



SCHOOLING'S EFFECT ON TEST PERFORMANCE

The relative importance of “nature” and “nurture” to performance on standardized tests has long been a matter of academic debate. In the mid-1990s, the debate was revived when Richard Herrnstein and Charles Murray argued that a variety of social and economic outcomes could be predicted by performance on a single cognitive test: the Armed Forces Qualifying Test, or AFQT.

The controversy surrounding this observation centered on Herrnstein and Murray's interpretation of the AFQT as a measure of innate ability, rather than as a measure of achievement or learned skill. Their analysis implied that investments in human capital could do little to break the intergenerational transmission of socioeconomic status.

Understanding whether the AFQT is a measure of ability or achievement is critical for drawing inferences from studies in which it is employed. Nonetheless, there appears to be no consensus of interpretation in the many other studies in which the AFQT has been used as a proxy for unobservable skill. Researchers attempting to estimate the effect of schooling on test performance have faced two serious problems: (1) schooling differences across individuals may themselves relate to unobserved skill; and (2) schooling is highly correlated with age, which may itself affect test performance.

In their paper, economists Elizabeth Cascio and Ethan Lewis present new estimates of the effect of schooling on AFQT performance for the youngest cohorts in the National Longitudinal Survey of Youth 1979 (NLSY 79). Using differences in schooling related to states'

school entry laws—laws that specify the year in which individuals with different birthdays can enter first grade—the authors estimate a model that allows age at the test date to have a direct effect on AFQT performance. They find evidence of an effect of schooling on the AFQT performance of minorities. However, the authors do not detect an effect of schooling on the AFQT performance of whites in the NLSY. The authors can neither rule out a large impact nor a lack of impact for this population.

Working Paper 05-01, “Schooling and the AFQT: Evidence from School Entry Laws,” Elizabeth Cascio, University of California-Davis, and Ethan Lewis, Federal Reserve Bank of Philadelphia

TIMING PRICE CHANGES

In maximizing their profits, firms need to consider not only how much to change prices but also when to do so. State-dependent pricing models make it possible to explore how the frequency of price changes responds to variations in model features, such as the form of the monetary policy rule, and to develop the implications of altered adjustment timing for the evolution of other macroeconomic variables.

In “Implications of State-Dependent Pricing for Dynamic Macroeconomic Models,” economists Michael Dotsey and Robert King show that SDP makes a difference in terms of model implications within two major areas of the macroeconomic literature. First, they show that state-dependent pricing can have a quantitatively important effect for economic outcomes under steady inflation and in response to monetary shocks. Second, they look at the results from studies that show that specific fac-

tor markets and variable elasticity demand curves generate more persistent output effects because monetary shocks moderate the size of price changes that firms make. The authors investigate whether these results are sensitive to the incorporation of state-dependent pricing. They find that specific factor markets perversely work to lower persistence in the face of state-dependent pricing, while variable elasticity demand continues to raise it.

Working Paper 05-2, "Implications of State-Dependent Pricing for Dynamic Macroeconomic Models," Michael Dotsey, Federal Reserve Bank of Philadelphia, and Robert King, Boston University and Federal Reserve Bank of Richmond

LOOKING AT THE RELATIONSHIP BETWEEN TRADE AND BUSINESS CYCLES

Conventional wisdom holds that countries that trade more with each other have more closely synchronized business cycles. Recently, economists have undertaken empirical research to test the validity of this belief. Their results show a strong relationship between the business cycles of trading partners among industrialized nations.

In "Can the Standard International Business Cycle Model Explain the Relation Between Trade and Comovement?" economists Ayhan Kose and Kei-Mu Yi use updated data to test these earlier results and reach a similar conclusion: increased trade between countries may lead to a significant increase in business cycle comovement.

But Kose and Yi note that these results should also be studied in a more formal theoretical framework. To do so, they extend an international real business cycle model to include autarky as well as complete markets, transportation costs, and a three-country setting, rather than the more typical two.

Their results show stronger business cycle correlations between countries that trade more, but the increase in correlations fall far short of those demonstrated by the empirical research. While this could be viewed as a puzzle, Kose and Yi conduct two further experiments that allow for additional channels by which increased trade can lead to increased correlations. These additional channels help close much of the gap; Kose and Yi suggest that these results provide guidance for future theoretical and empirical research on the effects of changes in trade intensity on output correlations.

Working Paper 05-3, "Can the Standard International Business Cycle Model Explain the Relation Between Trade and Comovement?," M. Ayhan Kose, International Monetary Fund, and Kei-Mu Yi, Federal Reserve Bank of Philadelphia

MONETARY SHOCKS AND THE STICKY-PRICE ISSUE

The sluggish adjustment of prices to monetary shocks, or "sticky prices," is a standard element of New Keynesian economic models. Sticky prices are thought to help propagate the effects of monetary shocks. Yet most models that have attempted to simulate the workings of sticky prices have failed to generate responses that are persistent.

Authors Michael Dotsey and Robert King think that one of the problems involves the standard modeling of the cyclical behavior of real marginal cost. The basic models fail to include supply-side features that allow an elastic response to demand without increasing marginal cost. The authors therefore look at the effect of introducing a number of supply-side features that lower the response of marginal cost to increases in demand. These features include the use of materials inputs in production, a varying intensity of capacity utilization, and an extensive margin for varying labor supply.

