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Internet Car Retailing

Though Internet shopping has been extolled for its convenience and its ability to deliver vast quantities of information to shoppers, the ongoing debate over how clicks will affect bricks in traditional retail channels has remained a largely speculative one. In **Internet Car Retailing** (NBER Working Paper No. 7961), **Fiona Scott Morton***, **Florian Zettlemeyer**, and **Jorge Silva Risso** find that buyers who use an Internet referral service save about 2 percent on their average new car purchase.

Car buyers using an Internet referral service submit a purchase request specifying the kind of car they want and the time frame in which they expect to make their purchase. The referral sites have contracts with one or two car dealerships in each geographic area. They send the consumer requests to their affiliated dealerships in the consumer's area. In return, the dealerships pay either an annual fixed fee for referrals or a combination of annual fee and a fee for each referral. The Internet sales person at the dealership then contacts the potential buyer with a non-binding price for the car in question. In theory, a buyer needs to visit the dealership only to pick up the car. Referral sites control quality using consumer satisfaction surveys and by tracking the number of referrals that result in sales. Dealerships with conversion rates that the referral service deems too low, or who generate

large numbers of consumer complaints, may be dropped from the referral network. Emphasizing the conversion rate gives dealerships an incentive to offer an attractive initial price to customers referred by the Internet service.

Autobytel.com is a major online auto referral service. The authors merge the 2 million Autobytel.com purchase requests in 1999 with a J.D. Power and Associates sample of every

authors drop "cars" with very few observations (fewer than 500 observations and less than 1.5 percent of their market segment). This reduced the number of observations by 46 percent to 195,772, and resulted in a dataset containing 204 different kinds of "cars" sold through 810 dealers.

The dealerships that have contracts with Autobytel.com sold an average of 767 cars over the time

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new car purchase from 1101 California car dealerships from January 1, 1999 to February 28, 2000. The J.D. Power data contain "customer information, the make, model and trim level of the car, financing, trade-in information, dealer-added extras, and the profitability of the car and the customer to the dealership." The car is considered an Internet purchase if the name and address on the Autobytel.com request match the name and address in the J.D. Power sample. By this standard, Autobytel.com referrals constituted 2.9 percent of the 360,255 purchases in the J.D. Power sample.

After defining different "cars" as every combination of make and model, body type, number of doors, trim level, 2 or 4 wheel drive, transmission type, number of cylinders, displacement, and model year, the

period studied. Non-Autobytel dealers sold 346. Thirty-three percent of the sample transactions went through dealerships that have contracts with Autobytel.com. People using the referral service were less likely to finance their cars through the dealer, to buy insurance through the dealer, or to buy a repair contract from the dealer. They also tended to live in areas with higher average income.

The authors find that the average Autobytel customer pays 2 percent less for his or her car; approximately one quarter of this price difference is due to purchasing at Autobytel franchise dealerships, which have lower prices than average. The remainder of the price difference is due either to savvy buyers choosing to use Autobytel, or Autobytel improving

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the bargaining position of standard buyers.

For auto retailers, the question of whether the Internet makes it easier for previously naïve buyers to educate themselves, or whether those who have always been savvy car buyers have migrated to the referral services is crucial; the first story would be expected to reduce their profits, while the second would not. The authors restrict the sample to less sophisticated buyers who obtain financing from the dealer and find

that the Autobytel price discount remains for buyers referred via the Internet. In addition, the more cars a dealership sold through Autobytel.com, the smaller was the observed spread in the prices consumers paid at that dealership. They conclude that these results suggest that Internet referrals increase buyer information and bargaining clout.

Although Internet car buyers pay less for their cars, the authors note it is possible that participating in an Internet referral service can be prof-

itable for individual dealers. Using data from one Midwestern dealership, they estimate that the cost of a traditional sale could be as much as \$600 higher than the cost of selling to an Internet referral. Given that the average Internet buyer pays only an estimated \$300 to \$500 less for his car, it is possible for an individual dealership's profitability to increase despite the lower purchase price.

—Linda Gorman

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Reducing the Risk of Investment-Based Social Security

Private financial markets could provide a minimum guarantee for Personal Retirement Account (PRA) annuities as part of an investment-based reform of Social Security. Under such a system, the "collar" would allow an individual to enjoy the higher returns offered by investing in stocks and bonds — rather than simply in paying into the pay-as-you-go system — while managing the market risk.

