

IN THIS ISSUE

- Terms of Trade Gains, Tariff Changes, and Productivity Growth
- The Real Effects of Financial Constraints
- Altruism and Social Pressure in Charitable Giving
- Growth in a Time of Debt
- The Effect of WIC on Infant Health

Terms of Trade Gains, Tariff Changes, and Productivity Growth

Productivity growth in the United States appears to have accelerated dramatically since 1995. Some research has attributed that growth to declining prices for information technology (IT) products. In **Effects of Terms of Trade Gains and Tariff Changes on the Measurement of U.S. Productivity Growth** (NBER Working Paper No. 15592), authors **Robert Feenstra, Benjamin Mandel, Marshall Reinsdorf, and Matthew Slaughter** argue that part of this apparent speed-up in productivity actually represents gains in the terms of trade and tariff reductions, especially for these IT products. They demonstrate how unmeasured gains in the terms of trade and declines in tariffs can cause conventionally measured growth in real output and productivity to be overstated.

Many factors have contributed to the increasing globalization of the IT industry, including the creation and spread of global production networks. However, the global engagement of the U.S. IT industry deepened after 1995, around the time that the Information Technology Agreement (ITA)—a comprehensive free-trade agreement that eliminated all world tariffs on hundreds of IT products—was ratified. This timing suggests that the ITA may have played an important role in the post-1995 trend in IT prices.

The evidence suggests that even small reductions in tariffs under the

ITA have a considerable impact on both prices and variety. The authors attribute the effect on prices to the fact that the ITA was a multilateral tariff reduction, with U.S. tariff cuts matched by those abroad. Since

imports are being processed in multiple countries, their prices can easily fall by more than the drop in U.S. tariffs.

Moreover, improvements in import variety have contributed substantially towards improving the terms of trade: without that effect, the increase in the terms of trade would be only one third of its actual level. This supports the hypothesis that entry of lower priced varieties from new sources of supply has caused a substantial drop in import prices that the standard methods used to construct official indexes may omit.

In addition, since 1995—at precisely the time that productivity growth picked up—U.S. terms of trade reversed and began rising, with a string of solid gains from 1995 through 2006. That suggests a connection between the terms of trade and productivity. In fact, the authors find that unmeasured changes in the terms of trade have a first-order impact on con-

ventionally measured productivity growth. In particular, if the reduction in import prices is understated, then conventionally measured productivity growth will be correspondingly overstated. Correcting for three different

“The magnitude of [the] acceleration [in U.S. productivity growth between 1995 and 2006] has been overstated, with a sizable share of the gains actually being accounted for by the benefits of international trade.”

measurement errors, they find that the actual U.S. terms of trade were rising much faster than officially reported.

In the past decade, the U.S. economy clearly enjoyed faster productivity growth than in previous time periods. The authors suggest that the magnitude of this acceleration has been overstated, with a sizable share of the gains actually being accounted for by the benefits of international trade. Their findings indicate that from 1995 through 2006, the actual average growth rates of the price indexes for U.S. imports are 1.5 percent per year lower than the growth rate of price indexes calculated using official methods. Thus, properly measured terms of trade gains can account for close to 0.2 percentage points per year, or about 20 percent, of the apparent increase in productivity growth for the U.S. economy over this period.

— Claire Brunel

The Real Effects of Financial Constraints

Murillo Campello, John Graham, and Campbell Harvey emailed a survey to 10,000 chief financial officers (CFOs) of public and private companies from 39 countries in the fourth quarter of 2008, asking for details of their decision making strategies during the global credit crisis. The respondents were promised anonymity, and no financial firms were included in the study. Those CFOs from the United States, Europe, and Asia who reported their firms as “credit constrained” planned to cut spending company-wide, give up attractive investment opportunities, and draw down lines of credit for fear that it would be restricted, according to **The Real Effects of Financial Constraints: Evidence from a Financial Crisis** (NBER Working Paper No. 15552).

The responses came from 1,050 CFOs: 574 from the United States, 192 from Europe, 284 from Asia. Of the U.S. respondents, the CFOs of 81 percent of the firms categorized as financially constrained said that they were experiencing credit rationing in the period, including a higher cost of borrowing (59 percent), and difficulties in initiating or renewing a credit line (55 percent). The responses of the European and Asian firms generally agreed with those of the U.S. firms.

