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Benefits of Newer Prescription Drugs Exceed their Costs

Americans' spending on prescription medication has grown significantly since the mid-1980s. Although the use of prescriptions is increasing, another important factor in the rapidly rising outlay for drugs is that newer, more expensive drugs are replacing older drugs. A recent health care study estimated the average 1998 price for drugs introduced in 1992 or later was \$71.49 per prescription, compared to \$30.47 for previously existing drugs. And, although price increases are generally not viewed favorably, a new paper by NBER Research Associate **Frank Lichtenberg** suggests some definite benefits from the more costly newer drugs. In **The Benefits and Costs of Newer Drugs: Evidence from the 1996 Medical Expenditure Panel Survey** (NBER Working Paper No. 8147), the author investigates how much of the difference between new and old drugs reflects changes in quality.

Lichtenberg uses data from the 1996 Medical Expenditure Panel Survey (MEPS), a national health care investigation, to provide evidence of drug age (measured as the number of years since the FDA approved the drug) on health conditions and total medical expense. The data include comprehensive

health care use and cost information from 22,061 people and 171,587 prescription observations. More than half of the drugs taken in the 1996 study were approved before 1980, and over one-fourth were approved before 1950. Lichtenberg controls for numerous characteristics — length of illness, education level of the patient, and insurance status for example — which might correlate with the age of the prescription

ity, and total non-drug medical costs. People taking new drugs were significantly less likely to die by the end of the survey than those taking the older medications. They were also significantly less likely to miss days at work than people taking old drugs.

Perhaps the most striking finding is that reducing the age of drugs cuts all types of non-drug medical expenses: hospital stays, office vis-

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drug and thus bias the results.

Confirming past research, Lichtenberg finds that replacing an old prescription with a new one would increase the cost of the prescription. According to his results, as an illustration, replacing a 15-year-old drug with a 5.5-year-old drug would increase the prescription cost by about \$18. But his analysis finds that replacing older drugs with newer counterparts would have several important benefits: reductions in mortality, morbid-

its, outpatient visits, dental visits, and emergency room visits. The biggest reduction is in hospital expenditures, which account for nearly 42 percent of total medical expense. Replacing 1,000 old prescriptions with 1,000 new prescriptions will increase drug costs by \$18,000 but will reduce the number of hospital stays by nearly six. Since the average cost of a hospital stay is \$7,588, a total reduction of \$44,469 in hospital costs could be expected. Even larger hospital cost savings

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result because use of new drugs reduces average length of stay as well as the number of stays. The total reduction in non-drug medical expenses is about four times the increase in the costs of the drugs — so reducing the age of drugs substantially reduces the total cost of treatment.

As a final caution, the author offers advice countering a prevailing sentiment that individuals should use less expensive generic drugs to reduce health costs. Lichtenberg warns that “denying people access to branded drugs would increase total treatment costs, not reduce them, and would

lead to worse outcomes.” He reasons that the average age of generic drugs is much older, at 38 years, versus 23 years for brand name drugs. The motto, “cheapest is always best,” does not apply, as a rule, to prescription drugs.

— Marie Bussing-Burks

Technology and Productivity Growth

Productivity is one of the most closely watched indicators of long-term economic prospects. Rising productivity is the key to making possible permanent increases in the standard of living. In **Productivity Growth in the 1990s: Technology, Utilization, or Adjustment** (NBER Working Paper No. 8359), authors **Susanto Basu, John Fernald, and Matthew Shapiro** present new estimates of the role of technological change in creating the unusual increases in measured productivity during the second half of the 1990s.

Changes in technology are the only source of permanent increases in productivity, but a number of transient factors can affect both true and “measured” productivity. For example, workers may work harder during periods of high demand and firms may use their capital assets more intensively by running factories for extra shifts; both factors can lead measured productivity to be too high relative to actual technological progress. Similarly, during periods of high demand, productivity can rise because firms take advantage of increasing returns to scale; the authors argue that this effect is not permanent and should be discounted when measuring long-run technical change. The strength of the latest economic expansion in the second half of 1990s has led many commentators to argue that the rapid increases in measured productivity during that period were attributable to bad measurement or to temporary factors of this type.

