculate the decision threshold of switching to ethanol. Their empirical analysis suggests that blending ethanol into gasoline would generate lower gasoline price volatility and that switching from conventional gasoline to an ethanol blend is an economically sound decision.

The "3:2:1 crack spread" is used as one of the significant indicators of refinery profitability. It is a term used in the oil industry and futures trading as a proxy for the profitability of refineries. Although there is some qualitative description of

its determinants, formal quantitative analysis is limited in the literature. Asche, Gjolberg, and Völker (2003) examine the price relationships among crude oil and refined products. They find that the crude oil price is weakly exogenous and that the spread is constant among some of the prices. Girma and Paulson (1998) examine the crack spread of daily futures prices of crude oil and heating oil. Girma and Paulson (1999) investigate the long-run relationship among crude oil, gasoline, and heating oil futures prices and find the prices are co-integrated. They also find a stationary relation between crude oil and its end products.

In the literature on mergers in the refinery industry, several studies rely on analysis of the price margin, which is defined as wholesale prices of gasoline less crude oil prices. The Government Accounting Office (GAO 2004) models the price margin as a function of the crude oil price, inventory ratio, utilization rate, and dummy variables representing a merger and acquisition event. Geweke (2003) provides a comprehensive survey on this subject.

The degree of market concentration has been long recognized and analyzed in the literature seeking to explain price changes and adjustment in the wholesale gasoline market. Focusing on Gulf Coast, Los Angeles, and New York whole spot gasoline markets, Oladunjoye (2007) investigates the effects of market structure on the pattern of price adjustment and finds that market concentration has a significant asymmetric effect on gasoline price changes responding to crude price shocks. The GAO (2004) concludes that mergers and increased market concentration generally led to higher wholesale gasoline prices in the United States from the mid-1990s through 2000. Examining wholesale price responses in 188 gasoline markets in the United States, Borenstein and Shepard (2002) find that refinery firms with market power generally choose a different adjustment rate and adjust prices more slowly than do competitive firms.

Background

The 3:2:1 crack spread is defined as

$$\pi = \frac{2}{3}P_G + \frac{1}{3}P_H - P_O$$

where P_G , P_H , and P_O are the prices of regular gasoline, no. 2 heating oil, and crude oil, respectively.

The 3:2:1 crack spread has been institutionalized over the years as a way to measure the refinery margin. The use of the 3:2:1 crack spread is justified by the fact that among all finished products converted from crude oil in the refinery process, gasoline and distillate fuel oil are the two primary product classes. The relative proportion of these two products is approximately two barrels of gasoline to one barrel of distillate fuel. Together, gasoline and distillate fuel comprise about 80 percent of the refinery yield. The average refinery yield of finished motor gasoline is about 46 percent and has been stable over the 1993–2007 sample period (DOE).

The West Texas Intermediate (WTI) crude oil price, which is priced at Cushing, Oklahoma, is chosen to represent the crude oil price in this study. The reason is that WTI-Cushing is one of the most widely traded and price-transparent crude oils in the U.S. crude oil market.

We use the Petroleum Administration for Defense Districts (PADDs) to define refinery product markets. This market definition was formed during World War II for the purpose of administering oil allocation. The PADDs are still used by the Department of Transportation (DOT) and Energy Information Administration (EIA) for statistical and reporting purposes. The five regions are East Coast (PADD I), Midwest (PADD II), Gulf Coast (PADD III), Rocky Mountain (PADD IV), and West Coast (PADD V). These five geographically distinct regions are also very different in terms of their economic conditions, oil and petroleum characteristics, oil-related pipeline infrastructure, and local product supply and demand conditions.

Because of its high population density, the East Coast PADD I has the highest demand for refined products in the country, but it has very limited refinery capacity. Its regional demand is largely satisfied by the Gulf Coast and by foreign imports. The Midwest PADD II is distinct in its coexistence of a highly industrialized section and a rural agricultural section. It also leads the Nation in ethanol production, mainly because of its leading role in corn production, the primary feedstock for ethanol production. For example, Iowa had 30 ethanol plants in operation by the end of 2007 and produces nearly 2.1 billion gallons of ethanol annually. Much of the crude oil used in the Midwest is piped in from the Gulf Coast and Canada. One place worth mentioning in this region is Cushing, Oklahoma, which is the major crude oil transportation hub for the Midwest.

The Gulf Coast region, including Texas, Louisiana, New Mexico, Arkansas, Alabama, and Mississippi, produces over 50 percent of the Nation's crude oil and 47 percent of its final refined products. This region also serves as a national hub for crude oil and is the center of the pipeline system. The Rocky Mountain region, or PADD IV, has the smallest and fastest-growing oil market in the United States, with only 3 percent of national petroleum product consumption. The West Coast region, PADD V, is the largest oil-producing and consuming region. This region's oil supply is independent of

other regions since it is geographically separated by the Rocky Mountains. In addition, the refinery market of this region is highly concentrated.

Data

The gasoline price relative to that of crude oil is used as a dependent variable to measure ethanol's possible substitution effect on the gasoline price, while the 3:2:1 crack spread is employed as a dependant variable to quantify the effect of ethanol on the refinery profit margin. Figure 1 presents the relative gasoline to crude oil price over the 1995–2007 period. Figure 2 is for the 3:2:1 crack spread deflated by Producer Price Index (PPI) for crude energy material for five PADD regions over the same sample period. The PPI data are obtained from the U.S. Bureau of Labor Statistics.

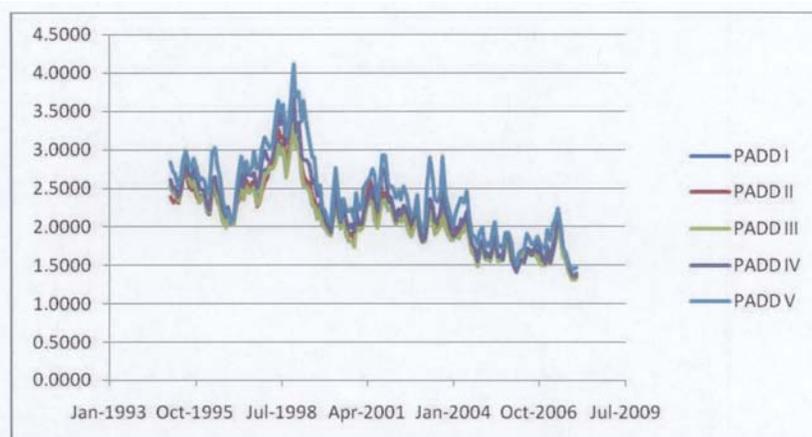


Figure 1. Relative Gasoline Price, 1995-2007

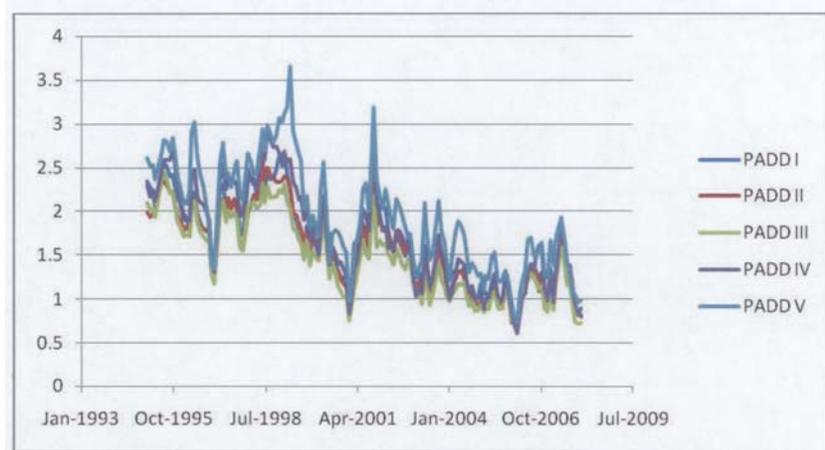


Figure 2. Deflated 3:2:1 Crack Spread, 1995-2007

The relative gasoline price is similar to crack spread in the sense that both are measurements of profitability of the refinery industry. The difference is that relative gasoline prices only account for the contribution of gasoline to the profit margin. It is employed in this study to quantify the substitution effect of ethanol production on gasoline prices. Relative gasoline prices and the refinery profit margin are mainly determined by similar explanatory variables. The explanatory variables included in this study are market demand and supply conditions, refinery capacity and utilization rate, market concentration and structure, unexpected supply disruptions, gasoline imports, seasonality, and ethanol production. Each of these chosen variables and its relationship with the relative gasoline price and refinery profitability is discussed in greater detail in this section.

Crude and Product Market Conditions

The gasoline price and refinery profitability are affected by the supply and demand balances of the crude market and product market. When the crude oil market has ample stocks, refinery profit should increase because of lower crude oil prices. Alternatively, when there are large stocks of gasoline and other refinery products, refinery profits should fall because of lower product prices. A tight product market will generate upward pressure on product prices even when there is an ample supply of crude oil. That is, product prices are bid up by more than any underlying cost increases. This upward movement relative to crude oil prices will be seen as an increase in the relative price and crack spread. We use monthly crude oil inventory and gasoline inventory data collected by the EIA to represent the conditions in these two markets. The gasoline stock and crude oil stock data for the East Coast region from 1995 to 2007 are shown in Figures 3 and 4, respectively.

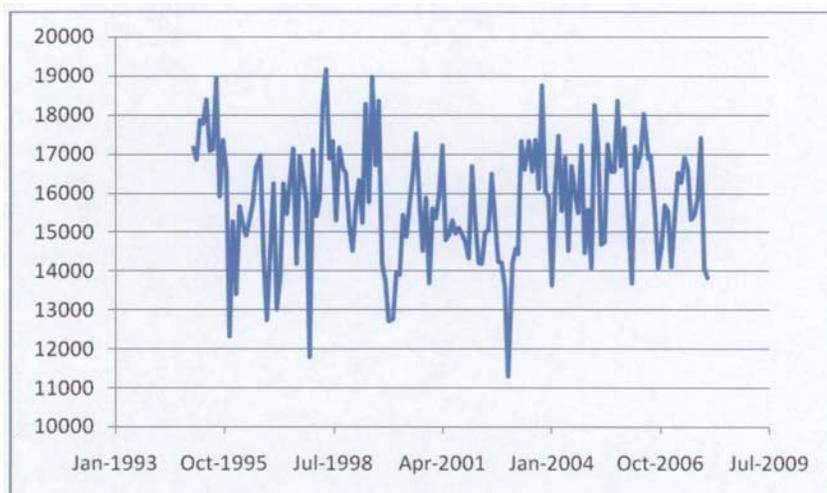


Figure 3. Month-End Oil Stock for PADD 1 (1995-2007)

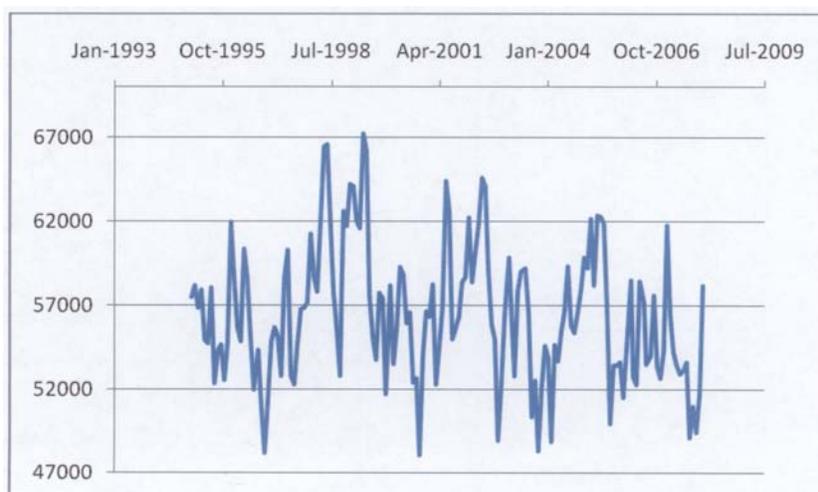


Figure 4. Month-End Gasoline Stock for PADD I (1995-2007)

Refinery Capacity and Capacity Utilization Rate

Refinery capacity is a critical factor influencing the profitability of the refinery industry. Figure 5 presents the operable crude oil distillation capacity in the five PADD regions from 1995 to 2007. In this figure, refinery capacity is represented by monthly data of atmospheric crude oil distillation units (barrels per calendar day). Total refinery capacity increased by 13 percent over the past 12 years, with PADD III, the Gulf Coast, having the highest growth of 19 percent. The lowest increase in capacity occurred in the Midwest, with a 4 percent growth over the same period.

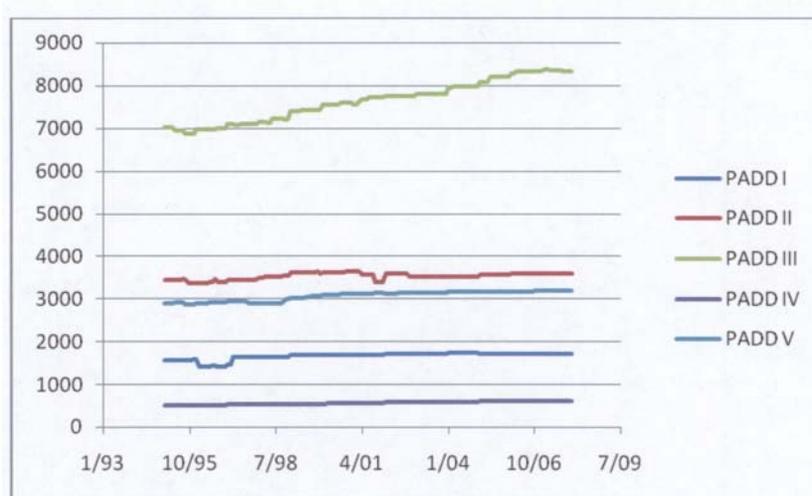


Figure 5. Operable Crude Oil Distillation Capacity (1,000 Barrels/Day)

The monthly percent refinery capacity utilization rates for 1995 to 2007 for PADDs II, III, and V are shown in Figure 6. Here, refinery capacity utilization is based on gross input to atmospheric crude oil distillation units divided by the refinery operable distillation capacity. The average rate over five regions is 92 percent, which means that capacity utilization has increased significantly and refineries are running at high rates of utilization. Refinery capacity and its utilization rate are variables that will affect gasoline price and refinery profits via higher prices for products and possible increases in marginal costs.

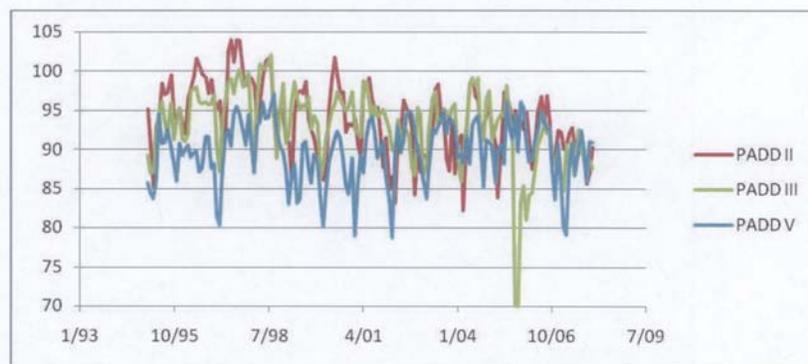


Figure 6. Percent Utilization of Refinery Operable Capacity (PADDs II, III, and V)

Market Concentration

Mergers and acquisitions among refinery firms may potentially further reduce the competition in the refinery market, thus possibly leading to a higher refinery margin. To measure the level of market concentration, the Herfindahl-Hirschman Index (HHI) is commonly applied in the literature. The HHI of a market is calculated by

summing the squares of the percentage market shares held by the respective firms as

$$HHI_t = \sum_{i=1}^{N_t} S_{it}^2$$

where S_{it} is the market share of a specific firm in the corresponding production market with total firms of N_t at year t . A market with an HHI less than 1,000 is considered to be a competitive market; 1,000–1,800 to be a moderately concentrated market, and greater than 1,800 to be a highly concentrated market.

We constructed an HHI for the five PADD regions over the period 1995 to 2007, and we present this information in Figure 7. The HHI for the refinery market in PADD I increased from 1,558 to 2,335 from 1995 to 2007 and changed from a moderately concentrated to a highly concentrated market using Department of Justice definitions. Since much of this region's refinery product supply is from other regions, the impact of this increased concentration may be small. The refinery market in PADD II, the Midwest, suggests that this is a competitive market, although its HHI increased to 960 in 2007. Similar to the Midwest region, PADD III, the Gulf Coast, also has a competitive refinery market as of the end of 2007. The HHI for PADD IV, the Rocky Mountain region, decreased from 1,025 to 930, which suggests that its refinery market became less concentrated than before. The HHI for the PADD V, the West Coast region, increased from 914 to 1,155, and this refinery market changed its definition to a moderately concentrated market by 2007.

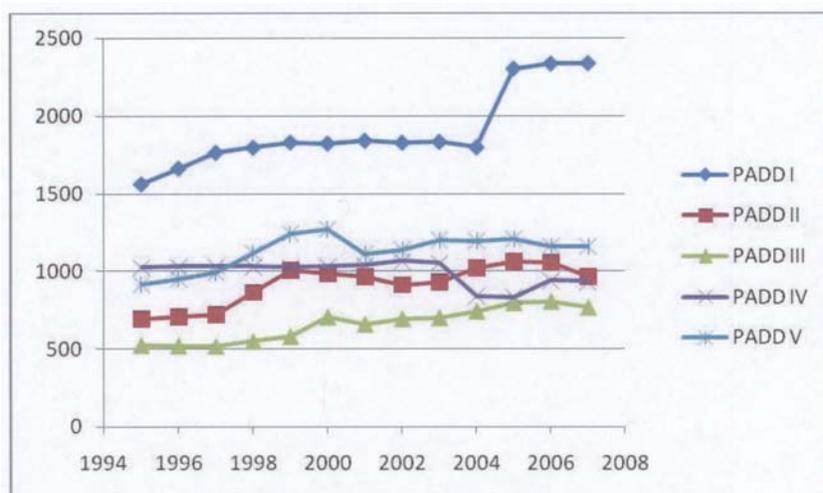


Figure 7. HHI, 1995-2007

Unexpected Supply Disruptions

On August 29, 2005, Hurricane Katrina hit the U.S. Gulf Coast at New Orleans. On September 24, 2005, Hurricane Rita hit at the border between Texas and Louisiana. Both were category four storms when they did significant damage to the refineries' facilities and pipeline in the Gulf Coast region. Refinery operations were reduced by 1.8 million barrel/day in September and October 2005. Retail gasoline prices jumped by \$0.50 to over \$3.00 per gallon on a national average basis after Hurricane Rita. Prices were distinctly higher than before. In order to control for the effect of this event on the gasoline and refinery profit margin, we include dummy variables for September and October in 2005, when the disruptions were most severe.

Gasoline Imports

A significant share of total gasoline demand in the United States is met by imports. The net import share of total gasoline consumption in 2007 is 14 percent. Figure 8 presents U.S. finished motor gasoline imports from all countries over the period 1995 to 2007. Imports reached their highest level in October 2005, the month after Hurricanes Katrina and Rita. Major sources of gasoline imports include Canada, Europe, and the Virgin Islands. A structural surplus in gasoline production in Europe means that gasoline production costs are lower when derived from foreign sources than they would be if the United States built and operated additional refinery capacity domestically. Growth in imports is expected to be tempered because of the increased use of domestically produced ethanol. Also, with increases in imported gasoline, refinery profitability is expected to be negatively affected.

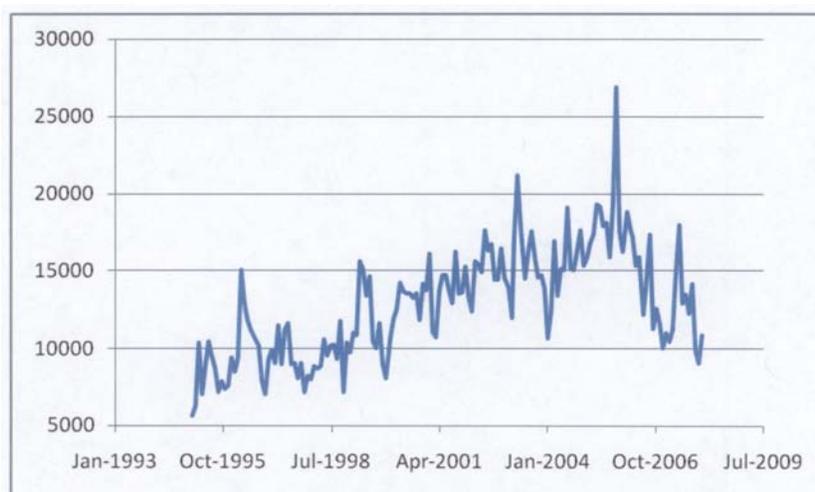


Figure 8. Monthly Motor Gasoline Imports, 1995-2007

Ethanol Production

Figure 9 presents the monthly ethanol production over the 1995–2007 period. There are 68 ethanol plants under construction or expanding. Iowa leads the Nation with about 2 billion gallons of ethanol production capacity. Our hypothesis is that this additional production has had a negative impact on gasoline prices and on the margins of crude oil refiners.



Figure 9. Monthly Ethanol Production, 1995-2007

Seasonality

The gasoline market is highly seasonal due to stronger demand in spring and summer. Gasoline price tends to gradually rise before and after summer. Demand for distillate fuel including heating oil and diesel fuel typically peaks in winter and thus has a counter-cyclical price pattern from gasoline. We include a set of monthly dummies to account for the seasonal pattern.

Estimation Method

The regression model is specified as follows:

$$(1) \quad \pi_{it} = X_{it}'\beta + \varepsilon_{it} \quad i=1,\dots,N; t=1,\dots,T.$$

where π_{it} is the price of gasoline divided by the price of crude oil or the 3:2:1 crack spread of region i at month t , and X_{it} is the K -dimensional vector of explanatory variables described earlier.

There are several options for estimating equation (1), including pooled OLS regression and panel data models. The pooled OLS regression simply pools together data series for all PADD regions and applies the ordinary least squares method. The OLS estimates of the standard errors may be highly inaccurate if the data exhibits heteroskedasticity and/or cross-sectional and serial correlation. The panel data models increase precision of estimates and allow us to control for an unobservable individual region's heterogeneity and temporal effects without aggregation bias.

The Hausman test for misspecification (Greene 2003, p. 301) is employed to help us select from two principal types of panel data models: the fixed effect model and the random effect model. Under the null hypothesis, the random effects estimator is consistent and efficient, while under the alternative, it is inconsistent. The random effect model is chosen if we fail to reject the null hypothesis. In the case of relative gasoline price (3:2:1 crack spread), the χ^2 test statistic was calculated at 26.92 (48.99) and significant at the 5 percent (1 percent) significance level. This suggests that the fixed effect estimator is consistent and asymptotically efficient in both cases.

Different specification tests are applied on the data set to better specify the panel data model. Applying the Wooldridge test for autocorrelation in panel data for the relative gasoline price (or crack spread) (Wooldridge 2002, p. 282), we get an F-test statistic of 917 (1,708), which is highly significant, and the null hypothesis of no first-order autocorrelation is rejected. Tests developed by Pesaran (2004) and Frees

(1995) of cross-sectional independence are applied and both null hypotheses are rejected; this confirms the existence of cross-sectional correlation across regions.

Based on these diagnostic results, we used a fixed effect panel data model with correction for first-order serial correlation. We also estimated a feasible generalized least squares (FGLS) model with generalized error structure to allow for the presence of AR(1) autocorrelation within panels, as well as for heteroskedasticity and cross-sectional correlation across panels. By using three alternative model specifications we hope to provide information on the robustness of the results.

The fixed effect model is specified as

$$(2) \quad \pi_{it} = \alpha_i + X_{it}'\beta + \varepsilon_{it} \quad i = 1, \dots, N; t = 1, \dots, T.$$

where α_i represents the individual regional effect. The fixed effect model is typically estimated by the least squares dummy variable (LSDV) method (Greene 2003, p. 287).

The FGLS estimation method takes into account heteroskedasticity, and cross-sectional and serial correlation. The error terms can be written as

$$E[\varepsilon\varepsilon'] = \Omega = \begin{bmatrix} \sigma_{11}\Omega_{11} & \sigma_{12}\Omega_{12} & \cdots & \sigma_{1N}\Omega_{1N} \\ \sigma_{21}\Omega_{21} & \sigma_{22}\Omega_{22} & \cdots & \sigma_{2N}\Omega_{2N} \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{N1}\Omega_{N1} & \sigma_{N2}\Omega_{N2} & \cdots & \sigma_{NN}\Omega_{NN} \end{bmatrix}$$

where

$$\Omega_{ij} = \begin{bmatrix} 1 & \rho_j & \rho_j^2 & \cdots & \rho_j^{T-1} \\ \rho_i & 1 & \rho_j & \cdots & \rho_j^{T-2} \\ \rho_i^2 & \rho_i & 1 & \cdots & \rho_j^{T-3} \\ \cdots & \cdots & \cdots & \ddots & \cdots \\ \rho_i^{T-1} & \rho_i^{T-2} & \rho_i^{T-3} & \cdots & 1 \end{bmatrix}$$

An FGLS panel data model is also called the Parks-Kmenta method (Kmenta 1986). This method consists of the following steps. Estimate equation (1) by regular OLS. Then use the estimation residuals to estimate assumed error AR(1) serial correlation coefficient ρ . Use this coefficient to transform the model to eliminate error serial correlation. Substitute $\hat{\Omega}$ for Ω using estimated ρ and σ^2 then obtain the FGLS estimator of β as

$$\hat{\beta}_{GLS} = (X' \hat{\Omega} X)^{-1} X' \hat{\Omega}^{-1} y.$$

Analysis of Estimation Results

Using the relative gasoline price as the dependent variable, we get estimation results for the pooled OLS regression, a fixed effect panel data model, and a panel FGLS method; these are shown in Table 1. The corresponding estimation results for 3:2:1 crack spread are shown in Table 2.

In the case of the relative gasoline price, three estimation methods generate similar results. The only difference is that standard errors of coefficient estimates get bigger after taking into account cross-sectional and temporal autocorrelation, which in turn lead to a comparatively lower significance level for corresponding variables. Crude oil and gasoline inventories, refinery capacity, short-run supply disruption, and dummy variables for some summer months all significantly influence the relative gasoline price. Ethanol production has a considerably negative impact on the gasoline price, which is highly significant at the 1 percent level in all three estimation results. This indicates that over the sample period, ethanol has a significant substitution effect on gasoline. Evaluating at the sample mean, we find that the gasoline price is lowered by 39.50¢, 28.70¢, and 34.10¢ per gallon because of the substitution effect of ethanol.

For the 3:2:1 crack spread, the estimation results of the fixed effect and panel FGLS models are quite different from that of the pooled OLS regression. In addition, the pooled OLS regression model generates highly significant estimates for all explanatory variables except the dummy variables for January, February, and November. As previously mentioned, ignoring cross-sectional and serial correlation as well as individual heterogeneity typically leads to highly inaccurate standard error estimation; i.e., the significance estimation results are not reliable. Hence, we focus on the fixed effect and panel FGLS estimation results.