Of the U.S. participants, including 130 public firms, 75 percent were classified as “small firms” — annual sales of

less than \$1 billion. In that category, 41 percent of firms said they were “not affected” by credit constraints in the fourth quarter of 2008; 37 percent were “somewhat affected”; and 22 percent were “very affected.” Among the large firms, with sales of \$1 billion or more, 49

half of constrained firms reported they wouldn’t take on new ventures that they planned to fund from cash flow, if they were not able to borrow in order to preserve their cash reserves, compared to 31 percent of the unconstrained firms.

Even those efforts weren’t enough

“86 percent of [credit] constrained firms reported they bypassed attractive investments because of concerns over raising money from outside the company [in Q4 2008, compared with only] 44 percent of unconstrained firms.”

percent report they were “not affected”; 35 percent, “somewhat affected”; and 16 percent “very affected.”

Constrained firms, on average, said they plan to cut employment by 11 percent, technology spending by 22 percent, capital investment by 9 percent, marketing by 33 percent, and dividends by 14 percent in 2009. Also, 13 percent of such firms tapped their lines of credit in order to have cash to meet expected needs, and another 17 percent did the same in case their banks shut off their credit. Few unconstrained firms report plans for significant cuts or concerns about the availability of credit during the period.

Indeed, 86 percent of constrained firms reported they bypassed attractive investments because of concerns over raising money from outside the company, while 44 percent of unconstrained firms reported a similar stance. Just over

to stem cash run off, as constrained firms on average reported burning through one-fifth of their liquid assets during 2008. Many firms said they expected to be forced to sell off productive assets to generate operating funds. But the authors caution that some constrained firms may have had to sell assets during the crisis because they may have been over-investing before the crisis.

The authors bring a new measure of financial constraints to the literature and conclude that their results provide evidence that financial constraints hamper investment in valuable projects, reducing the strength of future economic recovery. “In this context, one can better understand why policy-makers undertook unprecedented actions to unfreeze credit markets. Relaxing these constraints would produce additional long-term growth opportunities in the economy.”

—Frank Byrt

Altruism and Social Pressure in Charitable Giving

In the United States alone, annual individual giving to charity exceeds 2 percent of GDP, with approximately 90 percent of people donating a total of more than \$300 billion in 2008. While the stakes are clearly quite high, there is still disagreement on the precise factors that motivate some people to give and others to refrain from donating.

In **Testing for Altruism and Social Pressure in Charitable Giving** (NBER Working Paper No. 15629), authors

Stefano DellaVigna, John List, and Ulrike Malmendier describe two types of motivation that may underlie charitable giving. If individuals give because

want to say “no” to the solicitor and would avoid personal interaction with the solicitor if forewarned, then the motivation is social pressure.

“Social pressure is an important determinant of door-to-door giving.”

they enjoy giving, for example because they care about a specific worthy cause, or they like the warm glow of giving, then altruism is the motivation. On the other hand, if a person does not

To test for which of these motivations matters most, the authors design a field experiment involving door-to-door fundraising drives for two charities: a local children’s hospital, which

has a reputation as a premier hospital for children, and an out-of-state charity, not known by most potential donors. Some of the 7,668 households in the towns surrounding Chicago that were approached in this experiment between April and October, 2008 were given an opportunity to avoid the solicitor. One group of households got a flyer on their doorknob that notified them a day in advance about the exact time of solicitation,

so that they could avoid it. A second group also got the flyer, but it included a box that could be checked if the household did “not want to be disturbed.”

The authors find that the flyer reduces the share of households opening the door by 10 to 25 percent. If the flyer allows checking a “Do Not Disturb” box, it reduces giving by 30 percent, mainly among donations smaller than

\$10. These findings suggest that social pressure is an important determinant of door-to-door giving.

The authors use the data collected in their field experiment to estimate the parameters of a structural model for consumer charitable behavior. This model suggests that the estimated social pressure cost of saying no to a solicitor is \$3.50 for an in-state charity and \$1.40 for an out-of-state charity.”

