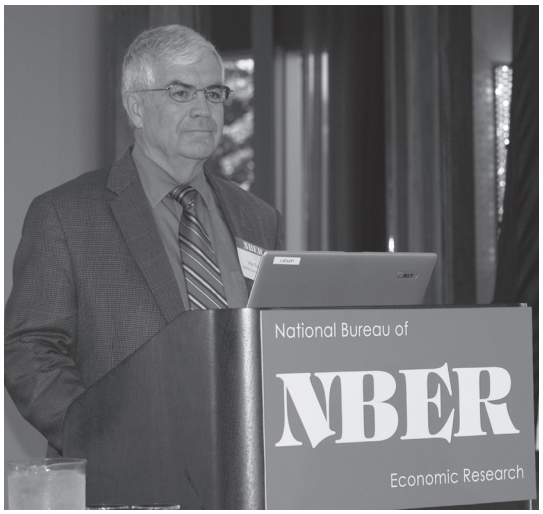
NBER Reporter

NATIONAL BUREAU OF ECONOMIC RESEARCH

Reporter OnLine at: www.nber.org/reporter

2009 Number 3



John B. Taylor

IN THIS ISSUE

The Martin Feldstein Lecture 1

Research Summaries
Search Technologies & Retail Competition 5
Measuring Tariff Evasion and Smuggling 8
How Labor Institutions Influence...Markets 11
Dynamic Measures of Inflation 13

NBER Profiles 16
Conferences 18
NBER News 22
Program and Working Group Meetings 23
Bureau Books 26

The Martin Feldstein Lecture*

Empirically Evaluating Economic Policy in Real Time

John B. Taylor

To honor Martin Feldstein's distinguished leadership and extraordinary contributions to the National Bureau of Economic Research, the Feldstein Lecture addresses an important question in applied economics, with an application to economic policy. In this inaugural lecture I consider macroeconomic policy during the financial crisis.

It is useful to divide the financial crisis into four phases: 1) the "root cause" period from 2003 to 2006; 2) the period from the flare-up in August 2007 to the panic in September 2008; 3) the panic period in September-October 2008; and 4) the post-panic period. Here I look at the fourth phase and focus on monetary policy.[1]

I emphasize *real time* policy evaluation because the crisis is ongoing and because the research is quite different from many existing monetary policy evaluations that examine policy over decades.[2] The financial crisis has made real time evaluation essential because of the rapid changes in events and policy. In addition to loads of new data and policies, real time evaluation must address new methodological questions about the use of high frequency data and simulation techniques.[3] Because of blogs, the 24-hour news cycle, and the rapid spread of ideas, the need for real time policy evaluation is here to stay.

To evaluate monetary policy during this period I develop a specific quantitative framework in which I compare actual policy with certain counterfactual policies. It is not enough to say that policy is good or

* *This is a written and abbreviated version with a few selected charts from the Martin Feldstein Lecture given on July 10, 2009. Additional charts and a video of the full lecture can be accessed at* http://www.nber.org/feldstein_lecture/feldsteinlecture_2009.html

John B. Taylor is an NBER Research Associate in the Monetary Economics Program and the Mary and Robert Raymond Professor of Economics at Stanford University.

NBER Reporter

bad in the abstract; you need to say "compared to what" and be able to measure the differences. Such a framework requires that one characterize actual policy and then choose an appropriate counterfactual policy. Both are difficult tasks and there are alternative ways to go about them. What is most important, in my view, is the quantitative framework that different researchers can use in different ways.

Actual Monetary Policy since the Panic of 2008

First consider actual policy. In early September 2008, the Fed's target for the federal funds rate target was 2 percent. Starting during the week of September 17, 2008, bank reserves and the monetary base rose sharply, as shown in Figure 1, above levels required to keep the federal funds rate on target.

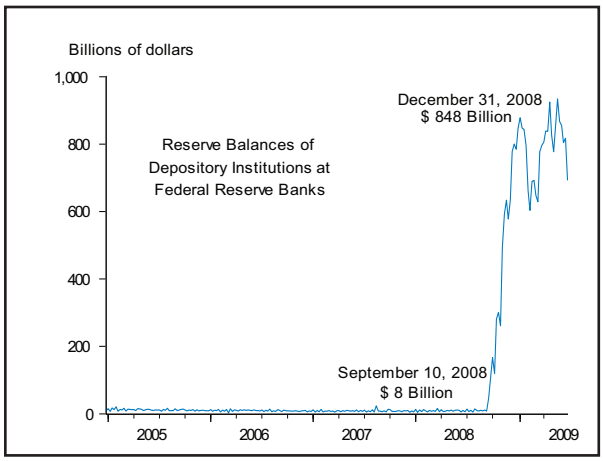


Figure 1. The Sharp Increase in Reserves under Actual Monetary Policy

Why did reserves increase so much? The Fed created them to finance loans and purchase securities. Some have argued that they were increased to accommodate a shift in money demand, or a decline in velocity, but the drop in interest rates suggests otherwise. Reserves continued to increase through the end of 2008 and have remained elevated since then as the Fed has financed its purchase of mortgage backed securities (MBS) and long-term Treasury securities, made loans to banks through the Term Auction Facility (TAF), and to foreign central banks, to AIG, and so on. The large level of reserves has raised questions about how and when the Fed will exit from it.

Note that this quantitative easing began *before* the funds rate hit zero. Indeed, the increase in

reserves eventually drove the interest rate to zero, which the Federal Open Market Committee (FOMC) then ratified. To see this, consider the timing of FOMC decisions. On October 8 the FOMC voted to cut the funds rate to 1.5 percent from 2 percent, but for the two weeks ending October 8, the funds rate was already well below 2 percent, averaging 1.45 percent. On October 29 the FOMC voted to cut the funds rate to 1 percent from 1.5 percent, but for the two weeks ending October 29, the funds rate was already well below 1.5 percent, averaging .76 percent. Then, on December 16, the FOMC voted to cut the funds rate to 0–.25 percent from 1 percent, but for the two weeks ending December 17, the rate was already in that range, averaging .14 percent. Thus, decisions to increase reserve balances, rather than the FOMC decisions about the target rate, drove down the funds rate.

Choosing a Counterfactual Monetary Policy

What is a reasonable counterfactual monetary policy? Most simply it would be to continue setting interest rates without the increase in reserves. When the optimal interest rate (say through the Taylor rule) hit zero — or became slightly positive, in the range of 0 to .25 percent — the trading desk would keep reserve balances at a level consistent with that interest rate, the caveat being that the growth rate of the money supply must not fall. Such a counterfactual would avoid monetary policy episodes like the Great Depression in the United States or the Lost Decade in Japan, where money growth actually declined. Given the state of the economy, this counterfactual would have had an interest rate (according to the Taylor rule) that hit the lower bound (0 to .25 percent) and would not have been much different from the actual path of the federal funds rate.

Thus the counterfactual monetary policy would be different from the actual policy: the size of the expansion in reserves and the corresponding increase in loans and securities purchases by the central bank would be much smaller with the counterfactual. The path of the federal funds rate would be identical for both actual and counterfactual.

To make such a counterfactual operational, consider a specific policy in which three facilities — the MBS purchase program, the medium-term Treasury purchase program, and the TAF — had not gone into operation. That is, the counterfactual monetary policy consists of three sub-counterfactuals in which the Fed 1) would not have purchased up to $500 billion MBS, 2) would not have purchased up to $300 billion in longer-term Treasury securities, and 3) would not have made up to $500 billion in TAF loans. The resulting path for reserves with this counterfactual is shown in Figure 2. Observe that the expansion of reserves is much smaller and more temporary compared to the actual policy shown in Figure 1. Indeed an exit strategy would already have been executed.

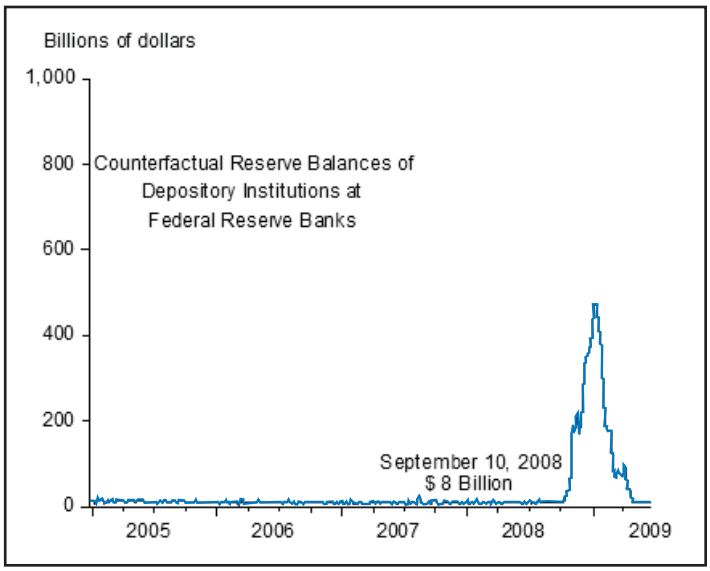


Figure 2. A Smaller, More Temporary Increase in Reserves under a Counterfactual Policy

Alternative counterfactuals could consider different facilities or different mixtures of facilities with larger or smaller impacts on reserves, including the case where reserves are held near their levels before the panic in September.

Because the path of the federal funds rate is identical in the actual and counterfactual policies, our evaluation can focus on the impact of the three sub-counterfactuals on other interest rates.

The MBS Purchase Program

Many say that Fed purchases of MBS drove mortgage rates down, but what do the data show? Johannes Stroebel and I (2009) have been investigating the impact empirically. We regressed the spread between 30-year mortgages and 10-year Treasuries on purchases as a share of the total outstanding MBS plus a measure of risk in the MBS market.

The Fed purchases are of Fannie Mae or Freddie Mac guaranteed MBS, so assessing their risk before and after their conservatorship is necessary. CDS rates on Fannie and Freddie debt were a good measure of risk, but they ended with the federal takeover. As an alternative risk measure, we used the spread between Fannie and Freddie debt and 5-year Treasuries, which was highly correlated with CDS rates while they existed. Our regressions show no significant role for Fed purchases on the MBS spread once the risk measure is taken into account.

Figure 3, on the following page, summarizes the results. It shows the actual mortgage rate spread that had been rising since 2007 and then declined in late 2008 and 2009. Using our estimated regression equation, we simulated the counterfactual that there were no MBS purchases — this counterfactual is also illustrated in Figure 3.

Mortgage rates only would have been a few basis points higher. The major reduction in the spread can be attributed to changed perceptions of risk.