From these two sets of estimates, all the explanatory variables have intuitively correct signs. First, the profitability represented by the 3:2:1 crack spread presents a strong seasonal pattern. This is reflected by the fact that the dummy variables for months in the second and third quarters are all significant at the 1 percent significance level in the panel FGLS model and at the 5 percent level in the fixed effect model. Second, crude oil and refinery product market conditions, refinery capacity, ethanol production, and unexpected supply disruption significantly affect profit margins. For all five PADD regions, unexpected supply disruption, measured by dummies for Hurricanes Katrina and Rita, considerably increased profits in the months right after the occurrence. Gasoline imports and the HHI are found not to have statistically significant effects on crack spread nationally. Finally, we find that ethanol production generates negative pressure on crack spread over the sample period. For the fixed effect and panel FGLS models, the marginal effect of ethanol production on the crack spread is estimated to be -0.000073 and -0.000077 , respectively.

Regional Analysis

Pooling cross-sectional and time-series information provides more accurate estimation results. However, it is instructive to analyze the time-series data of each region individually. Each PADD region has unique supply and demand conditions of crude oil and refinery products, different market structures, and different ethanol production and usage. The effects of explanatory variables may differ considerably because of region-specific factors.

We apply regular OLS regression on individual region's monthly data series over the period 1995 to 2007. The estimation results for the relative gasoline price and 3:2:1 crack spread are summarized in Tables 3 and 4, respectively.

From the estimation results for the relative gasoline price, ethanol production has a significant negative effect on gasoline prices in all regions. And the magnitude of the effect varies with PADD regions, ranging from -0.000041 to -0.000095 . As expected, in PADD II, the Midwest region, ethanol production has the largest impact on the gasoline price with a coefficient of -0.000095 . The substitution effect is highly significant and reduces the gasoline price by 39.5¢ on average over the sample period. The West Coast and East Coast experience similar negative ethanol impacts with estimates of -0.000056 , which means that the corresponding gasoline price is lowered by 23.3¢. The Gulf Coast region, PADD III, has a slightly higher coefficient estimate of -0.000059 , or, equivalently, a 24.6¢ reduction in gasoline prices. The Rocky Mountain region, or PADD IV, experienced the smallest downward gasoline price change, at 17.1¢, probably because of its comparatively low total gasoline consumption. These results tell us what would have happened had we removed the entire ethanol industry at the mean of the data set, and they are not marginal effects of removing one unit of ethanol capacity in each region.

From the estimation results of the profit margin for individual regions, effects of some explanatory variables differ considerably across regions. In PADD regions III and V, the HHI has a significant positive effect on refinery profit. This result suggests that higher market concentration in these two regional markets results in refinery profits. We did not find this pattern in our panel data model. Similarly, gasoline imports have a significant negative effect on the profit margin in both East Coast and Midwest regions, possibly because these two regions are more heavily dependent on imported refinery products to meet their regional demand. Ethanol production has a significant negative effect on the refiner's profit margin in all five PADD regions.

Conclusions

We employ pooled OLS regression, a fixed effect panel data model, and a panel FGLS estimation method to quantify the possible impact of ethanol on regular gasoline in the United States as a whole and in five regions of the United States. The models control for gasoline imports, refinery capacity, capacity utilization rate, hurricanes, market concentration in the refinery industry, stocks, and seasonality.

Estimation results show that over the period 1995 to 2007, ethanol production had a significant negative effect of \$0.29 to \$0.40 per gallon on retail gasoline prices. The results suggest that this reduction in gasoline prices came at the ex-

pense of refiners' profits. These results are statistically significant across a range of model specifications and across all regions.

Results for individual U.S. regions indicate that the largest impact of ethanol on gasoline is found in the Midwest region where gasoline prices were reduced by 39.5¢ per gallon. The Gulf Coast region is found to have experienced a 24.6¢ reduction in the retail gasoline price, while for the West Coast and East Coast, the average price drop is about 23.3¢. The smallest impact, a 17.1¢ reduction, is found in the Rocky Mountain region, mainly because of its comparatively low gasoline consumption.

These reductions in retail gasoline prices are surprisingly large, especially when one considers that they are calculated at their mean values over the sample period. The availability of ethanol essentially increased the "capacity" of the U.S. refinery industry and in so doing prevented some of the dramatic price increases often associated with an industry operating at close to capacity. Because these results are based on capacity, it would be wrong to extrapolate the results to today's markets. Had we not had ethanol, it seems likely that the crude oil refining industry would be slightly larger today than it actually is, and in the absence of this additional crude oil refining capacity the impact of eliminating ethanol would be extreme. In addition, the impact of the first billion gallons of ethanol on this capacity constraint would intuitively be greater than the billions of gallons that came later. We did try a quadratic term to pick up this effect, and it was not significant.

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TABLE 1.—REGRESSION RESULTS FOR POOLED OLS, THE FIXED EFFECT MODEL, AND THE PANEL FGLS METHOD ON RELATIVE GASOLINE PRICES

Variable	Pooled OLS Regression		Fixed effect model with AR(1)		Panel FGLS method	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Oil stock	1 3.88e-6	8.42e-7	2 1.97e-6	9.28e-7	1 5.71e-7	2.19e-7
Gasoline stock	1 -5.03e-6	1.11e-6	1 0.000010	2.70e-6	2 1.03e-6	5.24e-7
Refinery capacity	1 -0.000099	0.000029	2 -0.00038	0.00019	3 -0.00040	8.94e-6
Utilization rate	-0.0019	0.0028	0.00095	0.0015	0.00048	0.00041
Ethanol production	1 -0.000095	3.96e-6	1 -0.000069	0.000012	1 -0.000082	0.000012
Supply disruption	10.32	0.11	10.20	0.055	20.20	0.099
Gasoline import	1 -0.000037	3.89e-6	17.37e-6	2.75e-6	6.22e-6	4.78e-6
HHI	1 0.00028	0.000062	-0.00019	0.00019	-0.000037	0.000025
January	-0.030	0.054	2 -0.047	0.022	0.015	0.035
February	-0.083	0.054	2 -0.058	0.028	0.0061	0.046
March	0.013	0.055	2 -0.079	0.031	0.031	0.053
April	20.12	0.055	0.055	0.035	0.069	0.058
May	10.19	0.056	20.089	0.036	3 0.099	0.060
June	10.17	0.055	10.10	0.037	3 0.10	0.060
July	20.11	0.055	0.046	0.036	0.020	0.059
August	0.046	0.055	0.029	0.034	-0.0084	0.056
September	-0.0077	0.054	-0.012	0.031	-0.060	0.052
October	-0.014	0.054	-0.014	0.026	-0.069	0.046
November	-0.032	0.053	-0.063	0.019	-0.05	0.034
Constant	13.12	0.29	13.20	0.076	12.46	0.12
R ²	0.6014					
Adjusted R ²	0.5914					
			P = 0.87			
			F test	9.42		

1 1 percent significance.
 2 5 percent significance.
 3 10 percent significance level.

TABLE 2.—REGRESSION RESULTS FOR THE POOLED OLS, THE FIXED EFFECT MODEL, AND THE PANEL FGLS METHOD ON THE 3:2:1 CRACK SPREAD

Variable	Pooled OLS Regression		Fixed effect model with AR(1)		Panel FGLS method	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Oil stock	1 4.61e-6	9.53e-7	1 7.27e-7	3.19e-7	1 7e-6	1.18e-6
Gasoline stock	1 -4.56e-6	1.26e-6	1.13e-6	7.55e-7	1 0.000011	3.48e-6
Refinery capacity	1 -0.000015	0.000032	1 -0.000063	0.000012	3 -0.00039	0.00022

Utilization rate	1 -0.015	0.00032	-0.000066	0.00073	-0.00087	0.0019
Ethanol production	1 -0.000091	4.49e-6	1 -0.000073	0.000011	1 -0.000077	0.000014
Supply disruption	10.32	0.12	3 ^{0.23}	0.13	3 ^{0.13}	0.071
Gasoline import	1 -0.000062	4.41e-6	-3.3e-6	6.0e-6	5.19e-6	3.53e-6
HHI	10.00026	0.000069	-0.000027	0.000036	0.000079	0.00024
January	-0.058	0.06	0.00099	0.046	1 -0.075	0.028
February	-0.075	0.06	0.022	0.059	-0.036	0.036
March	20.13	0.062	20.14	0.067	20.095	0.039
April	10.30	0.063	10.22	0.072	10.18	0.044
May	10.39	0.063	10.23	0.07	10.19	0.046
June	10.36	0.063	10.24	0.074	10.20	0.046
July	10.31	0.062	20.17	0.073	10.15	0.045
August	10.28	0.062	20.16	0.07	10.18	0.043
September	10.23	0.061	30.12	0.066	10.18	0.039
October	10.19	0.061	30.099	0.059	10.18	0.034
November	0.0022	0.060	-0.03	0.044	0.02	0.025
Constant	14.04	0.33	12.06	0.13	12.53	0.10
R ²	0.6196		p = 0.87			
Adjusted R ²	0.6101		F test	3.98		

¹ 1 percent significance.
² 5 percent significance.
³ 10 percent significance level.

TABLE 3.—RESULTS FOR OLS REGRESSION ON RELATIVE GASOLINE PRICE WITH INDIVIDUAL PADD REGIONAL DATA

Variable	PADD I		PADD II		PADD III		PADD IV		PADD V	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Oil stock	3 .000025	.000015	1 .000012	2.11e-6	1 3.89e-6	9.38e-7	-7.88e-6	.000018	2.84e-6	5.62e-6
Gasoline stock	1 .000031	6.48e-6	.000011	8.16e-6	1 .000024	7.36e-6	1 .00015	.000055	.000029	.000019
Refinery capacity	0.0048	0.00032	.00054	.00047	-0.0012	.00021	1 -0.062	.0023	1 -0.032	.00074
Utilization rate	0.0051	0.0046	-0.12	.0073	3 .010	.0056	-0.10	.0086	.0037	.011
Ethanol production	1 -0.000056	.000014	1 -0.000095	8.45e-6	1 -0.000059	.000014	1 -0.000041	.000020	1 -0.000056	.000015
Supply disruption	2.47	.20	.19	.19	1.54	.20	.23	.26	-0.69	.29
Gasoline import	1 -0.000044	7.58e-6	-0.000012	9.59e-6	-5.07e-6	8.18e-6	-0.000013	.000014	-9.37e-6	.000014
HHI	3 -0.00029	0.00017	-0.00029	.00037	-0.0037	-0.030	0.0051	.00053	1 .0019	.00046
January	-10	.097	-0.47	.10	-0.057	.0084	-14	.13	-0.67	.15
February	-11	.098	-1.1	.10	-0.24	.088	-17	.13	-0.60	.14
March	.0079	.099	-12	.11	-0.06	.079	-0.63	.12	12	.14
April	.060	.10	-0.13	.10	-0.044	.080	.15	.13	.22	.14

TABLE 3.—RESULTS FOR OLS REGRESSION ON RELATIVE GASOLINE PRICE WITH INDIVIDUAL PADD REGIONAL DATA—Continued

Variable	PADD I		PADD II		PADD III		PADD IV		PADD V	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
May	.023	.11	.11	.080	.019	.080	.13	.14	.22	.14
June	.000052	.10	.17	.078	.0097	.078	.14	.14	.22	.14
July	.018	.10	.065	.078	-.0013	.078	.15	.15	.16	.14
August	.072	.10	.093	.079	.017	.079	.15	.15	.11	.15
September	-.037	.10	.053	.076	-.047	.076	.14	.14	.074	.14
October	.035	.10	-.012	.077	-.056	.077	.13	.13	.096	.14
November	-.029	.097	-.025	.096	-.052	.096	.12	.12	.046	.14
Constant	10.17	.67	.31	1.20	.048	1.20	1.49	1.49	18.87	2.79
R ²	.7109		.7119		.8229		.6610		.6415	
Adjusted R ²	.6705		.6717		.7981		.6136		.5915	

¹ 1 percent significance.
² 5 percent significance.
³ 10 percent significance level.

TABLE 4.—RESULTS FOR OLS REGRESSION ON 3:2:1 CRACK SPREAD WITH INDIVIDUAL PADD REGIONAL DATA

Variable	PADD I		PADD II		PADD III		PADD IV		PADD V	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Oil stock	.000012	.000018	.000014	2.3e-6	14.9e-6	1.0e-6	.000017	.000019	³ .000012	6.2e-6
Gasoline stock	¹ .000038	7.8e-6	³ .000015	8.7e-6	¹ .000029	7.9e-6	¹ .000023	.000058	.000025	.000021
Refinery capacity	-0.000079	0.000038	-.00017	.00050	-.00028	.00023	1-.012	.0025	1-.0029	.000082
Utilization rate	² -.01	.0055	1-.031	.0078	³ -.012	.0063	-.013	.0091	-.0065	.012
Ethanol production	¹ -.000051	.000017	1-.00009	9.e-6	² -.000039	.000016	-4.2e-6	.000021	1-.000047	.000016
Supply disruption	² .59	.24	.23	.21	.10	.21	.079	.27	-.24	.32
Gasoline import	1-.000065	9.1e-6	1-.000029	.00001	² -.000019	8.8e-6	-.000023	.000015	1-.000019	.000016
HHI	-.00033	.24	-.00042	.00039	1-.0023	.00078	.00033	.00056	1.0016	.00050
January	-.098	.12	-.053	.11	-.13	.090	-.19	.13	-.11	.16
February	-.023	.12	-.098	.11	-.12	.10	-.17	.14	-.025	.16
March	.16	.12	-.069	.11	.05	.085	.044	.14	.22	.16
April	³ .22	.12	.16	.11	.14	.086	2.34	.14	2.41	.16
May	.17	.13	1.33	.12	³ .16	.086	1.46	.14	2.36	.16
June	.11	.12	1.41	.11	³ .15	.084	1.59	.15	2.36	.16
July	.16	.13	2.28	.11	³ .15	.084	1.62	.16	2.36	.16

August	2.25	.12	1.37	.11	2.21	.085	1.68	.16	2.38	.16
September	14	.12	1.32	.10	3.14	.081	1.63	.15	2.40	.16
October .....	.20	.12	3.18	.10	.065	.083	1.53	.14	2.34	.16
November .....	.01	.12	.017	.10	-.053	.081	.21	.13	.068	.15
Constant	12.10	.81	13.76	1.91	13.52	1.29	17.22	1.58	18.04	3.07
R^2 .....	.7017		.7419		.8299		.7216		.6592	
Adjusted R^2 .....	.6600		.7058		.8061		.6827		.6116	

¹ 1 percent significance.

² 5 percent significance.

³ 10 percent significance level.

NOVEMBER 2007.

ANALYSIS OF POTENTIAL CAUSES OF CONSUMER FOOD PRICE INFLATION

PREPARED FOR: THE RENEWABLE FUELS FOUNDATION

PREPARED BY: INFORMA ECONOMICS, AN AGRA INFORMA COMPANY

I. EXECUTIVE SUMMARY

A. Introduction

Since fall 2006, public debate has intensified over the extent to which the expansion of the ethanol industry has resulted in higher agricultural commodity prices and, more importantly, whether and to what extent there has been an impact on consumer food prices. To date, this debate has been fueled mainly by anecdotal information. Given that this issue has bearing on major policy decisions with respect to agriculture and renewable energy, it is imperative that an objective, fact-based assessment be available to public policymakers. The Renewable Fuels Foundation (RFF) commissioned Informa Economics, Inc. (Informa) to conduct such an assessment, and the results are contained in this report.

B. Key findings

The “farm value” of commodity raw materials used in foods accounts for 19 percent of total U.S. food costs, a proportion that has declined significantly from 37 percent in 1973. For food products where corn is only one of several farm-produced inputs, the proportion of the total product cost attributable to the cost of corn is even less than 19 percent. The remaining portion of total retail food costs is known as the marketing bill. The marketing bill includes the costs of labor, packaging, transportation, energy, profits, advertising, depreciation, rent, interest, repairs, business taxes, and other costs not attributable to basic agricultural commodities. The marketing bill has a higher correlation with the consumer price index (CPI) for food than does corn, although there is a notable long-term upward trend to both the marketing bill and the food CPI. Within the overall marketing bill, the costs of energy and transportation have increased considerably over the last several years, with crude oil prices surging from just under \$60 per barrel in fall 2006 to nearly \$100 per barrel in November 2007, the same period during which corn prices have increased.

An analysis was performed to quantify the historical price relationships between corn prices and livestock, poultry, egg, and milk prices, and the results showed weak correlations. With these low correlations, it is statistically unsupported to suggest that high and/or rising corn prices are the causative reason behind high and rising retail meat, egg, and milk product prices. Moreover, the upward trend in cattle, hog, and poultry prices began in the late 1990s, well before the corn price began to increase significantly. Notably, dairy and egg prices have been driven higher mainly by strong export demand.

More generally, there has historically been very little relationship between corn prices and consumer food prices. Statistical relationships are weak even when corn price data are lagged to allow time for them to work their way through the food supply chain. The corn price would be considered a statistically insignificant variable in determining what drives the food CPI.

To provide context to an analysis of consumer food prices, it is useful to consider the role of food expenditures in the average American’s budget. The proportion of the average American’s disposable income that is spent on food has declined steadily over the last half-century, from 21 percent of disposable income in 1950 to below 10 percent in 2006. Additionally, the share of total food expenditures accounted for by at-home food consumption has been declining relative to away-from-home consumption. In 1950, 83 percent of total food expenditures were for at-home consumption, but by 2006 this share had declined to 58 percent.

Consumer food prices have been increasing at a relatively steady pace over the last two decades. The annual increase in the food CPI has averaged 2.96 percent since 1985, with food price inflation peaking at 5.84 percent in 1989 and falling to 1.2 percent in 1992. Since 1992, the rate of increase in the food CPI has averaged a slightly lower 2.57 percent. By comparison, the annualized growth rate during the first three-quarters of 2007 has been 3.40 percent. While growth rates in the CPI sub-index for food consumed away from home have been slowly trending upward since about 1994, the CPI for food consumed at home is significantly more volatile and is currently growing more rapidly than away-from-home food prices.

The United States harvested a record corn crop of 11.8 billion bushels in 2004, but production fell to 11.1 billion bushels in 2005 and dropped further to 10.5 billion

bushels in 2006. Over the same time period, encompassing crop-marketing years 2004–2005 through 2006–2007, the usage of corn in ethanol production expanded to 2.1 billion bushels from 1.3 billion bushels. Yet, the ethanol industry was not the only source of additional demand for corn. U.S. corn exports, which were 1.8 billion bushels in 2004–2005, rose to 2.1 billion bushels in both 2005–2006 and 2006–2007—a level that was at the top of the range experienced over the previous decade. Thus, the combination of a reduction in supply and an increase in demand from both the ethanol industry and the export market led to corn prices moving higher starting in fall 2006.

Sub-indices of the food CPI are reported for the major food product categories. It was investigated whether the price of corn has a greater influence on these sub-indices than the overall food CPI. However, similar to the case with the overall food CPI, the relationship with the product sub-indices is generally weak.

Given the weak correlation between corn prices and consumer food prices, it can be hypothesized that a considerable proportion of the impact of corn price changes is absorbed by participants in the value chains for meats, poultry, and other corn-based food products. This does not necessarily mean that margins within the value chain are low or negative, but rather that they are lower than they would be in the absence of higher corn prices.

In summary, the statistical evidence does not support a conclusion that the growth in the ethanol industry is driving consumer food prices higher. This is demonstrated by the fact that the R-squared statistic between nearby corn futures prices on the Chicago Board of Trade (CBOT) and the food CPI is only 0.04, which means that only 4 percent of the change in the food CPI is “explained” by fluctuations in nearby corn futures prices. Even when the corn price is lagged to allow for the effects to work their way through the food supply chain, the statistical results do not improve. It can be concluded that no single factor is the driver of consumer food prices over time—or the moderately higher-than-average inflation during the first three quarters of 2007—but rather there is a complex and interrelated set of factors that contribute to food prices.

II. INTRODUCTION

Since fall 2006, public debate has intensified over the extent to which the expansion of the ethanol industry has resulted in higher agricultural commodity prices and, more importantly, whether and to what extent there has been an impact on consumer food prices. To date, this debate has been fueled mainly by anecdotal information. Given that this issue has bearing on major policy decisions with respect to agriculture and renewable energy, it is imperative that an objective, fact-based assessment be available to public policymakers. The RFF commissioned Informa to conduct such an assessment, and the results are contained in this report.

As a result of the confluence of several factors that are explained in Section VIII of this report, corn prices received by farmers increased to an average of \$3.03 per bushel during the crop-marketing year that began in September 2006 and ended in August 2007, which was a substantial increase from the \$2.09 per bushel that farmers received in August 2006, just before the start of the 2006–2007 crop year. Similarly, it was considerably higher than the \$2.00 per bushel average experienced during the 2005–2006 crop year. However, other costs incurred in the production and distribution of food products were moving higher as well.

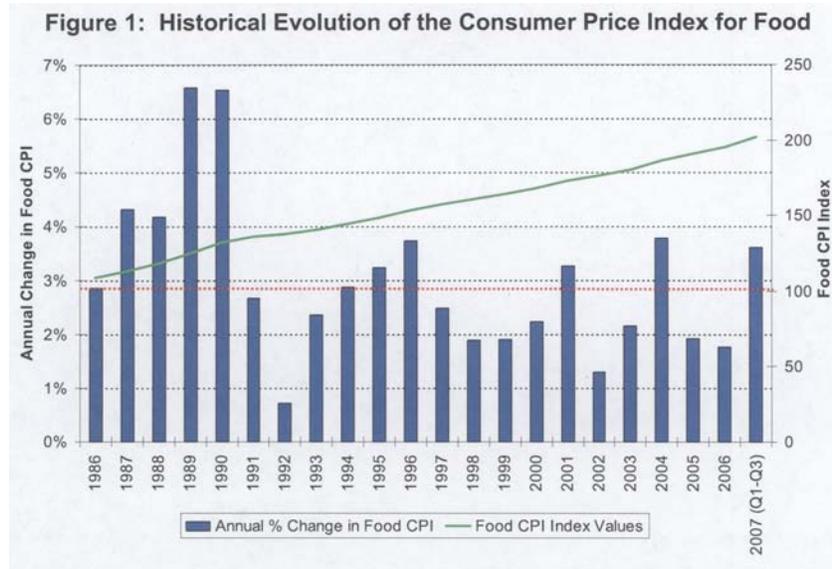
The price of crude oil (West Texas Intermediate) hovered just below \$60 per barrel in fall 2006, then increased to the \$60–\$70 per barrel range in the spring and early summer of 2007 and further to the \$70–\$80 per barrel range in the late summer and early fall of 2007; in November 2007, the price surged to near \$100 per barrel. Additionally, transportation costs have been surging in recent years, propelled higher partly by increasing fuel prices and partly by capacity tightness relative to strengthening demand for transportation services.

As will be shown in this report, no single factor is the driver of consumer food prices over time—or the moderately higher-than-average inflation during the first three quarters of 2007—but rather there is a complex and interrelated set of factors that contribute to food price inflation. In addition to the analysis contained in this report, Appendix A provides background on media coverage of the “food versus fuel” debate and on other studies that have looked into whether ethanol industry growth and changes in corn prices are contributing to food price inflation.

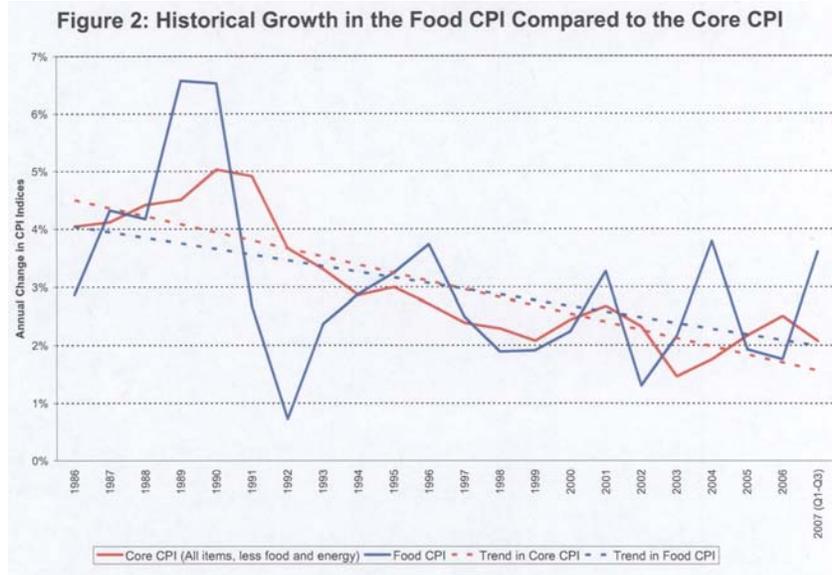
II. CONSUMER FOOD PRICES

Consumer food prices have been increasing at a relatively steady pace over the last two decades. Specifically, the annual increase in the food CPI has averaged 2.96 percent since 1985, with food price inflation peaking at 5.84 percent in 1989 and

falling to 1.2 percent in 1992 (see Figure 1). Since 1992, the rate of increase in the food CPI has averaged a slightly lower 2.57 percent. In comparison, the annualized growth rate during the first three-quarters of 2007 (January–September) has been 3.40 percent—a rate of growth that was matched only one other time in the last 15 years (in 2004).

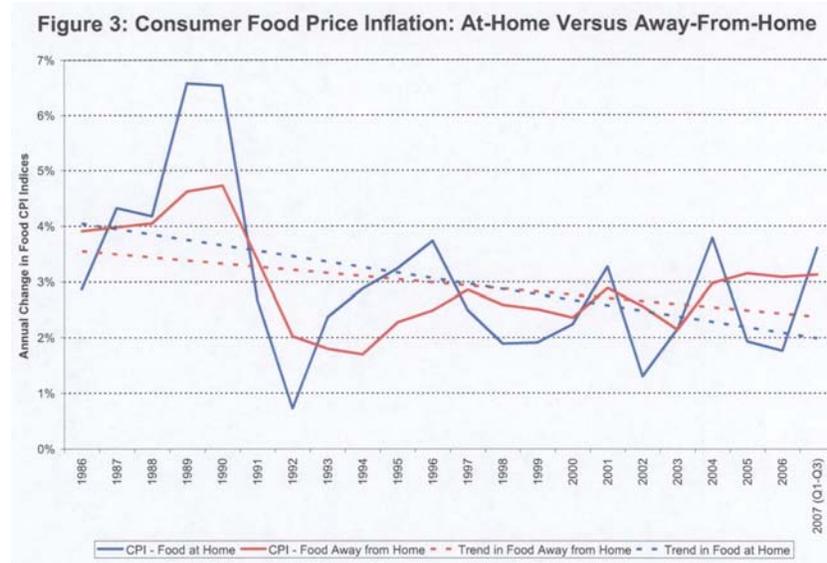


The “core CPI,” which excludes food and energy prices, is viewed as a more accurate reflection of underlying inflationary pressures in the general economy than the overall CPI (at least in the short term), since the core CPI excludes food and energy prices, which tend to be significantly more volatile from month-to-month than other sectors of the economy. Over the 1985–2007 time period, the average annual inflation rate of the core CPI has been 3.09 percent, which is very close to the 2.96 percent average food CPI growth rate (see Figure 2). Whether inflation in the core CPI or the food CPI is higher varies almost from year to year.



If only the period since 1992 is considered, core CPI inflation has on average been 0.17 percent below food CPI inflation. Essentially, this again indicates food CPI inflation has been similar to the core inflation rate over the long run. During this time period, the greatest differential between the two CPI inflation rates was in 2004, when food CPI inflation was higher than core CPI inflation by 1.69 percent. Similarly, from January to September 2007, the food CPI inflation rate has been running 1.32 percent above the core CPI inflation rate.

