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Internet Access Increases Stock Trading

The growing availability of online trading technologies is believed to have had a large effect on stock market volume and volatility. But is the increase in trading coincidental to the spread of the Web or a direct result of it? It may simply be that online traders would have executed their trades on other channels if the Web had not been available. In **Does the Internet Increase Trading? Evidence from Investor Behavior in 401(k) Plans** (NBER Working Paper No. 7878), **James J. Choi**, **David Laibson**,* and **Andrew Metrick** argue that introduction of a Web-based trading channel in a 401(k) plan does cause dramatic increases in the number and dollar volume of total trades.

The authors use trading data from the participants of two large corporate 401(k) plans. Both plans opened a Web trading channel in 1998, adding to pre-existing phone trading. Within 18 months of the initiation of Web trading, Web transactions had grown to approximately 60 percent of all transactions. The total trading rate of participants — adding up phone and Web channels — had quadrupled from its pre-Web level.

Even after the authors control for factors that might affect trading volume, such as stock price volatility or increased overall market volume, the Web effect is very large: daily trading frequency nearly doubles (a 96 percent rise) and daily turnover — the fraction of balances traded — increases by 55 percent. The transaction frequency effect is greater than the turnover effect because Web access lowers average transaction size and increases Web trading on low-balance accounts belonging to young traders.

The authors find that young, male traders with high salaries and plan balances are most likely to try the Web, which is consistent with societal stereotypes of Web traders. Retired and job-terminated participants are less likely to trade using the Web. The authors speculate that since ex-employees are out of the workplace "loop" they are less likely to know about plan changes like the new Web-based trading opportunities. Participants who traded frequently by phone prior to the introduction of Web trading are also less likely to try the Web.

> "Although the introduction of Web trading seems to increase total trading, it does not appear to increase short-term trading or last-hour trading, suggesting that the Web may not be an important catalyst for speculative trading."

Choi, Laibson, and Metrick find that most participants who try the Web stick with it. Of those participants who try the web, 88 percent make their next trade on the web. Conditional on a first and second Web trade, 94 percent make their third trade online, and 96 percent of Web-Web-Web traders make their fourth trade online.

Of those participants who try the web and revert back to the phone for the next trade, about half continue using the phone. Of the Web-Phone traders, 57 percent make their third trade by phone, and 77 percent of Web-Phone-Phone traders make their fourth trade by phone.

The lower effort cost associated with Web transactions leads traders to execute smaller dollar value transactions in their Web trades relative to phone trades. For example, small trades that would not be worth a time-consuming phone execution, would be worth executing quickly on a Web-based trading system. The average phone transaction in this data is 75 percent larger than the average Web transaction — for example, respective transaction averages of $70,000 (phone) versus $40,000 (Web) for one of the two firms and $105,000 versus $60,000 for the other firm. These differences also are driven by demographic contrasts between the typical phone and Web traders. While high balance plan participants are most likely to *try* the Web, low balance participants are most likely to *trade frequently* on the Web. Hence, low balance participants conduct a relatively large share of Web transactions.

Finally, the authors find that despite popular reports about excessive internet-based day trading, the availability of a Web-based trading channel does *not* increase short-term trading. They define short-term trades as trades that are

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"reversed" within five days of the original trade.

The authors also analyze "last-hour trades": trading orders that are placed in the hour before the market closes. All 401(k) trades are executed at closing prices, so last-hour trading is the only way for a 401(k) trader to trade with up-to-date information. Naturally, short-term market-timers would be disproportionately likely to be last-hour traders. The authors find that a greater proportion of phone trades are last-hour traders and that the introduction of Web trading does not increase the number of last-hour traders. Although the introduction of Web trading seems to increase total trading, it does not appear to increase short-term trading or last-hour trading, suggesting that the Web may not be an important catalyst for speculative trading.

— Noshua Watson

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Fewer Guns Mean Fewer Gun Homicides

Increases in gun ownership lead to a higher gun-homicide rate and legislation allowing citizens to carry concealed weapons does not reduce crime, according to a recent NBER Working Paper by **Mark Duggan.** After peaking in 1993, gun homicides in the United States dropped 36 percent by 1998, while non-gun homicides declined only 18 percent. In that same period, the fraction of households with at least one gun fell from more than 42 percent to less than 35 percent. Duggan finds that about one-third of the gun-homicide decline since 1993 is explained by the fall in gun ownership. The largest declines occur in areas with the largest reductions in firearm ownership.

Previous research on the relationship between gun ownership and crime has been impeded by a lack of reliable data on gun ownership. But in **More Guns, More Crime** (NBER Working Paper No. 7967), Duggan uses a new proxy for gun ownership — state and county-level sales rates for the nation's largest handgun magazine — to show that guns foster rather than deter criminal activity.