In Accumulated Pension Collars: A Market Approach to Reducing the Risk of Investment-Based Social Security Reform (NBER Working Paper No. 7861) NBER President **Martin Feldstein*** and **Elena Rangelova** show how individuals could, in effect, purchase a "put option" guaranteeing a minimum level of retirement annuity from their PRA. They would pay for it by selling a "call option" on returns above a specified level. The put and call options, which would be priced by the financial intermediary using standard techniques, define the collar and limit the extent of uncertainty of the PRA returns.

Feldstein and Rangelova examine a number of ways in which collars could guarantee that the combination of traditional Social Security benefits and the PRA annuity could match the "benchmark" case — the level of future benefits projected in current Social Security law. Their analysis is based on simulations using 50 years of historical data on the level and variability of market returns.

Collars could be used to completely eliminate the risk of future annuities falling below the Social Security benchmark level. Or, they could allow individuals to decide the level of risk they are prepared to accept in return for the possibility of higher retirement annuities. The greater the level of protection that the individual chooses, the more of the potential excess returns he or she would agree to give up.

The results of the Feldstein/Rangelova analysis show that the combination of the current payroll tax and an additional PRA contribution rate equal to 2.5 percent of covered earnings would guarantee the benchmark Social Security benefit. Raising the PRA contribution to 3 percent

level of PRA benefits for any given options strike price. Reducing the level of guaranteed annuity slightly — a lower put option strike price — increases the maximum amount of the annuity that the individual can keep substantially.

Another possibility would be to combine a minimum guarantee and share the upside gain above some threshold level. For example, the individual could buy a put option that guarantees that benchmark benefit and in exchange sell a put option that gives the annuity holder 50 percent of the gains above the threshold level. With a PRA contribution rate of 3 percent, this would allow the individual to keep all of the annuity up to 119 percent of the benchmark and half of

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means that future benefits would fall in the collar range of 100-145 percent of the benchmark. Reducing the guaranteed level of benefits to 90 percent of the benchmark with a 2.5 percent PRA contribution rate means that future benefits would fall in the collar range of 90-150 percent of the benchmark.

In general, a higher PRA savings rate reduces the risk that the PRA benefits will fall below the benchmark level, and so substantially increases the maximum amount of the annuity that the individual can keep. It also increases the average

all returns above 119 percent.

Introducing PRAs, alongside the existing system, means that the U.S. pension system could be made solvent without the hefty increases in payroll taxes that will be required under the current rules, owing to the higher returns offered. The use of collars could meet one of the main criticisms of an investment-based system, the exposure of individuals to excessive market risk. The analysis extends several earlier studies by Feldstein and other researchers, based on historic data and the demographic and economic forecasts of the Social

Security actuaries.

The results are based on a standard portfolio made up of 60 percent stocks and 40 percent corporate bonds. In the 50-year period from 1945-95, such a portfolio delivered an average real return of 5.9 percent and a standard deviation of 12.5 percent. The researchers subtract 0.4 percent for administrative costs and use the remaining 5.5 percent real return to

simulate PRAs and retirement annuities for 10,000 individuals. The shift to PRAs would be phased-in over a number of years, with those retiring in earlier years more dependent on Social Security benefits and those in later years more dependent on PRA returns. The researchers focus on the long-run position when the PRA accounts for one-third of the total benefits.

This market-based approach to insuring the level of retirement income could be completely voluntary, with individuals deciding what level of guarantee they want, depending on their risk preferences. Alternatively, the government could mandate a minimum level of protection, for example, a minimum guarantee of 90 percent of the benchmark.

—Andrew Balls

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School Choice Raises Demand for Teachers with Select Characteristics

School choice takes many forms, including charter schools, vouchers, tax credits for private school tuition, and inter-district choice. Historically, teachers' organizations such as the National Education Association and the American Federation of Teachers have opposed school choice. But in **Would School Choice Change the Teaching Profession?** (NBER Working Paper No. 7866), author **Caroline Hoxby** finds that school choice would have some notable benefits for the teaching profession. It would raise the demand for teachers with select skills: teachers with a high caliber college education, with better math and science skills, with a high degree of independence, and those who put forth extra effort all would be in great demand. Certainly, school choice would result in some losers: the less skilled and motivated teachers would find less demand for their services.