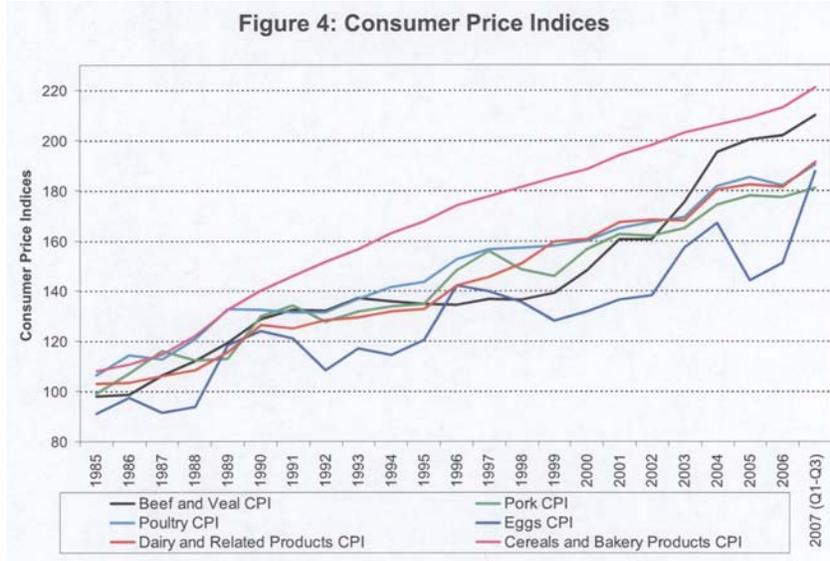
Not only is the overall CPI composed of major expenditure categories such as food and energy, but the food CPI is composed of two main sub-indices: food consumed at home and food consumed away from home. While growth rates in the away-from-home food CPI have been slowly trending upward since about 1994, the at-home food CPI is significantly more volatile and is currently growing more rapidly than away-from-home food prices (see Figure 3). However, both are currently growing at rates exceeding the core CPI.



Importantly, the USDA's Economic Research Service (ERS) and the Bureau of Labor Statistics (BLS) have noted that the at-home food CPI statistic likely overestimates actual inflation in prices consumers pay for food. This is due in part to the impact of emerging "big-box stores" (e.g., Wal-Mart and Costco) on the food at-home CPI. Data from previous studies have shown that food prices from these "big-box stores" are, on average, 7 percent to 8 percent lower than those found in large supermarket chains. The problem is that such stores might not be fully represented in the sample of stores surveyed for price data. Furthermore, when a "big-box store" acquires a store that is included in the surveyed group, the BLS has an aligning procedure which assumes that quality-adjusted prices at these stores are equal to the prices at the large supermarket chains. In essence, this procedure equates the prices of these alternative food retailers. A study by Hausman and Leibtag¹ concluded that this phenomenon confers an upward bias of 0.32 percent to 0.42 percent in the at-home food CPI.

The at-home food CPI is further categorized into additional sub-indices, broken down into product categories with increasing levels of specificity. An evaluation of relevant first-level product categories further demonstrates which categories are largely responsible for changes in the overall food CPI. Among products that have a direct or indirect linkage to corn as an input, egg prices have recently been exhibiting the strongest inflation, while other livestock, dairy, and poultry markets exhibit similar, but much milder, trends (see Figure 4). In contrast, the CPI for cereals and bakery products has avoided the large, volatile swings that have occurred in the egg market. In general, the more value added in the manufacture of the product, the more consolidated the market, and the more price elastic the demand (i.e., costs cannot be passed along to consumers without lowering demand), the less volatile end-product prices will be.

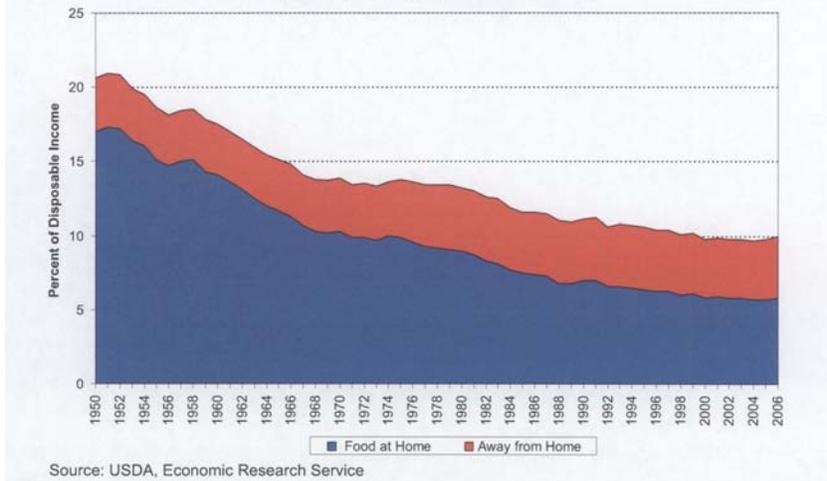
¹Hausman, J. and E. Leibtag. 2004. "CPI Bias from Supercenters: Does the BLS Know that Wal-Mart Exists?" NBER Working Paper #20712 (Aug). National Bureau of Economic Research, Cambridge, MA.



IV. PERSPECTIVE ON CONSUMER FOOD EXPENDITURES

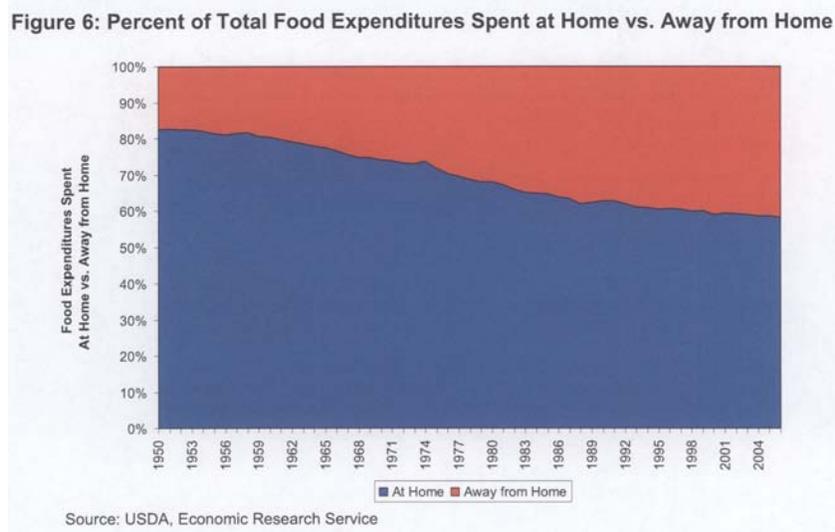
In providing context to the food-versus-fuel debate, in addition to examining how the CPI has changed over time it is also useful to consider the role of food expenditures in the average American's budget. To start with, the proportion of the average American's disposable income that is spent on food has declined steadily over the last half-century. In 1950, approximately 21 percent of disposable income was spent on food; by 2006, the share had broken below 10 percent (see Figure 5).

Figure 5: Consumer Food Expenditures: Percent of Disposable Income Spent on Food at Home vs. Away from Home



Interestingly, the proportion of disposable income spent on food away from home has remained relatively stable over time. Away-from-home food consumption has remained in the range of 4.0 percent to 4.3 percent of total disposable income since 1976. Given the increase in consumers' disposable income over time, this means that in nominal terms the total amount spent on food away-from-home has increased substantially. In fact, per capita away-from-home food expenditures have increased 44 percent between 2000 and 2006, increasing from an average \$971 to \$1,402.

Another trend within food expenditures is that the share accounted for by at-home food consumption has been declining relative to away-from-home consumption. Again, this is the share of food expenditures, whereas the previous paragraph addressed the share of disposable income. In 1950, 83 percent of total food expenditures were for at-home food consumption (see Figure 6). By 2006, this share had declined to 58 percent, and according to the USDA, it is predicted to fall to 51 percent by 2016.



Increases in food prices in 2007 have been showing up more in the at-home food CPI than the away-from-home food CPI, which is to be expected since at-home food prices historically have been more volatile than away-from-home food prices (refer back to Figure 3). However, given that the at-home food category has been a declining component of total food expenditures, and that food expenditures have accounted for a declining proportion of consumer incomes, the effect of any increase in at-home food prices on the average American's financial condition will be considerably muted relative to what it would have been in the past.

In the Center for Agricultural and Rural Development (CARD) study referenced in the appendix to this study, long-run general food prices were predicted to increase by as much as 1.8 percent above the "no ethanol" scenario. This was the most extreme scenario of the reviewed research publications, as the USDA forecasts long-run food price inflation equal to or less than the general inflation rate, the AFBF found no short- or long-term relationship, and the consulting firm AES only reported inflationary increases for individual products. However, even though the inflation rates estimated by AES were only examined for individual products, for most product categories the rates were less than those estimated by the CARD study. Therefore, it can be said that this average retail food price inflation estimation of 1.8 percent above the "no ethanol" control is the highest inflation rate estimation of those referenced.

What would the scenario of 1.8 percent higher food price inflation mean for consumers? In 2006, the average disposable income was \$32,114, with 9.9 percent of this being spent on food. This would mean that a 1.8 percent increase in the price food would increase the total annual food expenditures of an average household by about \$57 a year. With 58 percent of this being spent on at-home food expenditures,

this means that the average American household can be expected to spend an extra \$34 a year on their groceries.

However, to understand the net impact on consumers' financial condition, changes in expenditures on not only food but also fuel would have to be considered. Specifically, if more abundant supplies of ethanol were to result in a measurable reduction in retail fuel prices, this would have to be compared to any food price increase in determining the net impact to consumers. The effect of ethanol on retail fuel prices is not addressed in this study.

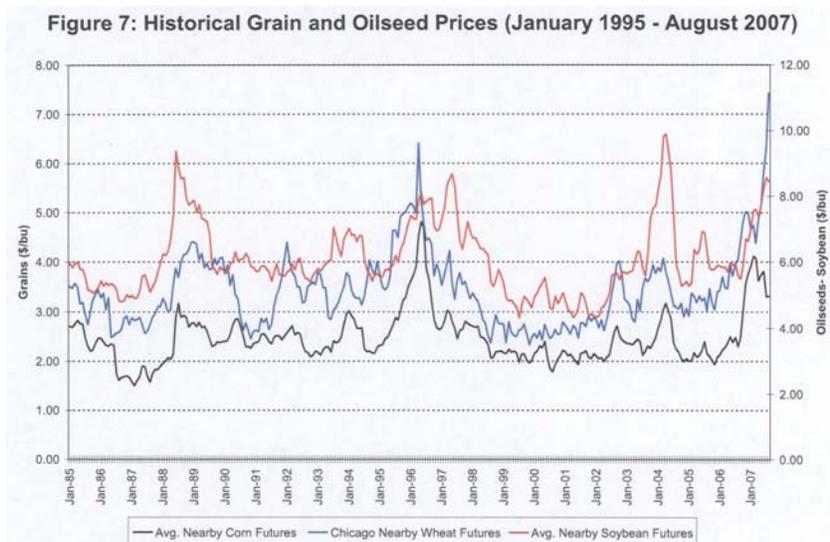
V. RELATIONSHIP BETWEEN CORN PRICES AND OTHER AGRICULTURAL COMMODITIES PRICES

This section analyzes the relationships among the prices of corn, other commodities and consumer food prices. It examines whether there is a sufficient relationship between corn prices and other commodity and food prices to substantiate whether an increase in corn prices—regardless of the reason for the increase in corn prices—would cause an increase in the prices consumers pay for food.

A. Historical relationships among corn and other commodity prices

1. Grain and oilseed prices

Grain and oilseed prices have always been highly volatile. In Figure 7, historical monthly nearby futures averages are shown for corn, soybeans, and wheat, the three major row crops grown in the United States.² Until recently, domestic demand for these commodities generally grew at a relatively steady rate, while changes in supply (usually due to weather) have been the main determinants of price volatility.



While these three commodities have only limited substitutability for each other, conditions in one market can influence the prices in another—often caused by the common denominator of weather. Recent increases in corn prices are no exception. While a record corn crop is being harvested in the fall of 2007, there is concern that increased demand will bring soybean supplies down to low levels by the end of the crop year, and weather problems in Australia and other wheat-growing nations have caused wheat prices to reach record levels. As a result, corn prices have not been able to fall as would have been expected given the size of the crop. This section provides a brief overview of the complex historical relationships among these three markets.

²“Nearby” futures refer to the futures contract closest to expiration. For example, March futures would serve as the nearby corn contract during January and February of any given year, since contracts are not traded with delivery during those months.

The Corn Price.—Over the historical time period extending from January 1985 to August 2007, the average nearby corn futures price has averaged \$2.46/bu. Weather had a substantial impact on corn futures prices in the 1988–1989 crop year, when poor crops resulted in high prices. (The crop year for corn begins in September, when harvest gears up on a large scale, and ends in August of the following calendar year.) In 1995–1996 record high corn prices were reached when a drop in production coincided with very strong export demand, resulting in record corn futures prices as high as \$5.00/bu.

Following record corn production in the 2004–2005 crop year of 11.8 billion bushels and another crop over 11 billion bushels in 2005–2006, corn futures prices declined to \$2.23/bu in the 2005–2006 crop year. However, driven by a significant decrease in corn acreage harvested in 2006, corn production fell to 10.5 billion bushels, while corn usage in ethanol production increased and exports rebounded strongly to the top end of the range experienced during the prior decade; as a result, nearby corn futures in 2006–2007 increased to an average \$3.56/bu, with spring prices approaching the \$4.50/bu range.

A fundamental driver of the price of corn is the level of inventories at the end of the crop-marketing year. Ending stocks are viewed by the industry as the “cushion” or “buffer” stocks available to incorporate increases in demand or reductions in supply in the following crop year. The larger the level of ending stocks, the more comfortable the market will be with a given level of demand. In particular, the ratio of year-end stocks to total consumption during the year is a key price determinant. Corn prices tend to weaken when supplies are plentiful relative to usage, whereas they strengthen when stocks are drawn down compared to demand. The level of stocks is market driven, as the U.S. Government no longer carries large stocks as part of its corn support programs.

Price Relationships Among Corn, Wheat, and Soybeans.—As was shown above in Figure 7, a general price relationship exists among these three crops. In 1995, the early frost that affected corn production also led to spikes in soybean and wheat prices. Just as the corn price increases were compounded by strong export demand, the wheat price increase was also compounded by other factors. These included low stocks that year and world supply issues, as production and export subsidies in the United States and EU were curtailed under the Uruguay Round of the General Agreement on Tariffs and Trade (now called the World Trade Organization, WTO).

However, a weather problem for one crop does not necessarily always mean a supply problem for the other. A prime example of this is the drought of 2003, which affected the soybean crop but left the other two crops relatively unscathed. While weather plays a key role in explaining the relationship between these three commodities, it is not the only factor. Each market has its own set of supply and demand factors that can either exacerbate the problems in another market or help to mitigate potential price increases.

Higher corn prices can influence wheat prices, but typically the reverse has not been true. This is because as corn prices move higher, wheat prices will be pulled higher to keep wheat from being used as a feed. However, the record wheat prices of 2007 are very much a result of supply-side issues. U.S. wheat supplies were reduced by adverse weather, including a spring freeze and unseasonably heavy rainfall around harvest. To add to the global supply problems, Australia’s wheat production has fallen significantly due to drought. Eastern Europe, Ukraine, and to some extent Canada—all of which are large-scale wheat producers—have also been having supply issues.

In general, the demand bases for wheat and corn are quite different since the crops’ end-product uses are generally different, with corn mainly used as a feed grain and wheat mainly used as a food grain. Usually, the global wheat supply has a modest impact on corn exports, although for countries where wheat and barley are the primary feed grains, a weather problem can necessitate increased usage of other feed grains, including imported corn. Although there can be some linkage between the wheat and corn markets in such a case, corn futures prices are remaining at high levels in fall 2007 in order for corn to “compete” against high-priced soybeans for acres to be planted in spring 2008; this competition is mainly with soybeans as opposed to wheat, since wheat is typically grown in areas that are not necessarily best suited for corn.

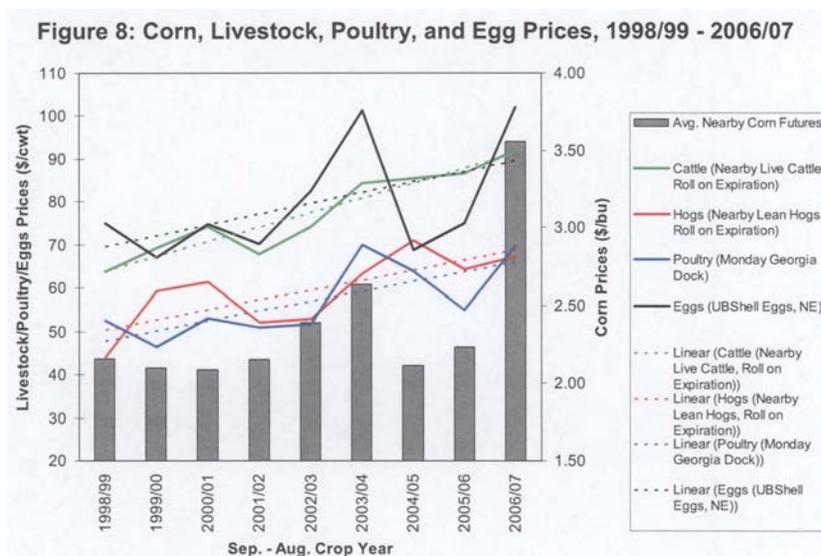
This competition between corn and soybean acres has affected the price relationship between these two commodities over the last couple of years. In the spring of 2006, futures prices provided a net revenue premium to grow soybeans compared to corn, and soybean acres expanded at the expense of corn. In 2007, the reverse was true, and corn acreage increased substantially. After the 2007 crop was made, the market realized that the pace of usage would bring soybean inventories to low levels at the end of the 2007–2008 crop year, and if a larger soybean crop were not

realized next year, the inventory situation would become particularly acute by the end of the 2008–2009 crop year. This has led to inflation in the corn price over what it would have been had it not had to compete with soybean acreage.

While part of the increase in soybean prices can be attributed to the shift of some soybean acres to corn in 2007, it can be argued that the price of soybeans would not have gone quite so high had it not been for the price of crude oil (petroleum), which has driven soybean oil prices higher due to the growth of the biodiesel industry.

2. Livestock, poultry, egg, and milk prices

Figure 8 provides a visual indication that there is not a strong correlation between corn prices and livestock or poultry prices. It is also evident that the upward trend in cattle, hog, and poultry prices began in the late 1990s, well before the corn price began to increase significantly in 2005–2006.



Cattle prices have been on an upswing since the mid-to-late 1990s, resulting from declining cattle supplies and increasing demand. Cattle inventories declined from 103.5 million head in 1996 (January 1 inventories) to just under 95 million head by 2004, and there has been only a modest 2-million-head rebound since then. In conjunction with declining cattle inventories was an increase in beef demand that became evident in the late 1990s. Consumer preferences began to take a detectable turn; the previously held belief that beef was a health detriment began to moderate as consumers adopted diets that placed more emphasis on protein and less on carbohydrates. These shifts in supply and demand have been the main driving forces behind the increasing cattle prices, which have been rising at an average annual growth rate of about 3.6 percent since 1998. Previous (1985–1998) cattle price increases averaged just less than 1 percent.

In contrast to the strong growth in cattle prices, the growth in hog and poultry prices has been more moderate, although there have still been increases. Similar to cattle prices, an upward trend in hog prices can be detected beginning near the turn of the millennium. In recent years, annual productivity gains have continued at trend levels, even as industry structure has matured. The breeding herd has held relatively steady, at or slightly above 6 million head since 2000, with minor deviations from year to year. From the demand side, pork demand at the wholesale level has remained stagnant in the United States, while export demand has increased dramatically. In general, there appears to be very little relation between corn prices and hog prices, with the possible exception being in the 1996–1997 crop year when hog prices spiked following the large corn price spike in 1995–1996. While most of this increase is attributed to constrained supplies of pork that year, the large increase in corn prices the previous year (exceeding the recent corn price spike in 2006–2007) may have partially motivated these supply reductions.

Poultry prices remained relatively flat across the 1985–1986 to 1999–2000 time period, averaging \$54.50/cwt. Since then, poultry prices have been trending upward at an average annual growth rate of 4 percent (averaging \$67.86/cwt). Such price increases can be largely explained by increasing per capita poultry consumption. Further demand increases have been seen following the Avian Influenza found within Asia and Europe in 2003. Such demand increases, along with tight supplies, resulted in the record-high prices recorded during the 2003–2004 crop year. Then in 2005–2006, prices dropped back down as exports backed off as a result of the record prices.

Egg prices, on the other hand, have been relatively more responsive to corn prices. There are several reasons for this tighter relationship. First, while the egg industry supply chain is not as concentrated as the broiler industry, it is still relatively integrated and consolidated. These larger, integrated operations are able to make supply decisions and respond more quickly to changing input prices than small, independent laying operations. Second, demand for eggs is relatively inelastic, as they are a cheaper source of protein than meats or other livestock products and are used in a range of processed food products. This enables price changes to be passed on to consumers without affecting overall consumption severely.

Egg values have been extremely high in 2007. With production margins extremely poor during 2005 and into 2006, producers cut their laying flocks considerably. Consequently, egg production has fallen. The total number of eggs produced up to this point in 2007 is about 1.5 percent fewer than the number of eggs produced during the same time period in 2006.

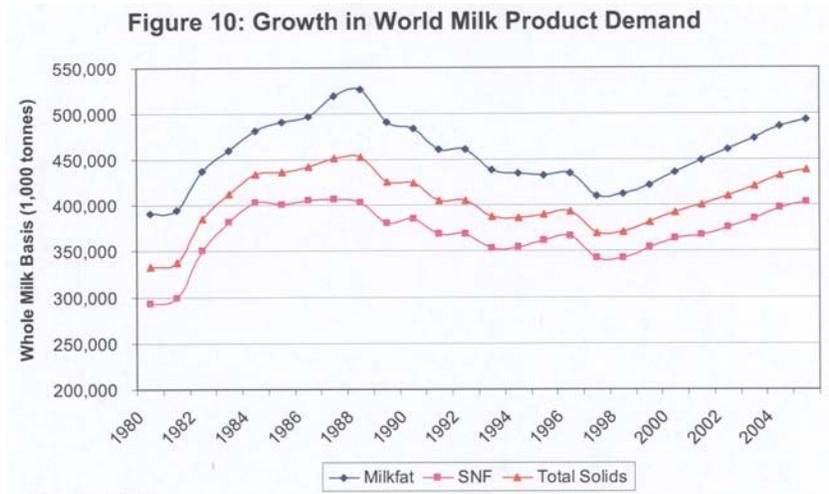
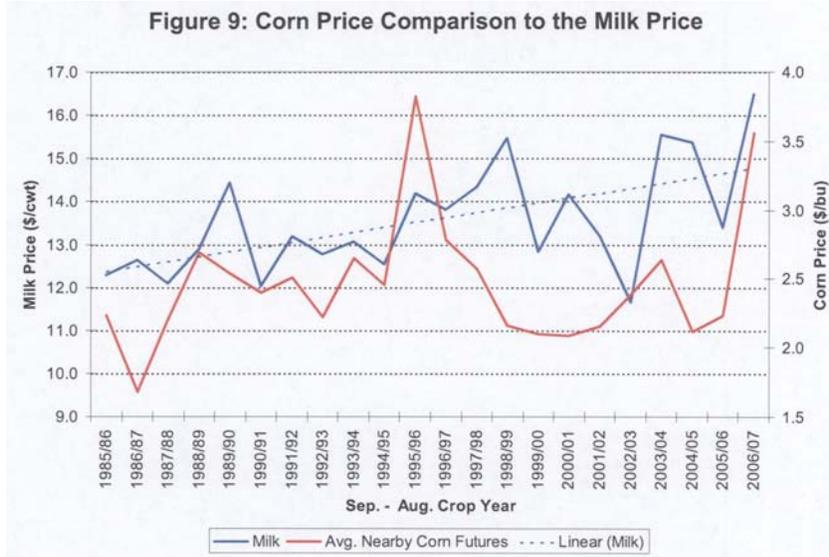
Along with a diminished U.S. egg supply, export trade of both eggs and egg products has risen strongly during 2007 (see Table 1). There has been a significant increase in exports of both shell eggs and egg products during the first 9 months of 2007 compared to recent years. Even though exports of shell eggs still account for less than 2 percent of all U.S. egg production, the increase in exports combined with diminished egg production was enough to skim necessary supplies from an already tight domestic market for eggs and has been a contributing factor to higher egg prices in 2007.

Similarly, inelastic demand for milk leads to a moderately tighter relationship between corn and milk prices than with other livestock and poultry prices (see Figure 9). That being said, recent milk price increases have been driven primarily by substantial increases in world dairy product demand and tight world supplies that resulted from major droughts in leading milk-producing countries, such as Australia (see Figure 10).

TABLE 1.—U.S. EXPORTS OF SHELL EGGS AND EGG PRODUCTS, JANUARY–SEPTEMBER, 2003–2007

Year	Table eggs (1,000 dozen)	Shell eggs (1,000 dozen)	All egg products, liquid equivalent (1,000 lbs)
2003 (January–September)	33,523	68,816	70,603
2004 (January–September)	36,123	73,157	61,195
2005 (January–September)	47,216	82,250	110,308
2006 (January–September)	37,838	75,478	114,536
2007 (January–September)	62,170	107,057	125,603

Note: Since only January–September data are available for 2007, data for the same time periods in previous years are shown for purposes of comparison.



Source: USDA

Correlation analysis

An analysis was performed to quantify the historical price relationships between corn prices and livestock, poultry, egg, and milk prices, and the results showed rather weak correlations. With these low correlations, it is statistically unsupported to suggest that high and/or rising corn prices are the causative reason behind high and rising retail meat, egg, and milk product prices.

Quarterly average nearby corn futures prices were analyzed relative to quarterly average nearby cattle and nearby hog prices and quarterly cash price averages for broilers, milk, and eggs (January 1985–September 2007). Direct quarter to quarter correlations were calculated as were lagged correlations for one, two, three, and four quarters to identify if there was a lagged impact from corn prices on meat, egg, and milk prices. The results are presented below.

Cattle and beef

In the cattle-and-beef sector, the correlation coefficients were weak over short periods of time and even negative over longer periods of time, which indicates that there is no discernible strong relationship between corn prices and cattle prices (see Table 2). Based on this analysis, it can be concluded that high corn costs do not automatically result in higher cattle prices, either in the short term or over a 12–16 month period. The higher costs of producing beef result in a negative impact on cattle feeders' margins, and this ultimately would have a negative impact on feeder cattle prices (i.e., the prices paid animals entering feedlots). Irrespective of the price of corn, the price of fed cattle and beef might be higher or lower, with such prices determined by the supply/demand conditions in the beef market.

TABLE 2.—CORN/CATTLE PRICE CORRELATION COEFFICIENTS

	Correlation
Current	+0.18
One quarter lag	+0.15
Two quarter lag	+0.06
Three quarter lag	–0.06
Four quarter lag	–0.21

The cattle and beef industry has a rather complex supply chain, as numerous independent entities participate in the production of cattle as they progress from the core cow-calf production operation through backgrounding activities and then on through commercial cattle-feeding activities. In the production process for grain-fed beef, it can take anywhere from 16 to 24 months for an animal to move from birth to slaughter. Multiple buy/sell transactions occur in this process, as young calves are typically sold to operations that put these animals on forage programs and then eventually sell the animals to feedlot operations that feed out the animals to slaughter weights. The complexity of this process has a tendency of disrupting the supply response to changing cattle prices and changes in feed costs, which is likely reflected in the weak correlations between cattle and corn prices.

