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Fixed Exchange Rates Do Not Guarantee Stable Prices

"Fixed exchange rates now seem much less effective as means to price stability than many of us thought before," **Lars E. O. Svensson** concludes in a recent NBER study prepared after the 1992-3 collapse of the European Exchange Rate Mechanism (ERM), the system of exchange rate cooperation within the European Monetary System. "Therefore, monetary stability and credibility has to be built at home with other means. A move to flexible exchange rates makes it no less essential for a price stability policy to build monetary credibility."

In **Fixed Exchange Rates as a Means to Price Stability: What Have We Learned?** (*NBER Working Paper No. 4504*), Svensson recounts the lessons of 1992-3, when eight ERM currencies and three in the Nordic countries outside the ERM came under attack, all but three were floated or devalued, and for those three the ERM band was widened to plus or minus 15 percent. He concludes that fixed exchange rates are more fragile and difficult to maintain than previously thought, and may even be in conflict with price stability.

According to Svensson, a number of facts explain the collapse of the fixed rate system. First, capital markets were deregulated and capital controls were removed as part of the EC's 1992 Single Market Program. Turnover on the global foreign exchange market tripled between 1986

and 1992. Central bank foreign exchange reserves were small in relation to the huge turnover on foreign exchange markets, suggesting that central bank foreign exchange interventions alone could not withstand speculative attacks.

Second, real exchange rates diverged because domestic inflation was too high in some countries. This inflation occurred in response to wage and price shocks caused by a combination of lack of monetary credibility, loose fiscal policy, and an inflation bias in wage formation. The resulting tension had to be resolved, either through lower inflation or exchange rate depreciation.

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Third, real economic shocks hit only certain countries, requiring their real exchange rates to adjust: that is, the prices of those countries' goods had to change relative to the prices of the other countries' goods. German unification was the most obvious real shock to hit one of the ERM members. A second example was the Finnish loss of exports to the former Soviet Union: during 1991 alone, Finland's exports to the Soviet Union dropped from 13 percent to 5 percent of total exports.

Further, some of the countries might have expected and looked forward to a more expansionary monetary policy after the collapse of the fixed exchange rate system, Svensson explains. In addition, the tactical defense against speculative attacks against a currency turned out to be more difficult than anticipated.

Svensson concludes that "fixed exchange rates may be a complement to monetary stability and credibility at home, as they appear to be for Austria and the Netherlands, although they are certainly not a substitute. They are simply neither necessary nor sufficient for credible price stability." However, with *flexible* exchange rates, it is even more important to build monetary credibility, he emphasizes. "A low and stable inflation provides the best environment for efficient resource allocation and growth, and it prevents the arbitrary and unfair wealth redistributions associated with high and variable inflation." Building monetary credibility includes "an institutional reform making price stability the goal of monetary policy and increasing the independence of the central bank."

Energy Taxes Are More Costly to the Economy Than Income Taxes, But Help the Environment More

According to a recent NBER study by Lawrence Goulder, taxes on gasoline consumption or on the BTU content of fuels are more costly to the economy than increases in personal or corporate income taxes designed to raise the same amount of revenue. But the energy taxes lead to reductions in emissions of pollutants at least nine times larger than those induced by the income tax increases.

In **Energy Taxes: Traditional Efficiency Effects and Environmental Implications** (*NBER Working Paper No. 4582*), Goulder applies both theory and simulation analysis to address the relative economic and environmental impacts of energy and income taxes. He analyzes four tax policies set to yield equal increases in revenue: a BTU tax on oil, natural gas, and coal; a per-unit tax on consumer purchases of gasoline; an increase in marginal rates of the personal in-

come tax; and an increase in the corporate income tax rate. He calculates that within the first 12 years following implementation, the energy taxes imply larger reductions in GDP than increased income taxes that produce the same revenue. The energy tax policies also lead to larger losses in consumption than the income taxes.

Goulder compares the welfare costs of energy taxes and income taxes (apart from the costs related to the environment), too. He finds that energy taxes reduce economic welfare more than income taxes do. "The excess costs of energy taxes are due partly to their relatively narrow tax base," he explains. While the narrow base is useful in concentrating the tax on activities that pollute, it implies large economic costs.

"Energy taxes imply larger reductions in GDP than increased income taxes that produce the same revenue."