In theory, the effect of gun ownership on crime is ambiguous. If criminals are deterred from committing crimes when potential victims are more likely to possess a firearm, then more gun ownership may lead to a reduction in criminal activity. If instead guns increase the payoff to criminal activity, or simply increase the likelihood that any particular confrontation will result in a victim's death, then an increase in gun ownership will tend to increase the crime rate.

Proving one theory over the other has been difficult because of the lack of adequate data on gun ownership measured across geographic areas over time. But as evidence of the accuracy of the gun magazine subscription data, Duggan shows that sales rates are significantly higher in counties whose average demographic characteristics are similar to those of the typical gun owner according to national surveys. Furthermore, he shows that the death rate from gun accidents and the number of gun shows per capita are positively related to the magazine sales. While Duggan admits that relatively few readers may be criminals, he points out that the majority of firearms used in crime are obtained either from burglaries or from the secondhand market. Thus as the rate of gun ownership in the general population increases, the ease with which criminals can obtain a gun will increase.

Duggan finds that state and county-level changes in the rate of gun ownership are positively related to changes in the homicide rate. His findings suggest that gun ownership causes crime, and does not simply reflect individuals purchasing guns in response to increases in criminal activity. In support of this, he finds that increases in gun ownership are positively related to future increases in the gun homicide rate, but bear no corresponding relationship to non-gun homicides. His findings reveal that the relationship with other crime categories is much less marked, suggesting that guns primarily affect crime by increasing the homicide rate.

He then examines whether legislation that allowed individuals to carry concealed weapons had an important impact on the crime rate. He shows that this legislation did not lead to a substantial increase in gun ownership, nor did it reduce crime relatively more in counties with high rates of gun ownership. This latter finding suggests, Duggan writes, "either that gun owners did not increase the frequency with which they carried their guns or that criminals were not deterred by the greater likelihood that their victims would be armed." Taken together, his results suggest that Carrying Concealed Weapons legislation did not have an important effect on the rate of gun ownership or on the crime rate.

"About one-third of the gun-homicide decline since 1993 is explained by the fall in gun ownership."

— David R. Francis

Is Making Divorce Easier Bad for Children?

Most U.S. states now allow for unilateral no-fault divorce, whereby one spouse can obtain a divorce without the consent of his or her partner, solely on the grounds of spousal incompatibility. This stands in contrast to historical state regulations which provided for divorce only for grounds, such as infidelity and physical abuse, and when it was mutually agreed upon by both partners. These older laws often were viewed as imposing enormous financial and emotional burdens on divorcing couples, motivating the "no fault" revolution in divorce law in the late 1960s and early 1970s. Yet many states are now concerned that today's laws make divorce too easy, and a number of states are considering

changes to divorce regimes which would move away from the current looser regulations. A primary motivation for this movement has been the perceived negative impact of divorce on children.

In **Is Making Divorce Easier Bad for Children? The Long Run Implications of Unilateral Divorce** (NBER Working Paper No. 7968), NBER Research Associate **Jonathan Gruber*** finds that unilateral divorce regulations have significantly increased the odds of an adult being divorced (by 11.6 percent) and of a child living with a divorced parent: children were 14.5 percent more likely than under the old laws to be living with a divorced mother and 11.1 percent more likely to be living with a divorced father.

Gruber then assesses the impact of easier divorce regimes on the long-run well being of children. He compares the adult circumstances of children who grew up in states where unilateral divorce was available versus children who grew up in states where it was not available. He finds that children who grew up in the "easier-divorce" states are in fact worse off in a number of ways. They are less well educated, with a particularly large increase in their odds of being a high school dropout or graduate as opposed to going on to attend or complete college. They also live in families with lower incomes. This appears to be primarily because these families involve earlier marriage, having more children, and an increased tendency for the women to not work for pay but rather to be home with their children.

These effects on marriage are particularly interesting. Children who grow up in states where divorce is easier are more likely to marry early, but these early marriages are also more likely to end in separation. By age 35, though, these children have similar odds of being married to their counterparts who grow up under stricter divorce regimes. Thus, the ultimate long-run impacts of being exposed to unilateral divorce depend on the implications for the "grandchildren" of unilateral divorce: being born into these earlier marriages and themselves subject to more marital separation. Because these effects are likely to be negative, it seems likely that making divorce easier is bad for children.

"Children who grew up in the "easier-divorce" states are in fact worse off in a number of ways."

Gruber's study uses 40 years of census data to capture the variation in divorce regulations over states and time. He examines the effects of being exposed to unilateral divorce at all, and the variation in these effects by the amount of exposure. His findings indicate that increased exposure to unilateral divorce regimes worsens child outcomes, but only up to about eight years; after that, there is little additional harm from continuing exposure to these laws. Gruber notes that this is consistent with evidence that unilateral divorce may have only a short-run impact on the divorce rate.