Hogs and pork

Within a single quarter there is virtually no correlation between corn prices and hog prices, as measured by nearby futures prices. Given the length of the breeding and production process (10–12 months), a lag of at least four quarters between high feed costs and any possible impact on hog prices would be anticipated. Historically, producers endured losses for at least two quarters prior to adjusting breeding inventories; if that behavior pattern still holds, there would theoretically be a relationship between corn prices lagged five or six quarters and hog prices. However, the correlations between corn prices and hog prices for all lagged time periods are very weak (see Table 3).

TABLE 3.—CORN/HOG PRICE CORRELATION COEFFICIENTS

	Correlation
Current	+0.15
One quarter lag	+0.19
Two quarter lag	+0.18
Three quarter lag	+0.17
Four quarter lag	+0.22
Five quarter lag	+0.19
Six quarter lag	+0.06
Seven quarter lag	–0.01

Even with a four-quarter lag on corn prices, the correlation of +0.22 is so weak that it cannot be concluded that higher corn prices result in higher hog prices. Once again, if higher corn prices were going to have an impact on pork supply and prices, such impacts would be expected at least a year from when corn prices rise. However, when further lags are considered (five, six, and seven quarters), the correlation actually begins to decline.

Broilers

In the broiler (chicken) sector, there does appear to be a slightly higher degree of linkage between broiler prices and corn prices. Still, correlation coefficients below

0.75 (actually, between -0.75 and 0.75) are considered tenuous at best, and the highest correlation coefficient between corn and the Georgia dock broiler price is only 0.3 (see Table 4).

TABLE 4.—CORN/BROILER PRICE CORRELATION COEFFICIENTS

	Correlation
Current	+ 0.25
One quarter lag	+ 0.31
Two quarter lag	+ 0.23
Three quarter lag	+ 0.12
Four quarter lag	+ 0.03

The coefficient of 0.25 within a single quarter indicates a weak relationship between corn and broiler prices. The fact that the coefficient with a one-quarter lag is a little higher does suggest that there is a very weak price relationship; however, over time the correlation coefficients get smaller (weaker), which indicates that there is little relationship between the cost of corn and the price of broilers.

Eggs

While correlations between corn and egg prices were the strongest observed for any of the livestock/poultry markets, the correlation coefficients would still be considered statistically weak. Again, a correlation between -0.75 and 0.75 is generally considered statistically insufficient to be used in modeling or predictions (for an equation with a single explanatory variable). Within a single quarter, or with up to a two-quarter lag in corn prices, the correlation coefficient between corn and eggs is gravitates around 0.5 (see Table 5). When a further lag in corn prices is considered, the correlations worsen.

TABLE 5.—CORN/EGG PRICE CORRELATION COEFFICIENTS

	Correlation
Current	+ 0.51
One quarter lag	+ 0.49
Two quarter lag	+ 0.51
Three quarter lag	+ 0.39
Four quarter lag	+ 0.13

Egg producers have the capability of adjusting short-term production volumes, which in turn can have fairly immediate impacts on egg prices. If corn prices were the driver of either “high” or “low” egg prices, the correlation coefficients would be substantially higher than those found and presented above. It would appear that other factors besides corn prices contribute to egg price changes. For example, egg-product exports have increased to 126 million pounds during the first 9 months of 2007, compared to 115 million pounds during the same period in 2006, which has resulted in high egg prices; the role of high corn prices appears to have been, at most, a secondary contributor.

Dairy and milk

Again, there is only a moderate degree of correlation between corn prices and milk prices (stronger than the broiler market but weaker than the egg market). The correlation coefficients for nearby corn futures prices and milk prices are shown in Table 6.

TABLE 6.—CORN/MILK PRICE CORRELATION COEFFICIENTS

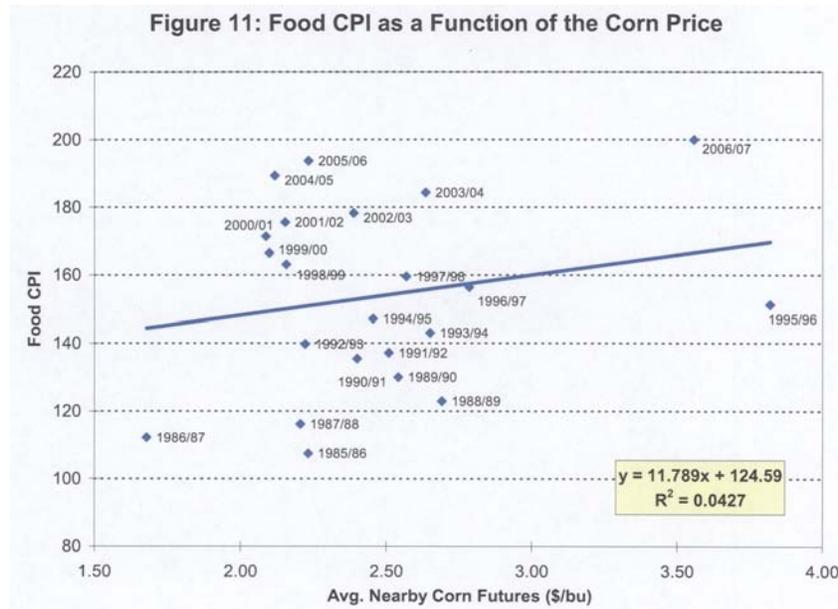
	Correlation
Current	+ 0.27
One quarter lag	+ 0.41
Two quarter lag	+ 0.44
Three quarter lag	+ 0.31
Four quarter lag	+ 0.13

VI. RELATIONSHIP BETWEEN CORN PRICES AND CONSUMER FOOD PRICES

A. Historical relationship between corn prices and consumer food prices

The first question to be asked in determining whether statements that higher corn prices are causing higher consumer food prices is: Have corn prices shown a strong relationship with consumer food prices in the past? In fact, this section shows there has historically been very little relationship between corn prices and consumer food prices. This is not surprising, given the results of the last section—if correlations between corn prices and livestock, poultry, egg, and milk prices at the wholesale level are weak, than correlations to further processed products at the retail level should be at least as weak.

Relationships between corn prices and consumer food prices were evaluated by running a simple regression of corn prices against food CPI index values. Crop year averages since 1985–1986 were utilized. The resulting R-squared³ value was only 0.04, indicating that variations in the corn price “explain” only 4 percent of the variations in the food CPI index (see Figure 11). Thus, the corn price would be considered a statistically insignificant variable in determining what drives the food CPI.



In reality, it would be expected that a change in the corn price would take time to work its way through the value chain before the food CPI is affected, so that the impact might not be instantaneous. However, the R-squared values do not improve when quarterly prices are used and the corn price is lagged by as many as four quarters (see Table 7).

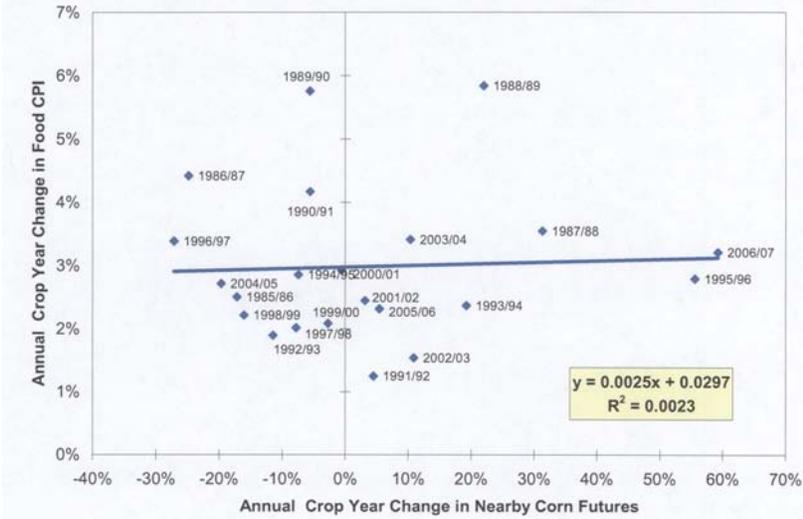
TABLE 7.—FOOD CPI AS A FUNCTION OF LAGGED CORN PRICES

Corn price	Correlation	R-squared value
Current	0.2010	0.0404
One quarter lag	0.1749	0.0306
Two quarter lag	0.1351	0.0183
Three quarter lag	0.0558	0.0031
Four quarter lag	-0.0078	0.0001

³The R-squared value represents the proportion of the total variation in the food CPI (the “y” variable) that can be explained by the corn price (the “x” variable).

Given that a general upward trend in the food CPI is prevalent, another regression was run using crop-year changes in corn prices against the crop-year changes in the food CPI. Again, very little of the food CPI inflation rate can be directly explained by year-to-year movements in the corn price, as reflected in an R-squared of 0.002 (see Figure 12). The corn price variable is statistically insignificant in the regression equation.

Figure 12: Yearly Changes in Food CPI as a Function of Corn Price Changes



While movements in the overall food CPI are not explained well by the price of corn, it was investigated whether the price of corn has a greater influence on sub-categories within the food CPI. Similar to the case with the overall food CPI, the relationship with the product sub-indices is generally weak, with only eggs having an R-squared over 0.1 (see Table 8 and Table 9). This is true even if lagged corn prices are used.

TABLE 8.—CORRELATION BETWEEN FOOD CPI SUB-INDICES AND CURRENT/LAGGED CORN PRICES

Corn prices	Beef and veal CPI	Pork CPI	Poultry CPI	Eggs CPI	Dairy and related products CPI	Cereals and bakery products CPI
Current	0.1968	0.1701	0.2164	0.4163	0.1413	0.2186
One quarter lag	0.1534	0.1830	0.2286	0.0064	0.1435	0.2006
Two quarter lag	0.0947	0.1689	0.2078	0.3782	0.1243	0.1660
Three quarter lag	-0.0068	0.0939	0.1243	0.2936	0.0491	0.0919
Four quarter lag	-0.0798	0.0370	0.0427	0.1427	-0.0186	0.0321

TABLE 9.—R-SQUARED VALUES FOR FOOD CPI SUB-INDICES REGRESSED AGAINST CURRENT AND LAGGED CORN PRICES

Corn prices	Beef and veal CPI	Pork CPI	Poultry CPI	Eggs CPI	Dairy and related products CPI	Cereals and bakery products CPI
Current	0.0387	0.0289	0.0468	0.1733	0.0200	0.0478
One quarter lag	0.0235	0.0335	0.0523	.....	0.0206	0.0402
Two quarter lag	0.0090	0.0285	0.0432	0.1431	0.0154	0.0276
Three quarter lag .....	.....	0.0088	0.0155	0.0862	0.0024	0.0084
Four quarter lag	0.0064	0.0014	0.0018	0.0204	0.0003	0.0010

The value chain for eggs is relatively more consolidated than other product value chains, as there are fewer handlers; eggs also generally have less value added than other food categories, and their price elasticity of demand is highly inelastic. These are all potential reasons to explain the slight but notable correlation between the eggs CPI and the corn price. Still, this relationship is too weak to be statistically significant. Despite the fact that milk is also considered to be a highly price-inelastic product, a very weak correlation with corn prices (lagged or current) is exhibited.

Considering that there are trends in some food CPI sub-indices, an attempt was again made to determine whether there would be a more notable relationship between the annual crop-year percent change in the corn price and the annual crop-year percent change in the food CPI sub-indices. Again, the eggs CPI had the strongest correlation with corn prices, but the R-squared value was only 0.30; the corn price variable was statistically significant at the 5 percent level (the first regression where this was the case), but it still suggests that only 30 percent of the yearly movements in the eggs CPI can be attributed to yearly corn price changes (see Table 10). Other correlation and regression results indicate very weak price relationships—in some cases negative.

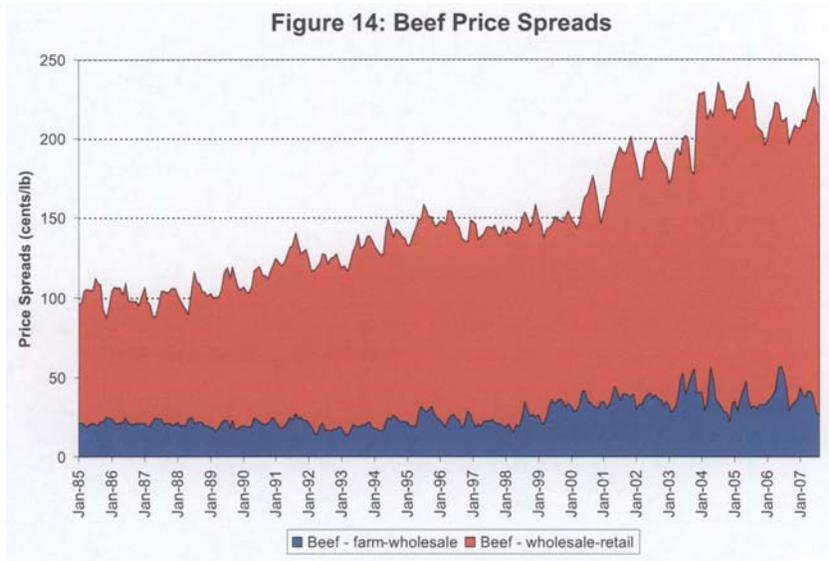
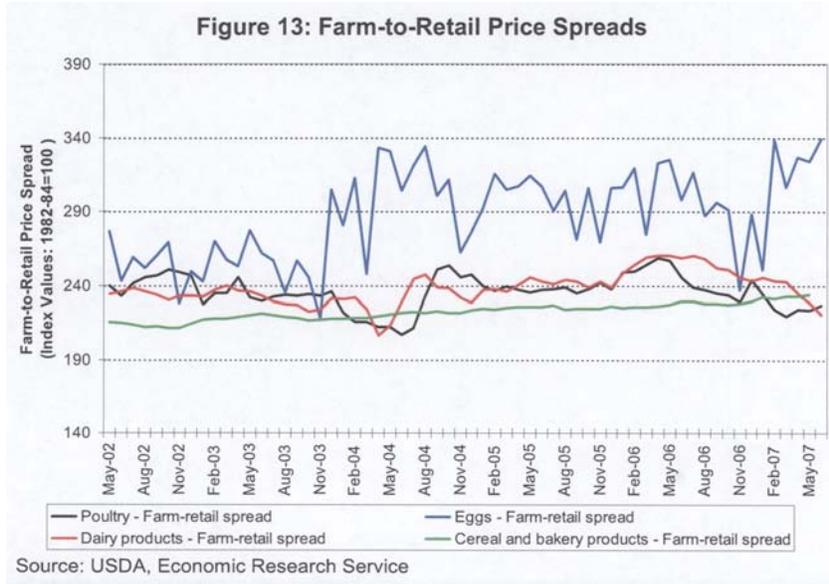
TABLE 10.—RELATIONSHIP BETWEEN ANNUAL CROP-YEAR CHANGES IN FOOD CPI SUB-INDICES AND CORN PRICE CHANGES

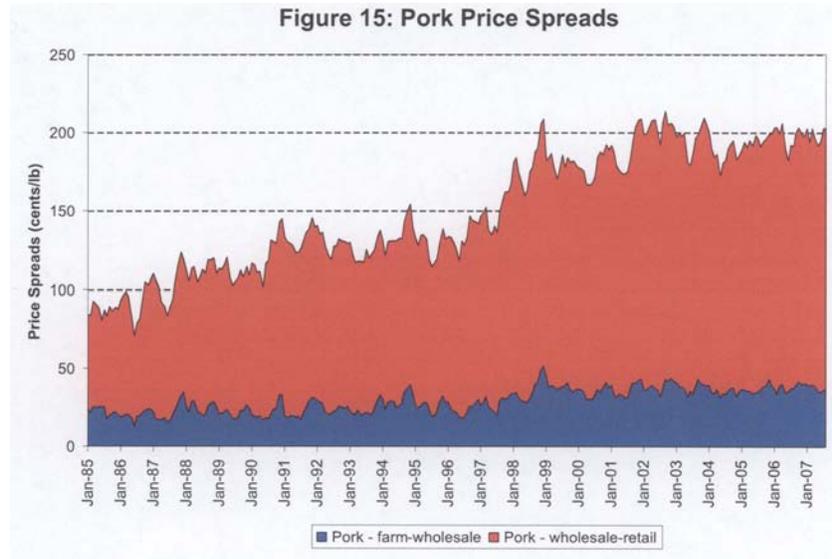
	Correlation	R-squared
Annual crop year percentage change in meats (beef and pork) CPI	-0.1078	0.0116
Annual crop year percentage change in beef and veal CPI	-0.0228	0.0005
Annual crop year percentage change in pork CPI	-0.1901	0.0361
Annual crop year percentage change in poultry CPI	0.0835	0.0070
Annual crop year percentage change in eggs CPI	0.5505	0.3031
Annual crop year percentage change in cereals and bakery products CPI	0.2756	0.0760

B. Price spreads among different levels of the value chain

There are several segments in the value chain between the farm and the consumer. For grains and oilseeds, there are grain elevators, bulk processors (e.g., flour millers and soybean crushers), further processors (e.g., packaged food manufacturers), wholesale distributors, and retail grocery and foodservice establishments that take basic commodities, transform them and deliver them to the consumer. For livestock and poultry, there are slaughterhouses and sometimes separate first-stage and further processors that produce in-tray meat cuts/poultry and packaged food products containing meats/poultry; distributors and retailers bring these products to consumers, while foodservice establishments prepare the meats/poultry before they are served.

There are various economic factors (supply/demand and costs) and industry structure issues that determine the margins at each of these value-chain segments and the degree to which they can pass along cost increases. The historical price spreads from farm to wholesale and from wholesale to retail are shown in Figure 13 to Figure 15.





C. Role of margins as shock absorbers

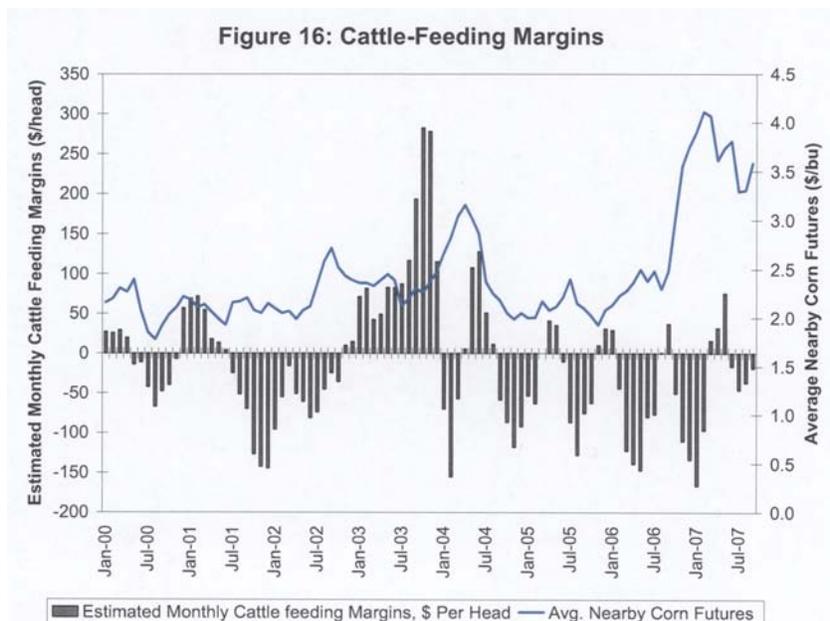
Given the weak correlation between corn prices and livestock, poultry, egg, and milk prices (at the farm level), it can be hypothesized that a considerable proportion of the impact of corn price changes is being absorbed in the value chain in the form of reduced margins to livestock producers. Importantly, this does not necessarily mean margins for livestock producers are low or negative, but rather that they are lower than they would be in the absence of higher corn prices. This section will look at the historical relationships between corn prices and production margins, as well as evaluate the impact of recent corn price changes.

1. Beef cattle

Cow-calf and cattle-feeding margins

Calf-crop levels have been declining steadily since about 1996, dropping from a level of 40.3 million head to 37.6 million head in 2007. During this same time period, a string of profitable years has been achieved in the cow-calf sector. Such strong profitability has not been experienced in the cattle feeding sector, where imputed margins have been negative since early 2004 (see Figure 16). This followed uncharacteristically high margins in 2003, which resulted mainly from the large increase in cattle prices during the last half of that year.⁴ In fact, over the long term from January 1985 to August 2007, average cattle feeding margins were negative, by an amount of $-\$15.42/\text{head}$. However, this does not necessarily mean that cattle feeders have experienced sustained losses over the time period, since there are many cost markups associated with feedlot operations that are already included in their margin calculations.

⁴Trade disruptions in the aftermath of the first domestic case of BSE in Canadian cattle helped boost United States fed cattle prices to record levels in the fall of 2003.



While total feed costs are undeniably affected by changes in the corn price, overall margins are not mirror-reflections of corn price changes. For one, there is often a lagged affect. The corn purchased in one period does not directly affect the profitability of the feeder steers being sold that period, but rather those that are being fed to be sold at a later date. Furthermore, cattle feeders anticipating higher corn prices will make operational adjustments. They will purchase fewer feeder cattle or only buy them at reduced prices; they can make ration adjustments to a degree; and/or they can decrease the number of days each animal is on feed (reducing total yardage costs and perhaps total feed consumption). The latter option is achieved by placing heavier-weight feeder cattle into the feedlot, or selling fattened cattle at a lower finished weight. There are also many other factors, such as beef demand, that affect the sales price of finished cattle but have nothing to do with the corn price.

Another mitigating factor has been the ability of feedlots to incorporate distillers grains into their feed rations. For each bushel of corn ground to make ethanol, almost one-third of the material ends up as distillers grains, and according to industry sources, approximately 42 percent of the distillers grains consumed in the United States in 2006 were used in beef cattle rations. Distillers grains are a high-energy, high-protein feed source that can be used as a feed substitute for corn. In fact, many recent feeding trials suggest that feeding wet distillers grains with solubles actually increases feed efficiency relative to corn.

Table 11 provides cost and revenue data for the U.S. cattle-feeding industry based on a proprietary feedlot production cost model developed by Informa. Annual data for calendar years 2004, 2005, and 2006 are presented. The key assumptions made are that feeder cattle are purchased and enter the feedlot at 750 pounds and are fed to a marketing weight of 1,200 pounds live, equivalent to 756 pounds carcass weight. The cost per head for feeder cattle entering the feedlot over this 3-year time-frame ranged from \$774 in 2004 to \$841 in 2006, with the 2005 cost very similar to 2006.

TABLE 11.—INFORMA FEEDLOT PRODUCTION COST MODEL
[Feedlot production cost model (\$/head)]

Marketing year	Market cost on 750 lb feeder steer	Feed cost	Total costs in feedlot	Total cost of 1,200 lb feeder steer	Market value of 1,200 lb feeder steer	Difference	Steer carcass weight
2004	774.40	167.92	270.00	1,044.40	1,012.97	- 31.43	807
2005	838.98	135.77	247.16	1,086.14	1,054.46	- 31.68	816
2006	840.99	150.92	268.72	1,109.71	1,035.62	- 74.09	833

1,200 lb liveweight fed steer yields an average carcass weight of 756 lbs

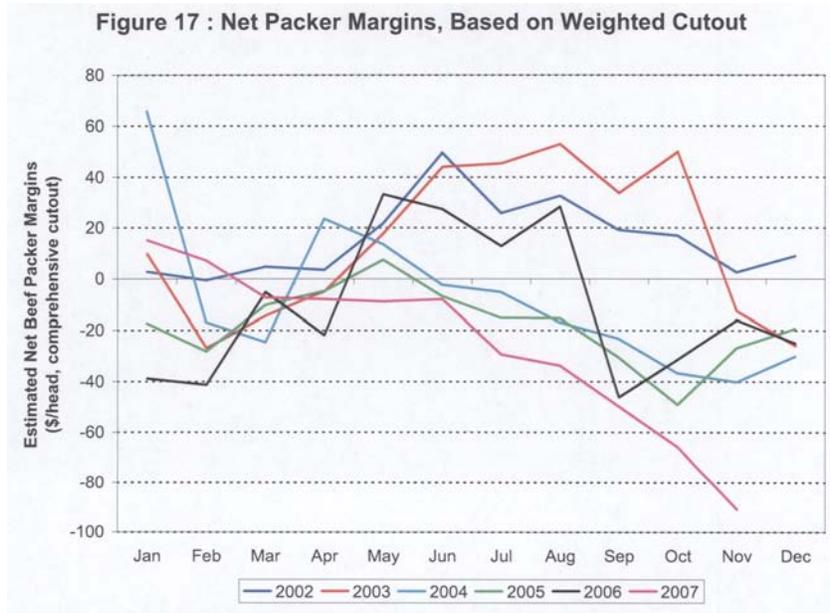
Source: Informa Economics, Inc.

Feed costs per head for 450 pounds of gain vary primarily with the cost of corn. Feed costs per head were about \$168 in 2004, dropped to \$136 in 2005 as corn prices declined, and then rebounded to about \$151/head in 2006 as corn prices turned higher. Total costs per animal during the feeding period are also provided; most changes are directly related to the cost of corn. For the 3 years analyzed, the feed cost as a percent of total costs ranged from a low of 54.9 percent in 2005 to a high of 62.2 percent in 2004.

For information purposes, a calculation of the total cost of a 1,200 pound fed steer is provided along with the average market value for that same animal. As can be seen, margins for feeding these animals were negative in each year under study, with 2004 and 2005 losses amounting to just over \$31/head while 2006 losses were more than double that at an estimated \$74/head. Of note is the fact that even with a \$32/head lower feed cost per head in 2005 relative to 2004, per-head production losses were the same in both years which, once again reflects the disconnect that exists between the cost of corn and the price of cattle.

Packer margins

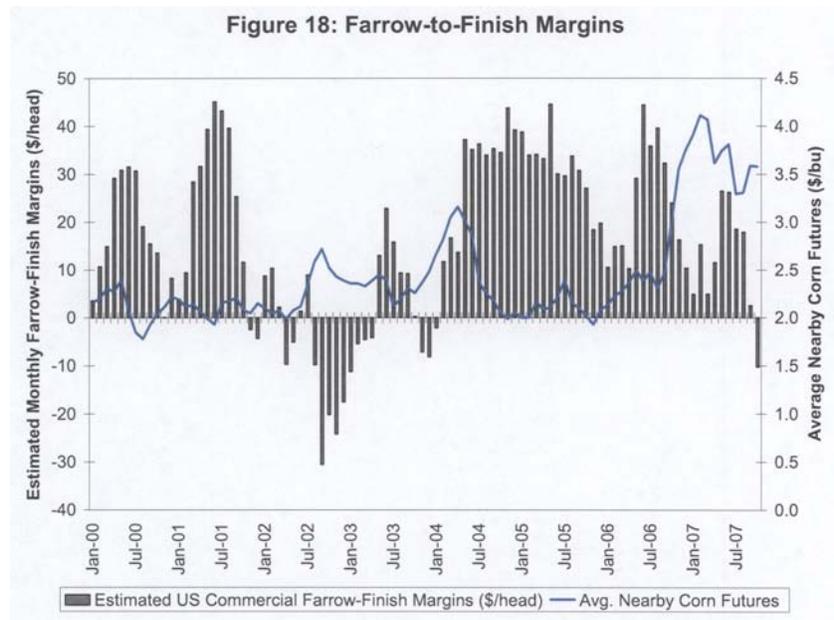
Packers have been experiencing the largest sustained losses of any of the beef supply chain participants. This has been a result of excess capacity chasing relatively tight supplies. Declining margins in the early 1990s forced plant shutdowns, and while margins improved in the mid-1990s, they have declined to historically low levels within the last 2 years. Figure 17 shows net packer margins since 2002.