Dotsey and King find that these supply-side features do indeed reduce the sensitivity of marginal cost to demand-induced variations in output. Decreased variation in marginal cost leads firms to make fewer or smaller price adjustments, thereby reducing the sensitivity of prices to demand. This reduced sensitivity generates more persistent responses to monetary shocks.

Working Paper No. 05-4, "Pricing, Production, and Persistence," Michael Dotsey, Federal Reserve Bank of Philadelphia, and Robert G. King, Boston University

DOES IMPROVING TECHNOLOGY RAISE OR LOWER EMPLOYMENT?

Recent empirical studies have reported that favorable technology shocks—improvements in technology that make production more efficient—may reduce employment in the short run. However, most models of the business cycle show that output and employment strongly move together.

In "Do Technological Improvements in the Manufacturing Sector Raise or Lower Employment?," Yongsung Chang and Jay Hong study the U.S. manufacturing sector to see if technological improvements in an industry raise or lower employment. They use total factor productivity (TFP), rather than labor productivity, as their measure. They argue that TFP—the productivity of all inputs taken together—is a more natural measure because labor productivity—output per hours worked—reflects changes in the mix of inputs as well as technology.

Chang and Hong find that technology's effect on

employment varies greatly across manufacturing industries. Some industries exhibit a temporary reduction in employment in response to a permanent increase in TFP, but far more respond with an increase in employment. The authors note that their results raise serious questions about existing research that finds that a positive productivity shock has a strong negative effect on employment.

Working Paper 05-5, "Do Technological Improvements in the Manufacturing Sector Raise or Lower Employment?," Yongsung Chang, Seoul National University and Federal Reserve Bank of Richmond, and Jay H. Hong, University of Pennsylvania and Federal Reserve Bank of Philadelphia

ANALYZING REVISIONS TO THE PERSONAL SAVING RATE

For at least the past three decades, economists have expressed concerns about how well the U.S. personal saving rate is measured. In "Benchmark Revisions and the U.S. Personal Saving Rate," researchers Leonard Nakamura and Tom Stark argue that the methods used to estimate the rate are subject to substantial measurement error. In particular, benchmark revisions can lead to considerable upward revisions, and large revisions can be made decades after the initial estimate. In fact, in the past, large variations in personal saving have been revised away over time.

The authors use conventional and real-time estimates of the personal saving rate (available from the Philadelphia Fed's real-time data set for macroeconomists, which can be found at www.philadelphiafed.org/econ/forecast/reaindex.html) to forecast real disposable income, gross domestic product, and personal consumption. They show that using real-time data invariably makes the forecasts worse. They conclude that while the personal saving rate may have some forecasting power once the true saving rate is known, as a practical matter it is useless.

Working Paper 05-6, "Benchmark Revisions and the U.S. Personal Saving Rate," Leonard Nakamura and Tom Stark, Federal Reserve Bank of Philadelphia

RISING HOUSING PRICES, WEALTH, AND CONSUMPTION

What are the short- and long-term effects of a steep rise in housing prices? Is buying a home a good lifetime investment for all households? How much do higher house prices spill over into the economy as increased consumption?

In this paper, authors Wenli Li and Rui Yao look at some of the ramifications of house-price appreciation, treat-

ing housing as both a household investment and a factor in the realm of consumption. They gauge the impact of rising house prices both in the aggregate and over the life-cycle of a variety of households. Modeling housing choice both as a preference for homeownership versus renting and on the basis of price, they also distinguish between liquid savings and illiquid home equity.

Although there is little effect at the aggregate level, there is a good deal of variation among different households over the life-cycle. The authors find that house-price appreciation increases consumption among all homeowners but especially the young and the elderly. Young homeowners lack liquidity and are likely to increase consumption by taking out loans that use their home as collateral, a home equity loan for instance. Elderly homeowners, less concerned about long-term effects, are more likely to increase their short-term consumption, such as traveling and eating out.

In terms of welfare, renters, not surprisingly, are hurt financially by house-price appreciation. Their housing costs will go up, but they will reap no gain in housing wealth. A more unexpected finding is that young homeowners also lose wealth. The rise in value of their existing homes is more than offset by the higher prices they will pay when they trade up to larger homes later in life.

Working Paper 05-7, "The Life-Cycle Effects of House Price Changes," Wenli Li, Federal Reserve Bank of Philadelphia, and Rui Yao, Zicklin School of Business, Baruch College

TECHNOLOGY MEETS LABOR SUPPLY

Economic research suggests that the introduction of new technologies in recent decades may have reduced the need for less-skilled labor. In manufacturing, new automation technologies—robotics, for example—have made it possible to produce with less manual labor. At the same time, however, the U.S. has been absorbing millions of less-skilled immigrant workers into some of its cities, apparently with little adverse impact on the employment rates or wages of other less-skilled workers. How have these workers been integrated into our economy in light of changing technology?

One explanation is that businesses only adopt automation to the extent that unskilled labor is not available to do the same job. In this paper, author Ethan Lewis tests this theory by asking whether the use of automation technologies in manufacturing plants is related to the fraction of workers who are high school dropouts in a plant's metropolitan area.