The expansion that began in the 1990s also is distinguished by a large

and long-lasting increase in business investment. Although labor force employment, labor force participation, and rates of unemployment have been comparable to what occurred in earlier expansions, the share of investment in information technology rose from a baseline of roughly 3 percent of GDP in the late 1980s to almost 6 percent of GDP by 1999. The authors suggest that this unusually rapid rate of investment actually may lead measured productivity growth to under-

growth rate of 2.5 percent, because of the temporary damping effect of higher investment on productivity growth noted above.

In the aggregate, the authors conclude, there is “evidence of a substantial increase in the pace of technological change in the latter half of the 1990s.” More intensive use of capital and labor accounted for some of the increase in measured productivity in the first half of the 1990s, but that utilization was flat or declining over the second half.

“The strong performance of productivity growth in the second half of the 1990s was in fact attributable to accelerating technical change, not to poor measurement or to temporary factors.”

state the underlying rate of technical change — because rapid capital investment disrupts firms’ ability to produce output, for example because their workers often are diverted from their normal tasks to install new equipment and learn to use it effectively. These “adjustment costs” lower output growth, and thus lower measured productivity growth as well.

Controlling for this range of confounding effects, the authors find that the strong performance of productivity growth in the second half of the 1990s was in fact attributable to accelerating technical change, not to poor measurement or to temporary factors. They find that in the first half of the 1990s, true technology grew at an annual rate of 1.2 percent, but this rate rose to 3.1 percent for the 1995-9 period. In fact, the rate of technical change over 1995-9 exceeded even the measured

Adjustment costs masked a substantial fraction of the increases in true technology that occurred in the second half of the 1990s.

These results also suggest that productivity increases were distributed widely, if unevenly. Durable manufacturing experienced the fastest rate of technology growth and its largest acceleration, with increases of over 6 percent per year during the second half of the 1990s. Technological growth in the private non-manufacturing sector—which includes the large and important service sector—increased from 0.9 percent to 2.7 percent over the same period. In non-durable manufacturing, however, technology growth was “very slow,” although the authors suggest that this result may arise from data problems at the end of the sample.

— Linda Gorman

Financial Liberalization Spurs Growth

Does financial liberalization spur growth? The answer, according to a recent NBER Working Paper by **Geert Bekaert, Campbell Harvey, and Christian Lundblad** is “yes.” Equity market liberalization, the researchers show, leads to a one percent increase in a country’s annual growth rate over a five-year period. Traditional approaches to understanding economic growth have overlooked the importance of financial liberalization — that is, primarily, opening the equity market to foreign investors — but its effect cannot be accounted for by macroeconomic factors or broader measures of financial development.

In **Does Financial Liberalization Spur Growth?** (NBER Working Paper No. 8245), the authors explore the relationship between equity market reform and growth. They suggest a number of ways in which financial liberalization can contribute to increased growth. For example, improved risksharing may lower the cost of capital, leading to greater investment and higher risk/higher return projects. Open capital markets also may mean more efficient capital markets and in general increase financial development.

The researchers then show that in a large sample of countries over a period since 1980, financial liberal-

ization leads to a one percent increase on average in a country’s annual growth rate over a five-year period. This result is subjected to a number of tests, including changing the liberalization dates, different groupings of countries and different regional indicators, and is still shown to be robust.

Following a financial liberalization, the ratio of investment-to-GDP rises while the consumption-to-GDP ratio falls and the trade balance worsens; this suggests that foreign capital inflows are invested rather

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than consumed. Moving away from their average result, the researchers show that across countries, a large secondary school enrollment, a small government, and an Anglo-Saxon legal system enhance the effect of liberalization.

Much of the current research on economic growth has been framed in the context of a debate about “convergence” between low-income and high-income countries. Earlier studies found a positive relationship between the initial level of income per capita and subsequent growth

— and therefore that there was no convergence effect — and that a wealthy country would enjoy faster growth rates in the future.

More recently Robert Barro, holding constant initial levels of human capital and other determinants of the steady state level of per capita GDP, has shown that poorer countries do grow faster than wealthy countries, a conditional convergence effect. Jeffrey Sachs’s work emphasizes that policy choices — such as respect for property rights and openness to international trade

— are particularly important determinants of long-term growth prospects; this suggests that poor countries can become part of the “convergence club” by implementing appropriate policies. Government policies for example might ensure a climate in which technological advances can thrive. Bekaert, Harvey, and Lundblad show that financial liberalization is an important policy choice that may lead countries into the convergence club.