2. Hogs

The hog industry has a much more integrated production system than the cattle industry, and as a result, pork production growth tends to be relatively stable, increasing at an average pace of 2 percent annually since 2000. Unlike cattle, hogs can not utilize forages, thus feed costs tend to account for a relatively large percentage of variable input costs.

Hog production margins remained high but volatile throughout most of the 1990s. However, in the late 1990s, producers expanded rapidly at the same time as the packing industry was reducing capacity, resulting in a huge price collapse in late 1998 and poor production margins for the next year. Production margins recovered in 2000 and 2001 only to turn negative during much of 2002 and 2003, as per capita pork supplies increased to burdensome levels once again (see Figure 18).



Beginning in late 2003, the U.S. pork industry began to experience an unprecedented boom in exports, which helped drive demand for pork and propel prices and margins to much higher levels. Since then, hog margins have remained mostly in the \$20 to \$30/head range, peaking periodically into the \$40/head range and dropping down into the teens in early 2006. The run of profitability since 2004 has been the best on record. Then, starting in early 2007, as corn prices had begun to increase significantly, hog margins took a slight decrease down into the \$5–\$25/head range, as the higher cost of gain offset hog prices, which remained favorable up through the summer of 2007. In the fall of 2007, on large production increases, hog production margins finally began to turn negative, ending the longest uninterrupted run of profits on record for the industry.

In Table 12, the total production cost per hog is calculated and converted to a total cost per cwt lean; it then is compared to the annual average market value per cwt lean to give an indication of production margins. The 2004–2006 time period was the best ever in terms of profitability for the hog production sector. Given that the long-term average margin for producers would fall somewhere in the \$7–\$8/cwt lean range, the United States industry headed into 2007 with a strong equity and financial condition fully able to withstand potential margin pressures arising from higher corn costs.

TABLE 12.—HOG PRODUCTION COST MODEL
[Farrow to finish cost of production model]

	Feed cost \$/head	Total cost \$/head	Total cost per \$/cwt lean	Market value per \$/cwt lean	Margin per cwt lean	Live weight	Carcass weight
2004	49.00	114.00	57.41	71.74	14.33	262.00	199.30
2005	37.00	103.00	51.09	68.28	17.19	264.00	200.70
2006	40.00	105.00	52.03	64.41	12.38	265.00	201.10

Butcher hog fed to 265 pounds

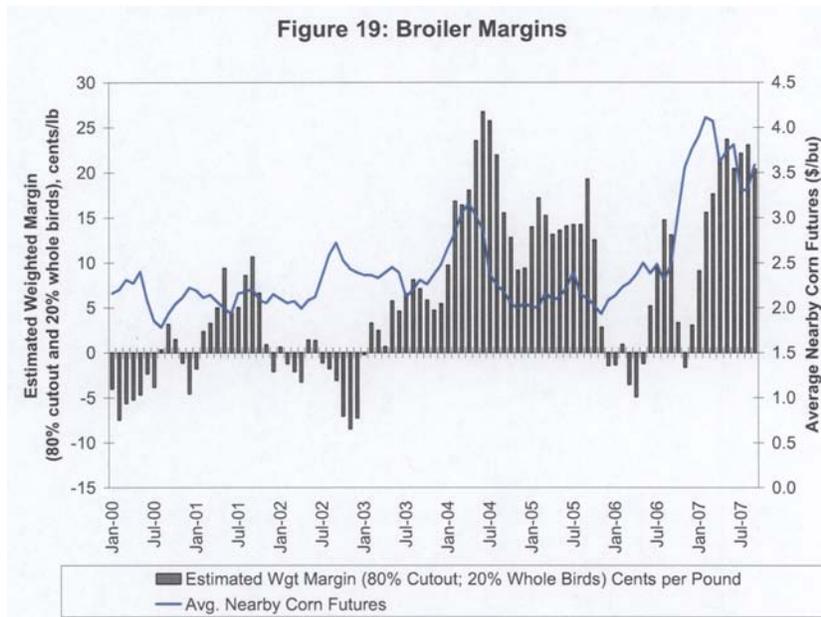
Source: Informa Economics, Inc.

3. Poultry: broilers and eggs

Broilers

The broiler industry is a highly integrated and concentrated industry with the top 25 production operations accounting for a large percentage of industry output. Since the decision making at the production level is consolidated into few hands, the broiler industry has the capability of making rather quick and meaningful production adjustment decisions.

There appears to be very little correlation between historical poultry margins and the price of corn (see Figure 19). In fact, when corn prices were at their lowest in early 2006, poultry margins were negative, and as corn prices began to take off, poultry margins climbed (although they took a brief dip when corn prices peaked in early 2007). In early 2003, poultry margins took a swing from negative to positive, despite relatively stagnant corn prices. This was a direct result from a cutback in production taken after the margin losses in 2002 and 2003. This cutback in production along with record high prices in late 2003 and early 2004 led to record high margins by mid-2004. Then, as exports dropped off due to the high poultry prices, margins began to decline. Corn prices throughout all of this have had relatively little effect. In fact, the record-high margins in mid-2004 directly followed a corn price spike in the preceding months.



As of November 2007, nearby CBOT corn futures were about \$4/bushel, while soybean meal has been averaging near \$220/ton. Based on these feed input prices, the feed cost per pound of broiler meat produced has risen to 25 cents compared to an

average of 20.6 cents in 2006. This appreciation in feed costs has raised total production costs to nearly 56 cents per pound. Even with this advance in feed costs, sales values for both whole birds and broiler parts are providing a weighted industry return of nearly 14 cents per pound (see Table 13).

With financial returns of this magnitude, odds favor the industry increasing production rather than maintaining the slight reductions that started last fall and lasted through the first quarter of 2007. The industry did initiate a production roll-back in the fall of 2006 due to poor margins; the weak margin situation was due to weak product prices in combination with rising feed costs. The production declines were large enough to raise product prices, and now that sales values have recovered so too have margins.

TABLE 13.—BROILER PRODUCTION COSTS AND IMPACT OF HIGHER CORN PRICE

[U.S. broilers]

	Average liveweight	Average eviscerated weight	Feed cost per RTC pound	Other cost per RTC pound	Total cost per RTC pound	Whole broiler net returns per RTC pound	Cutout net returns per RTC pound	Weighted net returns (80 percent cutout, 20 percent whole broilers) per RTC
2004	5.27	3.82	22.58	30.84	53.43	21.24	16.45	17.41
2005	5.38	3.90	19.52	30.84	50.36	22.46	10.21	12.66
2006	5.47	3.96	20.60	30.84	51.45	16.80	0.00	3.36
2007 (\$4.00/bu corn)	5.45	3.95	25.00	30.84	55.85	18.30	12.92	13.99
2007 (\$4.50/bu corn)	5.41	3.92	27.49	30.84	58.33	7.06	-4.05	-1.83

Eggs

Table 14 provides estimates of shell egg production costs. The feed cost per dozen eggs produced has varied from a low of 23.95 cents per dozen in 2005 to a high of 27.54 cents in 2004. Costs in 2006 for the feed component of production costs averaged 25.49 cents per dozen. Based on shell egg selling prices in the past 3 years, margins have been rather variable. In 2004, margins averaged over 18 cents per dozen even though feed costs were high, helped by very firm egg prices. Lower feed costs in 2005 were accompanied by weak egg prices and margins slipped to 5.41 cents before recovering to 10 cents per dozen in 2006. As with other livestock sectors, changes in feed costs have not been correlated with producer margins.

TABLE 14.—EGG COST OF PRODUCTION MODEL

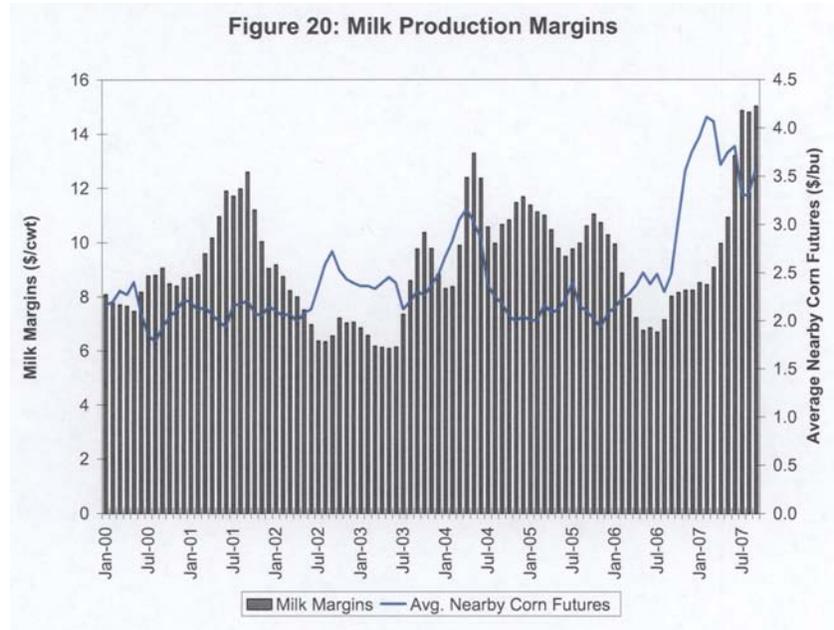
[Table egg cost of production model]

	Feed cost per dozen	Total cost per dozen	Margin per dozen	Urner Barry MW shell egg price
2004	\$27.54	\$49.80	\$18.04	\$86.54
2005	23.95	45.72	5.41	68.80
2006	25.49	47.37	10.00	75.44
\$4.00 corn	32.61	55.25	20.90	92.71
\$4.50 corn	34.75	57.75	18.40	92.71

Despite the highest feed costs in over 10 years, margins for the industry are the best in many years due to very strong egg prices. With average shell egg prices projected to be near 93 cents per dozen, production margins are very strong and this suggests the potential for expanding production rather than production declines.

4. Milk

Estimated milk production margins have averaged \$9.35/cwt over the time period from January 2000 to September 2007. Milk margins declined in 2002–2003 when corn prices increased, but margins climbed as corn prices spiked in 2003–2004 (see Figure 20). Both corn prices and milk margins declined during the latter part of 2004 and most of 2005. Despite current corn prices taking off, beginning in early 2007, milk margins have climbed to record high levels. This suggests that corn prices are a very minor determinant of milk production margins and are not a primary driver of milk prices.



Milk margins have been strong the past year largely as a result of rising milk prices, which have been driven by demand increases. U.S. milk consumption is increasing, and world dairy demand is also increasing. This world demand increase follows strong economic growth in many developing countries, and it is compounded by the fact that many major milk-producing countries, such as Australia, have been experiencing drought, thus tightening world milk and dairy supplies. Due to this strong global demand, U.S. exports of dairy products have increased significantly, and this has supported domestic price increases of milk and milk products.

VII. DRIVERS OF FOOD PRICE INFLATION

Given that historical data shows little relationship between corn prices and consumer food prices, the question arises: What does drive consumer food prices? This section will explore various factors affecting consumer food price inflation. In summary, food price inflation is caused by a complex set of factors.

A. Summary of usda models of the food CPI

USDA-ERS periodically forecasts the food CPI, and it is frequently asked to evaluate the impact of input price changes. The agency has three different models it uses to analyze the food CPI, with the choice of model depending on whether or not the objective calls for an analysis of short-run or long-run impacts. The ERS price-spread model and input-output model are used to analyze short-run impacts, while the variable proportions model is used in long-run analyses.

The price-spread model uses a weighted sum of percent changes in input prices from 16 food industries to estimate input price change effects on at-home food prices, where each input change is weighted by its respective cost share. It is assumed that each firm in each of the 16 food industries produces a single end-product; accordingly, the model combines a farm commodity with a set of non-farm inputs in fixed proportions.

Alternatively, the input-output model, while similar to the price-spread model, considers the indirect effects of changing input costs. For example, an increase in energy will not only affect the cost of producing the food item, but it will also impact the costs of producing other food production inputs. This model uses a system of equations from 50 food industries and 430 nonfood industries. Both of the short-run

models assume that consumers do not respond to retail price changes and that food producers do not alter their input proportions.⁵

However, the long-run model, the variable proportions model, relaxes these short-run restrictions. This eight-market food model uses a system-of-equations approach: (1) the first equation relates the industry's retail price to the price of one marketing or non-farm input, the exogenous farm supply, and the shift in consumer demand; and (2) the second equation relates the industry's farm price with the same three variables. Analyses using the variable proportions model have shown that changes in input prices do not always lead to food price increases. This effect is mitigated by firms altering their input proportions and by changing consumer demand.⁶

The ERS lists four key factors as influencing how input cost increases affect food prices.⁷ The first is the share of total costs accounted for by the input (this is discussed in detail below). The second is whether or not the input has adequate substitutes in the production process. The third is whether or not consumers have good substitutes for the food product. Last is the time period considered. In the short run, producers and consumers might not be able to adjust to price changes. If the price change is permanent, such adjustments can be made, but on the other hand, this might cause some firms to go out of business, causing the price increase to be greater in the long run.

B. Food marketing costs

1. Composition of the retail food dollar

The share of the final food product price accounted for by the cost of commodities purchased from producers has declined over the years. According to consumer expenditure data collected by the BLS and reported by the USDA, the "farm value" accounts for 19 percent of total food costs. This proportion has declined significantly from 37.2 percent in 1973 (see Figure 21).

The remaining portion of total retail food costs (i.e., in addition to the farm value) is known as the marketing bill. The marketing bill includes labor, packaging, transportation, energy, profits, advertising, depreciation, rent, interest, repairs, business taxes, and other costs.

With the decrease in the share of the food dollar accounted for by the farm value of raw materials, corn price changes have a declining impact on the overall food retail price. Furthermore, within many food items, corn constitutes only a portion of the farm value. Thus, in items where corn is only one of several farm inputs, total food costs attributable to the cost of corn will be on average even less than 19 percent.

While 19 percent represents the average share of farm value in the retail food dollar, this percentage varies considerably among food items. Table 15 provides the most current annual average data available for food categories for which the USDA estimates the farm value share of the retail food price.⁸

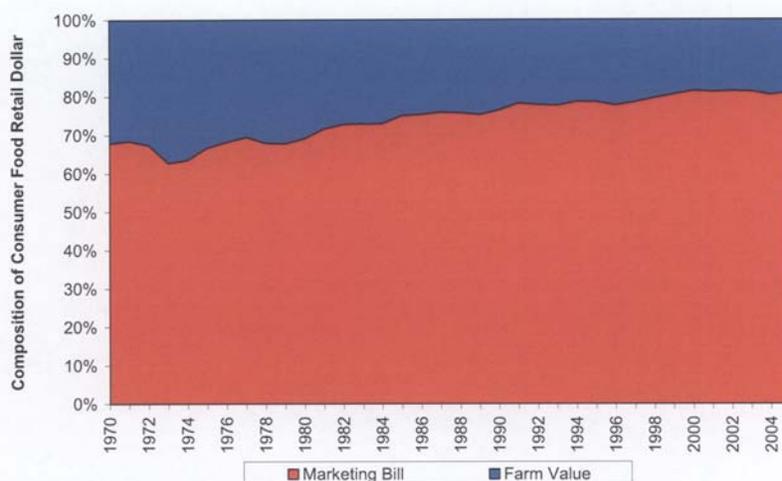
⁵This may be a rather strong assumption, especially for certain food products in which demand is elastic, there are multiple substitute products available to consumers, or for which there are substitute products available within the production process.

⁶Reed, A.J., K. Hanson, H. Elitzak, and G. Schluter. 1997. "Changing Consumer Food Prices: A User's Guide to ERS Analyses." Technical Bulletin #1862. Economic Research Service, Washington, DC.

⁷Economic Research Service. 2007. "Food CPI, Prices, and Expenditures: How Changes in Input Costs Affect Food Prices." Retrieved from www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/howchangesininputcostsaffect/.

⁸The most recent annual average data available for cereals and bakery products, fats and oils, and dairy were for 2005. Annual averages were available for 2006 for meat product data.

Figure 21: Evolution of the Food Dollar by Cost Component



Source: USDA, Economic Research Service

TABLE 15.—FARM VALUE SHARE OF RETAIL FOOD PRICE BY FOOD CATEGORY

Food product category	Farm value as percentage of retail price
Cereals and bakery items	6
Beef	47
Pork	30
Chicken	36
Dairy products	36
Fats and oils	17

The farm value share of the food dollar is provided for specific food products rather than categories in Table 16. The product examples that were selected for the table either are derived from corn or are commodities affected by the corn market (e.g., livestock, poultry, wheat, and soybeans). Again, total farm-based input costs are shown, not only the cost of corn.

TABLE 16.—EXAMPLES: COST OF FARM INPUTS AS A SHARE OF PRICES OF SELECT RETAIL FOOD PRODUCTS

Food product	Farm value share of retail price (percentage)	Example retail prices (price per pound)	Cost of input(s) purchased from farm (price per pound)
Milk, ½ gal.	34	\$3.84	\$1.31
Flour, wheat, 5 lbs	19	0.36	0.07
Bread, 1 lb	5	1.21	0.06
Margarine, 1 lb	15	1.26	0.19
Corn flakes, 18 oz. box	4	1.65	0.07
Corn syrup, 16 oz. bottle	3	1.57	0.05
Ground beef, 1 lb	47	2.37	1.11
Bacon, sliced	28	3.78	1.06
Chicken, fresh whole	47	1.14	0.54

Sources: USDA, ERS (utilizing most current data available for each food product category, as of October 2007)

VIII. PERSPECTIVE ON COMMODITY PRICE INFLATION

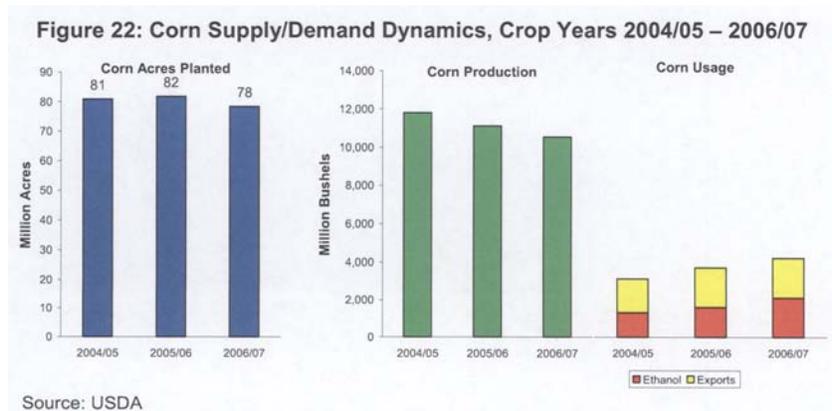
Although it has been shown in the preceding sections of this report that corn price changes have, at most, a weak correlation with changes in the food CPI, additional context can be provided to this report by examining not only the higher corn prices that have occurred since fall 2006 but also the environment of general commodity price inflation in which this has been occurring.

A. Corn prices

The “conventional wisdom” expressed in the media is that a dramatic increase in the use of corn in ethanol production caused corn prices to increase substantially, particularly since the fall of 2006. However, even the reason for the increase in corn prices is more complex than indicated by the media.

Fueled by a record yield, the United States harvested a record corn crop of 11.8 billion bushels in 2004. In 2005, acreage remained steady, but a more historically consistent yield led production to fall to 11.1 billion bushels. Then, in the spring of 2006, price signals in the futures markets gave farmers the incentive to plant more soybeans, and the acreage planted to corn fell by 3.5 million acres. Combined with relatively flat yields, corn production fell for the second year in a row, to 10.5 billion bushels.

Thus, corn production fell by 1.3 billion bushels over 2 years, even though the usage of corn in ethanol production expanded from 1.3 billion bushels in 2004–2005 to 2.1 billion bushels in 2006–2007 (see Figure 22). Yet, the ethanol industry was not the only source of additional demand. U.S. corn exports, which were 1.8 billion bushels in 2004–2005, rose to 2.1 billion bushels in both 2005–2006 and 2006–2007—a level that was at the top of the range experienced over the previous decade. So, it was basic supply and demand—a reduction in supply and an increase in demand from both ethanol and exports—that led to prices moving higher in the fall of 2006.



Then, in 2007, U.S. farmers proved that they could respond to the market’s need for more corn. In the 1996 and 2002 Farm bills, producers had been relieved of the base-acre and set-aside systems that had previously restricted what they could plant, and they now had “freedom to farm”—the ability to allocate their crop acreage as they saw fit, with few remaining constraints. With this freedom and corn prices that provided a significant net revenue premium per acre over soybeans, farmers planted 93.6 million acres of corn in 2007—the highest level since the 1940s. As of November 2007, the USDA estimates the crop at a record 13.2 billion bushels (see Table 17).

As was mentioned earlier in this report, the level of corn stocks at the end of the crop year relative to the volume of corn consumed during the year is a key factor in the pricing of corn. At the end of 2004–2005, when the previous record crop was harvested, the stocks-to-use ratio was nearly 20 percent, which is plentiful by recent historical standards. However, with lower production and rising ethanol usage and exports, the stocks-to-use ratio was cut almost in half, to just under 12 percent, in 2006–2007. This was reflected in substantially higher prices.

Despite Informa’s projections of an almost 800-million-bushel increase in the corn grind for ethanol and an additional 250 million bushels of exports, the record crop

of 2007 is forecast to allow stocks to build to over 2.1 billion bushels by the end of the crop year, allowing the stocks-to-use ratio to rebound to 17.1 percent. Normally, this would be expected to allow prices to ease significantly. However, soybean oil prices have been lifted by rising crude oil (petroleum) prices, and as a result the pace of soybean consumption is expected to bring stocks to meager levels by the end of the 2007–2008 crop year, and if there is not a rebound in soybean acres planted in 2008 stocks could reach unsustainably low levels. This has led to upward pressure on soybean prices, and in order for corn acreage not to fall too far in the face of continued ethanol industry expansion—and likely continued strength in exports given weakness in the U.S. Dollar—the market has maintained relatively high corn futures prices.

Based on futures prices as of November 2007, farmers would be expected to plant nearly 89 million acres of corn in 2008. If this were to occur, Informa's forecast of the stocks-to-use ratio for 2008–2009 would be 16.5 percent, which is ample but not burdensome. The national average farm price for corn, which Informa forecasts to be \$3.25/bu in 2007–2008 would be forecast to fall to \$2.85/bu in 2008–2009 under this scenario.

However, absent a very favorable soybean yield in 2008, such a high level of corn plantings would likely not allow soybean production to be sufficient to prevent stocks from falling to an unsustainable level, and prices would have to rise even further to ration demand. Accordingly, it is expected that by the spring of 2008 the market will anticipate this imbalance, and corn acres will be reduced further, with balance perhaps occurring at roughly 86 million acres of corn. In this case, even with no change in the demand forecast, the stocks-to-use ratio for corn would be forecast to recede to 12.7 percent in 2008–2009, which would be sufficient and would allow corn prices to come down.

TABLE 17.—U.S. CORN BALANCE SHEET

	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09
Planted acres	79.5	80.2	77.4	79.6	75.7	78.9	78.6	80.9	81.8	78.3	93.6	88.9
Harvested acres	72.7	72.6	70.5	72.4	68.8	69.3	70.9	73.6	75.1	70.6	86.1	81.8
Yield	126.7	134.4	133.8	136.9	138.2	129.3	142.2	160.4	148.0	149.1	153.0	160.0
Beginning inventories (September 1)	883	1,308	1,787	1,718	1,899	1,596	1,087	958	2,114	1,967	1,304	2,117
Production	9,207	9,759	9,431	9,915	9,503	8,967	10,089	11,807	11,114	10,535	13,168	13,083
Imports	9	19	15	7	10	14	14	11	9	12	10	10
Total supply	10,099	11,085	11,232	11,639	11,412	10,578	11,190	12,776	13,237	12,514	14,482	15,209
Feed and residual	5,479	5,469	5,665	5,842	5,864	5,563	5,795	6,158	6,155	5,598	5,700	5,400
Food/seed/industrial	1,805	1,846	1,913	1,957	2,047	2,340	2,537	2,686	2,981	3,488	4,290	5,500
Of which: ethanol for fuel	481	526	566	628	706	996	1,168	1,323	1,603	2,117	2,900	4,100
Domestic use	7,284	7,316	7,578	7,799	7,911	7,903	8,332	8,844	9,136	9,086	9,990	10,900
Exports	1,507	1,983	1,937	1,941	1,905	1,588	1,900	1,818	2,134	2,124	2,375	2,150
Total use	8,791	9,298	9,515	9,740	9,815	9,491	10,232	10,662	11,270	11,210	12,365	13,050
Ending inventories (August 31)	1,308	1,787	1,718	1,899	1,596	1,087	958	2,114	1,967	1,304	2,117	2,159
Stocks/use (percent)	14.9	19.2	18.1	19.5	16.3	11.4	9.4	19.8	17.5	11.6	17.1	16.5
Futures price (\$/bu)	2.57	2.16	2.10	2.09	2.15	2.37	2.64	2.12	2.23	3.54	3.55	3.25
Farm price (\$/bu)	2.43	1.94	1.82	1.85	1.97	2.32	2.42	2.06	2.00	3.03	3.25	2.85

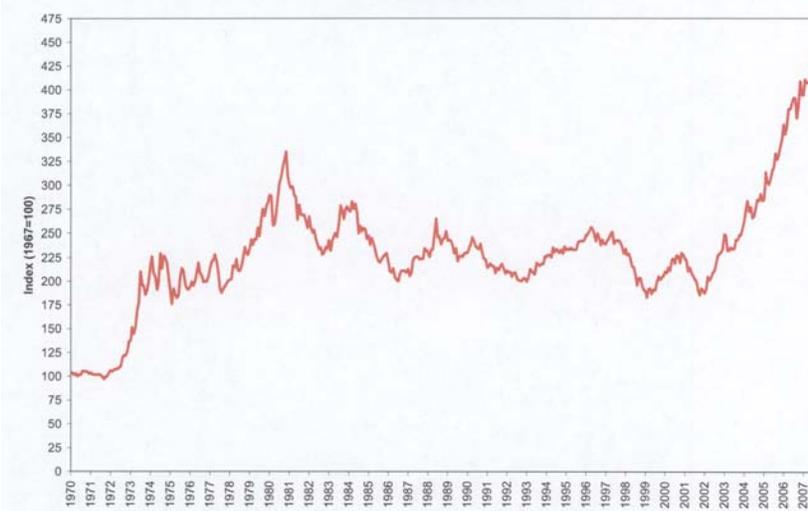
Sources: USDA, CBOT (History); Informa Economics.

Thus, producers have demonstrated their ability to respond swiftly to market conditions in making their acreage decisions. Assuming normal weather, this ability and willingness to shift acres is expected to mitigate any further inflationary pressures on corn prices through at least the 2008–2009 crop year, despite expectations for continued rapid growth in the ethanol industry. As a final note, there is evidence that the biotech corn traits that were first introduced in the United States in 1996 and have been gaining broader adoption in recent years have led to the potential for above-trend yields to be achieved; to the extent that this occurs or technology developments accelerate, this would further mitigate any upward pressure on corn prices.