—Lester Picker

Growth in a Time of Debt

Nations typically see growth slow when their debt levels reach 90 percent of gross domestic product. The median growth rate falls by 1 percent and average growth falls even more, according to **Carmen Reinhart** and **Kenneth Rogoff**, writing in **Growth in a Time of Debt** (NBER Working Paper No. 15639).

Using a newly developed historical data set, the authors examine 44 countries over a period of up to 200 years and find that the same slowdown occurs for advanced as well as emerging nations. However, the latter group is also vulnerable when their external debts reach 60 percent of GDP. In emerging nations, this debt level is associated with a decline in growth rates of about 2 percent. At higher ratios, growth is cut by about half. Inflation also rises sharply as emerging nations’ debts increase, an inflationary link that does not appear to exist (at least simultaneously) for advanced nations as a group.

While there are some exceptions to the high-debt/slow-growth phenomenon — Australia and New Zealand grew *faster* during their high-debt periods in the years after World War II than in other periods — the median growth of the 20 advanced nations in this study fell by half as their debt levels moved from less than 30 percent of GDP to 90 percent or more. The drop-off was particularly significant at the 90 percent threshold: between 60 and 90 percent of GDP, median growth was still 2.8 percent; above 90 percent it was 1.9 percent. The

drop in average growth between countries with debt ratios of 60–90 percent of GDP, and those above 90 percent of GDP, was even greater: 3.4 percent to 1.7 percent.

The trend was also more pronounced among the 24 emerging markets in the study, including Argentina, Brazil, India, Mexico, Nigeria, South

nations is less clear. Above external debts of 60 percent of GDP, growth rates for emerging nations dropped sharply between 1970 and 2009. Above 90 percent of GDP, median growth plummeted further, and average growth actually turned negative. The maturity of the debt also plays a factor, with nations heavily reliant on short-term borrowings

“The median growth of the 20 advanced nations in this study fell by half as their debt levels moved from less than 30 percent of GDP to 90 percent or more.”

Africa, and Turkey, than in more developed nations. With debt between 60 percent and 90 percent of GDP, median growth in the emerging markets was 4.5 percent. Above 90 percent, it dropped to 2.9 percent. The change in average growth rate was far more severe: 4.2 percent to 1.0 percent.

A big difference between advanced and emerging nations is the correlation between debt levels and inflation. For advanced nations, median inflation actually fell as debt grew (5.2 percent when debts were less than 30 percent of GDP; 3.9 percent when debts were 90 percent and above). For emerging nations, by contrast, median inflation more than doubled, from 6 percent to 16.5 percent, as debt grew. “Fiscal dominance is a plausible interpretation of this pattern” for emerging economies, the authors write.

External debts represent another pitfall for emerging nations, although the impact of such debts on developed

most vulnerable to sudden crises.

The authors emphasize that theirs is a first pass at the new historical data set, that the 90 percent debt-to-GDP ratio is an initial estimate with considerable uncertainty around it, including tying down country-specific factors that may affect these limits. Nevertheless, the results do suggest that countries face thresholds for debt/GDP above which the growth impacts may increase non-linearly.

The authors point out that in addition to public debt, it is also important to track private debt. In contrast to public debt, private debt tends to fall sharply after financial crises. Such private-sector data are scarce for nations over time. But the historical record of the United States points out that growth slowed when the nation slashed its private debt. During 1916–39, the median unemployment rate stood at 9.8 percent in years where debt-to-GDP rates were falling; in all other years, it was 6.7 per-

cent. The period 1946–2009 saw a similar pattern. “Thus, private deleveraging may be another legacy of the financial crisis that may dampen growth in the medium term,” the authors conclude.

“The sharp run-up in public sector

debt will likely prove one of the most enduring legacies of the 2007–2009 financial crises in the United States and elsewhere,” they conclude. “[A]cross both advanced countries and emerging markets, high debt/GDP levels (90 percent

and above) are associated with notably lower growth outcomes....Seldom do countries simply ‘grow’ their way out of deep debt burdens.”

