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The New Economy in Historic Perspective

The modern world was made possible by a set of "great inventions" discovered during 1860-1900, including electricity, the internal combustion engine, the telephone, phonograph, motion pictures, and a host of subsidiary inventions, including air transport. In turn, the great inventions made possible the great spurt of growth in U. S. productivity, often called the "golden age," between 1910 and 1970. Will recent inventions like the computer, telecom gear, and the Internet spur a major economic transformation as did the great inventions of the past? In part thanks to information technology and the "New Economy," the United States has experienced a marked acceleration in productivity growth since 1995 that has convinced a number of economists, journalists, and researchers that American indeed is on the verge of another industrial revolution.

Yet NBER Research Associate **Robert Gordon*** is deeply skeptical. In a paper rich with economic analysis and historic research, **Does The "New Economy" Measure Up to the Great Inventions of the Past?** (NBER Working Paper No. 7833), he questions the more extreme New Economy claims. Gordon doesn't doubt that U.S. productivity improved in recent years, but he carefully argues that the long-term improvements in productivity and living standards are incremental compared to the cluster of inventions that

fundamentally changed the economy and society at the turn of the previous century. "Our central theme is that computers and the Internet do not measure up to the Great Inventions of the late nineteenth and early twentieth century, and in this do not merit the label of 'Industrial Revolution,'" he writes.

The New Economy productivity gains of recent years are real, but largely confined to the durable manufacturing sector, including the making of computers

manufacturing.

Gordon also finds that the computer, telecom, and Internet technologies pale next to the five "great inventions" of 1860 to 1900. Electricity, the internal combustion engine, the chemical and pharmaceutical industries, the entertainment, information, and communication industries, and the rise of an urban sanitation infrastructure defined the Second Industrial Revolution of 1860 to 1900. These innovations not only led to a dra-

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and semi-conductors. Yet that industrial sector only comprises 12 percent of the economy. The New Economy productivity increases haven't spread to the remaining 88 percent of the economy. Dissecting the 1.35 percentage point acceleration in productivity growth achieved in 1995-9 as compared to 1972-95, Gordon calculates that 0.54 of that acceleration is unsustainable, reflecting a temporary upsurge in the growth of output that cannot continue. The remaining, sustainable part of the acceleration has occurred only within the durable manufacturing sector (including the production of computers), leading to the surprising conclusion that the trend in multi-factor productivity (MFP) has actually slowed since 1995 outside of durable

matic upsurge in productivity from 1913 to 1972, but they also changed everyday life. In the last third of the 19th century, city streets were filthy, a chaotic mass of horse drawn carriages and wandering pigs. Railroad accidents were frequent, and urban sanitation abysmal. For instance, in 1882, only 2 percent of New York City houses had water connections. For many workers, conditions in factories and sweatshops were Dickensian. Yet, thanks to the great inventions of the turn of the century, a fundamental divide opened between work and home life in the late nineteenth century and the twentieth—and for the better. The gains in productivity and living standards affected all of society. To give just one telling example: Electricity revolutionized the

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manufacturing process and working conditions, and led to generation of consumer appliances that eliminated manual laundry (washing machines), reduced food spoilage (refrigeration), and opened the southern United States for modern economic development (air conditioning).

The computer and the Internet don't measure up by this tough standard. The drop in computer prices and the quality enhancements have been stunning. Yet time is an important brake on the transforming power of computers. As Gordon notes, he can't think or type any faster than he did on his 1983 personal computer that operated with 1/100th of the memory and 1/60th of the speed of his present model. Much of the economic activity involving the Internet, while dazzling, is little more than a substitution of one form of entertainment or communication for another.

Gordon's careful investigation into the New Economy builds on the insights of

an earlier paper, **Interpreting The "One Big Wave" In U.S. Long-Term Productivity Growth** (NBER Working Paper No. 7752). Economists have written hundreds of papers attempting to understand the abrupt slowdown in U.S. productivity growth some three decades ago. Gordon changes the focus of research by asking a different question. He notes that the slow productivity growth of the last part of the twentieth century is a resumption of slow productivity growth in the late 19th century. The mystery to be explained, he says, is the post-1913 surge in productivity growth that lasted until the beginning of the 1970s. "In explaining the big wave, we give primary attention to the many great inventions of the late 19th and early 20th century," he writes.

The paper is largely devoted to making adjustments in MFP measurements back to 1870, including taking into account the shifting mix of the labor force in terms of education and gender as well as adding types of capital owned by the govern-

ment but valuable to the private sector. The "big productivity wave" remains, although his new MFP series grows somewhat more slowly than previously reported, and the upsurge in productivity growth begins earlier than in standard data, continuing at a steady pace between 1891 and 1972 rather than peaking in 1928-50.