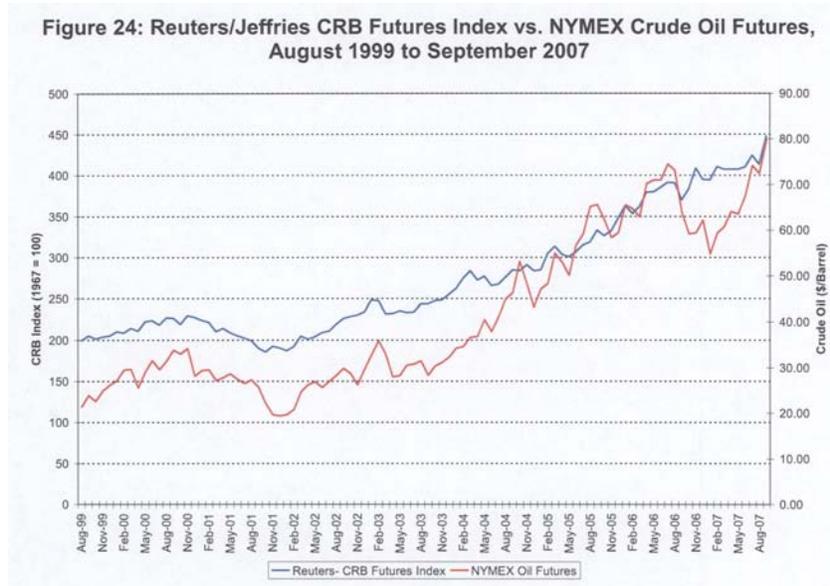
B. General commodity and macroeconomic inflation

The increase in corn prices since the fall of 2006 is not occurring in a vacuum, and in fact the Reuters/Jeffries CRB index, an index of commodity prices, has more than doubled since 2001 (see Figure 23). The index is a weighted average of the prices of 19 commodities in three categories: energy, agriculture, and metals.

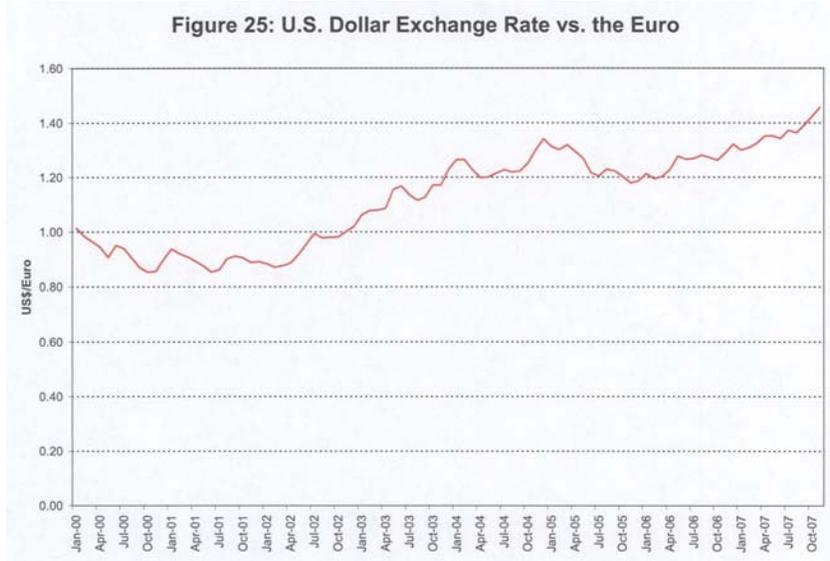
Figure 23: Monthly Average Reuters/Jeffries CRB Futures Index, January 1970 - September 2007



Crude oil, heating oil, and unleaded gasoline carry one-third of the overall weighting of the index. Therefore, it is not surprising that the index has been on a prolonged run as crude oil prices have surged from around \$20/barrel in November 2001 to almost \$100/barrel in November 2007 (see Figure 24).

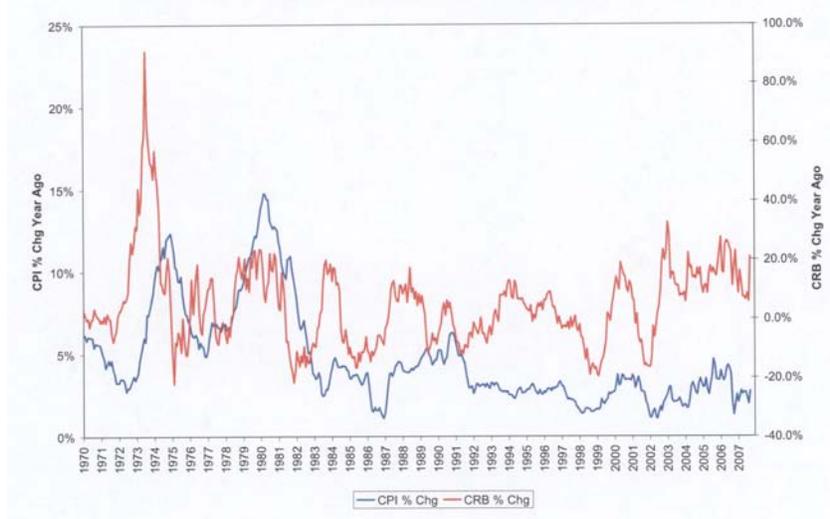


However, the weighting of energy commodities in the index masks the fact that the prices of metals and, more recently, agricultural commodities have been increasing. There is some interrelation of the price increases, as the demand for basic materials that has been generated by the strong economic growth in developing countries, especially China and India, encompasses not only energy but also metals. Higher energy prices have been a contributor to higher agricultural commodity prices as well, since they have fostered higher prices for ethanol and biodiesel and the expansion of those industries. Moreover, the depreciation of the U.S. Dollar, which has been particularly acute in the fall of 2007, has affected the prices of multiple commodities, making U.S. corn more affordable and thereby increasing export demand, and contributing to the rise in oil prices (see Figure 25).



In summary, corn has been one of several commodities that have experienced upward price pressure in recent years. Historically, rising prices for commodities in general—not corn in isolation—have contributed to overall macroeconomic inflation (see Figure 26). This was particularly the case during and after the oil price shocks of the 1970s. However, as the U.S. economy has become more service oriented and the manufacturing sector has accounted for a declining share of gross domestic product, there has been less of a direct impact of higher commodity prices on general inflation. Productivity gains have also helped dampen inflation.

Figure 26: Year-Over-Year Percent Changes in the Reuters/Jeffries CRB and CPI Indexes, 1970 - September 2007



IX. CONCLUSIONS

While there have been a number of stories in the media over the last year indicating that consumer food prices are being driven higher by an ethanol-induced increase in corn prices, there is little evidence of such a simplistic cause-and-effect linkage. In reality, a complex set of factors drives the food CPI. In fact, the marketing bill, defined as the portion of the food dollar that is not related to the farm value of raw materials, has a stronger relationship with the food CPI than does the cost of corn. While an increase in corn prices will affect certain industries—for example, causing livestock and poultry feeding margins to be lower than they otherwise would have been—the statistical evidence does not support a conclusion that there is a strict “food-versus-fuel” tradeoff that is automatically driving consumer food prices higher.

APPENDIX A: BACKGROUND ON THE “FOOD VS. FUEL” DEBATE

A. Media coverage

There has been no shortage of media attention given to the food-versus-fuel debate since late 2006. Major news sources such as The Washington Post, Los Angeles Times, CBS News, U.S. News & World Report, and The Wall Street Journal have run stories indicating that rising corn demand is causing an increase in consumer food prices. The following quotes are representative of stories and editorials that have been carried by the media:

- “Corn prices in America have spiked. And since corn is also a prime ingredient for animal feeds and sweeteners, prices likewise are rising for poultry, beef and everything from soft drinks to candy.” (The Washington Post; June 30, 2007)
- “While we worry about gas prices, the cost of milk, meat, and fresh produce silently skyrockets. So like the end of cheap energy, is the era of cheap food also finally over?” (Washington Times; June 30, 2007)
- “. . . rising food prices are threatening the ability of aid organizations to help the world’s hungriest people . . .” (Christian Science Monitor, quoted by CBS News; July 29, 2007)
- “Food prices were up 3.9 percent in April over a year ago. The overall inflation rate in the same period: 2.6 percent. Over the past 5 years, food prices have risen 12.2 percent nationwide. . . . Fuel costs and rising demand for corn are helping to drive the higher prices, experts said. Corn, for instance is in growing demand to make ethanol. Because it’s used so much in cattle feed, that’s pushing up prices for meat, milk, and eggs.” (Chicago Sun Times; June 6, 2007)
- “Ethanol already consumes so much corn that signs of strain on the food supply and prices are rippling across the marketplace.” (U.S. News & World Report; February 4, 2007)
- “Further, there’s only so much farmland to go around. To meet the Senate’s 2022 renewable-fuels mandate of 35 billion gallons using corn would take 96 million acres. Last year, the entire corn crop, most of which went to food, was grown on 80 million acres. The only source of unused farmland is 37 million acres in the Federal Conservation Reserve Program, under which the Government rents cropland from farmers for wetlands and wildlife.” (L.A. Times; August 20, 2007)

However, not all mainstream media reports have drawn a simplistic link between ethanol production and food prices. Bad weather, increasing export demand for certain food products, and high transportation costs resulting from rising fuel prices also have been cited as being additional drivers of recent food price increases. Additionally, the declining cost of corn as a proportion of total food prices has been used as a counter-argument, particularly regarding the prices of higher value-added products. Recently, the U.S. Department of Agriculture (USDA) acting Secretary Chuck Conner was noted as saying, “Ethanol fuel is getting too much of the blame for what’s happening in grocery store aisles” (Food and Fuel America; October 5, 2007).

While the statements made in the mainstream media are what reach the general public, there is not necessarily much analytic rigor behind them. Given all the claims and counter-arguments in the media, and given the importance of the policy debate occurring regarding renewable fuels, it is useful to look at more in-depth, analytically oriented research on whether there is a connection between ethanol production and consumer food prices.

B. Research publications

Despite the considerable amount of attention given to this topic by the media, relatively few studies have been conducted to provide evidence supporting one side or the other on this issue.

1. Center for Agricultural and Rural Development

A study entitled “Emerging Biofuels: Outlook of Effects on U.S. Grain, Oilseed, and Livestock Markets” (May 2007) was conducted by the Center for Agricultural and Rural Development (CARD) at Iowa State University. This study utilized a multi-product, multi-country, deterministic partial-equilibrium model to evaluate the impacts of ethanol production on planted acreage, crop prices, livestock production and prices, trade, and retail food costs. The analysis assumes current tax credits and trade policies are maintained. Essentially, the study authors customized the modeling system of the Food and Agricultural Policy Research Institute (FAPRI), which models supply and demand for all important temperate-climate agricultural products. This model was then utilized to analyze long-run equilibrium prices under several ethanol outlook scenarios.

The CARD study concluded that ethanol expansion will cause long-run crop, livestock, and retail food price increases. The study predicted that in the long run, general food prices (food at home and food away from home) will increase 0.7 percent to 1.8 percent more than they otherwise would have.

There were two basic ethanol scenarios considered. Under the baseline oil-price assumption, model results indicate a 0.7 percent increase in food prices due to ethanol production. If oil prices were \$10/barrel higher than the baseline assumption, the ethanol impact on food prices increases to 1.8 percent. The highest increases are predicted for at-home food prices (0.9 percent-2.2 percent), whereas away-from-home food-price increases are slightly more modest (0.6 percent-1.5 percent).

The study then deconstructs the predicted increase in prices of food consumed at home into more specific food item categories, predicting that the greatest inflationary pressure will be evident in the eggs market. The range in consumer egg price inflation as a result of ethanol production is estimated between 5.4 percent and 13.5 percent. Additional consumer price inflation is estimated to range between 2.5 percent and 6.3 percent for meats, between 1.4 percent and 3.5 percent for dairy, and 0.5 percent to 1.2 percent for cereal and bakery products.

2. National Corn Growers Association/Advanced Economics Solutions

The National Corn Growers Association (NCGA) released a report in March 2007 addressing the impact of higher corn prices on consumer food prices. They compiled the analyses/reports of the USDA, the Bureau of Labor Statistics (BLS), and Advanced Economics Solutions (AES, a consulting firm commissioned by the NCGA to analyze the impact of increased corn prices on retail food prices). Given USDA estimates of food input costs as a percentage of retail food prices and hypothetical corn prices of \$3.50 to \$4.00 per bushel (bu), AES estimated that retail prices for meat, poultry, fish, and eggs would be 4 percent to 11 percent higher than they otherwise would have been during the 2007–2009 period. As for consumer dairy prices, increases in the range of 4.3 to 8.3 percent were predicted. The study predicts a much lower increase in price inflation levels for cereal/bakery items of 0.67 percent to 1 percent annually. However, an important assumption behind the study is that while food-processing margins might be compressed in the short run due to higher corn prices, in the long run all of the increase in corn prices will be passed on to consumers.

3. U.S. Department of Agriculture

The publication “USDA Agricultural Projections” (February 2007), which was also incorporated into the NCGA report, projected market impacts related to ethanol supply; corn production, prices, and usage; other crop production and prices; livestock production and prices (including the impact of distiller’s grains); and farmland values. The study concluded:

- Consumer price inflation rates for red meats, poultry, and eggs will exceed the general inflation rate between 2008 and 2010, raising the inflation rate of food prices (all food) above the general inflation rate by as much as about 0.5 percent;
- Despite this initial period of higher food price inflation, on average, retail food prices will increase less than the general inflation rate over the next 10 years (the food-price inflation rate is predicted to fall below the general inflation rate after 2010); and
- Highly processed foods, such as cereals and bakery products, will rise at a rate near the general inflation rate.⁹

⁹Since the USDA projections were released in February 2007, some of the assumptions are now out of date. For instance, study authors did not foresee 93 million acres planted to corn in 2007, or wheat supply issues that have caused a spike in wheat prices.

4. American Farm Bureau Federation

The American Farm Bureau Federation published an article (July 2007) in which it indicated that while meat and dairy consumer price indices (CPI) have increased more than the "core CPI" (i.e., the average rate of inflation in the general economy, excluding food and energy prices), these increases are not related to corn prices. The analysis illustrates that recent corn price increases are not related to meat and dairy prices (on-farm). The point is made in the article that meat prices were increasing long before corn prices started to increase. It concludes that with little relationship between corn prices and meat and dairy prices, very little of the increase in food costs—particularly for meat and dairy products—can statistically be attributed to increased corn prices.

Senator BROWNBACK. The figure that I've seen is that it reduces the price 15 percent; the gasoline price in the country would be 15 percent higher if not for ethanol. So I think we've got to look at this thing as an overarching supply and demand situation. While you take corn out of the market to make ethanol, it doesn't go in the trash can; it goes in the gas tank; and that there's a supply and demand there that has a positive impact.

Plus, I was looking at the prices. In this country we don't eat that much corn directly. We do some, but mostly it's fed to livestock. So it has an indirect impact on the overall food prices in this country. You can escalate corn prices 40 percent with having minimal, less than 1 percent, impact on overall food prices in the country.

Do you chart that number or look at that number?

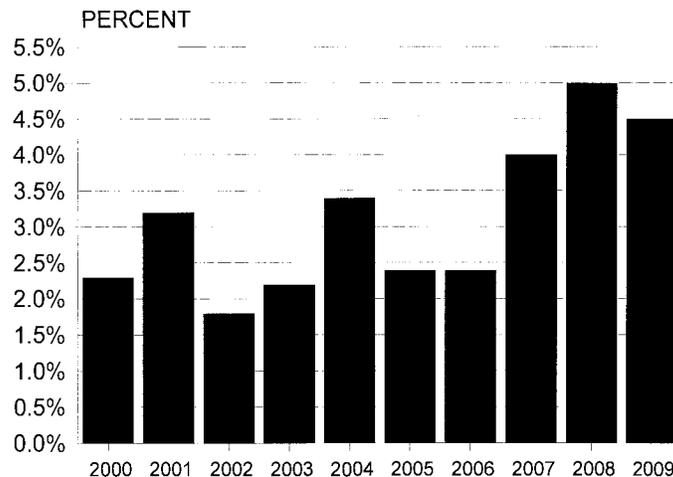
Mr. LUKKEN. Yes, we look at all sorts of fundamental numbers like that, yes.

Senator BROWNBACK. I hope you can supply that one to us as well.

Thank you, Mr. Chairman.

[The information follows:]

CHANGES IN FOOD PRICES FROM PREVIOUS YEAR 2000 THROUGH 2009



SOURCE BLS: 2008 AND 2009 DATA ARE FORECASTS

Senator DURBIN. Chairman Lukken, thank you very much. We appreciate your testimony today. We look forward to sending you some questions in writing, myself and other members of the subcommittee, and hope you can give us some timely answers.

Mr. LUKKEN. Thank you for allowing me to testify.

Senator DURBIN. You bet.

SECURITIES AND EXCHANGE COMMISSION

STATEMENT OF HON. CHRISTOPHER COX, CHAIRMAN

Senator DURBIN. Chairman Cox, welcome to the subcommittee. Senator Brownback and I are minimizing our opening statements so that we'll have a few more moments to ask questions and not take too much of your own time. If you would like to summarize your opening statement, the entire written statement will be made part of the record.

SUMMARY STATEMENT

Mr. COX. Thank you very much, Mr. Chairman, Senator Brownback, and members of the subcommittee. Thank you for the opportunity to testify today about the President's fiscal year 2009 budget request for the SEC.

I'll begin by saying that, in return for the SEC's not quite \$1 billion budget, the taxpaying public is getting significant value. The SEC oversees the nearly \$44 trillion in securities trading annually on U.S. equity markets, the disclosures of about 13,000 public companies, and the activities of about 11,000 investment advisers, 1,000 fund complexes, and 5,700 broker-dealers.

The Commission is active on a number of fronts working to protect investors, promote capital formation, and foster healthy markets. The failure of Bear Stearns has brought to the fore the regulatory gap in the supervision of investment banks. Although Federal law provides for supervision of commercial banks, no such scheme exists for the largest investment banks. The Commission created the voluntary Consolidated Supervised Entities (CSE) Program to partly fill this gap. Without this voluntary program, there would have not been any consolidated information available to regulators, including the New York Fed, when Bear Stearns precipitously lost liquidity in mid-March 2008.

While the CSE program is at present voluntary and receives no dedicated funding from the Congress, we understand that Congress may be acting to fill this gap. I strongly support this because of the fact that even today the SEC has no explicit statutory mandate to supervise the Nation's investment banks on a consolidated basis. It is a statutory no-man's-land that should not be tolerated indefinitely.

For the meantime, I have prepared information for the subcommittee concerning the SEC's proposed increases to the staffing in the CSE Program that I have submitted along with my testimony.

In addition to the important work of investment bank supervision, the Congress recently gave the Commission significant new statutory authority over credit rating agencies. That has permitted us to register credit rating agencies with the SEC beginning last fall. As of the end of September 2007, seven credit rating agencies,

including those that are most active in rating subprime securities, became subject to the Commission's new oversight authority.

In the 6½ months since the Commission's authority over these credit rating agencies went into effect, two additional ratings agencies have registered with the Commission, so that now there are nine nationally recognized statistical rating organizations registered with the SEC and in competition in the marketplace.

We have aggressively used our new examination authority under the new law to evaluate whether credit rating agencies are adhering to their published methodologies for determining ratings and managing conflicts of interest. We will shortly publish the findings of these examinations, which have focused on the three largest firms most active in rating subprime-related securities, and we will soon propose significant new rules governing credit rating agencies that build on the lessons learned from the recent subprime market turmoil.

Through the SEC's broader inspection and examination program, the SEC is focusing on securities firms and the adequacy of their controls over valuation, their controls to prevent insider trading, the level of protection they provide to seniors in our markets, and the adequacy of their compliance programs to prevent, detect, and correct violations of the securities laws.

The SEC is also working closely with our fellow regulators to promote the fairness and stability of the markets. Under the recently concluded MOU with the CFTC to which you just referred, Mr. Chairman, and Mr. Chairman Lukken has just talked to you about, we have established what we hope will be a durable process to better regulate today's increasingly interconnected markets.

To better anticipate future problems across all areas of the securities markets, we are more than doubling the size of the SEC's Office of Risk Assessment. The newly expanded office will help throughout the Commission to look around the corners and over the horizon in order to identify potentially dangerous practices before they impact large numbers of investors and the economy as a whole.

From both a budget and a policy standpoint, the SEC is first and foremost a law enforcement agency. The budget submission for fiscal 2009 would represent the largest amount of money ever devoted by the agency to pursuing wrongdoers in all corners of the securities markets. To lever the effectiveness of that investment, we are using new technology, including a new agency-wide enforcement database called the Hub, along with improved management of resources to focus our enforcement efforts on the areas of greatest risk for investors.

The Enforcement Division is aggressively investigating possible fraud, market manipulation, and breaches of fiduciary duty in the subprime area through our subprime working group. It's also pursuing significant investigations of insider trading, wrongdoing in the municipal bond market, Internet and microcap fraud, and scams against seniors. We've taken additional steps to safeguard investors and protect the integrity of the markets by redoubling our efforts to stamp out abusive naked short selling, including recently proposing a rule that would explicitly target naked short selling as fraud.

The SEC is also building upon its growing success in returning funds to harmed investors. Since the agency first received authority from Congress under the Sarbanes-Oxley Act to use FAIR funds, we have returned a total of more than \$3.7 billion to harmed investors. We expect to distribute another three-quarters of \$1 billion in the next 6 months alone, aided by the establishment of a dedicated Office of Distributions and Collections and a new computer tracking system for investor funds from penalties and other sources called Phoenix.

The SEC's efforts in the international arena have by necessity been a key focus of my chairmanship. The world's regulatory and enforcement authorities are finding that we have to collaborate if we are to protect our own investors. Accordingly, the SEC is working closely with our international counterparts to monitor the markets and pursue fraudsters wherever they run.

We're also exploring the idea of mutual recognition among a very few high standards countries with robust regulatory and enforcement regimes in order to strengthen our level of cooperation.

In recognition of the interconnectedness of global markets, the SEC is continuing to expand our own expertise in international financial reporting standards and to explore additional ways that U.S. investors might benefit from the increased comparability of investments in the marketplace that would result from using a truly global high-quality standard.

This year, after years of experience through the SEC's voluntary interactive data pilot program, the Commission will consider beginning to migrate public company filing with the SEC to interactive data. That would allow investors to have far easier access to information from the paper forms and financial statements that companies have filed since the 1930s. In addition, they would be able to use computers to easily and instantly compare information about the companies and funds in which they invest.

There are other investor-friendly improvements in store for mutual fund disclosure. In the coming months the SEC will consider allowing investors to have access to a summary prospectus for mutual funds that would succinctly present key facts about their funds up front and, with progressively more detailed information available in layers, give them an opportunity to exploit the Internet's easy search capabilities.

PREPARED STATEMENT

Mr. Chairman, these are only some of the highlights of what the agency has recently been focused on and what we have planned for the coming year. The SEC's mandate is as broad as it is important to America's investors and to our markets. On behalf of the agency, let me thank you for the support that you and this subcommittee have so well provided for these vital efforts. I want to thank you for this opportunity to discuss the SEC's appropriation for fiscal 2009, and I look forward to working with you to meet the needs of our Nation's investors. I'll be happy to answer your questions.

[The statement follows:]

PREPARED STATEMENT OF CHRISTOPHER COX

Chairman Durbin, Ranking Member Brownback, and members of the subcommittee: Thank you for the opportunity to testify today about the President's fiscal year 2009 budget request for the Securities and Exchange Commission.

As you know, until this year the Congress had not increased the SEC's budget for 3 years. If the President's budget request for another increase next year is approved, then after years of flat budgets, the SEC will have received a roughly four percent increase over 2 years. After taking inflation and pay increases into account, this budget for fiscal year 2009 would permit the SEC to keep staffing on par with levels in fiscal year 2007—at about 3,470 full-time equivalents.

In return for the SEC's not-quite \$1 billion budget, the tax-paying public gets significant value. The SEC oversees the nearly \$44 trillion in securities trading annually on U.S. equity markets; the disclosures of almost 13,000 public companies; and the activities of about 11,000 investment advisers, nearly 1,000 fund complexes, and 5,700 broker-dealers. By way of illustration, let me outline some of what the agency achieved during fiscal year 2007.

REVIEW OF FISCAL YEAR 2007

For the SEC's Enforcement Division, which polices the markets and helps keep investors' money safe, fiscal year 2007 was truly a notable year. The Division's results are impressive both in the number of cases filed—the second highest in Commission history—and in their substance, covering a range of topics of critical importance to investors.

Among many highlights, the Commission brought one of the most significant insider trading cases in 20 years. We filed options backdating cases against executives at companies in a range of industries, to stamp out that notorious abuse. Even non-investors benefited from the Commission's efforts: our anti-spam initiative was credited with a 30 percent reduction in the volume of stock market spam emails in an independent industry review. In all, the SEC forced wrongdoers to give up more than \$1 billion in illegal profits and pay more than \$500 million in financial penalties. In the 17 years since the Congress gave the SEC authority to collect penalties against companies, this is the fifth highest penalties and disgorgement total ever, and \$1 billion above the pre-Enron average of the 1990s.

The SEC also continued to aggressively combat scams targeting the retirement savings of America's senior citizens. In fiscal year 2007, the Enforcement Division brought 30 enforcement actions involving investment fraud, abusive sales practices, and other schemes aimed against seniors. In addition, our examination and investor education programs joined with other regulators, law enforcement agencies, the Financial Industry Regulatory Authority, and others to conduct examination sweeps and sponsor events to educate seniors across the country.

The Commission also reached an important new agreement to share enforcement and examination information with the Financial Crimes Enforcement Network (FINCEN), to assist in the identification, deterrence, and interdiction of terrorist financing and money laundering. The agreement will help ensure that SEC-regulated firms have robust anti-money laundering programs and identify financial institutions that are in violation of the Bank Secrecy Act.

The SEC's examination program also worked to identify compliance issues at brokerage firms and investment advisers and correct such problems before they could harm investors. In fiscal year 2007, the SEC conducted more than 2,400 examinations of investment advisers and investment companies, broker-dealers, transfer agents, and self-regulatory organizations. Overall, 75 percent of investment adviser and investment company examinations and almost 82 percent of broker-dealer examinations revealed some type of deficiency or control weakness. Importantly, most examinations resulted in improvements in the firms' compliance programs. Where appropriate, inspection results were referred for enforcement action.

In fiscal year 2007, we also initiated a new program for broker-dealer chief compliance officers that seeks to help them improve their compliance programs, called the CCO Outreach BD program. This program has been a great success, involving hundreds of participants.

On the regulatory front, the Commission reformed the implementation of Section 404 of the Sarbanes-Oxley Act, to fulfill the congressional intent that the law's objectives be achieved without waste and inefficiency. These reforms included Commission approval of a new auditing standard to ensure that 404 audits are conducted in a more cost-effective way, and that they focus on areas that truly matter to investors. The Commission also adopted Section 404 guidance for management, who previously had to rely on the rules intended for auditors. Currently, the staff is undertaking a study to determine whether as a result of these reforms Section 404 is in

fact being implemented in a manner that is efficient and that will be cost-effective for smaller reporting companies. The study will be completed before small companies are required to have their first audit under Section 404. In addition, during 2007 the Commission approved a series of reforms to help smaller companies gain faster and easier access to the financial markets when they need it.

One of the most significant disclosure initiatives in the Commission's history was our new comprehensive disclosure regime for executive compensation, which took effect in 2007. These new rules require every public company to provide a single number stating total compensation for their top officers. For the first time, all forms of compensation are in one place for investors to analyze, and companies are required to provide plain English statements of their compensation policies. The complete and readily accessible information about executive pay that this initiative has opened up to investors has provided a valuable new insight into corporate governance in the Nation's public companies.