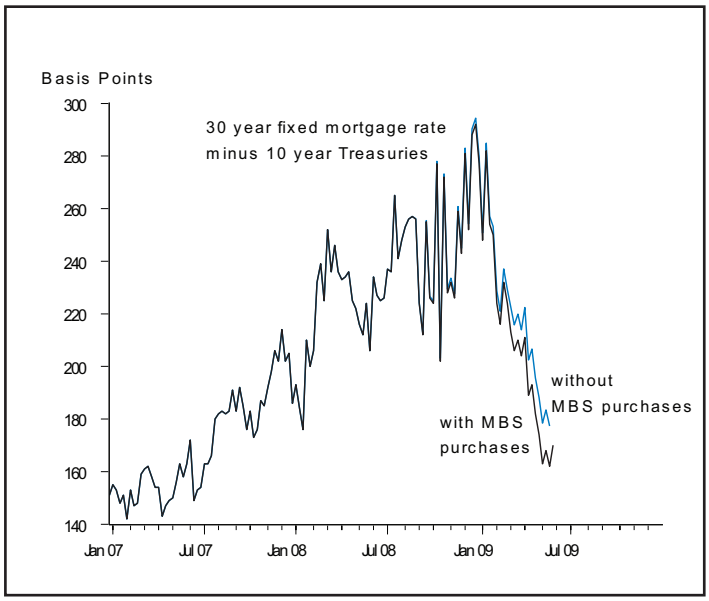


Figure 3. Mortgage Interest Rates: Actual and Counterfactual

Purchases of Longer-Term Treasuries

Figure 4 next shows the interest rate on 10-year Treasuries along with purchases by the Fed.

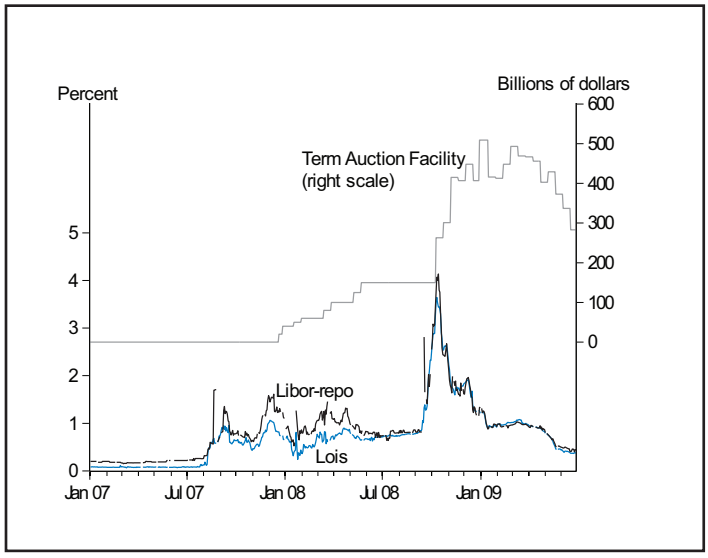


Figure 4. Libor-OIS (Lois) changes due counterparty risk (Libor-Repo) rather than TAF

Observe that the 10-year rate fell at the time of the announcement of the purchase program, but has mainly increased since then as the purchases have taken place. While other factors, such as an improved outlook for the economy or increased concerns about inflation, may have driven up these rates, it is very difficult to find empirical evidence that the purchases lowered these longer term rates as intended.

The Term Auction Facility

Evaluating the impact of TAF loans has been part of a research project that John Williams and I (2009) began early in the crisis. We looked at the impact of the TAF on the Libor-OIS[4] spread, a good measure of tension in the money markets and a focus of the facility. After controlling for counterparty risk using the spread between unsecured and secured interbank loans (Libor less the Repo rate), we found very little evidence that the TAF program has affected the spread.

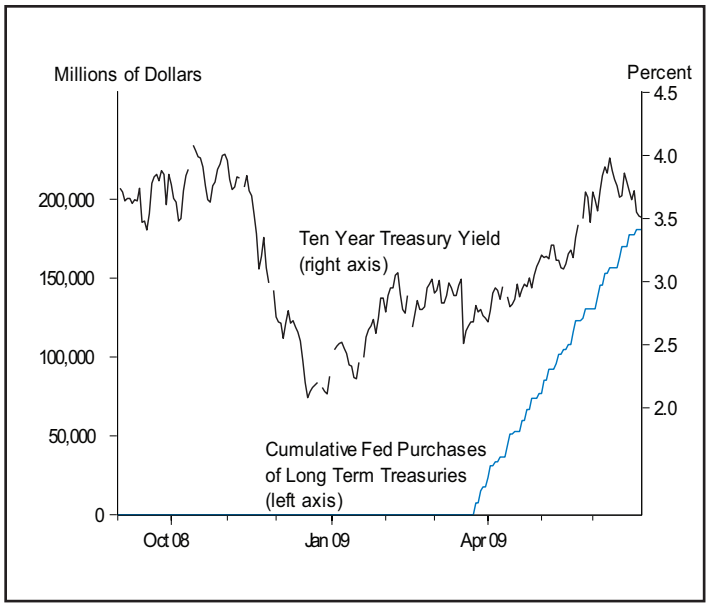


Figure 5. Treasury yields increased since start of purchase program

As shown in Figure 5, the Libor-OIS spread is highly correlated with the counterparty risk measure and there is very little impact of the TAF loans, also shown in Figure 5. According to this analysis, the path of Libor would have been essentially the same had the TAF not been activated. There may have been other benefits from the TAF, but in terms of this metric, which has long been mentioned as an appropriate one, there has been little impact.

Conclusion

Milton Friedman and Anna Schwartz's classic NBER study empirically evaluating monetary policy during the Great Depression was not completed until thirty years after that contraction was over. An underlying theme of this lecture has been a call for NBER-style empirical research on economic policy during the current financial crisis, but now—in real time—not thirty years from now. While more difficult and inherently more preliminary than monetary research

done long after the fact, the findings can be both useful to policymakers and interesting to researchers.

I have tried to illustrate this theme by setting up a framework for evaluating monetary policy during the past few months. I found that three key interest rates — the interest rate on mortgages, the interest rate on medium-term Treasuries, and Libor—would essentially be no different had the counterfactual policy rather than the actual policy been followed. And with the counterfactual, the Fed would already have exited from its unprecedented actions. While the empirical results are preliminary, they are clear and consistent about the impact of policy on interest rates and the economy. Nevertheless, I would emphasize the particular empirical framework for monetary policy evaluation during this crisis as much as the empirical results.

[1] *See Taylor (2009) for an analysis of policy during of the first three phases and Cogan, Cwik, Taylor, and Wieland (2009) for an analysis of fiscal policy during the fourth phase.*
[2] *For example, Taylor (1979) evaluated monetary policy during 1953–75, Feldstein and Stock (1997) during 1959–92, and Bernanke (2004) during the pre- and post-1984 periods.*
[3] *See Svensson (2009) for a real time approach that adapts methodologies, such as the Taylor Curve, for use in the evaluation of Riksbank policy.*
[4] *OIS is the Overnight Index Swap which measures the market expectation of the average federal funds rate during the maturity of the corresponding Libor interbank loans.*

References

B. Bernanke, "The Great Moderation," Federal Reserve Board, Washington, D.C., 2004.

J. C. Cogan, T. Cwik, J. B. Taylor, and V. Wieland, "New Keynesian versus Old Keynesian Government Spending Multipliers," NBER Working Paper No. 14782, March 2009.

M. Feldstein and J. H. Stock, "The Use of a Monetary Aggregate to Target Nominal GDP," in *Monetary Policy,* N. Gregory Mankiw ed., University of Chicago Press, 1997.

J. Stroebel and J. B. Taylor, "Evaluating the MBS Purchase Program," paper in process, Stanford University.

L.E.O. Svensson, "Evaluating Monetary Policy," Riksbank, Stockholm, Sweden, 2009.

J. B. Taylor, "Estimation and Control of a Macroeconomic Model with Rational Expectations," *Econometrica,* Vol. 47, No. 5, 1979.

J. B. Taylor, *Getting Off Track,* Hoover Press, Stanford California, 2009.

J. B. Taylor, "The Black Swan in the Money Markets," NBER Working Paper No. 13943, April 2008, and *American Economic Journal: Macroeconomics,* Vol.1, No. 1, pp. 58–83, 2009.

Research Summaries

Search Technologies and Retail Competition

Glenn Ellison*

When the Internet first came into wide consumer use, one heard a lot about the promise of "frictionless commerce." New search technologies would make it easy for consumers to find the exact product they wanted at the lowest possible price. Whether such a future comes to pass is obviously of great interest to consumers and online retailers. And, it may have dramatic effects on the traditional retail and media sectors. My recent research has included several projects that aim to improve our understanding of Internet search technologies and retail markets.

**Ellison is a Research Associate in the NBER's Program on Industrial Organization and a professor at MIT. His profile appears later in this issue.*

Price Search and Obfuscation

The desire to better understand where search frictions come from and how they may evolve motivates my work with Sara Fisher Ellison on Pricewatch. Pricewatch is a specialty search engine serving consumers who want to buy computer parts (such as memory upgrades or video cards) at

low prices from no-name e-retailers. One chooses the desired product from a menu on Pricewatch's first page — for example, 128 MB PC100 SDRAM memory module — and Pricewatch returns a list, sorted by price, of dozens of retailers carrying that product. A number of retailers have built businesses by serving Pricewatch consumers, and price competition occurs far more quickly this way than in the traditional retail sector: rankings on the Pricewatch list change throughout the day as firms raise or lower prices by a few dollars to move up or down.

Our choice to study this idiosyncratic environment may seem strange, but it illustrates how empirical work is often done in industrial organization. Developing theoretical models of the interactions between consumers and firms is the only way to address many important questions. Studying atypical environments can be a great way to get insights on how accurate models are. In our case, the simplicity of the business model of a Pricewatch retailer — basically, they just take memory modules off a shelf, put them in cardboard boxes, and mail them — makes it much easier to estimate profit functions. The frequent changes in relative prices let us estimate demand using (presumably random) short-term fluctuations. And, the generic nature of the products and retailers creates extremely price-sensitive demand, which highlights the role played by search frictions in sustaining price markups.

From our first look at the Pricewatch environment it was clear that the frictionless ideal had not been fully realized.[1] Yes, prices were very low and close together. But buying a product at the advertised price was rarely simple. Often, one had to search through multiple pages and read a great deal of fine print. Most striking was the litany of automated sales pitches encouraging one to upgrade to a superior product and/or buy additional add-ons to complement what one was trying to buy. We use the term "obfuscation" to describe practices by firms that increase search frictions, and we view Pricewatch as a great environment from which to gain insights on the topic.

I explore these ideas in two theoretical papers as well as in the empirical work mentioned above. The first theoretical paper examines add-on pricing.[2] The ubiquity of add-on pricing in the Pricewatch universe mirrors what one sees in many traditional businesses with high fixed costs and minimal product differentiation: for instance, hotels have extremely high long-distance rates; rental car companies have high refueling charges; and bank accounts often have a remarkably long list of fees. This regularity is made more striking by the fact that arguably such fees should have no effect on equilibrium profits. If firms are able to earn an extra $17 from each consumer by selling add-ons, then the equilibrium price in the market should simply end up $17 lower, and nothing important will change. The model I develop for why add-ons may raise profits, though, is quite simple. There are two types of consumers: regular consumers and cheapskates, who have a higher marginal utility of income. Price cuts disproportionately attract cheapskates. Ordinarily, this is not a problem — a cheapskate's money is as good as anyone else's — but when a firm relies on selling add-ons for its profits, then it is a problem, analogous to adverse selection. The adverse selection is a disincentive to price-cutting, which leads to higher equilibrium markups. This paper also involves behavioral industrial organization — it notes that one way to make the add-on pricing individually rational rather than just collectively rational for the firms is to add a small population of irrational consumers who buy add-ons only when the high add-on prices are not advertised.