Hoxby proposes the possibility that school choice ultimately would influence who became, and remained, a teacher by affecting schools' demand for certain characteristics. To determine which characteristics are demanded more by choice-based schools, she asks which are rewarded with a higher wage and are present in greater abundance. She analyzes data on traditional forms of school choice — selection of a private school and picking a public school by choosing a residence — and on a third form of choice, the charter school. She draws her data on traditional school teachers from a nationally representative random sample of public and private

school teachers and administrators. For comparable information on charter schools, Hoxby distributed surveys for administrators and randomly selected teachers to every charter school in operation. The teachers and administrators were queried on a number of topics, including teachers' pay, required and actual hours of work, teaching experience, college background, and career plans.

Overall, the evidence suggests that school choice would require teach-

ers who graduated from very competitive colleges are paid 3.1 percent more than their colleagues, while charter school teachers from the same group of colleges are paid 6.6 percent more than their colleagues. Charter schools also demand more teachers who have majored in math and science: in the public schools, math and science majors are paid about 4.4 percent more but in charter schools they are paid about 8.4 percent more than their colleagues.

“School choice would ... raise the demand for teachers with select skills: teachers with a high caliber college education, with better math and science skills, with a high degree of independence, and those who put forth extra effort.”

ers to have higher levels of skills and to exhibit extra effort in return for a higher wage for those characteristics. Specifically, Hoxby discovers that traditional forms of school choice do increase the demand for teachers who were educated at select colleges, who have degrees in a subject (like history or English) as opposed to education, who have good math and science skills, and who are willing to work extra hours in addition to those required. Comparing charter schools to public schools, Hoxby finds that charter schools not only hire more teachers with these characteristics, but also that the incremental return to such characteristics (in terms of pay) is higher at charter schools. (Charter schools pay lower salaries on average than regular public schools do, but charter schools allow pay to *vary* more with teachers' characteristics.)

For example, public school teach-

In salaries, the average public school teacher earns \$34,690; the average charter school teacher \$32,070; and the average private school teacher \$21,286.

Currently, skilled teachers are more likely to leave the profession early. Hoxby points out that, within a district, teachers with similar seniority and the highest level of college degrees are likely to receive roughly similar wages. But her research suggests that schools that face greater school choice retain skilled teachers longer. This may of course be a consequence of such teachers being paid more in districts that face stronger choice-based incentives to pay teachers according to their merit. Hoxby's research suggests that school choice could change the teaching profession in a way that many potential, and even established, teachers would like.

—Marie A. Bussing-Burks

How Financial Crises Spread

Like epidemics, financial crises tend to spread. Witness the 1997 Asian crisis, which quickly engulfed South Africa, Eastern Europe, and even Brazil. Many economists have argued that financial institutions sometimes panic, disregarding fundamentals, and thus spreading a crisis even to countries with strong fundamentals. Individual investors, too, can contribute to crisis by selling mutual funds, forcing fund managers to sell when the fundamentals do not warrant that action.

In **Managers, Investors, and Crisis: Mutual Fund Strategies in Emerging Markets** (NBER Working Paper No. 7855), authors **Graciela Kaminsky, Richard Lyons, and Sergio Schmukler** add to our understanding of this contagion-trading phenomenon by studying the behavior of U.S. international mutual funds focused in emerging markets. The authors find that during crises, emerging market funds engage in "momentum trading," selling stocks

that recently declined and buying recent winners. Contemporaneous momentum trading is stronger during a financial crisis, and fund investors show a stronger inclination to engage in contemporaneous momentum trading than do fund managers.

"The authors find that during crises, emerging market funds engage in 'momentum trading,' selling stocks that recently declined and buying recent winners."

Lagged momentum trading (buying past winners and selling past losers) is stronger during non-crisis periods and is stronger for fund managers than fund investors. The authors also find that funds engage in contagion trading, which they define as systematically selling assets from one country when asset prices begin to fall in another. This contagion trading is primarily attributable to investor activity, however, and not to the actions of fund managers.

The authors are able to distinguish in this study between fund investor

trades (for example, fund inflows and outflows) and fund manager trades. They are also able to differentiate between momentum trading at the manager and investor levels. Their method of measuring contagion trading via transaction quantities is also new to the literature.

The datasets used by the authors include individual portfolios, which allow them to examine trading strategies at a high resolution. The data include information from 13 dedicated Latin American mutual funds from April 1993 to January 1999. These 13 funds account for 88 percent of the total value of all 25 dedicated Latin American funds available as of the end of 1998.

—Lucille Maistros

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