Also in 2007, the SEC broke an 8-year logjam by publishing final rules to implement the Gramm-Leach-Bliley Act's bank-broker provisions. This will benefit investors who utilize banks as well as brokers to help achieve their financial objectives. And we approved the merger of the NYSE and NASD's regulatory arms, with the goal of creating a single set of rules and eliminating the regulatory gaps between markets that often made enforcement difficult.

The Commission also significantly intensified its contacts with its counterparts across the globe. As Chairman, I executed agreements with the College of Euronext Regulators, the German Federal Financial Supervisory Authority, and the UK's Financial Services Authority and Financial Reporting Council, all aimed towards enhancing information-sharing on enforcement and supervisory matters. The Commission also approved the merger of the New York Stock Exchange and Euronext; streamlined the deregistration requirements for foreign private issuers, removing a significant deterrent to listing on U.S. exchanges; and authorized foreign firms to use IFRS as published by the International Accounting Standards Board in preparing their disclosures in the United States. These important steps have helped facilitate cross-border capital formation and helped our market better integrate with the rest of the world.

Administratively, we undertook major reforms to improve the effectiveness of the SEC's operations. In 2007, the SEC significantly augmented its investor education and advocacy functions. To reinvigorate the agency's emphasis on the needs of retail investors, we created the Office of Policy and Investor Outreach which will assess the views of individual investors and help inform the agency's policymaking. The new Office of Investor Education is focused exclusively on promoting financial literacy and helping investors gain the tools they need to make informed investment decisions.

In 2007, the SEC took major steps to foster the widespread use of interactive data in corporate disclosures. Interactive data will empower investors to obtain and compare information about their investments far more easily than ever before. This initiative will completely remake financial disclosure. Instead of an electronic filing cabinet for 1930s-style forms, which was the SEC's EDGAR system, every item within an income statement or a balance sheet will be individually searchable and downloadable. Investors and the entire marketplace will be able to compare any information they choose for thousands of companies in an instant. RSS feeds will send the latest SEC filings to investors' desktops or handhelds, without their even having to know a form was filed.

Overall in fiscal year 2007, the SEC had one of the most productive years in its history, aggressively pursuing wrongdoing and tackling fundamental reforms in the securities markets, all on behalf of America's investors.

FISCAL YEAR 2008 TO DATE

Already in fiscal year 2008, the Commission has been active on a number of fronts working to protect investors, promote capital formation, and foster healthy markets. And our agenda in the coming months is no less ambitious.

Oversight of the Markets

The failure of Bear Stearns has brought to the fore the regulatory gap in the supervision of investment banks. Although Federal law provides for supervision of commercial banking by bank regulatory agencies, no such scheme exists for the largest investment banks. Because the law fails to provide for supervision of even the largest globally active firms on a consolidated basis, the Commission created the Consolidated Supervised Entities (CSE) program to fill this gap, beginning in 2004. Without this voluntary program there would not have been any consolidated information available to regulators, including the Federal Reserve Bank of New York,

when Bear Stearns precipitously lost liquidity in mid-March 2008. This program, which is necessary to monitor for, and act quickly in response to, any financial or operational weaknesses that might place regulated entities or the broader financial system at risk, is providing the basis for significant new collaboration with the Federal Reserve.

Building on the new statutory authority from Congress that enabled the SEC to register and examine credit rating agencies, as nationally recognized statistical rating organizations, beginning in late September 2007, the SEC has launched a new program to oversee credit rating agencies. This is also a vitally important topic in light of recent market events. Under this new authority, the Commission is conducting inspections of rating agencies to evaluate whether they are adhering to their published methodologies for determining ratings and managing conflicts of interest. Given the recent problems in the subprime market, the SEC has been particularly interested in whether the rating agencies' involvement in bringing mortgage-backed securities to market impaired their ability to be impartial in their ratings. We will shortly propose additional rules building on the lessons learned from the subprime market turmoil. These proposals may include, among other things, requiring better disclosure of past ratings, so as to facilitate competitive comparisons of rating accuracy; enhancing investor understanding of the differences in ratings among different types of securities; regulating and limiting conflicts of interest; reducing reliance on ratings per se, as opposed to the underlying criteria that ratings are thought to represent; and disclosing the role of third-party due diligence in assigning ratings. This will continue to be an area of emphasis for the Commission in the coming fiscal year.

Currently neither the CSE nor the credit rating agency programs receive dedicated funding from the Congress. We understand that Congress may be acting to fill this gap, and I believe such a move would help formalize and strengthen these two critical programs. We have prepared some information about this proposal that I have submitted along with my testimony.

The SEC is also working closely with our fellow regulators to promote the fairness and stability of the markets. Under a recently concluded Memorandum of Understanding with the Commodity Futures Trading Commission, we have established a durable process to better address the regulatory issues that in today's increasingly interconnected markets don't respect regulatory boundaries drawn up decades ago. The agreement that I signed with Acting Chairman Lukken establishes a permanent regulatory liaison between the two agencies, provides for enhanced information sharing, and sets forth several key principles guiding their consideration of novel financial products that may reflect elements of both securities and commodity futures or options.

To anticipate future problems, I announced in February 2008 a program to more than double the size of the SEC's Office of Risk Assessment, created under the leadership of my predecessor, Chairman Bill Donaldson. With additional staff experts and the right surveillance tools, the newly expanded Office will help staff throughout the Commission look around the corners and over the horizon to identify potentially dangerous practices before they impact large numbers of investors and the economy as a whole.

Enforcement

The SEC is continuing to pursue wrongdoers in all corners of the securities markets, while also applying enforcement resources to the areas that pose the greatest risks to investors.

The Enforcement Division's subprime working group is aggressively investigating possible fraud, market manipulation, and breaches of fiduciary duty. Among the issues we are looking at is whether financial firms made proper disclosures about their holdings and their valuations, whether insiders used non-public information to gain from the recent market volatility, and whether naked short sellers illegally manipulated the market.

The Enforcement Division is also investigating insider trading among large institutional traders; wrongdoing in the municipal bond market; Internet and microcap fraud; and scams against seniors.

In fiscal year 2008, the SEC is building upon its growing success in returning funds to harmed investors. Since the agency first received authority under the Sarbanes-Oxley Act of 2002 to use Fair Funds to compensate victims, we have returned a total of more than \$3.7 billion to wronged investors. We expect to distribute another \$750 million in the next 6 months alone. To further professionalize the agency's execution in this area, I have created the Office of Collections and Distributions, which is led by a Director who reports to the Executive Director and the Chairman. As part of this initiative, the agency has deployed a new computer tracking system,

called Phoenix, which with additional enhancements this year will help to speed the return of investors' money and maintain appropriate internal controls.

Another major productivity enhancement in the Enforcement Division is "The Hub," an agency-wide database that gives all enforcement staff access to the entire inventory of investigations. By giving line staff a window into this deep knowledge base, and permitting senior management to direct the resources of the national enforcement program quickly and effectively when necessary, The Hub is significantly increasing the effectiveness of our enforcement dollars. Additional features being rolled out in the coming months will help Division staff more readily access performance information, coordinate more effectively with our examination staff, and better manage their investigative documents throughout the enforcement lifecycle.

International Enforcement and Regulatory Issues

The SEC's efforts in the international arena, which have markedly increased in recent years, have by necessity been a key focus of my Chairmanship. The time is long past when the SEC, or any financial regulator, can feel safe that by scrutinizing just the activities within its national borders, it can comprehend all the potential dangers ahead. In a world where capital flows freely across borders, problems or issues in one corner of the globe rarely stay there. The world's regulatory and enforcement authorities are finding that we have to collaborate if we hope to protect our own investors. Accordingly, the SEC is working closely with our international counterparts to monitor the markets and pursue fraudsters wherever they may run. We are also exploring the idea of mutual recognition among a very few high-standards countries with robust regulatory and enforcement regimes.

In recognition of the interconnectedness of global markets, the SEC will continue to expand our own expertise in IFRS, and explore additional ways that U.S. investors might benefit from increased comparability using a high-quality international standard. The continued integration of our own domestic accounting standards and IFRS will enhance the quality of both, while improving the reliability, clarity, and comparability of financial disclosure for American investors.

Disclosure

The SEC is committed to making public company disclosure more useful to investors. Under the leadership of the Office of Interactive Disclosure, the SEC is building upon our recent successes in constructing a foundation for the widespread use of interactive data. After years of experience through the SEC's voluntary pilot program, the Commission will consider a rule in 2008 that requires the use of interactive data by reporting companies, as well as other proposals to expand interactive data reporting by mutual funds and other market participants. These efforts will be aimed at giving investors the ability to easily find and compare key data about the companies and funds in which they invest.

There are other investor-friendly improvements in store for mutual fund disclosure. Too many investors today throw away their mutual fund disclosures instead of reading them. Too often, the prospectuses are laden with legalese that makes them nearly impenetrable for the average person. In the coming months, the SEC will consider authorizing mutual funds to issue a summary prospectus that will be more user-friendly for investors. If adopted, the summary document would succinctly present key facts about the fund up front, with more detailed information available for investors on the Internet or in paper upon request. The agency also is preparing help for investors at the time they buy a mutual fund to learn about fees, expenses, and conflicts of interest.

Another important initiative relates to the \$2.5 trillion worth of municipal securities currently outstanding, about two-thirds of which is owned either directly or indirectly by retail investors. Despite its size and importance, this market has many fewer protections for investors than exist in the corporate market. For example, investors often find it difficult even to get their hands on the disclosure documents for the municipal securities they own. To address this shortcoming, the Commission is working to authorize the creation of an online computer database, which would give investors in municipal securities electronic access to disclosures filed in connection with their investments. I have also urged our authorizing committees in the House and in the Senate to update the SEC's authority in this area.

Investor Protection

The Commission has very recently taken additional steps to safeguard investors and protect the integrity of the markets during short selling transactions by proposing a rule that would specify that abusive "naked" short selling is a fraud. In a naked short sale, the seller does not borrow or arrange to borrow the securities in time to make delivery to the buyer within the standard 3-day settlement period for trades. As a result, the seller fails to deliver stock to the buyer when delivery

is due. This is known as a “failure to deliver.” When sellers intentionally fail to deliver securities to the buyer as part of a scheme to manipulate the price of a security, or possibly to avoid borrowing costs associated with short sales, they should be subject to enforcement action by the Commission for violation of the securities laws.

The Commission is also working to protect Americans’ pension fund investments. In March 2008, the Commission issued a special report reminding public pension funds of their responsibilities under the Federal securities laws, and warning them that they assume a greater risk of running afoul of anti-fraud and other provisions if they do not have adequate compliance policies and procedures in place to prevent wrongdoing in their money management functions.

To protect investor privacy and to help prevent and address security breaches at the financial institutions the SEC regulates, the Commission proposed new rules that provide more detailed standards for information security programs. The proposed rules provide more specific requirements for safeguarding information and responding to information security breaches. The Commission also extended these privacy protections to other entities registered with the Commission.

The Commission has also proposed an expedited process to speed up the availability to the investing public of exchange-traded funds (ETFs). ETFs are similar to traditional mutual funds, but issue shares that trade throughout the day on securities exchanges. The proposed rules would eliminate a barrier to entry for new participants in this fast-growing market, while preserving investor protections. The Commission also proposed enhanced disclosure for ETF investors who purchase shares in the secondary markets.

Mr. Chairman, these are only some of the highlights of what the agency has recently been focused on, and what we have planned for the coming year. The SEC’s mandate is as broad as it is important to America’s investors and our markets. On behalf of the agency, let me thank you for the support that you and this Committee have so well provided for these vital efforts.

CONCLUSION

The budget request for fiscal year 2009 will allow the SEC to continue to aggressively pursue each of these ongoing initiatives on behalf of investors, as well as to address new risk areas as they emerge. As I mentioned, the request will allow the SEC to fully maintain our current program of strong enforcement, examinations and inspections, disclosure review, and regulation.

The request also will cover merit raises for SEC staff, as the agency transitions to a new performance evaluation system. This new five-level rating system has been developed in conjunction with the National Treasury Employees’ Union to provide more individualized feedback to staff, based on clear performance criteria. The system has been piloted in our Office of Human Resources, and will next be extended to the agency’s senior managers. The rest of the agency’s employees are scheduled to transition into the program next year.

I want to thank you for this opportunity to discuss the SEC’s appropriation for fiscal year 2009. I look forward to working with you to meet the needs of our Nation’s investors, and I would be happy to answer any questions you may have.

STAFFING LEVELS

Senator DURBIN. Thank you very much, Chairman Cox.

Let me try to reconcile budget request with some of the policy statements you’ve made. If I understand the President’s budget request for 2009, it calls for 3,409 permanent staff at the SEC, which would be a reduction anywhere between 94 and 100 employees, and over the last 3 or 4 years you’ve had about an 11 percent reduction in your enforcement activities. Does that sound about right?

Mr. COX. All the way up to the 11 percent reduction in enforcement activities. We have within our overall budget, which is—

Senator DURBIN. Staffing reduction. I’m sorry, staffing reduction of 11 percent since 2005.

Mr. COX. Yes, we have had budget freezes, as you know, from Congress through continuing resolutions in 2006 and 2007. So holding at the same dollar figure for two fiscal years in a row, combined with the fact that we have a built-in ratchet of about 5 per-

cent just standing steady because of cost-of-living allowances, merit pay, and promotions within the agency and an historically low turnover rate, means that, with two-thirds of the total budget going to personnel, it is impossible to maintain even the same staffing numbers year to year at higher dollar levels.

But what we have done within the overall budget number is to prioritize enforcement and also the Division of Trading and Markets and its market supervisory responsibilities, so that in the last fiscal year we have brought the second highest number of enforcement actions in the agency's 74-year history. Likewise, we have the highest number of respondents in actions in years by quite a wide margin.

OVERSIGHT OF INVESTMENT BANKS

Senator DURBIN. So I want to applaud your efficiencies and what you have achieved. But if you continue to reduce the number of staff that are working in some of these sections, some of these divisions within the SEC, it clearly would have an impact on your future activity. One of the things that you raise is something that I'm concerned about. You mentioned the Bear Stearns situation, in which the head of the Federal Reserve as well as the Secretary of the Treasury decided to step in and to help Bear Stearns through a rough patch.

Without judging the wisdom of that decision, and I think it was necessary personally, it seems to have opened up a new area of concern and responsibility. You talked about the gap in enforcement for investment banks. I don't know what the most current figure is, but I heard at one time that we have opened our discount window to the tune of about \$200 billion in borrowing by these investment banks.

The obvious question is, the entities that are borrowing the money now from the Federal taxpayers through the discount window, what kind of oversight and supervision we have of these entities. I think what I heard in your opening statement is the suggestion that the SEC may play a role in that or could or should play a role in that.

Reconcile these two things—reducing the number of staffers in your budget and expanding your responsibilities to include investment banks to make sure that at the end of the day the taxpayers of America don't end up holding the bag as investment banks use the discount window.

Mr. COX. Well, Mr. Chairman, you're absolutely right about the importance of that function of overseeing and supervising investment banks. In addition, I would add to that, the SEC also has been given very recently a significant new function related to subprime issues and that is oversight and regulatory authority over credit rating agencies. Both of these functions are prioritized within the SEC's budget, but something has to give. It has to come from some place.

So, if the SEC's budget were to be frozen on a continued basis, we would run out of potential savings. The largest area of potential savings I have been able to find thus far is the agency's historical function of maintaining a filing and information service that was essentially related to the 1930s-era idea of having paper forms. We

had people walk into the SEC and inspect documents. With the Internet we didn't need that any longer, and so we were able to free up about 100 positions within the agency and put those slots to better use.

But the opportunity to find efficiencies like that is a very steep declining curve.

Senator DURBIN. Historically, the SEC has relied on fees and collections to defer their costs of operation to some extent; is that not the case?

Mr. COX. Well, it is partly true, but in a way that concerns me some days, not entirely true, because, while we do collect a good deal in the way of fees, all of our funds are appropriated.

Senator DURBIN. All of your funds—

Mr. COX. We cannot live off of the fees we collect.

IMPOSITION OF USER FEES

Senator DURBIN. I understand that part. But what I'm driving at is, I'm trying to reconcile the earlier question: Where will you find some future SEC Chairman, where will they find the resources to now keep a close eye on investment banks using the discount window, borrowing from American taxpayers? It seems that there should be, and it may not exist today, some fee collection that would fund that Government responsibility. Has that been proposed by the administration or anyone to your knowledge?

Mr. COX. Well, indeed, were this subcommittee willing to do so, taking the existing stream of fees that the SEC already collects and dedicating it to SEC operations would provide a good deal of consistency to the budget.

Senator DURBIN. But those fees are not collected from investment banks currently, are they?

Mr. COX. No, they are not, and we could, I suppose—I should say, Congress could—fashion a new kind of fee. But in any case, the difference between the fees that the SEC's responsible for collecting and our appropriation is already significant. There's a big delta there.

Senator DURBIN. But it would seem, in fairness, that if this branch of our economy is going to be reviewed, there's oversight, that the cost of that oversight shouldn't be borne by another sector of the economy, collection of fees from some other entity. That doesn't seem to track. At least, I don't know in this detail, but it would seem that collecting a fee from the supervised entity is more reasonable.

Mr. COX. Well, I think at least in the SEC's experience we have subsisted entirely on the basis of appropriated funds, and so there has been no effort with respect to any of the agency's programs to match some form of fee collection with our function.

Senator DURBIN. Thank you.

Senator Brownback.

Senator BROWNBACK. Thank you very much, Mr. Chairman.

SUBPRIME MORTGAGE CRISIS

Welcome, Chairman Cox. I want to look at what led up to the subprime debacle that we've had. You can go back after these cri-

ses are over and look at how did all this occur and you hope to learn lessons from that.

I went and met with my realtors in Kansas and different bankers and they said: Oh, yeah, yeah, we knew this was going on; we weren't making any of the loans, but people were out trolling and originating subprime mortgages to people we had never lent to. I even had one banker say to me: Yes, I originated one of the loans that I would never have made, but then put it into the pool for the subprime fund. And I thought, well, at least he admitted it, I guess, but he would never have made it, but it got into then the securitized overall fund.

I want to enter into the record, Mr. Chairman, an article in the New York Times magazine from April 27, 1996, Thomas Friedman, a New York Times columnist, remarked in the "News Hour with Jim Lehrer" that: "There are two superpowers in the world, the United States and Moody's bond rating service, and it is sometimes unclear which is more powerful."

[The information follows:]

[From The New York Times, April 27, 2008]

TRIPLE-A FAILURE

(By Roger Lowenstein)

The Ratings Game

In 1996, Thomas Friedman, the New York Times columnist, Thomas Friedman, the New York Times columnist, remarked on "The NewsHour With Jim Lehrer" that there were two superpowers in the world—the United States and Moody's bond-rating service—and it was sometimes unclear which was more powerful. Moody's was then a private company that rated corporate bonds, but it was, already, spreading its wings into the exotic business of rating securities backed by pools of residential mortgages.

Obscure and dry-seeming as it was, this business offered a certain magic. The magic consisted of turning risky mortgages into investments that would be suitable for investors who would know nothing about the underlying loans. To get why this is impressive, you have to think about all that determines whether a mortgage is safe. Who owns the property? What is his or her income? Bundle hundreds of mortgages into a single security and the questions multiply; no investor could begin to answer them. But suppose the security had a rating. If it were rated triple-A by a firm like Moody's, then the investor could forget about the underlying mortgages. He wouldn't need to know what properties were in the pool, only that the pool was triple-A—it was just as safe, in theory, as other triple-A securities.

Over the last decade, Moody's and its two principal competitors, Standard & Poor's and Fitch, played this game to perfection—putting what amounted to gold seals on mortgage securities that investors swept up with increasing élan. For the rating agencies, this business was extremely lucrative. Their profits surged, Moody's in particular: it went public, saw its stock increase sixfold and its earnings grow by 900 percent.

By providing the mortgage industry with an entree to Wall Street, the agencies also transformed what had been among the sleepest corners of finance. No longer did mortgage banks have to wait 10 or 20 or 30 years to get their money back from homeowners. Now they sold their loans into securitized pools and—their capital thus replenished—wrote new loans at a much quicker pace.

Mortgage volume surged; in 2006, it topped \$2.5 trillion. Also, many more mortgages were issued to risky subprime borrowers. Almost all of those subprime loans ended up in securitized pools; indeed, the reason banks were willing to issue so many risky loans is that they could fob them off on Wall Street.

But who was evaluating these securities? Who was passing judgment on the quality of the mortgages, on the equity behind them and on myriad other investment considerations? Certainly not the investors. They relied on a credit rating.

Thus the agencies became the de facto watchdog over the mortgage industry. In a practical sense, it was Moody's and Standard & Poor's that set the credit standards that determined which loans Wall Street could repackage and, ultimately,

which borrowers would qualify. Effectively, they did the job that was expected of banks and government regulators. And today, they are a central culprit in the mortgage bust, in which the total loss has been projected at \$250 billion and possibly much more.

In the wake of the housing collapse, Congress is exploring why the industry failed and whether it should be revamped (hearings in the Senate Banking Committee were expected to begin April 22). Two key questions are whether the credit agencies—which benefit from a unique series of government charters—enjoy too much official protection and whether their judgment was tainted. Presumably to forestall criticism and possible legislation, Moody's and S.&P. have announced reforms. But they reject the notion that they should have been more vigilant. Instead, they lay the blame on the mortgage holders who turned out to be deadbeats, many of whom lied to obtain their loans.

Arthur Levitt, the former chairman of the Securities and Exchange Commission, charges that “the credit-rating agencies suffer from a conflict of interest—perceived and apparent—that may have distorted their judgment, especially when it came to complex structured financial products.” Frank Partnoy, a professor at the University of San Diego School of Law who has written extensively about the credit-rating industry, says that the conflict is a serious problem. Thanks to the industry's close relationship with the banks whose securities it rates, Partnoy says, the agencies have behaved less like gatekeepers than gate openers. Last year, Moody's had to downgrade more than 5,000 mortgage securities—a tacit acknowledgment that the mortgage bubble was abetted by its overly generous ratings. Mortgage securities rated by Standard & Poor's and Fitch have suffered a similar wave of downgrades.

Presto! How 2,393 Subprime Loans Become a High-Grade Investment

The business of assigning a rating to a mortgage security is a complicated affair, and Moody's recently was willing to walk me through an actual mortgage-backed security step by step. I was led down a carpeted hallway to a well-appointed conference room to meet with three specialists in mortgage-backed paper. Moody's was fair-minded in choosing an example; the case they showed me, which they masked with the name “Subprime XYZ,” was a pool of 2,393 mortgages with a total face value of \$430 million.

Subprime XYZ typified the exuberance of the age. All the mortgages in the pool were subprime—that is, they had been extended to borrowers with checkered credit histories. In an earlier era, such people would have been restricted from borrowing more than 75 percent or so of the value of their homes, but during the great bubble, no such limits applied.

Moody's did not have access to the individual loan files, much less did it communicate with the borrowers or try to verify the information they provided in their loan applications. “We aren't loan officers,” Claire Robinson, a 20-year veteran who is in charge of asset-backed finance for Moody's, told me. “Our expertise is as statisticians on an aggregate basis. We want to know, of 1,000 individuals, based on historical performance, what percent will pay their loans?”

The loans in Subprime XYZ were issued in early spring 2006—what would turn out to be the peak of the boom. They were originated by a West Coast company that Moody's identified as a “nonbank lender.” Traditionally, people have gotten their mortgages from banks, but in recent years, new types of lenders peddling sexier products grabbed an increasing share of the market. This particular lender took the loans it made to a New York investment bank; the bank designed an investment vehicle and brought the package to Moody's.

Moody's assigned an analyst to evaluate the package, subject to review by a committee. The investment bank provided an enormous spreadsheet chock with data on the borrowers' credit histories and much else that might, at very least, have given Moody's pause. Three-quarters of the borrowers had adjustable-rate mortgages, or ARMs—“teaser” loans on which the interest rate could be raised in short order. Since subprime borrowers cannot afford higher rates, they would need to refinance soon. This is a classic sign of a bubble—lending on the belief, or the hope, that new money will bail out the old.

Moody's learned that almost half of these borrowers—43 percent—did not provide written verification of their incomes. The data also showed that 12 percent of the mortgages were for properties in Southern California, including a half-percent in a single ZIP code, in Riverside. That suggested a risky degree of concentration.

On the plus side, Moody's noted, 94 percent of those borrowers with adjustable-rate loans said their mortgages were for primary residences. “That was a comfort feeling,” Robinson said. Historically, people have been slow to abandon their primary homes. When you get into a crunch, she added, “You'll give up your ski chalet first.”

Another factor giving Moody's comfort was that all of the ARM loans in the pool were first mortgages (as distinct from, say, home-equity loans). Nearly half of the borrowers, however, took out a simultaneous second loan. Most often, their two loans added up to all of their property's presumed resale value, which meant the borrowers had not a cent of equity.

In the frenetic, deal-happy climate of 2006, the Moody's analyst had only a single day to process the credit data from the bank. The analyst wasn't evaluating the mortgages but, rather, the bonds issued by the investment vehicle created to house them. A so-called special-purpose vehicle—a ghost corporation with no people or furniture and no assets either until the deal was struck—would purchase the mortgages. Thereafter, monthly payments from the homeowners would go to the S.P.V. The S.P.V. would finance itself by selling bonds. The question for Moody's was whether the inflow of mortgage checks would cover the outgoing payments to bondholders. From the investment bank's point of view, the key to the deal was obtaining a triple-A rating—without which the deal wouldn't be profitable. That a vehicle backed by subprime mortgages could borrow at triple-A rates seems like a trick of finance. "People say, 'How can you create triple-A out of B-rated paper?'" notes Arturo Cifuentes, a former Moody's credit analyst who now designs credit instruments. It may seem like a scam, but it's not.

The secret sauce is that the S.P.V. would float 12 classes of bonds, from triple-A to a lowly Ba1. The highest-rated bonds would have first priority on the cash received from mortgage holders until they were fully paid, then the next tier of bonds, then the next and so on. The bonds at the bottom of the pile got the highest interest rate, but if homeowners defaulted, they would absorb the first losses.

It was this segregation of payments that protected the bonds at the top of the structure and enabled Moody's to classify them as triple-A. Imagine a seaside condo beset by flooding: just as the penthouse will not get wet until the lower floors are thoroughly soaked, so the triple-A bonds would not lose a dime unless the lower credits were wiped out.

Structured finance, of which this deal is typical, is both clever and useful; in the housing industry it has greatly expanded the pool of credit. But in extreme conditions, it can fail. The old-fashioned corner banker used his instincts, as well as his pencil, to apportion credit; modern finance is formulaic. However elegant its models, forecasting the behavior of 2,393 mortgage holders is an uncertain business. "Everyone assumed the credit agencies knew what they were doing," says Joseph Mason, a credit expert at Drexel University. "A structural engineer can predict what load a steel support will bear; in financial engineering we can't predict as well."

Mortgage-backed securities like those in Subprime XYZ were not the terminus of the great mortgage machine. They were, in fact, building blocks for even more esoteric vehicles known as collateralized debt obligations, or C.D.O.'s. C.D.O.'s were financed with similar ladders of bonds, from triple-A on down, and the credit-rating agencies' role was just as central. The difference is that XYZ was a first-order derivative—its assets included real mortgages owned by actual homeowners. C.D.O.'s were a step removed—instead of buying mortgages, they bought bonds that were backed by mortgages, like the bonds issued by Subprime XYZ. (It is painful to consider, but there were also third-order instruments, known as C.D.O.'s squared, which bought bonds issued by other C.D.O.'s.)