The second theoretical paper, written with Alexander Wolitzky, makes the level of search costs endogenous in a standard search-theoretic model. We discuss two mechanisms that may make it individually rational for firms to make searches more time consuming.[3] One mechanism assumes that some consumers don't want to spend much time shopping. In such a model, firms will have an incentive to make examining their product slightly more arduous than consumers expect, and to simultaneously raise prices. Because the time already spent examining a product is a sunk cost, it won't deter consumers from finishing their examination of a firm's product, but it will raise the perceived incremental cost of visiting another firm. The other mechanism that firms use is a signal-jamming model in which making search more arduous similarly makes continued search less attractive by increasing consumer expectations about how difficult future searches will be.

Our empirical work on the Pricewatch search engine exploits data that are unusually rich in some dimensions. Most notably, we were able to download the prices at which memory modules were available from dozens of firms indexed by Pricewatch at an hourly frequency over the course of a year. We then matched this to hourly quantity data from two e-retail websites that get most of their traffic from Pricewatch referrals. The price and quantity data make clear that Pricewatch dramatically reduces some search frictions. In one product category, we estimate that a firm that raises its prices by one percent will lose one-fourth of its sales. But the cost data make clear that search frictions are far from completely eliminated. Firms appear to maintain markups over marginal cost of 8–16 percent.

Further analyses indicate that each of the mechanisms discussed in the theoretical papers is operative. For example, we can measure the adverse selection problem that add-on pricing creates. A single-percent price decline can substantially reduce a firm's average margin because it raises total sales by 20 percent, but only increases sales of add-ons by about 10 percent. Indeed, the actual markups appear to be very consistent with the estimated magnitude of the adverse selection. Relative to the

search-cost model, we find that consumers have not found the most relevant information -- the prices at which they could have bought the product they ended up buying.

Overall, these results support the view that the equilibrium level of search frictions is determined by a balance of search technologies and firms' investments in obfuscation. This balance is reflected in the practices that have not received much attention, but have long been found in places like the hotel, rental car, and banking industries. Price search may become more efficient than it is in the current online world, but we would not expect that the "frictionless" ideal will be closely approached.

Sales Taxes and Online-Offline Competition

Sara Fisher Ellison and I have also used our Pricewatch data to examine the effects of sales taxes on e-retail sales.[4] Sales tax policies are potentially important to the future of traditional and online retail. The status quo is that state governments are unable to compel retailers without a presence in their states to collect sales taxes or to provide information that would allow the state to levy "use taxes." As a result, an attractive feature of buying from small online merchants (or even Amazon) is the *de facto* tax free status of purchases. Not surprisingly, state governments and traditional retailers are unhappy about this situation and are pursuing a variety of avenues to change it.

Our work exploits another very nice feature of the online sales environment. The retailers listed on Pricewatch set prices at the national level. However, the tax-inclusive price a consumer would pay to purchase from each retailer depends on the consumer's location. Our sales data include the home-state of each purchaser, so rather than just observing national market shares as a function of national prices, we are able to simultaneously observe market shares in 50 different states as a function of 50 different tax-inclusive price orderings.

We analyze the data from a variety of angles. In one analysis, we collapse everything into a simple regression on a 51-observation state-level dataset. In another, we treat sales into each state in each hour as a separate observation and estimate a discrete choice model on a dataset with 800,000 observations. The results are fairly consistent. We find that consumers do not react as strongly to differences in sales taxes as they do to differences in pre-tax item prices. Nonetheless, we find that sales patterns are strongly influenced by taxes: a single percentage point higher sales tax rate leads to a 6 percent decrease in online sales by in-state merchants.

We make a number of other observations about online and offline retail. Geography still matters in e-retail for two reasons: consumers prefer purchasing from nearby merchants to take advantage of reduced shipping times; and, there is an additional preference for in-state merchants that offsets some of the tax disadvantage. We also look for effects of the variation in the online-offline price gap which occurs over the course of a week (because online prices adjust more rapidly to market conditions), but we fail to find evidence that consumers react to such transitory differences. This also could be a sign of "behavioral" consumers: consumers appear generally to be aware of the tax advantages of buying online, but do not exploit more subtle patterns that can be equally important in some circumstances.

Sponsored Search Auctions

If price search will not come to dominate the online (and offline) environment, what will? Today, most consumers find products either by visiting merchants they know and/or by using general search engines like Google. A common way to use Google is to search for the product one is interested in buying and then to examine the offers from merchants contained in the list of "sponsored links" presented above and alongside the unbiased search results. One's first reaction may be that this process couldn't possibly be as efficient as searching for products via Pricewatch, but there is circumstantial evidence that it must be at least somewhat effective: enough consumers choose to search this way to generate $10 billion dollars in annual revenues for the firms that sell-off the right to be a sponsored link. The functioning of this retail "platform" is also of interest to the traditional media that it is displacing, and to the increasing number of firms that rely heavily on online advertising.

Previous work on search engines has developed elegant auction-theoretic models of the process by which Google, Yahoo!, Bing, and others auction off the right to be a "sponsored link."[5] My work with Susan Athey extends this research to explore the implications of the fact that service providers such as Google are not just auctioning generic "objects" — they are auctioning advertisements that derive their value from the fact that consumers believe that they are sufficiently likely to be valuable to make clicking on them worthwhile.[6] Our approach assumes that potential advertisers are heterogeneous in the probability that they will be able to meet a consumer's need. The genius of the sponsored-search auction is that it may lead to a sorting equilibrium where the firms that are most likely to meet a consumer's need are able to outbid other firms on a per click basis. Hence, it is the fact that the auctioneer is collecting revenue that induces firms to reveal their quality, which allows consumers to search in a more efficient manner.

Although these auctions work well in a base case, the greater part of our paper explores various ways in which the considerations underlying auction design become more subtle. For example, reserve prices can increase the volume of trade by making clicking worthwhile, and using weights to adjust for differences in click-through rates is critical if one wants to approximate efficiency, but involves a number of

tradeoffs. In a short time, sponsored search has become one of the most active topics in computer science as well as in economics, and many new results are emerging.

[1] *G. Ellison and S. F. Ellison, "Search, Obfuscation, and Price Elasticities on the Internet," NBER Working Paper No. 10570, June 2004, and* Econometrica *77, 2009, pp.427–52.*

[2] *G. Ellison, "A Model of Add-On Pricing," NBER Working Paper No. 9721, May 2003, and* Quarterly Journal of Economics, *120, 2005, pp.585–637.*

[3] *G. Ellison and A. Wolitzky, "A Search Cost Model of Obfuscation," NBER Working Paper 15237, August 2009. The paper builds on D. Stahl, "Oligopolistic Pricing with Sequential Consumer Search,"* American Economic Review *79, 1989, pp.700–12.*

[4] *G. Ellison and S. F. Ellison, "Internet Retail Demand: Taxes Geography, and Online-Offline Competition," NBER Working Paper No. 12242, May 2006. Part of this work is forthcoming as G. Ellison and S. F. Ellison, "Tax Sensitivity and Home State Preferences in Internet Purchasing,"* American Economic Journal: Economic Policy, *2009*

[5] *See G. Aggarwal, A. Goel, and R. Motwani, "Truthful Auctions for Pricing Search Keywords," ACM Conference on Electronic Commerce, 2006; B. Edelman, M. Ostrovsky, and M. Schwarz, "Internet Advertising and the Generalized Second-Price Auction: Selling Billions of Dollars Worth of Keywords,* American Economic Review *97, 2007, pp. 242–59; and H. Varian, "Position Auctions,"* International Journal of Industrial Organization, *25, 1997, pp. 1163–78.*

[6] *S. Athey and G. Ellison, "Position Auctions with Consumer Search," NBER Working Paper 15253, August 2009.*

Measuring Tariff Evasion and Smuggling

Raymond Fisman*

Tales of bribery and corruption date back to the beginning of recorded history. By the time the historian Suetonius was at work documenting the antics of Roman leaders, his chronicles were filled with extorting senators, vote-buying Caesars, and judges-for-sale. Needless to say, we do not want for stories of venality and excess among latter-day Caesars and senators. Whether it's the U.S. Senate seat that Illinois Governor Rod Blagojevich allegedly tried to sell to the highest bidder last year, or the "Versailles in the jungle" built with billions that some say were embezzled by Zaire's Mobutu Sese Seko, the corruption narrative is alive and well today.

Fisman is a Research Associate in the NBER's Corporate Finance Program. He is also Director of the Social Enterprise Program, and Lambert Family Professor of Social Enterprise, Columbia Business School. His profile appears later in this issue.

Yet we are not satisfied by stories — we want to see it in the data. For one thing, talk is cheap, so we don't know how much to trust casual retelling or survey evidence, particularly in a sensitive and secretive domain such as corruption. (Think about the incentives for truth telling in response to the question, "How much did you pay in bribes last year?"). For well-documented instances of corruption, we only observe cases that come to light via enforcement efforts, so lack of any evidence of misbehavior could be taken of proof that corruption is nonexistent — or so ubiquitous that the enforcers are on the take themselves.

Recent years have seen a blossoming of corruption research in economics, focused on approaches to getting around the cheap talk problem in measuring illicit behavior. In a series of papers with Shang-Jin Wei, I have looked for ways of analyzing what happens when corruption meets globalization, by studying the role of smuggling and tariff evasion in international trade. Our work more broadly informs the discussion on how tax rates affect tax evasion.

Our core methodology is based on the simple observation that shippers moving goods across international borders are asked not just once but twice about the contents of their containers: by export officials at one end and import authorities at the other. In both cases, false claims have real and material costs, ranging from the forfeiture of shipped goods to fines to prison time (and in some extreme cases, a death sentence). Yet the benefits of deceit often differ widely at the points of import and export. Where such benefits are low, we may plausibly take the reported figures at face value, and use them as a benchmark against which to compare the numbers that would-be smugglers report where deception is required to ply their trade.

The idea of comparing mismatched import-export data isn't new. Jagdish Bhagwati observed back in 1964 that

importers might underinvoice the value of their shipments as a means of evading tariffs,[1] and suggested that this might explain the gap between reported exports and imports in global trade data. With this as inspiration, Wei and I set about analyzing the gap between goods reportedly leaving Hong Kong destined for mainland China and those reported arriving in China from Hong Kong.[2]

We were not interested in the *level* of this trade gap — many explanations ranging from reporting errors to transportation have been put forth to explain it — but rather its correlates. Most obviously, in the absence of any deliberate misreporting, there should be no relationship between tariff rates and the import-export reporting gap. It is tempting to presume that higher tariffs will necessarily increase evasion, since the benefits from evasion increase as the tariff rate goes up. But it turns out that this relationship depends crucially on the punishment for evasion and the stomach for risk among would-be evaders. Imagine, for example, that the penalty for attempted tariff evasion is a multiple of tariffs evaded — then both the benefit and cost of evasion increase when tariffs go up, and a risk-averse shipper will be more likely to opt for truthful reporting.

Given the frequent ambiguity and discretion in penal codes and the diversity of risk preferences, the tariff rate/tariff evasion relationship ultimately is an empirical matter. In Hong Kong-to-China trade, it turns out that higher tariffs indeed are associated with a bigger gap between reported exports and imports, implying a higher level of evasion.

We estimate that a single percentage point increase in tariffs results in a 3 percentage point increase in the "evasion gap." This implies that the peak of the "smuggling Laffer Curve" is at 33 percent, with government revenues declining for any increase above this level because of evasion. Given this, Chinese tariffs were perplexingly high, with nearly half of all products having tax rates (the tariff plus a value added tax) above this 33 percent threshold in the mid-1990s.