Again, the explanation for the productivity gains prior to 1970 lies mostly with the cluster of inventions developed from 1860 to 1900. A complementary explanation is that the closing of American labor markets to immigration, and of goods markets to trade, between the 1920s and 1960s gave a boost to real wages which, in turn, made labor expensive and promoted productivity growth. The post-1972 slowdown in productivity growth coincided with a reopening of labor markets to immigration and of goods markets to foreign trade.

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Does the Tax Code Influence CEO Compensation?

Reacting to public and political scrutiny of high CEO compensation, Congress enacted legislation in 1993 to limit the corporate tax deductibility of executive pay. But a recent study by **Nancy Rose*** and **Catherine Wolfram**** indicates that this legislation had no significant effect on overall executive compensation levels.

In **Regulating Executive Pay: Using the Tax Code to Influence CEO Compensation** (NBER Working Paper No. 7842), the authors use data on nearly 1400 publicly traded U.S. corporations and examine the effect of "Section 162(m)," which limits the corporate tax deduction for compensation paid to the CEO and the next four highest-paid executive officers to \$1 million per person. This cap represented roughly the median level of total compensation for large firms' CEOs at the time the legislation was enacted. Two exceptions are noteworthy. First, the limit applies only to the five named executive officers of the firm as of the end of the fiscal year. This creates the possibility of using post-retire-

ment or deferred compensation to mitigate the effect of the tax limits. Some corporations have in fact restructured executive compensation to take advantage of this.

Second, Section 162(m) included an

"The legislation consequently has had relatively little real impact on overall compensation."

exemption for "qualified performance-based compensation." Firms may continue to claim tax deductions in excess of \$1 million for compensation under shareholder-approved plans that link pay to objective measures of firm performance and are administered by a committee of "outside" directors on the Board. Three-quarters of all the firms studied by Rose and Wolfram qualified some type of compensation for this exemption, and roughly 40 percent of the firms affected by the pay cap qualified both bonus and stock options plans for exemption. Salary payments are considered non-performance-based by definition, and are therefore entirely subject to the \$1 million cap.

Rose and Wolfram find that Section 162(m)'s limit on the deductibility of executive pay slowed salary growth and compressed executive salaries around the \$1 million cap, but had little effect on bonus payments, stock option awards,

and long-term incentive pay. The authors conclude that the legislation consequently has had relatively little real impact on overall compensation, and note that this is "consistent with the views expressed by many compensation consultants and corporate directors." This may reflect dilution of politicians' original intent to limit executive pay in the final legislation, and suggests that corporate pay decisions are better insulated from "blunt political pressure" than from direct stakeholder pressure brought to bear on individual firms.

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Hope Program Increases College Attendance, but also Widens Racial Gap

The federal government and the states have recently ushered in a new generation of student aid policies. These new programs differ from traditional, need-based student aid in one crucial dimension: they are aimed not at low-income students but at the middle class. For example, the federal Hope Scholarship and the Lifetime Learning Credit, which offer tax benefits of up to \$1,500 a year to families of college students, are unavailable to those too poor to pay taxes. Similarly, the tax-advantaged college savings plans recently introduced by the federal government and by 41 states are most attractive to high-income families, who have the highest marginal tax rates and saving rates.

How will this new type of student aid affect college attendance rates? Will aid to middle- and high-income families actually increase college attendance, or are the new programs simply transfers to students who would have gone to college anyway? In **Hope for Whom? Financial Aid for the Middle Class and Its Impact on College Attendance** (NBER Working Paper No. 7756) **Susan Dynarski*** estimates the impact of subsidies on the college attendance of middle- and upper-income youth by evaluating Georgia's HOPE (Helping Outstanding Students Educationally) Scholarship, the inspiration for the federal Hope Scholarship.

She finds that Georgia's program has had a surprisingly large impact on college attendance, increasing the college attendance rate of 18- to 19-year-olds by 7 to 8 percentage points. Georgia's program also has widened the gap in college attendance between blacks and whites and between those from low- and high-income families. The federal Hope Scholarship, if it has its intended effect on middle- and upper-income attendance, also will widen already large racial and

This increase is concentrated among Georgia's white students, who have experienced a 12.3 percentage point rise in their enrollment rate relative to whites in nearby states. The black enrollment rate appears unaffected by HOPE. The differential impact of HOPE on blacks and whites is likely attributable to the focus of HOPE on middle- and upper-income students who perform well in high school. In particular, during the period under study, HOPE provided almost no benefits to the

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income gaps in college attendance in the United States, Dynarski concludes.