Lewis finds that in both 1988 and 1993, the higher the relative number of dropouts in a metropolitan area, the less automated the plants were. More pointedly, between

1988 and 1993, the use of automation technology grew more slowly, both overall and relative to plants' forecasts, where the relative number of dropouts in the local economy grew more quickly. In rare cases, plants de-adopted automation technology when less-skilled labor became unexpectedly abundant.

These results are consistent with models that imply less-skilled immigration does not lower the wages of less-skilled native-born workers but is instead accommodated by creating more jobs for less-skilled workers. Some of these jobs may be the result of plants shifting toward producing more labor-intensive goods, but most appear to be created when plants shift the technique by which they produce the same goods.

Working Paper 05-8, "Immigration, Skill Mix, and the Choice of Technique," Ethan Lewis, Federal Reserve Bank of Philadelphia

LOOKING FOR THE BEST BUY: CONSUMER SEARCH COSTS AND INTERNATIONAL PRICE VOLATILITY

A central puzzle in international economics is that relative prices across countries fluctuate a lot. This holds true whether we examine purchasing power parity, which involves baskets of goods and exchange rates between currencies, or the law of one price, which states that the same good should have the same price in different markets.

Many studies have found that persistent deviations from the law of one price occur because firms segment markets and price discriminate across countries. This so-called pricing to market is attributed to the fact that firms face different market conditions in each market they serve. However, many models that examine pricing to market do not take into account opportunity costs—that is, the amount of time consumers spend shopping for a good.

In "Consumer Search, Price Dispersion, and International Relative Price Volatility," economist George Alessandria shows that a model that considers these "consumer search" costs can better explain fluctuations in international relative prices.

Working Paper 05-9, "Consumer Search, Price Dispersion, and International Relative Price Volatility," George Alessandria, Federal Reserve Bank of Philadelphia

RENT RISK AND HOMEOWNERSHIP

Owning a home has often been looked at more or less in isolation as an investment, an "asset risk." The financial

risk of owning a home may be more accurately gauged by comparing it with the risk of the other option—renting. Owning a home may provide a "hedge" against fluctuations in rent, where the cost may rise every year, but homeownership has its own price risk when an owner sells or dies.

This paper looks specifically at how home-buying is related to the financial risk of renting and under which circumstances it works most effectively as a hedge. Using a simple housing choice model, the authors show how the net risk depends on a household's expected length of stay. For those with expectations of longer stays, the rent risk outweighs the asset price risk of owning. Greater rent volatility and more uniformity of house prices from place to place geographically further increase the value of owning.

Testing the idea that rental volatility and longer expected lengths of stay, singly or in combination, increase a hedging demand for owning, the authors find that, depending on the elasticity of the supply of ownership units, this demand may result in a higher homeownership rate, higher housing prices, or both. Household-level data show that with rental volatility the probability of homeownership increases faster for households with longer expected lengths of stay.

Working Paper 05-10, "Owner-Occupied Housing as a Hedge Against Rent Risk," Todd Sinai, Wharton School, University of Pennsylvania, and NBER, and Nicholas S. Souleles, Wharton School, University of Pennsylvania, NBER, and Visiting Scholar, Federal Reserve Bank of Philadelphia

ADVERTISING AND OUTPUT

Advertising has generally been treated in national accounts as an intermediate input with no direct, quantifiable output. Leonard Nakamura argues that there are two ways in which advertising produces output: as an investment in the longer-term sales of products and as financing for broadcast entertainment and news.

In terms of investment, spending on advertising that seeks more than short-term sales might be counted as producing output. For example, advertising that introduces a new model of car may well expect payoffs that go beyond the model's first year. Previous estimates that perhaps one-third of the money spent on advertising is essentially capital investment, Nakamura concludes, is a reasonable benchmark but should be updated with current data.

As for broadcast entertainment and news, they have generally been produced as byproducts of advertising. Although nominally free, they are products that consumers are willing to pay for, as evidenced by the willingness of many

to pay for basic cable service. Therefore, they might arguably be counted along with other entertainment. If these free products are added to other entertainment, the output of entertainment products is of course raised, but because these additional products are free, the average overall cost of entertainment is reduced.

Like the investment portion of advertising spending, this entertainment and news contribution to GDP would consist of roughly one-third of expenditures on advertising. Thus, two-thirds of advertising costs would produce measurable outputs.

Working Paper 05-11, "Advertising, Intangible Assets, and Unpriced Entertainment," Leonard I. Nakamura, Federal Reserve Bank of Philadelphia

AN INTERMEDIARY AS A MARKETPLACE REGULATOR

This paper examines a marketplace in which participants can enter into nonexclusive contracts. Since they can enter into a number of contracts secretly, they may decide to enter into as many contracts as they can and later default on all of them.

One solution to the problem above is to require cash collateral so that participants have a stake in each contract, but this measure has its own negative impact on the general welfare of market participants. Another solution is to establish an intermediary who would make sure that no one enters into too many contracts. Such an intermediary essentially acts as an exchange or a regulator that monitors participants' transactions.