A couple of explanations come to mind for why the government might be foregoing potentially greater tariff revenues. First, the innocent one: the Chinese government may have been legitimately protecting infant automobile or computing industries (both high tariff products), nurturing them behind tariff walls regardless of the short-run losses in revenue. Similarly, the government may have been paternalistically setting high tariff barriers on some goods to protect its citizens from the temptations of Chanel perfume and Absolut vodka (also high tariff products).

A less honorable explanation is that tariff rates were kept high by corrupt government officials precisely because they forced importers to find a way around them. Under this "endogenous regulation" story, corrupt customs agents earn a fine living by turning a blind eye to smuggling (for a fee), and thus do their best to keep tariff rates at a high enough level to keep their "services" in high demand.

In addition to reporting the value of their cargo, shippers also must report the quantity of goods to both export and import authorities. By comparing the extent of misreporting on quantities versus values, we were further able to determine whether evasion occurred through underinvoicing quantities, prices, or relabeling high tariff goods as low tariff ones. Since the evasion gap in values was far more correlated with tariff rates than the gap in quantities, we concluded that most underinvoicing took place by reporting lower values for shipped goods. This is perhaps not surprising — it's easy to weigh forty-foot containers and use this information to calculate how much is in each shipment, but potentially much harder to verify the final market price of incoming products.

Figuring out the extent of relabeling is a bit trickier — we assume that if relabeling is occurring, for the most part it is probably among relatively similar products (it's easier to relabel a high-tariff chicken as a low-tariff turkey than as a low-tariff four-door sedan). Empirically, this would imply that as the tariff rate on a particular good increases, the evasion gap on similar goods (in, say, the same 4-digit SIC industry category) should decline, because the relabeled goods appear only on the import side of the statistics. This is what we find for the Hong Kong/China case, with this type of relabeling accounting for most of the tariff evasion between the two countries.

What are the implications for tariff design? If it is indeed the case that evasion is most easily done through relabeling, then countries need not set uniformly low tariffs to keep evasion in check. Rather, it may be enough to minimize dispersion of tariff rates among similar products (that is, frozen chickens must have the same rate as frozen turkeys, but not midsized automobiles).

Of course, the extent to which this lesson can be broadly applied depends on the extent to which our findings hold more generally. While our analysis focused on Hong Kong/China trade, it may be extended to any country pair worldwide, and also can be used to assess the efficacy of changes in enforcement. Comparable results have been found in analyses of trade statistics for India,[3] Eastern European nations,[4] and beyond.[5] Fellow NBER researcher Dean Yang has used this approach too in evaluating the impact of pre-shipment inspections on the scale of evasion.[6]

More broadly, our method of uncovering underground activities using the differing truth-telling incentives for importers and exporters can be applied to a much wider realm of trade issues. In our original tariff evasion study, export figures were the benchmark numbers; in our work on the smuggling of art[7] the truth-telling incentives are reversed, but the principle remains the same.

Most countries prohibit or severely restrict the export of antique art and other cultural property. This includes big-time antiquities like Etruscan chariots and Greek statues that would fetch millions, but also covers hundred-dollar trinkets like pre-Columbian pottery shards and nineteenth-century coins. Such objects only can be exported with

special government permission, which is rarely forthcoming.

Either way, there's no problem on the import side in the United States: The Department of Homeland Security itself explains in its handbook for art importers that violating a foreign country's law doesn't necessarily mean you're in violation of U.S. law. While it's okay to bring illegally exported items into the country, you do have to be honest about what you report to the U.S. authorities. Otherwise, antiquities importers would be guilty of perjury and their merchandise subject to seizure.

Thus, there is likely truthful reporting on the U.S. import side, while exporters with weak rule of law may have "missing" exports, as antiques are taken out of the country without showing up in trade statistics. Once again, we hypothesize that smuggling gaps will appear in the trade data, this time correlated with a measure of the ease of getting around export controls. Consistent with this, the antique smuggling gap is widest for those countries where it's easiest to bribe your way around export restrictions — Nigeria, Russia, and Syria to name a few — the countries that also get rated as highly corrupt year after year in Transparency International's global rankings.

In a third variant on the theme of reporting incentives, we partnered with Peter Moustakerski to study the ubiquitous middleman in corrupt transactions. Lore has it that "facilitators" or "fixers" often sit between buyer and seller in illicit activities. But how to gauge their importance? Rather than looking for differences in the motivation for honest reporting between sellers (exporters) and buyers (importers), in this case we looked at whether the prevalence of trade middlemen was greater for products with stronger tariff evasion incentives.

Trade intermediaries — or entrepôts — are a very common phenomenon in global commerce. Ports such as Macao, Singapore, Cyprus, and others are heavily dependent on their trading activities. Hong Kong, however, is by far the world's largest entrepôt economy, where trade was 259 percent of GDP in 1998, largely because of its role as intermediary between China and the rest of the world. Why route goods through Hong Kong rather than sending directly to and from China? Arguments largely have rested on the role of specialized agents with business connections and expertise in shipping.

In our paper on outsourcing tariff evasion" [8] we suggest that part of this expertise actually may be in the domain of smuggling and otherwise evading Chinese tariffs. The benefit of indirect trade for the purposes of evading tariffs is increasing in the value of tariffs evaded, and hence the tariff rate. Further, there's no other tax-related reason to ship goods via Hong Kong, since there is no preferential tax treatment of goods coming in through Hong Kong. Yet for high tariff goods, a much larger fraction of Chinese imports are in fact routed through Hong Kong, suggestive of evasion motives. Our calculations imply that as much as a quarter of all Hong Kong entrepôt trade to China may be accounted for by tariff evasion motivations.

Our research in this area first and foremost underscores the scale and importance of illicit trafficking in global trade. Thus far, our findings hint at methods for pinpointing where enforcement authorities should focus their efforts. The research findings also have implications for how to best design tariffs to discourage evasion while still allowing governments to earn tariff revenues. Yet this field of research is still in its infancy, and we hope that future work by ourselves and others will continue to shed light on this dark side of international economic activity.

---

[1] *J. Bhagwati, "On the Underinvoicing of Imports," Bull. Oxford Univ.Inst. Statis. 26 (November 1964): pp. 389–97.*

[2] *R. Fisman and S. Wei, "Tax Rates and Tax Evasion: Evidence from 'Missing Imports' in China," NBER Working Paper No. 8551, October 2001.*

[3] *P. Mishra, A. Subramanian, and P. Topalova, "Tariffs, Enforcement, and Customs Evasion: Evidence from India,"* Journal of Public Economics, *Elsevier, vol. 92(10–11), pp. 1907–25, October 2008.*

[4] *B. Javorcik and G. Narciso, "Differentiated Products and Evasion of Import Tariffs,"* Journal of International Economics, *Elsevier, vol. 76(2), pp. 208–22, December 2008.*

[5] *H. Berger and V. Nitsch, "Gotcha! A Profile of Smuggling in International Trade," CESifo Working Paper Series , 2008.*

[6] *D. Yang, "Integrity for Hire: An Analysis of a Widespread Customs Reform,"* Journal of Law and Economics*, 2008, Vol. 51, No. 1, pp. 25–57.*

[7] *R. Fisman and S. Wei, "The Smuggling of Art, and the Art of Smuggling: Uncovering the Illicit Trade in Cultural Property and Antiques," NBER Working Paper No. 13446, September 2007.*

[8] *R. Fisman and S. Wei, "Outsourcing Tariff Evasion: A New Explanation for Entrepôt Trade," NBER Working Paper No. 12818, January 2007.*

How Labor Institutions Influence Firms and Labor Markets

Morris M. Kleiner*

During the past year, perceived market failures have resulted in financial and product markets being encouraged to increase their level of government regulation. The labor market, however, continues to be one segment of the economy with the most extensive and deeply ingrained role for institutions and regulations, including employers, unions, and government oversight. How do these institutions influence labor markets, as well as the traditional economic factors of supply and demand?

To understand what happens within firms' labor markets we need to know how organizations set policies and how those policies affect the performance of the organization. The most basic job attribute that firms determine for their employees is compensation—its level and method of pay.[1] When we examine how methods of pay may influence the firm, we find that moving from piece rates to time rates or gain-sharing reduces individual productivity but allows firms to move workers among different tasks without their becoming demoralized.[2] When the piece rate is changed often, consequently shifting rates of pay and making it more difficult to adjust work effort, employees can become demoralized. Even when the piece rate remains constant, workers can become demoralized if meeting targets for their desired level of pay becomes difficult or out of reach.

Other firm policies, such as employee involvement (EI), can directly influence employee and firm behavior.[3] A great many American firms have organized workplace decision-making so as to allow employees to get more involved in their jobs—using policies like self-directed work teams, total quality management, quality circles, profit sharing, and other diverse human resource programs. Using information from employees and from firms, we can ask not only what EI does for firms—the principal question in the literature on the subject—but also what EI does for workers, and can examine EI from the bottom-up perspective of participants rather than managers. We find that EI practices are linked in a hierarchical structure that provides a natural scaling of EI activities and the intensity of the EI effort. Firms take a fairly long time—up to 20 years—to achieve an equilibrium level of employee involvement.[4] Firms with EI are also more likely to have profit sharing and other forms of shared compensation, as well as other high-performance workplace practices. EI has a weaker influence on output per worker, but a strong and positive influence on overall employee well-being.

In spite of declines in membership, the most important labor market institution influencing both firms and the labor market itself is still the labor union. Unions provide a voice to workers and the mechanisms for raising wages. One additional function of unions is to reallocate resources away from owners of capital to workers without putting the firm out of business.

Nevertheless, firms may oppose unionization, because it might reduce profits and investment. An often neglected area of research on labor market institutions is the direct role for employers in union-organizing campaigns. After examining the determinants and consequences of employer behavior when faced with an organizing drive, we show that there is a substitution between high wages and benefits, good working conditions, and supervisory practices. There is also some "tough" management opposition to unionism. Our research shows that a high innate propensity for a union victory deters management opposition, while some indicators of a low propensity also reduce opposition. These results are consistent with the notion that firms behave in a profit-maximizing manner in opposing an organizing drive, with the basic proposition that management opposition, reflected in diverse forms of behavior, is a key component in the ongoing decline in private sector unionism in the United States.

The introduction of a union into an establishment initially does not result in generally higher wages relative to when there is no organizing drive, or when the union loses an election or fails to achieve a collectively bargained contract.[5] Unions initially go for voice-related policies, such as grievance procedures and a seniority system, and then go after wages and benefits. What unions bring to an establishment initially is greater employee voice and due process in terms of job bidding and transparency from management. However, unions generally are associated with fewer policies where pay is at risk, and they reduce wage-related incentives for performance.