Miscalculations that were damaging at the level of Subprime XYZ were devastating at the C.D.O. level. Just as bad weather will cause more serious delays to travelers with multiple flights, so, if the underlying mortgage bonds were misrated, the trouble was compounded in the case of the C.D.O.'s that purchased them.

Moody's used statistical models to assess C.D.O.'s; it relied on historical patterns of default. This assumed that the past would remain relevant in an era in which the mortgage industry was morphing into a wildly speculative business. The complexity of C.D.O.'s undermined the process as well. Jamie Dimon, the chief executive of JPMorgan Chase, which recently scooped up the mortally wounded Bear Stearns, says, "There was a large failure of common sense" by rating agencies and also by banks like his. "Very complex securities shouldn't have been rated as if they were easy-to-value bonds."

The Accidental Watchdog

John Moody, a Wall Street analyst and former errand runner, hit on the idea of synthesizing all kinds of credit information into a single rating in 1909, when he published the manual "Moody's Analyses of Railroad Investments." The idea caught on with investors, who subscribed to his service, and by the mid-20s, Moody's faced three competitors: Standard Statistics and Poor's Publishing (which later merged) and Fitch.

Then as now, Moody's graded bonds on a scale with 21 steps, from Aaa to C. (There are small differences in the agencies' nomenclatures, just as a grande latte at Starbucks becomes a "medium" at Peet's. At Moody's, ratings that start with the letter "A" carry minimal to low credit risk; those starting with "B" carry moderate to high risk; and "C" ratings denote bonds in poor standing or actual default.) The ratings are meant to be an estimate of probabilities, not a buy or sell recommendation. For instance, Ba bonds default far more often than triple-As. But Moody's, as it is wont to remind people, is not in the business of advising investors whether to buy Ba's; it merely publishes a rating.

Until the 1970s, its business grew slowly. But several trends coalesced to speed it up. The first was the collapse of Penn Central in 1970—a shattering event that the credit agencies failed to foresee. It so unnerved investors that they began to pay more attention to credit risk.

Government responded. The Securities and Exchange Commission, faced with the question of how to measure the capital of broker-dealers, decided to penalize brokers for holding bonds that were less than investment-grade (the term applies to Moody's 10 top grades). This prompted a question: investment grade according to whom? The S.E.C. opted to create a new category of officially designated rating agencies, and grandfathered the big three—S.&P., Moody's and Fitch. In effect, the government outsourced its regulatory function to three for-profit companies.

Bank regulators issued similar rules for banks. Pension funds, mutual funds, insurance regulators followed. Over the 1980s and 1990s, a latticework of such rules redefined credit markets. Many classes of investors were now forbidden to buy non-investment-grade bonds at all.

Issuers thus were forced to seek credit ratings (or else their bonds would not be marketable). The agencies—realizing they had a hot product and, what's more, a captive market—started charging the very organizations whose bonds they were rating. This was an efficient way to do business, but it put the agencies in a conflicted position. As Partnoy says, rather than selling opinions to investors, the rating agencies were now selling "licenses" to borrowers. Indeed, whether their opinions were accurate no longer mattered so much. Just as a police officer stopping a motorist will want to see his license but not inquire how well he did on his road test, it was the rating—not its accuracy—that mattered to Wall Street.

The case of Enron is illustrative. Throughout the summer and fall of 2001, even though its credit was rapidly deteriorating, the rating agencies kept it at investment grade. This was not unusual; the agencies typically lag behind the news. On Nov. 28, 2001, S.&P. finally dropped Enron's bonds to subinvestment grade. Although its action merely validated the market consensus, it caused the stock to collapse. To investors, S.&P.'s action was a signal that Enron was locked out of credit markets; it had lost its "license" to borrow. Four days later it filed for bankruptcy.

Another trend that spurred the agencies' growth was that more companies began borrowing in bond markets instead of from banks. According to Chris Mahoney, a just-retired Moody's veteran of 22 years, "The agencies went from being obscure and unimportant players to central ones."

A Conflict of Interest?

Nothing sent the agencies into high gear as much as the development of structured finance. As Wall Street bankers designed ever more securitized products—using mortgages, credit-card debt, car loans, corporate debt, every type of paper imaginable—the agencies became truly powerful.

In structured-credit vehicles like Subprime XYZ, the agencies played a much more pivotal role than they had with (conventional) bonds. According to Lewis Ranieri, the Salomon Brothers banker who was a pioneer in mortgage bonds, "The whole creation of mortgage securities was involved with a rating."

What the bankers in these deals are really doing is buying a bunch of I.O.U.'s and repackaging them in a different form. Something has to make the package worth—or seem to be worth—more than the sum of its parts, otherwise there would be no point in packaging such securities, nor would there be any profits from which to pay the bankers' fees.

That something is the rating. Credit markets are not continuous; a bond that qualifies, though only by a hair, as investment grade is worth a lot more than one that just fails. As with a would-be immigrant traveling from Mexico, there is a huge incentive to get over the line.

The challenge to investment banks is to design securities that just meet the rating agencies' tests. Risky mortgages serve their purpose; since the interest rate on them is higher, more money comes into the pool and is available for paying bond interest. But if the mortgages are too risky, Moody's will object. Banks are adroit at working the system, and pools like Subprime XYZ are intentionally designed to

include a layer of Baa bonds, or those just over the border. "Every agency has a model available to bankers that allows them to run the numbers until they get something they like and send it in for a rating," a former Moody's expert in securitization says. In other words, banks were gaming the system; according to Chris Flanagan, the subprime analyst at JPMorgan, "Gaming is the whole thing."

When a bank proposes a rating structure on a pool of debt, the rating agency will insist on a cushion of extra capital, known as an "enhancement." The bank inevitably lobbies for a thin cushion (the thinner the capitalization, the fatter the bank's profits). It's up to the agency to make sure that the cushion is big enough to safeguard the bonds. The process involves extended consultations between the agency and its client. In short, obtaining a rating is a collaborative process.

The evidence on whether rating agencies bend to the bankers' will is mixed. The agencies do not deny that a conflict exists, but they assert that they are keen to the dangers and minimize them. For instance, they do not reward analysts on the basis of whether they approve deals. No smoking gun, no conspiratorial e-mail message, has surfaced to suggest that they are lying. But in structured finance, the agencies face pressures that did not exist when John Moody was rating railroads. On the traditional side of the business, Moody's has thousands of clients (virtually every corporation and municipality that sells bonds). No one of them has much clout. But in structured finance, a handful of banks return again and again, paying much bigger fees. A deal the size of XYZ can bring Moody's \$200,000 and more for complicated deals. And the banks pay only if Moody's delivers the desired rating. Tom McGuire, the Jesuit theologian who ran Moody's through the mid-90s, says this arrangement is unhealthy. If Moody's and a client bank don't see eye to eye, the bank can either tweak the numbers or try its luck with a competitor like S.&P., a process known as "ratings shopping."

And it seems to have helped the banks get better ratings. Mason, of Drexel University, compared default rates for corporate bonds rated Baa with those of similarly rated collateralized debt obligations until 2005 (before the bubble burst). Mason found that the C.D.O.'s defaulted eight times as often. One interpretation of the data is that Moody's was far less discerning when the client was a Wall Street securitizer.

After Enron blew up, Congress ordered the S.E.C. to look at the rating industry and possibly reform it. The S.E.C. ducked. Congress looked again in 2006 and enacted a law making it easier for competing agencies to gain official recognition, but didn't change the industry's business model. By then, the mortgage boom was in high gear. From 2002 to 2006, Moody's profits nearly tripled, mostly thanks to the high margins the agencies charged in structured finance. In 2006, Moody's reported net income of \$750 million. Raymond W. McDaniel Jr., its chief executive, gloated in the annual report for that year, "I firmly believe that Moody's business stands on the 'right side of history' in terms of the alignment of our role and function with advancements in global capital markets."

Using Weather in Antarctica To Forecast Conditions in Hawaii

Even as McDaniel was crowing, it was clear in some corners of Wall Street that the mortgage market was headed for trouble. The housing industry was cooling off fast. James Kragenbring, a money manager with Advantus Capital Management, complained to the agencies as early as 2005 that their ratings were too generous. A report from the hedge fund of John Paulson proclaimed astonishment at "the mispricing of these securities." He started betting that mortgage debt would crash.

Even Mark Zandi, the very visible economist at Moody's forecasting division (which is separate from the ratings side), was worried about the chilling crosswinds blowing in credit markets. In a report published in May 2006, he noted that consumer borrowing had soared, household debt was at a record and a fifth of such debt was classified as subprime. At the same time, loan officers were loosening underwriting standards and easing rates to offer still more loans. Zandi fretted about the "razor-thin" level of homeowners' equity, the avalanche of teaser mortgages and the \$750 billion of mortgages he judged to be at risk. Zandi concluded, "The environment feels increasingly ripe for some type of financial event."

A month after Zandi's report, Moody's rated Subprime XYZ. The analyst on the deal also had concerns. Moody's was aware that mortgage standards had been deteriorating, and it had been demanding more of a cushion in such pools. Nonetheless, its credit-rating model continued to envision rising home values. Largely for that reason, the analyst forecast losses for XYZ at only 4.9 percent of the underlying mortgage pool. Since even the lowest-rated bonds in XYZ would be covered up to a loss level of 7.25 percent, the bonds seemed safe.

XYZ now became the responsibility of a Moody's team that monitors securities and changes the ratings if need be (the analyst moved on to rate a new deal). Al-

most immediately, the team noticed a problem. Usually, people who finance a home stay current on their payments for at least a while. But a sliver of folks in XYZ fell behind within 90 days of signing their papers. After six months, an alarming 6 percent of the mortgages were seriously delinquent. (Historically, it is rare for more than 1 percent of mortgages at that stage to be delinquent.)

Moody's monitors began to make inquiries with the lender and were shocked by what they heard. Some properties lacked sod or landscaping, and keys remained in the mailbox; the buyers had never moved in. The implication was that people had bought homes on spec: as the housing market turned, the buyers walked.

By the spring of 2007, 13 percent of Subprime XYZ was delinquent—and it was worsening by the month. XYZ was hardly atypical; the entire class of 2006 was performing terribly. (The class of 2007 would turn out to be even worse.)

In April 2007, Moody's announced it was revising the model it used to evaluate subprime mortgages. It noted that the model "was first introduced in 2002. Since then, the mortgage market has evolved considerably." This was a rather stunning admission; its model had been based on a world that no longer existed.

Poring over the data, Moody's discovered that the size of people's first mortgages was no longer a good predictor of whether they would default; rather, it was the size of their first and second loans—that is, their total debt—combined. This was rather intuitive; Moody's simply hadn't reckoned on it. Similarly, credit scores, long a mainstay of its analyses, had not proved to be a "strong predictor" of defaults this time. Translation: even people with good credit scores were defaulting. Amy Tobey, leader of the team that monitored XYZ, told me, "It seems there was a shift in mentality; people are treating homes as investment assets." Indeed. And homeowners without equity were making what economists call a rational choice; they were abandoning properties rather than make payments on them. Homeowners' equity had never been as high as believed because appraisals had been inflated.

Over the summer and fall of 2007, Moody's and the other agencies repeatedly tightened their methodology for rating mortgage securities, but it was too late. They had to downgrade tens of billions of dollars of securities. By early this year, when I met with Moody's, an astonishing 27 percent of the mortgage holders in Subprime XYZ were delinquent. Losses on the pool were now estimated at 14 percent to 16 percent—three times the original estimate. Seemingly high-quality bonds rated A3 by Moody's had been downgraded five notches to Ba2, as had the other bonds in the pool aside from its triple-A's.

The pain didn't stop there. Many of the lower-rated bonds issued by XYZ, and by mortgage pools like it, were purchased by C.D.O.'s, the second-order mortgage vehicles, which were eager to buy lower-rated mortgage paper because it paid a higher yield. As the agencies endowed C.D.O. securities with triple-A ratings, demand for them was red hot. Much of it was from global investors who knew nothing about the U.S. mortgage market. In 2006 and 2007, the banks created more than \$200 billion of C.D.O.'s backed by lower-rated mortgage paper. Moody's assigned a different team to rate C.D.O.'s. This team knew far less about the underlying mortgages than did the committee that evaluated Subprime XYZ. In fact, Moody's rated C.D.O.'s without knowing which bonds the pool would buy.

A C.D.O. operates like a mutual fund; it can buy or sell mortgage bonds and frequently does so. Thus, the agencies rate pools with assets that are perpetually shifting. They base their ratings on an extensive set of guidelines or covenants that limit the C.D.O. manager's discretion.

Late in 2006, Moody's rated a C.D.O. with \$750 million worth of securities. The covenants, which act as a template, restricted the C.D.O. to, at most, an 80 percent exposure to subprime assets, and many other such conditions. "We're structure experts," Yuri Yoshizawa, the head of Moody's derivative group, explained. "We're not underlying-asset experts." They were checking the math, not the mortgages. But no C.D.O. can be better than its collateral.

Moody's rated three-quarters of this C.D.O.'s bonds triple-A. The ratings were derived using a mathematical construct known as a Monte Carlo simulation—as if each of the underlying bonds would perform like cards drawn at random from a deck of mortgage bonds in the past. There were two problems with this approach. First, the bonds weren't like those in the past; the mortgage market had changed. As Mark Adelson, a former managing director in Moody's structured-finance division, remarks, it was "like observing 100 years of weather in Antarctica to forecast the weather in Hawaii." And second, the bonds weren't random. Moody's had underestimated the extent to which underwriting standards had weakened everywhere. When one mortgage bond failed, the odds were that others would, too.

Moody's estimated that this C.D.O. could potentially incur losses of 2 percent. It has since revised its estimate to 27 percent. The bonds it rated have been decimated, their market value having plunged by half or more. A triple-A layer of bonds

has been downgraded 16 notches, all the way to B. Hundreds of C.D.O.'s have suffered similar fates (most of Wall Street's losses have been on C.D.O.'s). For Moody's and the other rating agencies, it has been an extraordinary rout.

Whom Can We Rely On?

The agencies have blamed the large incidence of fraud, but then they could have demanded verification of the mortgage data or refused to rate securities where the data were not provided. That was, after all, their mandate. This is what they pledge for the future. Moody's, S.&P. and Fitch say that they are tightening procedures—they will demand more data and more verification and will subject their analysts to more outside checks. None of this, however, will remove the conflict of interest in the issuer-pays model. Though some have proposed requiring that agencies with official recognition charge investors, rather than issuers, a more practical reform may be for the government to stop certifying agencies altogether.

Then, if the Fed or other regulators wanted to restrict what sorts of bonds could be owned by banks, or by pension funds or by anyone else in need of protection, they would have to do it themselves—not farm the job out to Moody's. The ratings agencies would still exist, but stripped of their official imprimatur, their ratings would lose a little of their aura, and investors might trust in them a bit less. Moody's itself favors doing away with the official designation, and it, like S.&P., embraces the idea that investors should not "rely" on ratings for buy-and-sell decisions.

This leaves an awkward question, with respect to insanely complex structured securities: What can they rely on? The agencies seem utterly too involved to serve as a neutral arbiter, and the banks are sure to invent new and equally hard-to-assess vehicles in the future. Vickie Tillman, the executive vice president of S.&P., told Congress last fall that in addition to the housing slump, "ahistorical behavioral modes" by homeowners were to blame for the wave of downgrades. She cited S.&P.'s data going back to the 1970s, as if consumers were at fault for not living up to the past. The real problem is that the agencies' mathematical formulas look backward while life is lived forward. That is unlikely to change.

Senator BROWNBACK. It goes through how these rating agencies rated these subprime mortgages with an AAA score. I'm trying to piece all this together in hindsight. So, people are originating these loans that locals would not make because it isn't up to their standards. And when you put them all together, it somehow magically transforms into an AAA-rated bond entity that is cited in this article.

I go back on it, Chris, and ask: What should we be doing differently to keep this from happening again? Obviously, we're in a credit crunch and so we're not going to have a lot of money flowing at the moment. Are there things we should be doing to either oversee or rank the bond raters? Should we provide greater oversight on the mortgage originating entities, to make sure that data is there and that the loan is worthy? I think that this whole system is a series of bad practices, trying to get people into loans that they shouldn't have and then catching them in the net.

What's the lesson learned here?

Mr. COX. Well, first, yes to both of your questions. These are both areas that Congress and regulators should take very serious interest in and make big changes in. We are not the front-line regulators for the mortgage industry, but I feel comfortable as Chairman of the SEC commenting on this because of the big impact that it has had in the securities markets, and focusing on proper oversight of mortgage origination is of vital importance for regulators and for lawmakers.

OVERSIGHT OF CREDIT RATING AGENCIES

With respect to credit rating agencies, the Congress has done a very important and wise thing very recently in the Credit Rating Agency Act, giving the SEC brand new authority to regulate and

oversee credit rating agencies that presently we are exercising vigorously. Up until a few months ago, until the end of September last year, the credit rating agency industry was essentially unregulated. Now that is completely changed. We are in the midst of a very broad investigation of the three largest credit rating agencies that rated most of the subprime-related securities. We will report publicly our findings from that examination very soon. The findings of that examination will also inform our ongoing rule-writing that we expect to complete this year. We expect to propose very, very soon new rules to govern, for example, conflicts of interest in that industry, to prohibit certain practices, to make sure that there is full disclosure of things like due diligence in preparation of these ratings, that there's full understanding and disclosure of the various methodologies, and that there's healthy competition in that industry.

None of this existed before. These are big changes and they are very, very necessary.

FINANCIAL SERVICES REGULATORY STRUCTURE

Senator BROWNBACK. Would you mind commenting on the Secretary's comments about the need for changes due to new business structures? He's saying we need to consolidate several of these agencies and remove blind spots. Just your thoughts on that.

Mr. COX. Modernization of financial services regulation, which is the general topic that was broached by the Treasury blueprint, is I think very high on everybody's agenda, in the Congress, certainly for all of us at the SEC and for other regulatory agencies, but also around the world, and in international fora such as the Financial Stability Forum and IOSCO.

The reason is that our regulatory structure is old. It's got quite a pedigree, a distinguished one, but the major regulatory agencies go back to the first part of the 20th century. Our agency is going to turn 75 years old in just a few months. This is already the 75th anniversary of the 1933 act.

So as markets have changed, as the products that Walt Lukken and the CFTC regulate have morphed in such dramatic ways in the 21st century into competitors for products that the SEC regulates, our system has to take that into account. It's very hard to do that, I understand, because of both constituencies in the marketplace who've become accustomed to the existing regulatory structure, because of difficulties in Congress related to different jurisdictions and different committees, and because of some very difficult substantive choices that would have to be made about which model to pick and how to integrate it.

So it's surpassingly difficult. But I think the topic is the right one to focus on because we have to do a better job of integrating regulatory responsibilities if we're going to keep abreast of what's going on, not only in our own country but in interconnected ways around the world.

Senator BROWNBACK. Thank you, Mr. Chairman.

BROKER-DEALER RULEMAKING

Senator DURBIN. Mr. Chairman, on March 19, 2007, the SEC published a proposed rule on amendments to financial responsibility rules for broker-dealers. In the notice the SEC asked for com-

ments on changes to the rules on net capital, customer protection, books and records, notification rules. I understand that some of these proposed amendments have been sought by the financial services community for a number of years.

Among the changes proposed are reduction in capital charges, haircut for money market mutual funds, and the inclusion of certain money market mutual funds as qualified securities eligible for deposit in the special reserve account.

It's my understanding that the comment period closed last June, and since it will soon be a full year since the comment period on the proposed rule elapsed, what is the current status of this rule-making?

Mr. COX. Mr. Chairman, we are very interested in this subject. We have taken a fresh look at it in light of all the market turmoil to make sure that this is the right time to be embarking on these kinds of changes. But the comment that we have received has included much favorable comment, and so this is very much on the rulemaking agenda of the Commission at this time.

Senator DURBIN. Since it's been a year, what is the anticipated release date for your final rule?

Mr. COX. We don't have a calendar date right now for further action on this proposal. But I would be happy, Mr. Chairman, to report back to you in real time about what the prognosis for that is.

Senator DURBIN. If you would, please.

Are you soliciting additional comments?

Mr. COX. No, I believe the comment period is closed. Let me check and make sure that's the case.

Yes, that is the case.

Senator DURBIN. Is there a plan to reissue a new proposal or are you going to stick with the original proposal?

Mr. COX. I think that the opportunity to fashion a final rule based not only on the proposal but the questions that were asked and the comments that were received should be sufficient so that it would not be required that we repropose it.

Senator DURBIN. If you'd kind of let me know just in general terms when that might happen.

SECURITIES LITIGATION REFORM

Last August, a group of law professors asked your agency to convene a series of roundtables on the topic of securities litigation reform, and the "Wall Street Journal" reported that the forums would occur early next year, implying this year, 2008. Can you tell me if such roundtables are planned or under way?

Mr. COX. Mr. Chairman, this was a suggestion in chief from academics led by, among others, Professor Langwood at Georgetown. It is one that I think for a variety of reasons many people agree the Commission should act upon. There are a variety of reasons across the ideological spectrum and across the markets that people have interest and concerns with this general topic.

My own interest in this topic and experience with it suggests to me that it is best taken up in a bipartisan way. We have currently a short-handed Commission comprised only of Republican commissioners and so I have wanted to wait before we had any such roundtable, even though of course we could always have a balanced

panel, to make sure we also had a balanced Commission that can give the public confidence that we're handling this very important issue with great care and not in any political way.

DIVESTMENT DISCLOSURES

Senator DURBIN. Last question I have. Two weeks ago the SEC adopted rules requiring a registered investment company disclose when it divests from securities of issuers that the fund determines conduct or have direct investments in certain business operations in Sudan. These rules were mandated under the Sudan Accountability Investment Act signed into law on December 31 of last year.

How will the SEC track these particular divestment disclosures?

Mr. COX. Mr. Chairman, as you know, we acted with great alacrity to do what was required by the statute, and we are energetically going to implement it as well, through the Division of Corporation Finance and our Office of Risk Assessment.

Senator DURBIN. So how would an investor be able to quickly determine that a particular company has made such a disclosure, for example?

Mr. COX. I'm sorry?

Senator DURBIN. How would an individual investor be able to determine that a particular company has made such a disclosure?

Mr. COX. Well, all of these filings will be made public and we have taken some very recent measures to provide for full text search capability of filings that are available on our EDGAR online disclosure system.

Senator DURBIN. Good. Thank you.

Senator Brownback, any further questions?

Senator BROWNBACK. No questions.

Senator DURBIN. Chairman Cox, thanks. We appreciate your coming by. We're glad you're working with the CFTC on a memorandum of understanding and how that you'll continue that cooperative arrangement. I asked when they formed this subcommittee to bring these two agencies under the subcommittee's jurisdiction. There are so many things that you do have in common, at least in terms of the integrity of the marketplace. I hope that that conversation continues outside this room.

Thank you for being here today.

Mr. COX. Thank you very much, Mr. Chairman.

ADDITIONAL COMMITTEE QUESTIONS

Senator DURBIN. Any questions for the record will be submitted to those who have testified, in the hopes that there will be prompt replies so we can complete our work.

[The following questions were not asked at the hearing, but were submitted to the Commission for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR RICHARD C. SHELBY

CRA PROGRAM

Question. Chairman Cox, in your testimony you indicated that the SEC's credit rating agency program's costs are approximately \$2.2 million. Would you please discuss how these funds would be allocated within the program? How would having

a dedicated funding source for the program improve the SEC's ability to administer the program?

Answer. The SEC created the credit rating agencies program in September 2007 as a result of the enactment of the Credit Rating Agency Reform Act, to ensure that rating agencies are adhering to their published methodologies for determining ratings and managing conflicts of interest. The Act also provides the Commission with authority to write new regulations in this area and inspect the nationally recognized statistical rating organizations for compliance with applicable rules and policies. The SEC's proposed budget for fiscal year 2009 would increase the number of staff responsible for implementing the Credit Rating Agency Reform Act from 7 to 20 positions for oversight and inspections of credit rating agencies. This would nearly triple the number of staff dedicated to the program. Having dedicated funding would give the credit rating agency program more legislative structure and formality and ensure that the agency's allocation of resources was in line with the intent of Congress.

CSE PROGRAM

Question. Chairman Cox, over the past several months our economy has been plague by a liquidity crisis triggered by poorly underwritten subprime loans and structured finance products. The investment banks the SEC regulates as part of the CSE program were among the most active players in both the subprime and structured finance markets. They structured and underwrote many of the financial instruments now causing so many problems for our economy.

—If the SEC was properly monitoring the CSE firms, why did it fail to raise the alarm about the decline in underwriting and lending standards?

—How much responsibility does the SEC bear for the deterioration of lending and underwriting standards by CSE firms and their subsidiaries?

Answer. The President's Working Group noted in their March report to the President that a principal underlying cause of the turmoil in financial markets was "a breakdown in underwriting standards for subprime mortgages" which then rippled through the system as these substandard mortgages were securitized. However, the SEC has no authority over mortgage underwriting standards. The consolidated supervised entities program does not change this reality. Under the Commission's new authority to supervise credit rating agencies, the Commission has recently proposed new rules designed to increase accountability and competition among credit rating agencies, as their ratings may have played a significant role in the market acceptance of subprime-related securities.

ENFORCEMENT

Question. Chairman Cox, earlier today at a hearing of the Banking Committee, former SEC Chairmen Arthur Levitt stated that the SEC needs substantial increases in its enforcement budget and that it does not have the manpower to properly enforce our securities laws.

—How many personnel are presently employed by the Division of Enforcement, and how has that figured changed over the past 10 years?

Answer. In fiscal year 2008, the Enforcement program has over 1,100 permanent FTE which is more than 30 percent higher than the size of the enforcement program since 1998.

[Dollars in millions]

	Enforcement Program FTE	Enforcement Program Salaries and Benefits Obligations
1998	852	(¹)
1999	811	(¹)
2000	824	(¹)
2001	904	(¹)
2002	925	(¹)
2003	935	(¹)
2004	1,144	\$168.8
2005	1,232	195.4
2006	1,157	200.6
2007	1,111	197.8
2008 (Budget)	1,124	210.0

¹ Not available.

Question. Also, how do the number of SEC enforcement actions and the amount disgorgements orders during your tenure compare to the levels seen when Chairmen Levitt was at the Commission?

Answer. In fiscal year 2007, the Commission brought the second highest number of cases in the Commission's history including the largest number of corporate penalties cases ever. The chart below, provides the requested information on the nearly seven full fiscal years of Chairman Levitt's tenure and the two full fiscal years of my tenure.

[Dollars in millions]

	Average Number of Enforcement Actions Per Year	Average Disgorgements and Penalties Ordered Per Year
Arthur Levitt, Chairman, July 1993-Feb. 2001	490	\$608
Christopher Cox, Chairman, August 2005-present	615	2,483

Note: Figures for Chairman Levitt are totals for fiscal year 1994-fiscal year 2001. Figures for Chairman Cox are totals for fiscal year 2005-fiscal year 2007.

The following table shows the specific figures for each fiscal year during Chairman Levitt's and my tenures:

[Dollars in millions]

	Enforcement Actions	Disgorgements and Penalties Ordered
Under Chairman Levitt:		
1994	497	\$764
1995	486	1,028
1996	453	392
1997	489	263
1998	477	477
1999	525	841
2000	503	488
Under Chairman Cox:		
2006	574	3,365
2007	655	1,601

SUBCOMMITTEE RECESS

Senator DURBIN. This meeting of the subcommittee will stand recessed. Thank you.

[Whereupon, at 4:12 p.m., Wednesday, May 7, the subcommittee was recessed, to reconvene subject to the call of the Chair.]