Although participants are not required to report contracts to the intermediary, the author argues that they will tend to do so voluntarily because not reporting will induce the participant with whom the contract was entered to strategically default. Also, in order to induce agents to report all their contracts voluntarily, the intermediary must permit participants enough latitude so that they can cheat on parties with whom they have entered into a contract. This implies that in some cases the intermediary must allow participants to enter into more contracts than they really need and not make reported trades public.

Working Paper 05-12, "A Theory of an Intermediary with Nonexclusive Contracting," Yaron Leitner, Federal Reserve Bank of Philadelphia

THE EVOLUTION AND REGULATION OF CREDIT BUREAUS IN THE U.S.

Credit bureaus emerged in the United States in the late 19th century, a time when credit reporting took place mostly at the local level. In recent years, the proliferation of credit cards has created a national market, and computers and other modern technology have made universal coverage of borrowers possible. Today, the vast majority of consumer credit information in the U.S. is maintained by the three major credit bureaus, and statistics show that more than 3 million credit reports are issued each day. And as the credit reporting industry has grown, so has the amount of regulation at the federal and state levels.

In "A Century of Consumer Credit Reporting in America," economist Robert Hunt describes the evolution of the credit reporting industry from its beginnings as a few joint ventures to its supporting role in America's trillion dollar consumer credit market. He also looks at the costs to society when credit bureau data are inaccurate and asks whether we should expect credit reporting agencies to attain a degree of accuracy that maximizes benefits to society. Hunt notes that there are plausible reasons to think not, and this is the principal rationale for regulating the industry.

Working Paper 05-13, "A Century of Consumer Credit Reporting in America," Robert Hunt, Federal Reserve Bank of Philadelphia

DOES MONITORING TRANSACTION ACCOUNTS GIVE LENDERS USEFUL INFORMATION?

Does observing transactions help financial intermediaries monitor borrowers? Economists Loretta Mester, Leonard Nakamura, and Micheline Renault provide evidence that the answer is yes, especially for commercial banks. In "Transactions Accounts and Loan Monitoring," these authors show that tracking a commercial borrower's cash flows into and out of checking accounts, for example, can help a bank monitor the changing value of collateral—defined in this paper as accounts receivable and inventory—that the borrower has posted for an operating loan.

Using a unique data set from an anonymous Canadian bank, Mester, Nakamura, and Renault test the hypothesis that the lender uses information from borrowers' transactions accounts to determine that loans are being used for normal operating purposes rather than for other activities. They observe that such accounts provide useful information to a lender and that the lender responds to the information received. The authors state three main findings: monthly changes in accounts receivable are quite perceivable in

transactions accounts movements; the number of previous borrowings that exceeded the value of the collateral predicts credit downgrades and loan write-downs; and as loans deteriorate, loan reviews become lengthier and more frequent.

Together, these findings show that financial intermediaries can and do use transactions accounts to monitor collateral, such as accounts receivable and inventories, for operating loans.

Working Paper 05-14, "Transactions Accounts and Loan Monitoring," Loretta Mester and Leonard Nakamura, Federal Reserve Bank of Philadelphia, and Micheline Renault, Université du Québec à Montréal

CROSS-BORDER EFFECTS OF MONETARY STIMULUS

How do the monetary policy actions of one country radiate into the economies of other countries when economies are more and more interdependent, and with what consequences?

According to recent models looking at open economies, a monetary expansion has two spillover effects on another country's economy. One effect is a countering of monopolistic distortions. This raises output and employment to more efficient levels for both the source country and the trade partner. The other effect alters the terms of trade in favor of one or the other country, depending on whether goods are priced in the currency of the buyer country or the seller country. Hence, the counter-monopolistic efficiency effect improves the welfare of both countries, while the terms-of-trade effect tilts benefits toward just one country.

Most recent studies assume that production occurs in one stage. In this setting, the unequal benefits of the terms-of-trade effect tend to dominate the greater-efficiency effect. In this paper, which looks at production involving multiple border crossings in a vertical chain of production and trade, the efficiency-improvement effect is magnified and the terms-of-trade effect is lessened.

Therefore, it appears that in interdependent economies with cross-border production processes—for example, the United States and Canada—monetary expansion can be mutually beneficial to both countries, regardless of the source of the stimulus.

Working Paper 05-15, "Vertical Production and Trade Interdependence and Welfare," Kevin X. D. Huang, Federal Reserve Bank of Philadelphia, and Zheng Liu, Emory University

NEW EVIDENCE ON THE STRUCTURE OF PRICING IN THE CREDIT CARD MARKET

In earlier research, economists Paul Calem and Loretta Mester, using data from 1989, argued that credit card rates remain persistently high because consumers, especially those with high balances, face potential costs when switching between card issuers. Adverse selection problems may compound these switching costs because those consumers who want to switch in order to accumulate more debt may have a stronger incentive to respond to a credit card solicitation from a lender.

But much has changed in the credit card industry since 1989. In particular, card issuers have taken advantage of advances in technology to pre-screen applicants for credit cards. Furthermore, new technologies and innovations may improve issuers' ability to judge creditworthiness, lower evaluation costs, and allow issuers to target higher credit-quality borrowers, thus making the market more competitive. But the evidence as to whether the credit card market has truly become more competitive and interest rates less "sticky" is difficult to interpret.