Another reason for the excess costs of energy taxes is that the BTU tax is applied to gross output, while the income tax is levied on net output. Goulder estimates that taxes on gross output are similar to income taxes in the magnitude of distortions they produce in labor and capital markets. But taxes on gross output involve additional distortions, which make them more costly overall than income taxes. The gasoline tax, in contrast, is levied on consumption rather than income, giving it an advantage over income taxes, and mitigating its excess costs.

On the environmental side, for eight major air pollutants that Goulder considers, the energy taxes induce emissions reductions at least nine times larger than those under the income tax alternatives. So, "while the BTU and gas taxes considered are inferior to the alternatives on narrow efficiency grounds, they are superior on environmental grounds." To establish whether the relative environmental benefits of energy taxes are large enough to offset their higher costs in nonenvironmental dimensions, future research will have to be done.

Small Business Job Creation Is Overstated

Claims about the job-creating prowess of small business appear with remarkable regularity

ty in speeches by prominent politicians, newspaper columns by leading opinionmakers, statements from the U.S. Small Business Administration (SBA), and assessments by well-known economic analysts. These claims conjure up the image of an economy in which large firms inexorably shrink, while small firms struggle valiantly to replenish the stock of jobs. But in a recent NBER study, **Steven Davis, John Haltiwanger, and Scott Schuh** find that this conventional wisdom about small business job creation rests on misleading interpretations of the data, caused by two statistical fallacies and a confusion between net and gross job creation.

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In **Small Business and Job Creation: Dissecting the Myth and Reassessing the Facts** (*NBER Working Paper No. 4492*), the three economists examine the relationship between employer size and job growth in the U.S. manufacturing sector from 1973 to 1988. Using the U.S. Census Bureau's longitudinal database, they find that large employers account for most newly created manufacturing jobs. Plants that averaged at least 100 employees accounted for nearly three-quarters of gross job creation, and firms with at least 500 employees accounted for more than half of job creation.

Moreover, larger employers offer greater job durability for both new jobs and the typical existing job. The one-year survival rate for newly created jobs at the biggest manufacturing firms is 76 percent, compared with only 65 percent at the smallest firms. The one-year survival rate for all jobs at the biggest firms is 92 percent, compared with only 81 percent at the smallest firms.

The authors explain that one common method of calculating the contribution of small business to job creation is to divide the net change in employment among small businesses (defined by the SBA, for example, as firms with fewer than 500 employees) by the total net change in employment. But firms can migrate between size categories from one year to the next. What appears to be a new small firm is often just a large company that shrank. Further, migration from the large- to small-business category is especially

common during periods of low growth in total employment. This pattern can create the illusion of a booming small-firm sector. As a result, small business *appears* to contribute 90 percent of job growth.

Second, companies classified as large in the previous year, on average, are more likely to have experienced a recent transitory increase in employment. Because transitory movements reverse themselves, companies classified as large are relatively likely to contract. Likewise, firms classified as small in the previous year are more likely to expand. The phenomenon of regression to a company's own long-run size creates the illusion that small firms systematically outperform large firms. So the authors calculate the relationship between plant size and growth in the manufacturing sector using alternative definitions of plant size, and find no relationship between plant size and the employment growth rate.

Finally, Davis and his coauthors conclude that studies that focus on the share of net job growth accounted for by small businesses badly distort the overall jobs picture, and hide the enormous number of new jobs created by large employers. A more accurate job creation picture emerges by looking at gross rather than net job creation, they find.

Capital Accumulation and Employment Rise Explain East Asian Growth

There are two primary sources of economic growth: increasing the quantity of factors of production, and increasing the efficiency with which those factors are used. In **The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience** (*NBER Working Paper No. 4680*), **Alwyn Young** concludes that the accumulation of factors of production explains most of the output growth in the newly industrializing countries (NICs) of East Asia. Increases in productive efficiency play a much smaller role.

Young calculates that between 1966 and 1990, total factor productivity growth in the non-agricultural economy of the NICs ranged from a low of -0.3 percent in Singapore to a high of 2.3

percent in Hong Kong. In manufacturing, he estimates, total factor productivity growth ranged from a low of -1 percent per year in Singapore to a high of 2.9 percent in South Korea. Young concludes that these rates of productivity growth in the Asian NICs are well within the range experienced by economies in Latin America and the OECD over similarly long periods of time.