Once unions are clearly established and have a long history within a company, how do management and labor interact at the workplace to determine productivity? For example, we consider a large plant in the commercial aerospace industry — where the firm produces large civilian aircraft — and in which strikes, slowdowns, and tough union leaders can influence the productivity of one of the largest plants in the

* *Kleiner is a Research Associate in the NBER's Labor Studies Program. He is also a Visiting Scholar at the Federal Reserve Bank of Minneapolis and the AFL-CIO Professor of Labor Policy, Humphrey Institute of Public Affairs, University of Minnesota, Twin Cities. His profile appears later in this issue.*

United States, by large percentages and by absolute dollar amounts.[6] Putting together aggressive management leadership with a weak union leader initially may lead to higher productivity, but it also results in the union membership choosing a more militant union leader in response. Consequently, within the plant that we studied, negative productivity outcomes were associated with more strikes, or with collective shirking within the terms of the contract, which occurred when one side of the labor-management team had a more strident leader. However, following the concerted activities such as a strike or slowdown, we found no evidence of long-term effects, with the plant returning to pre-strike levels of productivity within three to six months after the formal settlement of a labor-management dispute.

One of the most controversial questions about the interaction of institutions such as unions is whether they put firms out of business. Much of the conjecture is that unions raise wages above market levels and reduce productivity so that unionized firms are not able to compete with nonunion ones.[7] However, if there are economic rents attributable to monopolies, or patents in product markets that can be distributed between owners of capital and labor, then higher wages and lower investment in capital may not put firms out of business. Estimates from our models show that at the mean value of the sample, being unionized has no influence on firm solvency. At the highest levels of unionization, though, firm insolvency increases. Additional probing of the issue, using data from the Current Population Survey Displaced Worker Supplement, finds that the probability of unionized workers becoming unemployed because of a mass layoff or plant closing is no higher than for nonunion workers. Although unions reduce profits because of these distributional effects, and labor leaders as well as management may make bad decisions, they are not so foolish as to eliminate the firm's value as an ongoing concern.

Although unions are the dominant labor market institution in the manufacturing sector, other government-run institutions have formed in the service sector that can, in some ways, serve as substitutes for some of the voice and monopoly functions of unions. For example, occupational licensing by the government has evolved as a partial substitute for unionization in the service sector.[8] Generally, licensing and other forms of regulation of occupations are driven by the occupational associations who lobby government for regulation. Occupational regulation in the United States generally takes three forms. The least restrictive form is registration, in which individuals file their names, addresses, and qualifications with a government agency before working in their occupation. The registration process may include posting a bond or filing a fee. In contrast, certification permits any person to perform the relevant tasks, but the government — or sometimes a private, nonprofit agency — administers an examination and certifies those who have achieved the level of skill and knowledge for certification. For example, travel agents and automobile mechanics are generally certified but not licensed. The toughest form of regulation is licensure; this form of regulation is often referred to as "the right to practice." Under licensure laws, working in an occupation for compensation without first meeting government standards is illegal. In 2003 the Council of State Governments estimated that more than 800 occupations were licensed in at least one state, and more than 1,100 occupations were licensed, certified, or registered.

Using a specially developed survey of the U.S. population that is consistent with the Current Population Survey, we find that 35 percent of the respondents answered that they were either licensed or certified. Approximately 6 percent stated that individuals who did not have a license could do the work, which is the definition of government certification. Therefore, 29 percent are fully licensed. Another 3 percent stated in the survey that all who worked would eventually be required to be certified or licensed, bringing the total that are or eventually must be licensed or certified by government to 38 percent. In contrast, union members are about 12 percent of the U.S. workforce. Having a license is associated with approximately 14 percent higher hourly earnings, depending on the detail of the specifications, and this result is similar to the union wage premium. The measure of dispersion of wages among licensed jobs is about the same as, or only slightly smaller than, that among unregulated ones. In contrast, unionization reduces the variance in wages.

Unlike unions, which can engage in concerted activities such as strikes or work slowdowns, licensed workers do not sign collective agreements with their employers. Nor do they engage in strikes against employers to raise wages. Occupational licensing can affect pay and employment through increasing quality by imposing initial education, testing, continuing training requirements, internship requirements, or fees. Further, licensing can use the police powers of the state to monitor and prevent the potential work effort of unlicensed workers. Competition by unlicensed individuals is virtually eliminated through the use of the state's enforcement process. Finally, the regulatory board through its administrative procedures of establishing large entry barriers and moral suasion can reduce the number of openings in schools that prepare individuals for licensed positions.

Overall, what role do more intense labor market institutions, such as labor law restrictions on management and unionization, have on national economic performance? Using a measure of national performance for OECD nations, such as foreign investment between nations and over time, we show that labor market institutions have an economic effect.[9] Firms are more likely to seek investment opportunities in nations that allow for more managerial or business flexibility in dealing with the workforce that may then entice foreign

investment. Nevertheless, the results do not necessarily suggest that a nation or state would be better off trading social equity through fewer restrictive industrial relations institutions for higher levels of foreign investment. Seeking to analyze and examine the balance of the proper level and intensity of labor market institutions is likely to continue to be a central task of both labor economists and policymakers.

[1] *R. B. Freeman and M. M. Kleiner, "The Last American Shoe Manufacturers: Changing the Method of Pay to Survive Foreign Competition," NBER Working Paper No. 6750, October 1998, and* Industrial Relations, *44 (2) (April 2005), pp. 307–30.*

[2] *S. Helper and M. M. Kleiner, "International Differences in Lean Production, Productivity and Employee Attitudes," NBER Working Paper No. 13015, April 2007, and in* International Differences in Business Practices and Productivity, *R. B. Freeman and K. Shaw, eds., forthcoming from University of Chicago Press.*

[3] *R. B. Freeman, M. M. Kleiner, and C. Ostroff, "The Anatomy of Employee Involvement and Its Effects on Firms and Workers," NBER Working Paper No. 8050, December 2000, and R. B. Freeman and M. M. Kleiner, "Who Benefits Most from Employee Involvement: Firms or Workers?"* American Economic Review, *90 (2) (May 2000), pp. 219–23.*

[4] *W. Chi, R. B. Freeman, and M. M. Kleiner, "Adoption and Termination of Employee Involvement Programs," NBER Working Paper No. 12878, January 2007.*

[5] *R. B. Freeman and M. M. Kleiner, "Impact of New Unionization on Wages and Working Conditions: A Longitudinal Study of Establishments," NBER Working Paper No. 2563, May 1990, and* Journal of Labor Economics, *7 (3), pt. 2 (1990), pp. S-8–25.*

[6] *M. M. Kleiner, J. S. Leonard, and A. M. Pilarski, "Do Industrial Relations Affect Plant Performance? The Case of Commercial Aircraft Manufacturing," NBER Working Paper No. 7414, November 1999, and as "How Industrial Relations Affect Plant Performance: The Case of Commercial Aircraft Manufacturing,"* Industrial and Labor Relations Review, *55 (2) (January 2002), pp. 195–218.*

[7] *R. B. Freeman and M. M. Kleiner, "Do Unions Make Firms Insolvent?" NBER Working Paper No. 4797, July 1994, and as "Do Unions Make Enterprises Insolvent?"* Industrial and Labor Relations Review, *52 (4) (July 1999), pp. 507–24.*

[8] *M. M. Kleiner and A. B. Krueger, "The Prevalence and Effects of Occupational Licensing," NBER Working Paper No. 14308, September 2008, and "Analyzing the Extent and Influence of Occupational Licensing on the Labor Market," NBER Working Paper No. 14979, May 2009.*

[9] *M. M. Kleiner and H. Ham, "Do Industrial Relations Institutions Impact Economic Outcomes? International and U.S. State-Level Evidence," NBER Working Paper No. 8729, January 2002, and as "Do Industrial Relations Institutions Influence Foreign Direct Investment? Evidence from OECD Nations,"* Industrial Relations, *46 (2) (April 2007), pp. 305–28.*

Dynamic Measures of Inflation

Ricardo Reis*

While the definition of inflation is widely agreed upon — "a continuing rise in the general price level" according to Merriam-Webster — turning it into a concrete measure is much more difficult. One key obstacle is figuring out how to combine all of the price changes in the economy into a single number, and this price-index problem has occupied many economists for centuries.[1]

Roughly three approaches have been taken. One is rooted in statistics, seeing price indexes as estimators of an underlying concept, and focusing on probability models of price dynamics and how to deal with sampling uncertainty, consistency, efficiency, and so on. Another approach uses both mathematics and logic, proposing axioms that price indexes should satisfy, and from them deriving the formulas necessary to compute the indexes. A third approach uses models of economic choice, whether of producer or consumer behavior, and derives price indexes as dual measures of changes in welfare.

Across all approaches, most of the work so far has been static. While the price indexes are used to compare two dates, the theory underlying them gives little or no role to time. More recently, a dynamic approach has surfaced, in an attempt to measure inflation and to answer three separate questions.[2]

* *Reis is a Research Associate in NBER's Program on Monetary Policy and a professor of economics at Columbia University. His profile appears later in this issue.*

What are the consequences of central banks targeting different measures of inflation?

Kosuke Aoki and Pierpaolo Benigno began this literature by characterizing optimal monetary policy if there are two sectors in the economy, one where prices are flexibly chosen and another where they are sticky, so the relevant dynamics relate to price adjustment.[3] Michael Woodford already had shown that if there is only one sector with sticky prices, then even though social welfare depends on the volatility of both inflation and an output gap, stabilizing inflation alone achieves both goals (a result that Olivier Blanchard and Jordi Gali would later label "the divine coincidence.")[4] Aoki and Benigno found that, with two sectors, targeting only the sectoral price index in the sticky-price sector maximizes social welfare.

In my work with N. Gregory Mankiw, we set up a simple but general framework to study a stability-price-index (SPI), designed so that by committing to keep it on target, the central bank would stabilize economic activity.[5] We consider an economy with many sectors and four sources of heterogeneity in sectoral characteristics: the sluggishness of price adjustments; the cyclical sensitivity of optimal prices; the sector's size; and the magnitude of sector-specific shocks. Our first result is a generalization of Aoki and Benigno: the stickier are a sector's prices, the larger is its weight on the SPI. By targeting the prices in stickier sectors, the central bank minimizes the forecast errors that these firms make when fixing their prices ex ante.

Our second result justifies the practice of focusing on core measures of inflation, which exclude food and energy prices. We show that if a sector has very volatile specific shocks, like food and energy, then it requires large movement in its relative prices, so a central bank that stabilizes that sector's price will induce a mis-allocation of resources. Third, we find that more cyclical sectors receive a larger weight in the SPI because they serve as good indicators of the state of real activity. Finally, we find that, all else equal, the larger the weight of a sector on the final consumption basket, the smaller its weight on the SPI. It is important for welfare that larger sectors have their relative prices reflect changes in marginal rates of transformation, while unimportant sectors like gold provide a nominal anchor to the economy.

A numerical illustration on U.S. data suggests that the SPI puts a large weight on nominal wages. Wages are infrequently set, move closely with the business cycle, are relatively stable, and have a zero weight on the consumption basket. Efficient changes in real wages attributable to shocks to productivity can come through changes in goods' prices rather than through nominal wages. More recent work by Eusepi et al has explicitly constructed an optimal inflation target for the U.S. data using a quantitative business cycle model.[6] Their research concludes that a central bank with a strict-inflation target, while sticking to that target and ignoring fluctuations in output, can almost replicate the optimal outcomes of a flexible-inflation target, as long as the strict target is this unique measure of inflation.

Our model does not take into account intermediate goods. Subsequent research has shown that if the central bank's goal is to maximize social welfare, it will find it attractive to place a special weight on the price of intermediate goods, reinforcing the unique role of wages.[7]

How to separate absolute and relative price changes?