In "Switching Costs and Adverse Selection in the Market for Credit Cards: New Evidence," authors Paul S. Calem, Michael B. Gordy, and Loretta J. Mester present new evidence on the effects of changes in the informational structure of the credit card market. Their findings suggest that despite the many changes seen over the past decade, switching costs and adverse selection remain relevant issues in the credit card market.

Working Paper 05-16, "Switching Costs and Adverse Selection in the Market for Credit Cards: New Evidence," Paul S. Calem, LoanPerformance; Michael B. Gordy, Federal Reserve System Board of Governors; and Loretta J. Mester, Federal Reserve Bank of Philadelphia (This paper is forthcoming in the Journal of Banking and Finance)

MARKET RISK AND UNDERWRITING SECURITIES

Section 20 of the Glass-Steagall Act of 1933 prohibited U.S. commercial banks from affiliating with organizations engaged in the underwriting, sale, or distribution of stocks, bonds, debentures, notes, or other securities. This regulation sought to allay concerns about the possible increased risk and negative effects on the overall safety and soundness of the banking system that may arise when bank holding companies (BHCs) engage in both commercial banking and investment banking activities.

But over the years, such restrictions have been gradually relaxed, and in 1999, passage of the Gramm-Leach-

Bliley Act (GLBA) abolished the general prohibition on underwriting domestic securities by U.S. banks.

Before the enactment of GLBA, some researchers argued that since securities activities are inherently riskier than traditional banking activities, expanding into securities underwriting increased BHCs' risk. Others made a case for the positive side: the potential for product diversification and increased earnings that securities underwriting could bring.

In "Banks in the Securities Business: Market-Based Risk Implications of Section 20 Subsidiaries," economist Victoria Geyman evaluates the risk of banking organizations that actually engaged in securities activities. Using data from 1985 through 1999, she examines whether there was an economically significant difference in market, or systematic, risk between BHCs with securities powers and those without such powers. (Market, or systematic, risk reflects the co-movement of BHC returns with returns on a market portfolio.) The period Geyman chooses includes the years before 1987 leading up to when the Federal Reserve allowed commercial BHCs to establish separate Section 20 securities affiliates, to 1999, when GLBA resulted in a significant reduction in the number of separate securities-underwriting affiliates.

While regulators are concerned about total risk, market participants consider systematic risk a more relevant measure. This paper estimates total, systematic, and unsystematic risk for BHCs with and without Section 20 affiliates. Geyman concludes that while systematic risk of all BHCs increased in the late 1980s and 1990s, BHCs that did not participate in Section 20 activities exhibited lower systematic risk than BHCs with Section 20 affiliates. However, the overall level of risk and the level of unsystematic risk of BHCs with Section 20 affiliates declined during the 1990s. These results are an important extension of the findings of previous studies that argued that expanded bank powers are likely to decrease total risk in the U.S. banking industry.

Working Paper 05-17, "Banks in the Securities Business: Market-Based Risk Implications of Section 20 Subsidiaries," Victoria Geyman, Federal Reserve Bank of Philadelphia

BANKRUPTCY REFORM: A GOOD IDEA?

Today, debtors can declare bankruptcy by choosing to file under one of the chapters of the bankruptcy code. Chapter 7 is the most common and the most beneficial chapter for individual filers. However, the U.S. bankruptcy code has recently undergone significant changes that make it harder to file under Chapter 7.

In "A Quantitative Theory of Unsecured Consumer

Credit with Risk of Default," economists Satyajit Chatterjee, Dean Corbae, Makoto Nakajima, and Jose-Victor Rios-Rull develop a model that accounts for the recent trends in household indebtedness and bankruptcy. In this model, households face adverse events (such as a job loss or a sudden medical expenditure) that can result in indebtedness that may cause some households to file for bankruptcy. In their model, some households file for bankruptcy because they have no option—they cannot repay their debt and maintain a positive level of consumption. But some households file for bankruptcy even though they have the resources to repay their debt—for these households, bankruptcy is not the only option, but it is the best one.

The authors use their model to study the long-term consequences of the new bankruptcy law, which makes it very difficult for above-median-income households (households that, presumably, have the resources to repay their debt) to file under Chapter 7. They find that the new law lowers credit costs for all households but some households are not able to declare bankruptcy when doing so would make them better off. Weighing benefits versus costs, the authors conclude that, on average, the new law makes households better off.

Working Paper 05-18, "A Quantitative Theory of Unsecured Consumer Credit with Risk of Default," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia; Dean Corbae, University of Texas, Austin; Makoto Nakajima, University of Illinois; and Jose-Victor Rios-Rull, University of Pennsylvania

SOLVING THE NATIONAL BANK NOTE PUZZLE

The federal government began to charter national banks in the 1860s. These banks were licensed to issue national bank notes, which were free of default risk and backed by U.S. Treasury bonds deposited by issuing banks at the U.S. Treasury. The advent of these new banks, along with a 10 percent annual tax on state bank notes, soon meant that the new national bank notes had supplanted state banks' notes.

However, the total supply of national bank notes never reached its maximum permissible level—in spite of evidence that issuing bank notes was more profitable than bank lending. Scholars have long puzzled over why national banks did not take greater advantage of the authority to issue notes.