— Andrew Balls

Growth and Recovery in East Asia

In the modern history of economic upheavals, the East Asian financial crisis that began in 1997 with the fall of the Thai baht surprised economists in two ways: first, for the massive damage it inflicted upon Indonesia, Korea, Thailand, Malaysia, and the Philippines, and, second, for how quickly these countries bounced back from the battering.

In **Recovery and Sustainability in East Asia** (NBER Working Paper No. 8373), **Yung Chul Park** and **Jong-Wha Lee** assert that the reason the so-called “Asian Tigers” went down so hard yet came up

fighting so fiercely is that the crisis was relatively brief and the effected economies were fundamentally healthy. “Although the financial crisis of 1997 abruptly brought a halt to Asia’s period of robust growth, there was little in Asia’s fundamentals that inevitably led to the crisis,” the authors state.

The main reason the crisis erupted with such severity, Park and Lee argue, is that East Asian countries had “too much short-term capital flowing into weak and under-supervised financial systems,” and thus set themselves up for a sudden and sharp upheaval that was “in large

measure a liquidity crisis caused by investor panic.” But the authors contend that once the panic ended and a measure of stability (that is, liquidity) returned, the crisis countries were able to quickly recover, aided by “a large real (currency) depreciation, expansionary monetary and fiscal policy, and an improvement in the global economic environment.” But more fundamentally, note Park and Lee, the countries were still in possession of the same qualities that earned many of them double-digit growth rates pre-crisis: “high rates of saving, good human resources, trade open-

ness, and maintenance of good institutions.”

Park and Lee observe that an analysis of other countries that have undergone currency crises shows a pattern in which an initial drop in growth is followed by a return, after about three years, to “pre-crisis or non-crisis growth rates.” They note that East Asian countries appear to be following a similar pattern, albeit in a more dramatic fashion on both ends. Thus, they predict that in the long-term East Asian countries will go from a pre-crisis average annual growth rate of 7 percent to around 5 percent. However, the authors point out that the lower growth is attributable not to the crisis but to the fact that some of the high growth in the past came as East Asian countries made improvements to put themselves on par with their more industrialized peers. Now that they’ve narrowed the gap, Park and Lee believe, there will be less growth realized simply as a result of “catching up.”

Ultimately, they remain convinced that “there is no evidence for a direct impact of a currency crisis on long-term growth...This suggests that with a return to the core policies that resulted in rapid growth, the East Asian economies

can again returned to sustained growth,” the authors state.

NBER Research Associate Robert Barro agrees that there is “broad evidence” to be gleaned from other crises bolstering the notion that East Asian countries will return to growth rates “that would have prevailed” without crisis. But in his study, **Economic Growth in East Asia Before and After the Financial Crisis** (NBER Working Paper No. 8330), he looks at investment rates and stock market prices

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post-crisis and finds reasons to be concerned that the five East Asian crisis countries could become the exception to the rule.

“The failure of investment ratios to rebound significantly in the crisis countries suggests that the crisis had a long-term adverse effect,” writes Barro. “This conclusion is reinforced by the observation that real stock market prices in the crisis countries have failed to re-attain their pre-crisis values.”

Barro finds that in four of the five countries that suffered the sharpest contractions in the crisis — Indonesia, South Korea, Malaysia,

and Thailand — investment as a share of GDP dropped by more than 10 percent in 1998 and did not recover substantially in either 1999 or 2000. (The fifth country, the Philippines, already had a low investment ratio and the reduction post-crisis was relatively small.)

As for stock prices, Barro notes that in the crisis countries, stock valuations at the end of 2000 fall far short of those from early 1997. And he views the lack of anything approaching a recovery as a clear

signal from the financial markets that investors are bearish on long-term growth prospects. “From the perspective of the financial markets, events from 1997 through 2000 had permanent negative consequences for the economic outlook of the five Asian-crisis countries,” he writes.

Barro agrees that the “recoveries in the five countries in 1999-2000 were strong in most cases” but concludes that it is “unclear whether” the wounds inflicted by the crisis will quickly heal or continue to fester for sometime to come.

— Matthew Davis

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