There is an important distinction between changes in prices that are equiproportional across all goods (absolute-price changes) and changes in the cost of some goods relative to others (relative-price changes). One bedrock principle of neoclassical economics is that absolute-price changes are neutral to any real decisions: if all prices exogenously doubled, then no relative trade-off would change so no one would behave differently. There is no money illusion if changes in the unit of account don't change anything real.[8]

This principle predicts that if we were able to come up with a measure of inflation such that all prices increase in exactly the same proportion and it is unrelated to any relative-price movements, then this should be unrelated to measures of real activity. This would be a measure of pure inflation, stripped away from all relative-price movements.

Michael Bryant and Stephen Cecchetti first noted that using dynamic factor analysis on a panel of price data allows one to extract an equiproportional component as one of the factors.[9] In my work with Mark Watson, we note that the other factors are as just as interesting[10]: they measure relative-price changes attributable to an aggregate shock (to productivity or monetary policy for instance) and they provide a way to statistically purify the absolute-price changes from relative price movements.

Using U.S. quarterly data since 1959 on prices in 187 sectors, we find that for a typical sector, the idiosyncratic relative-price component accounts for roughly 70 percent of its variability. Macroeconomic shocks account for almost as much as one third of the movement in sectoral prices. Within aggregate sources of variation, pure inflation accounts for about 15–20 percent of the variability in the personal consumption expenditures (PCE) deflator, while a 2-dimensional index of aggregate relative-price changes captures most of the remainder. Even considering as many as four conventional measures of relative-price changes, the two relative-price factors in our baseline specification appear to be a more comprehensive measure of relative-price movements. Researchers must be cautious when testing the predictions for inflation from models with a single consumption good, because most of the variation in standard inflation indexes is associated with relative-price movements, which these models ignore.

Next, we turn to the Phillips correlation between PCE inflation and measures of real activity. The typical explanation for that correlation in economic models involves movements in relative prices. For instance, in sticky price or information models, only a fraction of price-setters adjusts to shocks, leading to a change in relative prices between those that adjust and those that do not, which then leads to changes in outputs. Our results support these theories: in the U.S. data, after controlling for relative goods' prices, the Phillips correlation becomes quantitatively negligible. If high inflation typically comes with low unemployment, it is because it also comes with changes in relative prices hidden within conventional inflation measures. At this macroeconomic level, there is no evidence of money illusion.

How to measure changes in the cost of living?

The definition of an economic cost-of-living price index is the change in wealth that would be required to leave a consumer equally well-off given today's prices as with yesterday's prices. The cost-of-living index is therefore the dual welfare measure associated with a consumption problem, so it is intrinsically linked to the setup of that problem.

The modern theory of consumption assumes that people maximize utility over many periods under uncertainty. According to this theory, measures of cost-of-living based on static models of consumer behavior have two crucial flaws. First, they suffer from an intertemporal substitution bias. When prices temporarily increase today, consumers will borrow from the future to afford their desire for smooth consumption. A static measure of inflation, like the consumer price index (CPI), will overstate inflation in this case. Second, cost-of-living measures suffer from an omitted variable problem. In the same way that the relative price of apples and bananas matters for the cost of living, so does the relative price of apples between today and tomorrow. In particular, because the relevant basket for the consumer includes goods today and in the future, and since asset prices measure the relative price of consumption over time, asset prices must enter a cost-of-living price index.[11]

I show that these two problems with static measures of inflation like the CPI are pervasive and then characterize the theoretical properties of a dynamic measure of the cost of living, which I label the DPI.[12] It differs from static measures in many ways. First, because consumers are forward-looking, so is the DPI, which implies that it moves with news of price changes. If today consumers learn that prices are going to rise in the future, they adjust their consumption immediately and their welfare changes today, so there is already inflation today. Second, an increase in prices today that is going to persist has a larger impact on welfare than a purely temporary one. In the limit, if the price change is permanent, then there is no scope for intertemporal substitution and the dynamic and static measures coincide. Third, and similarly, if the returns on an asset are close to being serially independent, as is the case with equity prices, then changes in the stock market have a close-to-zero impact on the DPI. Intuitively, because changes in stock prices do not change any relative returns from the present onwards, they have no effect on consumer choices and thus no effect on inflation. Fourth, durable goods like housing are special because they provide utility, like nondurables, but they also transfer wealth over time, like assets. If the price of a durable goes up temporarily, on top of the effect on inflation through consumption discussed above, there is an additional effect. Because the consumer now expects a capital loss on the durable it is holding, she is worse off, so inflation is even higher.

The next step in this research is to construct an annual DPI for the U.S. economy since 1960. The DPI is quite different from the CPI, with a correlation of only 0.34 between the two; in the past decade, average dynamic inflation has been 7.3 percent versus only 3.7 percent static inflation. The reason for these differences is that the DPI puts a great deal of weight on two series, house prices and bond prices. Until 2007, house prices were unusually high, while bond prices shot up in 2008. Both have combined to yield high inflation.

Conclusion

While the research described above has many new results, one old result keeps re-surfacing: your optimal measure of inflation depends on what you want to use it for. There is no universal best price index, but rather different indexes depending on what you are trying to measure. Economists are as guilty as laymen of falling into the complacency of using popular measures of inflation without giving too much thought to whether these are the right measures for the question at hand. I have learned that asking this question every time I want to look at inflation often yields surprising answers.

---

[1] *E. Diewert, "The Early History of Price Index Research," NBER Working Paper No. 2713, September 1988, traces the history of price index research to as early as the beginning of the eighteenth century.*

[2] *One use of dynamic measures of inflation that I will not cover is as deflators to obtain real measures of GDP. See S. Basu and J. Fernald, "Aggregate Productivity and Aggregate Technology,"* European Economic Review *46 (2002), pp. 963–91.*

[3] *K. Aoki "Optimal Monetary Policy Responses to Relative-Price Changes,"* Journal of Monetary Economics, *48 (2001), pp. 55–80, and P. Benigno "Optimal Monetary Policy in a Currency Area,"* Journal of International Economics *63 (2003), pp. 293–320.*

[4] *M. Woodford, "Inflation Stabilization and Welfare," NBER Working Paper No. 8071, January 2001, and O. Blanchard and J. Gali, "Real Wage Rigidities and the New Keynesian Model," NBER Working Paper No. 11806, November 2005.*

[5] *N. G. Mankiw and R. Reis, "What Measure of Inflation Should a Central Bank Target?" NBER Working Paper No. 9375, December 2002.*
[6] *S. Eusepi, B. Hobijn, and A. Tambalotti, "CONDI: a cost-of-nominal-distortions index", FRB New York Staff Report 367, 2009.*
[7] *K. Huang and Z. Liu, "Inflation Targeting: What Inflation Rate to Target?"* Journal of Monetary Economics *52, 2005, pp. 1435–62, and B. Strum, "Monetary Policy in a Forward-Looking Input-Output Economy,"* Journal of Money Credit and Banking *41, 2009, pp. 619–50.*
[8] *D. Hume's* Principles of Political Discourses *(1752) added the further proposition that, in the long run, change in the stock of money leads to proportional changes in absolute prices. This produces the more controversial result of monetary neutrality.*
[9] *M. Bryan and S. Cecchetti, "The Consumer Price Index as a Measure of Inflation," NBER Working Paper No. 4505, October 1993, and M. Bryan, S. Cecchetti, and R. Wiggins II, "Efficient Inflation Estimation," NBER Working Paper No. 6183, September 1997.*
[10] *R. Reis and M. Watson, "Relative Goods' Prices and Pure Inflation," NBER Working Paper No. 13615, November 2007.*
[11] *A. Alchian and B. Klein, "On a Correct Measure of Inflation,"* Journal of Money Credit and Banking, *5, 1973, pp. 173–91, first emphasized that a dynamic measure of the cost-of-living must include asset prices.*
[12] *R. Reis, "A Dynamic Measure of Inflation," NBER Working Paper No. 11746, November 2009.*

NBER Profile: *Glenn Ellison*

Glenn Ellison is a Research Associate in the NBER's Industrial Organization Program and the Gregory K. Palm Professor of Economics at MIT. Ellison received an A.B. in mathematics from Harvard University in 1987, an M.Phil. in economics from Cambridge University in 1988, and a Ph.D. in economics from MIT in 1992.

He began his academic career as an Assistant Professor at Harvard University. He returned to MIT in 1994 as the Ford Career Development Associate Professor and was promoted to Professor in 1997. He has also served as Editor of *Econometrica* and has held visiting positions at the Center for Advanced Study in the Behavioral Sciences, Stanford University, and the Institute for Advanced Study, Princeton University.

Ellison's primary specialties are game theory and industrial organization. His recent work has focused on electronic commerce and online businesses. He also has continuing interests in a broad range of topics, including game theoretic models of learning, mutual funds, geographic concentration, academic publishing, and math education.

Ellison is married to Sara Fisher Ellison, a senior lecturer in the economics department at MIT who works in industrial organization. They have three daughters: Caroline, 14; Anna, 11; and Kate, 6. He has spent a fair amount of time in recent years coaching his daughters' middle school math teams — including writing a textbook for them — and also enjoys his time as youth softball coach.

NBER Profile: *Raymond Fisman*

Raymond Fisman is a Research Associate in the NBER's Program in Corporate Finance. He is also the Lambert Family Professor of Social Enterprise and Director of the Social Enterprise Program at the Columbia Business School.

Fisman received his Ph.D. in Business Economics at Harvard University and his B.A. in Economics and Mathematics from McGill University. He worked as a consultant in the Africa Division of the World Bank for a year before moving to Columbia in 1999.

Fisman's research focuses on two main areas: he studies the behavior of firms in the developing world, with a particular focus on corruption. And, he conducts lab experiments to test theories of philanthropic motivations.

Fisman also writes a monthly column for *Slate* magazine, and his book, *Economic Gangsters: Violence, Corruption, and the Poverty of Nations* (coauthored with Edward Miguel), was published by Princeton University Press in 2008. He lives in Morningside Heights with his wife and their 18-month old daughter.

NBER Profile: *Morris M. Kleiner*

Morris M. Kleiner is a Research Associate in the NBER's Labor Studies Program. He is also the AFL-CIO chair of labor policy and professor at the Humphrey Institute and the Center for Human Resources and Labor Studies at the University of Minnesota. Kleiner received his M.A. and Ph.D. in economics from the University of Illinois and his undergraduate degree from Bradley University.

His research studies include analyzing the influence of institutions such as firms, unions, and government in the labor market and the effect of labor-management policies on organizations. He has published extensively in the field of labor economics and industrial relations, and is the author, co-author, or coeditor of six books. His latest book "*Licensing Occupations: Ensuring Quality or Restricting Competition*" was selected as one of the "Noteworthy Books in Industrial Relations and Labor Economics" by the Princeton University, Industrial Relations Section.

Prior to joining the Minnesota faculty, Kleiner was a Professor at the University of Kansas. He has also been a visiting scholar in the Harvard University economics department, a visiting researcher in the Industrial Relations Section at Princeton University, and a research fellow at the London School of Economics. He is currently serving as a Visiting Scholar in the economic research department at the Federal Reserve Bank of Minneapolis.

In his free time, Kleiner enjoys running, biking, traveling, and especially visiting his grandchildren with his wife, Sally.

NBER Profile: *Ricardo Reis*

Ricardo Reis is a Research Associate in the NBER's Programs on Monetary Economics and Economic Fluctuations and Growth. He is also a professor of economics at Columbia University.