One typical explanation for the low issuance of national bank notes is the hidden transaction costs: either the cost of redeeming physical notes or the cost of maintaining cash balances to back the bank notes issued. Other researchers have suggested that the supposed profitability of issuing notes might be misleading. For one thing, some of the low

issuance can be explained by regional variations in the supply of bank notes and regional variations in the profitability of bank lending. For example, before 1874, bank lending was highly profitable in the South and West, areas where note issuance was relatively low. However, this explanation is incomplete and does not jibe with the facts after 1874.

In “Resolving the Puzzle of the Underissuance of National Bank Notes,” economists Charles Calomiris and Joseph Mason use microeconomic data to test the various theories of note underissuance. They resolve much of the puzzle by analyzing data on individual banks’ incentives for and constraints on note issuing. In fact, they note that much of the puzzle about underissuance of national bank notes turns out to be largely a result of legal restrictions on bank note issuance, which complicates making accurate inferences from the aggregated data.

Working Paper 05-19, “Resolving the Puzzle of the Underissuance of National Bank Notes,” Charles Calomiris, Columbia University, and Joseph Mason, Drexel University and Visiting Scholar, Federal Reserve Bank of Philadelphia

SUNK COSTS AND THE DECISION TO EXPORT

According to recent economic research, firms’ decisions to enter or exit foreign markets generate a delayed expansion of net exports following a real exchange rate depreciation. In “Do Sunk Costs of Exporting Matter for Net Export Dynamics?,” economists George Alessandria and Horag Choi revisit this issue in a general equilibrium model. They develop a model in which firms face larger upfront sunk costs when entering a foreign market and smaller day-to-day costs to continue exporting in the foreign market. Under these circumstances, firms start exporting only when the expected return covers the entry costs, and they continue to export as long as the return of doing so exceeds the cost of continuing. They calibrate the model to match the rate at which firms start and stop exporting and the relatively large size of exporters.

The authors find that with these firm-level export decisions, the dynamics of net exports and the real exchange rate are largely the same as those in business-cycle models without sunk costs. Also, they find that the business cycle has an effect on when firms start and stop exporting, in a manner consistent with the experience of U.S. exporters.

Working Paper 05-20, “Do Sunk Costs of Exporting Matter for Net Export Dynamics?,” George Alessandria, Federal Reserve Bank of Philadelphia, and Horag Choi, University of Auckland

SPECIAL PURPOSE VEHICLES

This paper looks at corporations’ use of special purpose vehicles (SPVs), such as limited partnerships, limited liability companies, and trusts, and attempts to account for their widespread use.

Authors Gary Gorton and Nicholas Souleles argue that SPVs are created in part to limit losses in the case of bankruptcy, since SPVs by design cannot go bankrupt. They also contend that although the SPV debt is nominally off balance sheet, there are implicit “relational” connections between the sponsoring institution and the SPV, essentially informal attachments that circumvent the restrictions on formal contracts. Investors recognize this implicit support.

The authors attempt to model the motivations of those forming SPVs. In the initial model, the sponsor chooses how to distribute assets between on- and off-balance-sheet entities, allowing for moral hazard (intentional negligence) regarding how much effort the sponsor exerts to monitor and maintain the assets. An extension introduces the possibility of adverse selection (a reverse “cherry-picking”), in that the sponsor distributes the assets after learning their quality (which investors do not observe). These potential problems would generally make investors reluctant to invest in the debt issued by the SPV. But hypothetically the sponsor counters this unease by an implicit commitment to provide selective subsidies where necessary.

Using data on credit card securitization, the authors test two implications of the model. First, if SPVs are designed to avoid bankruptcy costs, they should be more common among riskier companies. Second, if investors in SPVs really recognize an implicit connection between the sponsor and the SPV, they will include expectations about the sponsor’s strength in their assessment of the SPV.

The authors do find a correlation between the use of SPVs and the riskiness of sponsoring firms. They also find that investors require significantly higher yields for SPVs issued by riskier sponsors.

Working Paper 05-21, “Special Purpose Vehicles and Securitization,” Gary Gorton, Wharton School, University of Pennsylvania, and Nicholas S. Souleles, Wharton School, University of Pennsylvania, and Visiting Scholar, Federal Reserve Bank of Philadelphia

EMPLOYMENT MATCHING MODELS

National data show that increases in labor productivity lead to only sluggish improvement of labor market conditions as measured by job vacancies and employment. Job

vacancies react first, then slowly the number of new hires rises. This reaction to changes in labor productivity generally follows a hump-shaped pattern.

According to authors Shigeru Fujita and Garey Ramey, the standard model of job matching does not replicate the pattern found in the data. The model predicts that a rise in productivity results in an immediate tightening of the labor market; firms open up new job vacancies, unemployed workers are reallocated across those new job openings, and employment rises quickly. In the standard model, the labor market adjustments occur much quicker than the data suggest.

The authors argue that the rapid adjustment of the labor market in the standard model happens because the cost of creating new jobs does not go beyond the expense of posting job vacancies. The authors augment the standard model with sunk job creation costs, i.e., expenses that cannot be recovered once paid in creating new job positions. In their model, the number of available job positions in the economy changes only sluggishly because firms face these job creation costs, while workers are moving across those available jobs fairly frequently.