Between 1966 and 1990, output per capita in Singapore grew nearly 7 percent per year, Young notes, but output per worker grew only 4 percent per year. The difference in these two growth rates is attributable to a dramatic rise in labor force participation rates, brought about by a postwar decline in birth rates, and rising rates of female participation. In 1966, 27 percent of the Singaporean population was working; by 1990, 51 percent was working. Similar (although smaller) increases in labor force participation occurred in the other NICs. While output per capita in the NICs grew an average of 6 to 7 percent per year between 1966 and 1990, output per worker grew only 4 to 5.5 percent per year.

Rising levels of educational attainment are also important in explaining growth in the NICs. In 1966, 31 percent of the Korean working population had never attended school, while only 27 percent had at least a secondary education. By 1990, 75 percent had some secondary education or more, while only 6 percent had not attended school. In each of the NICs, there was a doubling, tripling, or quadrupling of the percentage of the working population with at least a secondary education during the 1970s and 1980s. After he accounts for changes in the *quality* of the labor force, Young estimates that output per worker in the NICs actually grew only 3 to 4 percent per year.

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Capital investment also has grown rapidly in the NICs. In Singapore, the investment-to-GDP ratio, in constant dollar terms, went from 11 percent in 1960 to a high of 47 percent in 1984 (after which it fell back to 40 percent). In South Korea, constant dollar investment rates were around 5 percent of GDP in the early 1950s, but approached 40 percent by 1991. In Taiwan, the in-

vestment-to-GDP ratio rose from 10 percent in the 1950s to above 20 percent in the 1970s and 1980s. Only in Hong Kong has the investment-to-GDP ratio been roughly constant. Young estimates that the output per unit of capital input in Singapore, South Korea, and Taiwan has been falling at about 3 percent per year for the past two-and-a-half decades.

The extraordinary growth of manufacturing output in the East Asian NICs, Young emphasizes, was caused in large part by sectoral reallocations of labor. In Singapore, South Korea, and Taiwan, the manufacturing labor force grew a dramatic 6 percent per year for 24 years as labor was reallocated from other sectors, including agriculture. Young finds that, after he accounts for the transfer of labor into manufacturing, labor productivity growth in manufacturing actually underperformed the aggregate economy in both Singapore and Taiwan.

Securities Transactions Taxes Raise Little Revenue

During the 1990 budget negotiations, a plan for a broad-based 0.5 percent tax on transactions in stocks, bonds, and exchange-traded derivatives was proposed. The Congressional Research Service estimated that such a securities transaction tax (STT) might raise \$10 billion in revenue. And in 1993, the Clinton administration proposed a fixed 14 cent tax on transactions in futures contracts and options on futures. But a recent study for the NBER by **John Campbell** and **Kenneth Froot** shows that the estimated revenues from STTs will be overstated if we ignore their behavioral effects.

In **International Experiences with Securities Transaction Taxes** (*NBER Working Paper No. 4587*), Campbell and Froot show that the Swedish and British STTs created incentives for investors to economize on the resources being taxed by shifting trading to foreign markets, or by trading closely substitutable derivative instruments, or by reducing the volume of trade. “Off-shore trading was a particularly important response to the Swedish STT on equity, while investors responded to the Swedish STT on fixed-income instruments by trading untaxed local substitutes,” they write. “The British STT cannot

be avoided by trading abroad, but it does stimulate trading in untaxed substitute assets and also seems to reduce total trading volume to some degree."

The Swedish experience with an STT began in January 1984 with a levy of 50 basis points on the purchase and sale of equities. The initial legislation also included a tax on stock options. In July 1986, Parliament doubled the rates on equity and equity-derivative transactions, and in 1987 broadened the scope to include interdealer trades. On January 1, 1989, a fixed-income turnover tax also took effect, but it was abolished in April 1990. On January 1, 1991, tax rates on the remaining instruments were cut by one-half, and on December 1, STTs were removed completely.