Reis received his B.Sc. from the London School of Economics and his Masters' and Ph.D. from Harvard University. He taught at Princeton University before joining the Columbia faculty. His main area of research is macroeconomics, and Reis has studied monetary policy, models of inattentiveness, and measuring the persistence of macroeconomic series and how they affect business cycles and banking crises. His current focus is on liquidity injections during a financial crisis.

Reis serves on Board of Editors of the *American Economic Review*. He is also an Associate Editor of the *Journal of Monetary Economics*, the *Journal of Money Credit and Banking*, and the *Economic Journal*. He lives in Manhattan and spends most of his time with his wife (Mafalda), playing with their young son (António).

Conferences

32nd International Seminar on Macroeconomics

NBER's 32nd International Seminar on Macroeconomics (ISOM) took place on June 12 and 13. NBER Research Associates Jeffrey Frankel of Harvard University and Francesco Giavazzi of Bocconi University served as ISOM co-chairs. Lucrezia Reichlin, London Business School, and Kenneth D. West, NBER and University of Wisconsin, organized this year's program, which was hosted by the Central Bank of Cyprus. The following papers were discussed:

- "Free Flows, Limited Diversification: Openness and the Fall and Rise of Stock Market Correlations, 1890–2001" — **Dennis Quinn**, Georgetown University, and **Joachim Voth**, CREI, Barcelona
- "The Default Puzzle: Underwriters and Sovereign Bond Markets, 1815–2007" (NBER Working Paper No. 15128) — **Marc Flandreau**, Graduate Institute Geneva; **Juan Flores**, University of Geneva; **Norbert Gaillard**, Sciences Po; and **Sebastian Nieto**, OECD
- "Systemic Risk-Taking and the U.S. Financial Crisis" — **Romain Ranciere**, IMF, and **Aaron Tornell**, University of California, Los Angeles
- "The Feldstein-Horioka Fact" — **Domenico Giannone** and **Michele Lenza**, European Central Bank
- "Can Parameter Instability Explain the Meese-Rogoff Puzzle?" — **Philippe Bacchetta** and **Toni Beutler**, University of Lausanne, and **Eric van Wincoop**, University of Virginia and NBER

- "International Reserves and Underdeveloped Capital Markets" — **Kathryn Dominguez**, University of Michigan and NBER

- "The Nontradable Goods' Real Exchange Rate Puzzle" — **Lukasz Drozd**, University of Wisconsin, and **Jaromir Nosal**, Columbia University

- "Assessing External Equilibrium in Low Income Countries" — **Lone Christiansen, Alessandro Prati, Luca Antonio Ricci, Stephen Tokarick, and Thierry Tressel**, IMF

The conference concluded with a Panel Discussion on "Monetary Policy in a Low Interest Rate Environment" chaired by **Athanasios Orphanides**, Governor of the Central Bank of Cyprus. The panelists were: **Huw Pill**, European Central Bank; **Vincent Reinhart**, American Enterprise Institute**; Volker Wieland**, Goethe University Frankfurt; and **John Williams**, Federal Reserve Bank of San Francisco.

Summaries of these papers may be found at: http://www.nber.org/confer/2009/ISOM09/summary.html

Twentieth Annual EASE Conference

The NBER, the China Center for Economic Research, the Chung-Hua Institution for Economic Research, the Hong Kong University of Science and Technology, the Hong Kong Institute for Monetary Research, the Korea Development Institute, the Singapore Management University, and the Tokyo Center for Economic Research jointly sponsored the NBER's 20th Annual East Asian Seminar on Economics on June 26–27. Takatoshi Ito, University of Tokyo and NBER, and Andrew K. Rose, University of California, Berkeley and NBER, organized the conference, which focused on "Commodity Prices and Markets." These papers were discussed:

- **Jan J. J. Groen**, Federal Reserve Bank of New York, and **Paolo A. Pesenti**, Federal Reserve Bank of New York and NBER, "Commodity Prices, Commodity Currencies, and Global Economic Developments"

- **Kalok Chan**, Hong Kong University of Science and Technology, and **Yiuman Tse** and **Michael Williams**, University of Texas at San Antonio, "The Relationship between Commodity Prices and Currency Exchange Rates: Evidence from the Futures Markets"

- **Christian Broda** and **John Romalis**, University of Chicago and NBER, "Identifying the Relationship Between Trade and Exchange Rate Volatility"

- **Joonhyuk Song**, KDI, and **Junhee Lee**, Yeungnam University, "Oil and the Macroeconomy: A Case of Korea"

- **Feng Lu**, China Center for Economic Research, "China Takes the Lead: Changes of the Global Commodity and Ocean Freight Markets in Recent Years"

- **Mario Crucini**, Vanderbilt University and NBER, and **Martin Berka**, Massey University, "The Consumption Terms of Trade and Commodity Prices"

- **Ichiro Fukunaga**, Bank of Japan and TCER, and **Naohisa Hirakata** and **Nao Sudo**, Bank of Japan, "The Effects of Oil Price Changes on the Industry-Level Production and Prices in the U.S. and Japan"

- **Biing-Shen Kuo**, National Chengchi University and **Su-Ling Peng**, CIER, "Price Pass-Through, Household Expenditure and Industrial Structure: The Case of Taiwan"

- **Etsuro Shioji** and **Taisuke Uchino**, Hitotsubashi University and TCER, "Pass-Through of Oil Prices to Japanese Domestic Prices"

- **Sungbae An**, Singapore Management University, and **Heedon Kang**, Bank of Korea, "Oil Shocks in a DSGE Model for the Korean Economy"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/EASE09/summary.html

NBER Conference in Beijing

The eleventh annual NBER-CCER Conference on China and the World Economy took place at the China Center for Economic Research (CCER) in Beijing on July 2 and 3. The conference program was jointly arranged by the National Bureau of Economic Research, the CCER at Beijing University, and Tsinghua University. After opening remarks by U.S. organizer Shang-Jin Wei of NBER and Columbia University, Yang Yao of CCER, and Chong-En Bai of Tsinghua University, the following topics were discussed:

Causes and Impacts of the Crisis

- **Feng Lu**, CCER, "China and the Financial Crisis"

- **Deborah Lucas**, NBER and Northwestern University, "Measuring and Managing Governmental Financial Risk"

- **David Li**, Tsinghua University, "The International Monetary System"

Exchange Rates and Prices

- **Charles Engel**, NBER and Wisconsin-Madison, "Exchange Rate Policies" (NBER Working Paper No. 14829)

- **Fan He**, CASS, "China's Exchange Rate Regime"

- **David Weinstein**, NBER and Columbia University, "Variety, Prices, and Welfare: Macroeconomic Lessons from Micro-data"

Financial Liberalization, Risks and Urbanization

- **Yiping Huang**, CCER, "China's Asymmetric Market Liberalization and Its Consequences"

- **Todd Sinai**, NBER and University of Pennsylvania, "Assessing the Risks of Home Ownership"

- **James Wen**, Trinity College, "Urbanization in China"

Labor and Health Issues

- **Chong-En Bai**, "Declining Shares of Labor Income in China"

- **Dennis Yang,** Virginia Tech University, "Accounting for Rising Wages in China"

- **Jonathan Skinner**, NBER and Dartmouth College, "Measuring Inefficiency in Health Care: A Global Perspective" (NBER Working Paper No. 14257)

- **Xiaoyan Lei,** CCER, "Health Issues of Retirees — Evidence from a Recent Survey"

Demography, Savings, and Economic Growth

- **Shang-Jin Wei**, "Sex Ratios, Savings Rate, and Entrepreneurship in China" (NBER Working Paper No. 15093)
- **Yuyu Chen**, PKU, "Consumption and Savings of Chinese Urban Households"
- **Yang Yao**, CCER, "Demographic Transition and China's Growth Model"

Trade

- **Miaojie Yu**, CCER, "Trade Liberalization, Productivity, and Firm Heterogeneity"
- **Pinelopi Goldberg**, NBER and Princeton University, "Effects of Patent Enforcement in Pharmaceuticals in Developing Countries"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/China09/summary.html

The Economics of Household Saving

NBER Research Associate Erik Hurst of the University of Chicago and NBER President James Poterba of MIT are co-directing a two-year research project on the "The Economics of Household Saving." At the inaugural research meeting for this project, which was held on July 18, the following papers were discussed:

- **Annamaria Lusardi**, Dartmouth College and NBER, and **Olivia S. Mitchell**, University of Pennsylvania and NBER, "How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness"
- **John Beshears**, Harvard University; **James J. Choi**, Yale University and NBER; **Brigitte C. Madrian** and **David Laibson**, Harvard University and NBER; and **Katherine L. Milkman**, University of Pennsylvania, "The Effect of Providing Peer Information on Retirement Savings Decisions"
- **Ulrike Malmendier**, University of California, Berkeley and NBER, and **Stefan Nagel**, Stanford University and NBER, "Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?"(NBER Working Paper No. 14813)
- **Peter J. Kuhn**, University of California, Santa Barbara; **Peter Kooreman**, Tilburg University; **Arie Kapteyn**, RAND Corporation; and **Adriaan Soetevent,** University of Amsterdam, "The Own and Social Effects of an Unexpected Income Shock: Evidence from the Dutch Postcode Lottery" (NBER Working Paper No. 14035)
- **Miles S. Kimball**, University of Michigan and NBER, and **Tyler Shumway**, University of Michigan, "Fatalism, Locus of Control, and Retirement Saving"

The authors of each of these papers have prepared short research summaries that describe their findings and the broader implications of their work. These summaries may be found at: http://www.nber.org/confer/2009/SI2009/SAV/summary.html

Thirtieth NBER Summer Institute Held in 2009

In the summer of 2009, the NBER held its thirtieth annual Summer Institute. Over 1800 economists from more than 300 different universities and other economic research organizations throughout the world attended. There were 42 distinct meetings, representing all of the nineteen NBER research programs, and over 400 presentations. The Summer Institute included a panel discussion on the origins and effects of the global financial crisis, a set of Methodology Lectures on the use of field experiments in economics, and the first annual Martin Feldstein Lecture, which was delivered by John Taylor of Stanford University and NBER. A complete agenda and many of the papers presented at the various sessions are available on the NBER's web site by clicking Summer Institute 2009 on our conference page, www.nber.org/confer.

Methodology Lectures Focus On Data Collection and Field Experiments

In 2007, the NBER Summer Institute introduced a new workshop series focused on empirical methodology and econometric tools. The workshops are designed to present overviews of current statistical and other methodological tools in a format that will assist empirical researchers in carrying out their own research. In 2007, the workshop focused on "Cross Section and Panel Data," with lectures delivered by NBER Research Associate Guido Imbens of Harvard University and Jeffrey Woolridge of Michigan State University. In 2008, the lecture topic was "Time Series Econometrics," with NBER Research Associates James Stock of Harvard University and Mark Watson of Princeton University as the presenters.

At the 2009 Summer Institute, the Methodology Lectures focused on data collection, with a particular emphasis on field experiments. NBER Research Associates Michael Kremer of Harvard University and John List of the University of Chicago described current best practices for carrying out investigator-designed and influenced experiments. These experiments are one means of obtaining new data and insights on economic issues. Their lectures attracted a substantial number of Summer Institute participants, including many of the graduate students who attended this year's meeting. List's lecture, "Using Field Experiments in Economics: An Introduction," and Kremer's "Conducting Field Research in Developing Countries," together provided a broad introduction to the theory and practice of this increasingly important aspect of empirical research. These speakers also discussed applications of field experiments in various sub-fields of economics. Videos of the Methodology Lectures from 2007, 2008, and 2009 may be viewed at: www.nber.org.