Moreover, they show that the model with sunk costs is able to replicate the hump-shaped patterns of the labor market adjustments found in the data, improving the performance of the standard job-matching model.

Working Paper 05-22, "The Dynamic Beveridge Curve," Shigeru Fujita, Federal Reserve Bank of Philadelphia, and Garey Ramey, University of California, San Diego

FINANCIAL IMPERFECTIONS AS A STABILIZER

Recent economic research has developed the idea that financial imperfections may introduce inefficiencies into financial markets, and these inefficiencies can aggravate economic downturns. In contrast to this research, economist Ronel Elul has developed a model in which financial imperfections may serve as a stabilizing force.

In most of the existing literature, lenders who are concerned about default impose borrowing constraints to ensure that people make their promised payments whenever they are able to do so; moreover, in these models, the constraints typically become tighter as collateral values fall, thereby aggravating economic downturns. In "Collateral, Credit History, and the Financial Decelerator," Elul sets up a model in which lenders are imperfectly informed about a borrower's propensity to default—that is, there is also adverse selection. In this case, it is possible for people to exploit lenders' relative ignorance and default even when they could actually make the required payments—that is, they can strategically default.

Elul shows that for relatively high house prices the existing literature's findings are maintained; that is, the borrowing constraints become tighter as falling prices decrease the wealth with which people can collateralize future loans. When prices are sufficiently low, however, he shows that people will find it worthwhile to strategically default, despite the effect this may have on their reputation. This serves as a stabilizing force because it leaves them with more wealth to spend on housing precisely when prices are at their lowest.

Working Paper 05-23, "Collateral, Credit History, and the Financial Decelerator," Ronel Elul, Federal Reserve Bank of Philadelphia

THE BORDER EFFECT AND VERTICAL SPECIALIZATION

For the past few decades, international barriers to the flow of goods, services, assets, and information have fallen. However, most empirical research finds that two regions within a country are still much more likely to trade with one another than are two otherwise identical regions in different countries, indicating that barriers to the flow of goods and services at national borders are still quite large. This "border effect" puzzle can be reconciled only if the goods being traded can easily be substituted for one another or if, in crossing national borders, large (unmeasured) costs are incurred.

In "Vertical Specialization and the Border Effect Puzzle," economist Kei-Mu Yi proposes a solution to the puzzle based on vertical specialization—that is, regions or countries specializing in particular stages of a good's production sequence. Yi develops a model of intra- and international trade with vertical specialization. He parameterizes the model to match data on relative wages, trade shares, and vertical specialization for the U.S. and Canada. The main finding from the model is that the border-effect and barriers at the U.S.-Canada border are about half those estimated in the literature.

Working Paper 05-24, "Vertical Specialization and the Border Effect Puzzle," Kei-Mu Yi, Federal Reserve Bank of Philadelphia

RISK-ADJUSTED PERFORMANCE MEASURES IN BANKING

One of bank management's main objectives is to maximize risk-adjusted profitability subject to constraints imposed by regulatory capital requirements. One way to do this is to minimize the risk of each activity in which a bank participates and then sum these risks over the entire organi-

zation. This approach, however, ignores the interdependent nature of risks within a company. Recently, financial market practitioners and regulators have made great strides in the design, calibration, and implementation of portfolio models of credit risk. These models allow bank management to identify concentrations of risk and opportunities for diversification on a company-wide basis.

In “Risk-Adjusted Performance Measures at Bank Holding Companies with Section 20 Subsidiaries,” Victoria Geyman contrasts traditional measures of performance with the portfolio-based risk-adjusted measures of performance for a sample of domestic bank holding companies that are involved in both traditional and commercial banking and securities underwriting. One of her main findings is that traditional “stand-alone” performance measures can lead to results substantially different from those of the portfolio models. She also finds evidence of gains from diversification into securities activities, as indicated by the composition of optimal portfolios.

Working Paper 05-26 “Risk-Adjusted Performance Measures at Bank Holding Companies with Section 20 Subsidiaries,” Victoria Geyman, Federal Reserve Bank of Pennsylvania

COURTS, CONTRACTS, AND INNOVATION

The authors explore a model of legal uncertainty, in which parties enter into a contract but are uncertain about how a judge will interpret and enforce it in the event of a dispute. The judge can use two different methods for resolving the dispute. He or she can consider a wide range of evidence, for example, evidence from contractual negotiations or dealings between the parties under past contracts. Alternatively, the judge can consider more limited information and make a ruling based on facts that are essential to the case at hand, as well as to other similar cases.

The authors focus on the following tradeoff. By considering a wide range of evidence the judge is more likely to rule correctly in the case at hand, that is, in accordance with the contracting parties’ true wishes. But this method of judgment undermines the formation of precedents that reduce legal uncertainty for other parties entering into similar contracts. Established precedents allow subsequent contracting parties to better predict how judges will enforce their contracts.

The authors consider the implications of this tradeoff in a number of different settings. In a model in which individuals may enter into novel contracts (innovate) or simply use existing contracts, they show that the use of evidence increases the likelihood that parties will innovate in any

period, while precedents increase the rate at which contractual innovations are imitated, and thus, are diffused throughout the population. When courts can use a mixture of evidence and precedents, the minimum amount of evidence needed to promote innovation is reduced over time.