Gruber also highlights the two channels through which making divorce easier can affect child outcomes: by increasing the odds that a child grows up in a divorced household; and by changing "bargaining power" between spouses, even in couples that don't split up. Under mutual divorce, a spouse who is less attached to a marriage (and potentially to the children) cannot leave without the other spouse's permission, giving the more attached spouse some power in negotiating the terms of the marriage. But when unilateral divorce comes into force, the less attached spouse can always leave whenever he or she likes, shifting the bargaining power away from the more attached spouse. This means that less attached spouses can take actions which are more beneficial to themselves and less beneficial to their spouses, and to their children; the more attached spouses may not be able to stop them because they have lost their bargaining power. For example, the less attached spouse can shift family spending away from educational resources to consumption goods, and the more attached spouse cannot stick up for the children without risking ending the marriage.

This feature also may account for why shifting to unilateral divorce is bad for children, even if their parents' marriages don't actually end. Gruber notes that his findings cannot distinguish these explanations, but that the large magnitudes of his effects, relative to the impact on divorce, suggest that bargaining power effects are important.

— David R. Francis

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How Fast Has China Grown?

For policymakers, or even casual observers, few facts shape impressions about a country's well-being more than bedrock statistics on economic growth. This has been especially true in regards to conventional perceptions about modern day China. While there may be much debate about the country's human rights record and environmental policies, almost unquestioned in the mainstream is the notion that economic reforms in China have produced awesome growth rates.

Indeed, NBER Research Associate **Alwyn Young*** notes that if you look at China's official reports, between 1978 and 1998 gross domestic product or GDP per capita grew at an astounding 8 percent annually, "a performance which makes China the most rapidly growing economy in the world during this period." But his study, **Gold into Base Metals: Productivity Growth in the People's Republic of China During the Reform Period** (NBER Working Paper No. 7856), is an apt reminder that economic statistics can be highly malleable objects.

Adopting a relatively conservative approach — he relies solely on official Chinese government data — Young argues that, upon closer examination, what appears to be phenomenal turns out to be relatively "mundane." Accepting all the numbers the statisticians of the People's Republic produce, but making systematic adjustments using their own data, he shows that "one can...reduce the growth rate during the reform period to levels previously experienced by other rapidly growing economies," so that "... once one takes into account rising labor force participation, the transfer of labor out of agriculture and improvements in educational attainment," labor productivity growth in the non-agricultural economy is only 2.6 percent. That's a

commendable performance, notes Young, "but by no means extraordinary," and a far cry from the officially touted 8 percent growth of GDP per capita.

In making his adjustments, Young errs on the side of caution. He seeks to make corrections only when there is good cause to believe official government estimates are biased and when there exist alternative government statistics that provide the tools to affect a revision. For example, he points out that at the root of national income statistics are reports filed by local officials whose tendency to "overstate the growth of output, while understating investment and births" is something that's been "well documented, by none other than the Chinese themselves." But in attempting to correct for this, Young is careful to rely on official statistics, and well-developed ones at that.

In this case, he sticks to the government's own well established — but surprisingly little-used — price indexes to correct what he believes to be a systematic understatement of inflation, an understatement that has the practical effect of making growth rates seem much more impressive than they actually are. Substituting these indexes for the official inflation rate formula — which relies heavily on local reporting — Young recalculates growth rates and finds that from 1986 to 1998, they averaged 6.2 percent per year, "3 percent less than the officially reported figures of 9.2 percent." In other words, China's stellar growth rates may be more the product of a statistical assessment that prefers one set of official numbers to another, as opposed to actual economic performance. Most interesting, Young's reworking of the numbers offers evidence that in the political unrest that rocked China in 1989, economic instability was a more significant factor than previously noted. He finds that while the government was reporting 4 percent growth, if they had blended their own price indexes into the mix, they would have reported that GDP actually fell by 5.2 percent.

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As for what to read into his revisions of Chinese economic history, Young offers that there are opposing interpretations, and that both can be viewed as valid. He notes that even if labor productivity grew at only 2.6 percent a year, "when contrasted with the experience of other reforming economies, sustained 2.6 percent labor productivity growth can be seen as nothing short of miraculous."

On the other hand, given that the estimates presented in this paper are by no means the lowest possible, and given the presumed inefficiency of central planning, one might have expected greater gains in a "successfully" reforming economy, Young writes. "In this regard, moderate productivity growth might be seen as reflecting enduring problems, such as the failure to reform state enterprises and the inefficiencies introduced by local government intervention in industrial production and trade."

To the extent that reforms have produced greater efficiencies, Young asserts that they have come through the "easiest" but also the "greatest" of the reforms' achievements: the elimination of policies that "kept the peasantry tied up in agriculture." While Young restricted his data deconstruction exercise to productivity growth outside of agriculture, he believes the role played by agriculture in the success of the East Asian economies deserves more attention. "Despite the popular academic emphasis on industry and exports," concludes Young, "a deeper understanding of the success of the world's most rapidly growing economies may lie in that most fundamental of development topics: agriculture, land and the peasant."

— Matthew Davis

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