—Laurent Belsie

The Effect of WIC on Infant Health

The Supplemental Program for Women, Infants and Children (WIC), established in 1972, directly aids low-income pregnant and lactating women and young children by providing nutritional counseling and food vouchers for items including eggs, cheese, milk, tuna, carrots and iron-fortified infant formula. Widely used and broadly supported, WIC has a current annual budget of \$6.2 billion. Since the first WIC office opened in Kentucky in 1974, the number of WIC participants has grown from 88,000 to 8.7 million in 2009. A number of previous studies have found that pregnant women who participate in WIC give birth to healthier babies than those who do not.

In **Is a WIC Start a Better Start? Evaluating WIC’s Impact on Infant Health Using Program Introduction** (NBER Working Paper No. 15589), researchers **Hilary Hoynes**, **Marianne Page**, and **Ann Huff Stevens** provide new evidence on the link between infant birth weight and maternal participation in the WIC program. Using the gradual introduction of WIC programs across 2,059 counties between 1972 and 1982

to frame their research, they compare average birthweights within counties before and after WIC adoption. Because some counties adopted WIC earlier than others, the authors are able to disentangle

the effects of implementing WIC from the underlying time trend in infant health.

The authors find that in counties and years where the WIC program was implemented, infant health improved. They observe that birth weight outcomes are important, both in their own right and as predictors of later health and socioeconomic success. Analyzing mean birth weight (in grams) and the fraction of newborns classified as “low birth weight” (less than 2,500 grams), they find that WIC availability increased average birth weight by a statistically significant 2.7 grams. When the results are scaled to reflect that only a minority of eligible mothers actually choose to receive WIC, these results suggest that average birth weight among WIC participants increased by approxi-

mately 29 grams, or 10 percent.

Educational data on birth certificates helped the authors identify groups for whom WIC participation is higher, and therefore the effects of WIC introduc-

“In the population that...received WIC assistance, average birth weight increased by approximately 29 grams, or 10 percent.”

tion should be greater. They find that among women with less than a high school education, the availability of WIC food aid increases their infants’ average birth weight by 7 grams. They also find that as the mother’s educational level increases, the effect of participating in WIC declines, as expected. In addition, they find that the impact of WIC introduction is concentrated in counties with the highest poverty rates. Finally, “WIC access appears to have no impact on the percent of births to mothers with less than a high school education or on the fraction of births to minority mothers,” the authors write, making it unlikely that their results are driven by changes in the composition of children born after the program started.

—Sarah H. Wright

NBER

The National Bureau of Economic Research is a private nonprofit research organization founded in 1920 and devoted to objective quantitative analysis of the American economy. Its officers are:

James M. Poterba—President and Chief Executive Officer

John S. Clarkeson—Chairman

Kathleen B. Cooper—Vice Chairman

The NBER Digest summarizes selected Working Papers recently produced as part of the Bureau’s program of research. Working Papers are intended to make preliminary research results available to economists in the hope of encouraging discussion and suggestions for revision. The Digest is issued for similar informational purposes and to stimulate discussion of Working Papers before their final publication. Neither the Working Papers nor the Digest has been reviewed by the Board of

Directors of the NBER.

The Digest is not copyrighted and may be reproduced freely with appropriate attribution of source. Please provide the NBER’s Public Information Department with copies of anything reproduced.

Individual copies of the NBER Working Papers summarized here (and others) are available free of charge to Corporate Associates. For all others, there is a charge of \$5.00 per downloaded paper or \$10.00 per hard copy paper. Outside of the United States, add \$10.00 per order for postage and handling. Advance payment is required on all orders. To order, call the Publications Department at (617) 868-3900 or visit www.nber.org/papers. Please have the Working Paper Number(s) ready.

Subscriptions to the full NBER Working Paper series include all 700 or more papers published each year.

Subscriptions are free to Corporate Associates. For others within the United States, the standard rate for a full subscription is \$7000; for academic libraries and faculty members, \$5735. Higher rates apply for foreign orders. The on-line standard rate for a full subscription is \$1800 and the on-line academic rate is \$750.

Partial Working Paper subscriptions, delineated by program, are also available. For further information, see our Web site, or please write: National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.

Requests for Digest subscriptions, changes of address, and cancellations should be sent to Digest, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398. Please include the current mailing label.