In 1993, Georgia initiated the HOPE Scholarship, which is funded by a state lottery. The program pays for tuition and fees at Georgia's public colleges for state residents who maintain at least a B average in high school and college. Using data from the Current Population Survey, and a set of nearby states as a control group, Dynarski finds that among those youth most likely eligible for Georgia HOPE, the attendance rate has risen by nearly 11 percentage points relative to attendance of a similar population in nearby states.

lowest-income students, since the scholarship was reduced dollar-for-dollar by other sources of aid including the need-based Pell Grant.

Dynarski cautions that the results of the Georgia analysis should be applied cautiously to other programs, such as the federal Hope Scholarship. Key institutional differences between the Georgia and federal subsidies suggest that the impact of the federal Hope Scholarship may be less than what Georgia experienced with its program.

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Explaining the Mysteries of International Trade

Goods shipped from one country to another incur an array of costs. These include but are not limited to transport charges, currency conversion costs, tariffs, and an assortment of "nontariff" expenses, such as those associated with meeting country-specific product standards. The conventional wisdom has been that these costs of transactions in goods markets, while having some effect on trade flows, have little to do with the apparent failure of international capital markets to reach nearly the same degree of integration as domestic ones, even

across OECD countries. But NBER Research Associates **Maurice Obstfeld** and **Kenneth Rogoff** contend that, in fact, trade costs have profound and surprising indirect effects on inhibiting capital market integration.

In **The Six Major Puzzles in International Macroeconomics: Is There a Common Cause?** (NBER Working Paper No. 7777) they show that international trade costs are the central actor in a range of economic dramas whose plot twists have confounded experts for quite some time. These include, according to the authors, the fact that, free trade notwithstanding, con-

sumers in the industrialized world consistently display a "strong preference" for domestically produced goods. Similarly, while globally integrated financial markets would seem to inspire a bit of wanderlust in investment capital, the bulk of a country's savings don't stray across borders but, over the long term, are invested at home, and in homegrown equities. "Remarkably, we find that once one allows for trade costs in goods markets," a host of puzzling market behaviors seem less mysterious, they write.

For example, Obstfeld and Rogoff find that the "cost of international trade can dramatically skew domestic consumption

in favor of home-produced goods." This insight clarifies previously unexplained findings, like the fact that U.S. investors hold only about 11 percent of their equity wealth in foreign stock markets despite the conventional wisdom that international diversification is prudent. Trade costs also play a role in showing how exchange rate swings can induce such large and persistent discrepancies in countries' relative price levels and in the relative prices of similar internationally tradable goods—as the euro's sharp

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depreciation against the dollar is doing right now.

In addition, though it may seem highly esoteric to the layman, Obstfeld and Rogoff's study is getting considerable attention because it holds out trade costs as the solution to what some economists consider the "mother of all economic puzzles:" the fact that in developed countries, national savings don't usually flow to other parts of the world where they might get a better rate of return but, for the most part, stay at home as investment. In other words, while there may be periods of large cross-border capital flows — such as the United States is now experiencing, where the amount of goods and investment flowing into this

country versus what's going out has produced a "current account deficit"—these are temporary phenomena. Despite the current hand wringing about the size of the U.S. current account deficit, what surprises economists is that such deficits are actually relatively small when compared to total national savings and investment. Furthermore, over the long term, the deficits rarely get very big before a correction takes place.

Obstfeld and Rogoff argue that there is a good reason why, ultimately, foreigners

finance so little domestic investment and that, as a result, account balances stay in a relatively narrow range. They contend that the "friction" generated by trade costs doesn't just show up in the price of imported products. They find that as a country increases consumption of foreign goods, trade costs aggravate the current account balance in a way that threatens to escalate the real domestic interest rate.

Obstfeld and Rogoff conclude that the mere prospect of high interest rates is enough to prompt "trade reversals." In this situation, imports are increasingly replaced by domestically produced "substitutes," which in turn leads to a reduction in foreign investment and a reduction in the account deficit. The

authors find similarly complex forces at work in equities markets, with problems introduced by trade costs—and their effect on such things as the ability of foreign investors to "repatriate" their dividends — explaining why stock investors maintain a preference for home assets.

Finally, they believe that trade costs should be considered by economists who are having a hard time understanding why growth in consumption is still highly variable from one developed country to another, despite the fact that integrated financial markets should produce a more consistent rate. (Obstfeld and Rogoff note that trade costs likely are an important ingredient in resolving issues surrounding the impact of exchange rates. But they admit they lack the kind of compelling evidence of their influence found for the other "puzzles.")

The analysis suggests that the problems created by trade costs might explain why markets have not become more fully integrated than would otherwise be expected, given the progressive drop in barriers to trade and investment. From this prospective, anything that can be done to reduce trade costs should have significant implications for trade and investment flows and, in turn, global economic growth.

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