The authors also examine the breadth of precedents. Overlapping jurisdictions—for example, the courts of two different states in which a firm does business—reduce the optimal breadth of precedents because broad precedents are more likely to introduce conflict. Accordingly, overlapping jurisdictions increase the value of using evidence. The authors use their model to interpret differences between the legal systems in the U.S. and England.

Working Paper 05-27, “Courts and Contractual Innovation: A Preliminary Analysis,” Mitchell Berlin and Yaron Leitner, Federal Reserve Bank of Philadelphia

PRICING CONSUMER PAYMENT TRANSACTIONS

Electronic payment instruments (excluding credit cards) are considerably cheaper than their paper-based alternatives, including cash. Banks and merchants are interested in shifting users to electronic payments to save costs, as are some government policymakers who seek to improve the cost efficiency of their nation’s payment system. Historically, banks have recouped their payment costs through earning interest on payment float, maintaining a spread between market rates and the rate paid on deposits, and charging flat monthly fees or imposing balance requirements. In contrast to business users, consumers face very few payment services that are priced on a per transaction basis and so they have little incentive to choose the lowest cost instrument either at the point of sale or for bill payments.

In “The Effect of Transaction Pricing on the Adoption of Electronic Payments: A Cross-Country Comparison,” authors Wilko Bolt, David Humphrey, and Roland Uittenbogaard use the experience of Norway (which priced its payment services) and the Netherlands (which did not) to determine what effect transaction pricing might have on the adoption of debit cards versus withdrawing cash from an ATM and on the adoption of electronic giro transactions over paper giros. (Giro is an electronic payment system used in Europe equivalent to an automated clearinghouse, or ACH, in the U.S.) They conclude that if users strongly value the improved convenience or security of electronic payments, pricing, which is viewed negatively by most consumers, may not be necessary to ensure the rapid adoption of electronic payments.

Working Paper 05-28, "The Effect of Transaction Pricing on the Adoption of Electronic Payments: A Cross-Country Comparison," Wilko Bolt, De Nederlandsche Bank, Amsterdam; David Humphrey, Florida State University, and Visiting Scholar, Federal Reserve Bank of Philadelphia; and Roland Uittenbogaard, De Nederlandsche Bank, Amsterdam

COMPETITIVE EFFECTS OF BASEL II PROPOSAL ON CREDIT CARD INDUSTRY

For a bank using the advanced internal ratings-based framework as proposed in the Basel II Accord, the regulatory capital requirement for its on-balance-sheet credit card portfolio would be a function of its internal estimates of the probability of default, loss given default, and exposure at default. In contrast, the Basel I-based approach requires the same minimum capital charge on all credit card exposures, regardless of the actual credit risk of those exposures.

Under the current proposal of U.S. banking regulators, the Basel II framework would result in a bifurcated capital regime: A relatively small number of large U.S. banking organizations would use the A-IRB approach for assessing credit risk, while other U.S. banks would continue to apply the current Basel I-based capital rules.

How will these new rules affect the competitive positions of U.S. banks that remain under the current capital regime? Some U.S. bankers, particularly community bankers, have expressed concern that A-IRB banks would face lower capital requirements for various products, including credit cards, and that this will place non-A-IRB banks at a disadvantage. In addition, there's concern that the A-IRB approach would have a substantial effect on credit card specialty banks (CCSBs) that adopt A-IRB versus card issuers that remain under Basel I rules. Furthermore, the new capital rules could affect the competitive position of Basel II

adopters relative to their nonbank rivals.

In "Potential Competitive Effects on U.S. Bank Credit Card Lending from the Proposed Bifurcated Application of Basel II," Federal Reserve researchers William Lang, Loretta Mester, and Todd Vermilyea explore these potential competitive effects as they relate to the credit card industry. Their analysis suggests that: the A-IRB treatment of credit cards will not have a substantial competitive effect on community banks and most regional banks, since credit cards are generally not an important product for these institutions; minimum capital requirements on credit card loans will likely rise under Basel II and may create disincentive for independent monoline credit card banks to opt in to Basel II; banks with substantial credit card portfolios that do not adopt Basel II and nonbanks may receive a modest competitive advantage relative to adopters, but any cost advantage would likely be modest, since Basel II banks may be able to meet most of their additional capital needs by adding tier 2 capital rather than more expensive tier 1 capital; except in cases of severe stress, Basel II raises the relative capital requirement for holding credit card loans on balance sheet rather than securitizing them, so Basel II may increase incentives to securitize credit card loans, thereby mitigating the increase in required capital for on-balance-sheet exposures; and in periods of severe stress, Basel II A-IRB generates potentially very large increases in required capital, and as a result, A-IRB adopters may decide to increase actual capital in nonstress periods, suggesting some competitive effect.

Working Paper 05-29, "Potential Competitive Effects on U.S. Bank Credit Card Lending from the Proposed Bifurcated Application of Basel II," William W. Lang, Federal Reserve Bank of Philadelphia; Loretta J. Mester, Federal Reserve Bank of Philadelphia, and Wharton School, University of Pennsylvania; and Todd A. Vermilyea, Federal Reserve Bank of Philadelphia



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