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Unfortunately, data for Sweden prior to 1988 are not available. But when the stock turnover tax was at its maximum level, in 1988 and 1989, there was a high level of offshore trading, Campbell and Froot observe. Foreign investors tended to substitute more toward trading abroad, while domestic investors tended to trade less. The tax on fixed-income instruments created considerable substitution toward other Swedish assets, with little migration offshore. The lesson here, the authors summarize, is that an STT fails when it taxes a transaction with close untaxed substitutes: the Swedish equity transaction tax applied only to transactions using Swedish brokerage services, which are highly substitutable with foreign brokerage services. But the Swedish fixed-income transaction tax was a more dramatic failure; investors did not even have to move offshore, because they were able to find untaxed domestic assets that were close substitutes for the taxed assets.

In Britain, the STT is a "stamp duty": a tax on the registration of ownership of a financial asset. The rate of stamp duty has varied over the years, from a high of 2 percent to a low of 0.5 percent. Stamp duty on U.K. equities raised 830 million pounds in revenue in fiscal 1992-3. But the existence of the stamp duty reduced overall trading in the United Kingdom more than Swe-

den's equity or fixed-income taxes reduced overall trading there.

Campbell and Froot estimate that if the U.S. government imposed a British-style STT at the British rate, trading volume would decrease, and tax revenue would be \$2 billion to \$4 billion annually, not the \$10 billion forecast by the Congressional Budget Office.

The CPI Understates Fall in PC Prices

Prices of personal computers declined rapidly, while their quality improved dramatically, from 1989 to 1992. Yet, whenever there is technological improvement in a given product, such as a computer, standard price indexes tend to underestimate the true price decrease over time. For example, in a recent study for the NBER, **Ernst Berndt, Zvi Griliches, and Neil Rappaport** construct their own quality-adjusted price indexes for PCs and find that price declines were almost 50 percent steeper than more conventional methods had estimated.

In **Econometric Estimates of Price Indexes for Personal Computers in the 1990s** (*NBER Working Paper No. 4549*), the authors point out that any realistic comparison of the price changes in PCs over time must adjust for the quality improvements in later models. But the government's usual method for constructing price indexes, like the Consumer Price Index, is to compare the prices of identical products at two distinct points in time. However, if quality improves over time, then just looking at changes in price fails to capture the whole picture. As the authors show, fewer than one-third of all PC models even survive from one year to the next. The more rapid technological change is, the less likely it is that models will remain unchanged, and the less credible a traditional price index is.

"Conventional techniques for calculating price indexes lead to dramatic underestimates of the rate at which PC prices declined."

In their sample, Berndt, Griliches, and Rappaport include 1,883 computer models sold in the United States between 1989 and 1992. During that period, there were major technical improve-

ments in processor speed, memory, and storage. For example, in 1989 only about one-third of all models contained a 32-bit processor; by 1992, more than three-fourths of models did. Random access memory in the typical machine grew from a little more than one megabyte in 1989 to almost five megabytes in 1992. Hard disk capacity grew from an average of less than 50 megabytes to more than 120 megabytes. And PCs were getting smaller, as the truly portable notebook computer grew in popularity. In this study, the authors estimate separate price indexes for the portable computers and desktop models.

The simplest index they calculate, based on the changes in the average price of PCs from 1989–92, yields an average yearly decline of around 10 percent for desktop models and 11 percent for portables. However, this ignores all aspects of quality improvement, as well as the entry and exit of various models. A slightly more sophisticated index, similar to the government's, which compares like products over time, yields an average annual decline of 19 percent for desktop models. (Given the pace of change in "portables," it is not possible to construct such an index for them for these years.)

By estimating the value of the characteristics

comprising PCs, Berndt, Griliches, and Rappaport are able to calculate some alternative price indexes for both desktop and portable personal computers in 1989–92. For desktop models, their index takes into account speed, memory, storage, and expandability of the computer. They find that the prices of desktop models decreased at an average annual rate of over 30 percent; the rate of price reductions accelerated to around 50 percent in 1992. Further, their calculations reveal a marked decrease over the period in the willingness of consumers to pay extra for a brand name.

For portables, estimates of price change were based on speed, memory, storage capacity, and ease of transportability. The average annual decline in portable PC prices during the four-year period was around 20 percent, they calculate. During 1992, prices declined at a rate in excess of 40 percent. And, the premium for name-brand portable computers disappeared during this period.

Thus, the authors conclude that conventional techniques for calculating price indexes lead to dramatic underestimates of the rate at which PC prices declined. This problem is not unique to personal computers, though, but is common to all products in which quality improves over time.

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