Insurance Project Workshop

The NBER's Working Group on Insurance, directed by Research Associates Kenneth Froot of the Harvard Business School and Howard Kunreuther of the University of Pennsylvania, met in Cambridge on June 10. These papers were discussed:

- **Liran Einav**, Stanford University and NBER; **Amy Finkelstein**, MIT and NBER; and **Mark Cullen**, Yale University, "Estimating Welfare in Insurance Markets Using Variation in Prices"
- **Darius Lakdwalla** and **Neeraj Sood**, RAND Corporation and NBER, "Health Insurance as a Two-Part Pricing Contract"
- **Thomas Baker**, University of Pennsylvania, and **Peter Siegelman**, University of Connecticut, "Enticing Low Risks into the Health Insurance Pool: An Idea from Insurance History and Behavioral Economics"
- **David Moss**, Harvard University and NBER, "An Ounce of Prevention: The Power of Public Risk Management in Stabilizing the Financial System"
- **Erwann Michel Kerjan**, University of Pennsylvania; **Paul Raschky**, University of Innsbruck; and **Howard Kunreuther**, "Corporate Demand for Insurance: An Empirical Analysis of the U.S. Market for Catastrophe and Non-Catastrophe Risks"
- **Alex Boulatov**, University of Houston, and **Stephan Dieckmann**, University of Pennsylvania, "Disaster Relief Funds: Policy Implications for Catastrophe Insurance"
- **Paul Freeman**, University of Denver, and **Stuart Miller**, AIR Worldwide, "The Evolution of Catastrophe Risk Management in Mexico"

In addition to these presentations, a midday panel discussion, moderated by Froot, focused on Asset Allocation and other Financial Policies of Insurers and Reinsurers. The panelists were: **John Gauthier**, Allied World Assurance, and **William Poutsiaka**, Transatlantic Reinsurance.

Summaries of these papers may be found at: http://www.nber.org/confer/2009/INSs09/summary.html

Japan Project Meets

The NBER together with the Center on the Japanese Economy and Business, The Center for Advanced Research in Finance, the European Institute of Japanese Studies, and the Australia-Japan Research Centre held a project meeting on the Japanese economy in Tokyo on June 30–July 1. The National Graduate Institute for Policy Studies and European Institute of Japanese Studies co-sponsored the meeting. The organizers were: Jennifer Corbett, Australia-Japan Research Centre; Charles Horioka, NBER and Osaka University; Anil K Kashyap, NBER and the Graduate School of Business, University of Chicago; and David Weinstein, NBER and Columbia University. The following papers were discussed:

- **Rasmus Fatum**, University of Alberta, "Official Japanese Intervention in the JPY/USD Exchange Rate Market: Is it Effective and Through Which Channel Does it Work?"

- **Ashish Arora**, Duke University; **Lee G. Branstetter**, Carnegie Mellon University and NBER, and **Matej Drev**, Carnegie Mellon University, "The Great Realignment: How the Changing Technology of Technological Change in Information Technology Affected the U.S. and Japanese IT Industries, 1983–1999"

- **Tokuo Iwaisako**, Ministry of Finance, and **Keiko Okada**, Hosei University, "Understanding the Decline in the Japanese Saving Rate in the New Millennium"

- **Gil S. Bae**, Korea University; **Yasushi Hamao**, University of Southern California; and **Jun-Koo Kang**, Nanyang Technological University, "Bank Monitoring Incentives and Borrower Earnings Management: Evidence from the Japanese Banking Crisis of 1993–2002"

- **Sergey Chernenko** and **Robin Greenwood**, Harvard University, and **Fritz Foley**, Harvard University and NBER, "Are Agency Costs Fully Priced? Evidence from Public Listings of Subsidiaries in Japan"

- **Jenny Corbett**; **Kazunobu Hayakawa**, Institute of Developing Economies; and **Fukunari Kimura**, Keio University, "Who's Serving You? A Gravity Model Approach to Services Trade"

- **Chih-nan Chen**, Harvard University; **Tsutomu Watanabe**, Hitotsubashi University; and **Tomoyoshi Yabu**, Keio University, "A New Method for Identifying the Effects of Foreign Exchange Interventions"

- **Takeo Hoshi**, University of California, San Diego and NBER; **Satoshi Koibuchi**, Chiba University of Commerce; and **Ulrike Schaede**, University of California, San Diego, "Changes in Main Bank Rescues during the Lost Decade: An Analysis of Corporate Restructuring in Japan, 1981–2007"

Summaries of these papers may be found at: http://www.nber.org/confer/2009/JPMs09/summary.html

Economic Fluctuations and Growth Research Meeting

The NBER's Program on Economic Fluctuations and Growth met in Cambridge on July 11. NBER Research Associates Mark Bils, University of Rochester, and Julio J. Rotemberg, Harvard Business School, organized the meeting. These papers were discussed:

- **Fatih Guvenen**, University of Minnesota and NBER, and **Anthony Smith**, Yale University, "Inferring Labor Income Risk from Economic Choices: An Indirect Inference Approach"

- **Robert Barro**, Harvard University and NBER; **Emi Nakamura** and **Jon Steinsson**, Columbia University and NBER; and **Jose Ursua**, Harvard University, "Crises and Recoveries in an Empirical Model of Consumption Disasters"

- **James Kahn**, University of Pennsylvania, "What Drives Housing Prices?"

- **Roland Benabou**, Princeton University and NBER, "Groupthink: Collective Delusions in Organizations and Markets"

- **Olivier Blanchard** and **Guido Lorenzoni**, MIT and NBER, and **Jean-Paul L'Huillier**, MIT, "News, Noise, and Fluctuations: An Empirical Exploration"

- **Melissa Dell**, MIT; **Benjamin Jones**, Northwestern University and NBER; and **Benjamin Olken**, MIT and NBER, "Climate Shocks and Economic Growth: Evidence from the Last Half Century" (NBER Working Paper No. 14132)

Summaries of these papers may be found at: http://www.nber.org/confer/2009/efgs09/summary.html

Bureau Books

The following volumes may be ordered directly from the University of Chicago Press Distribution Center, at
Telephone: 1-800-621-2736
Email: custserv@press.uchicago.edu

For more information on ordering and electronic distribution, see
http://www.press.uchicago.edu/Misc/Chicago/infopage.html

Tax Policy and the Economy, Volume 23

Tax Policy and the Economy, Volume 23, edited by Jeffrey R. Brown and James M. Poterba, is now available from the University of Chicago Press Journals Division for $60.00 (clothbound).This annual series of volumes presents current academic research findings on taxation and government spending.

Volume 23 includes studies of the effects of the Social Security earnings test on labor supply; the meaning of U.S. corporate tax losses; how globalization affects the design of a tax system; and whether federal provision of goods and services crowds out their provision by state and local governments or the private sector.

Brown and Poterba are Research Associates in the NBER's Programs on Public Economics and Aging and co-organizers of this conference. Brown is also a Professor in the Finance Department at the University of Illinois at Urbana-Champaign. Poterba is a professor of economics at MIT and President of the NBER.

Studies of Labor Market Intermediation

Studies of Labor Market Intermediation, edited by David H. Autor, will be available from the University of Chicago Press this October for $110.00.

From the traditional craft hiring hall to the website "Monster.com," many different institutions are designed to facilitate the matching of workers with firms. These Labor Market Intermediaries (LMIs) range from criminal records' providers, public employment offices, labor unions, and temporary help agencies, to centralized medical residency matches. This volume describes how these third-party actors intercede where workers and firms meet, thus aiding, impeding, and, in some cases exploiting the matching process. Building a conceptual foundation for analyzing the roles that these economic actors serve in the labor market, this volume develops a sense of their significance to market operation and to worker welfare. Cross-national in scope, it brings together research on a set of market institutions that are typically treated as isolated entities, thus setting a research agenda for analyzing the changing shape of employment in an era of rapid globalization and technological change.

Autor is a Research Associate in the NBER's Programs on Labor Studies and Education and a Professor of Economics at MIT.

International Differences in the Business Practices and Productivity of Firms

International Differences in the Business Practices and Productivity of Firms, edited by Richard B. Freeman and Kathryn L. Shaw, is available from the University of Chicago Press for $99.00.

In recent years, globalization and the expansion of information technology have reshaped managerial practices, forcing multinational firms to adjust their business practices to different environments and domestic companies to face competition from new foreign competitors. In this 2009 NBER Conference Volume, a distinguished group of contributors examines the phenomenon of widespread differences in managerial practices across firms, establishments within firms, and countries. The eight studies combine qualitative and quantitative analyses of business practices, including the use of teams, incentive pay, lean manufacturing, and quality control. The book offers a much-needed model for measuring the productivity and performance of international firms in a fast-paced global economy.

Freeman directed the NBER's Program of Research on Labor Studies for many years; Shaw is a Research Associate in the Program. Freeman is the Herbert Ascherman Chair in Economics at Harvard University. Shaw is the Ernest C. Arbuckle Professor of Economics at Stanford University's Graduate School of Business.

The Problems of Disadvantaged Youth: An Economic Perspective

The Problems of Disadvantaged Youth: An Economic Perspective, edited by Jonathan Gruber, will be available this fall from the University of Chicago Press. This NBER Conference Report costs $110.00.

In the United States, one of the most important public policy issues is how to improve the life prospects of disadvantaged youth who, in their formative years, face low-quality school systems, poor access to health care, and high crime environments. This volume examines various aspects of disadvantage and a variety of ways of increasing the ability of low-income youths to improve their circumstances later in life. The nine essays in this volume help to document the serious short- and long-term negative consequences of childhood disadvantage and provide nuanced evidence of the impact of public policy designed to help needy children.

Gruber directs the NBER's Program on Health Care and is a Professor of Economics at MIT.

Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being

Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being, edited by Alan B. Krueger, will be available from the University of Chicago Press in October for $75.00.

Economists and social scientists are increasingly interested in the study and effects of subjective well-being. Putting forward a new method for measuring, comparing, and analyzing the relationship between happiness and the way people spend their time — across countries, regions, and history — this book helps to set the agenda for future research. It introduces the system of National Time Accounting (NTA), which relies on individuals' own evaluations of their emotional experiences during various uses of time — this represents a distinct improvement in measuring well-being from such objective measures as the Gross National Product. A distinguished group of contributors here summarize the NTA methodology, provide illustrative findings about happiness based on NTA, and subject the system to a rigorous conceptual and methodological critique that only serves to strengthen the approach. Because subjective well-being is topical in economics, psychology, and other social sciences, this book should have cross-disciplinary appeal.

Krueger is on leave from the NBER and Princeton University's Economics Department. He is currently the Department of the Treasury's Assistant Secretary for Economic Policy.

NBER Reporter
NATIONAL BUREAU OF ECONOMIC RESEARCH

1050 Massachusetts Avenue
Cambridge, Massachusetts 02138-5398
(617) 868-3900

Change Service Requested

Nonprofit Org.
U.S. Postage
PAID
National Bureau of
Economic Research