

• **Access to finance** because all investments in new products, services or processes have to be financed in advance of production.

• **Sources of new technological knowledge**, such as the Science and Engineering Base play an important role in shaping innovation systems.

• **Networks and Collaboration.** Firms rely on a variety of knowledge sources as inputs to the innovation process. Networks help them access these.

• **Customers and suppliers.** Demanding customers and suppliers put pressure on firms to deliver better quality goods and services.

It could be argued, with some truth, that a whole host of other factors (such as transport) affect productivity or innovation performance. But in any assessment of this sort the difficulty lies in trying to keep its scope within manageable bounds. This has obviously constrained the choice of success factors, which have been selected on the basis that they seem to be the most important.

MAJOR KINDS OF ECONOMICALLY COMPETITIVE ENVIRONMENTAL FEES

Y.B. Kalenichenko, PhD student

Of government revenue streams commonly labeled taxes, I want to identify three major kinds, each with different functions. These are 1) taxes—compulsory levies for the general purposes of government according to one's ability to pay; 2) user fees—paid by those who use services according to benefits received, direct costs imposed, or wear and damage caused; and 3) environmental fees—which recover the costs of negative externalities that otherwise are imposed on others. For motor vehicle revenues, logic dictates (1) taxes on the commodities themselves as long as we choose to rely on sales taxes to support government, 2) fees levied on some proxy for road use such as tires and fuel to pay for such costs to the extent that they represent private consumption—that is, are a private good, and 3) environmental fees to recover the costs of (or to correct) damages to nature that are otherwise externalized. Again, it is often

appropriate to attach more than one revenue to any particular base, and it is particularly appropriate to do so for petroleum.

Calculating a precise fee for environmental externalities is a challenge largely beyond our current abilities, but we cannot wait until such time that we know for certain what they are. It could happen that environmental fees totally supplant all personal and corporate income taxes as well as sales taxes, gradually phased in revenue-neutral fashion while conventional taxes are decreased.

Highways and associated services should have user fees to recover the full costs of operations and service. Motor fuel is an excellent proxy base for highway use because it charges proportionate to use except for very heavy vehicles. Supplemented by other user fees just for those vehicles—the best design is an ESAL fee (axle-weight x distance)—would fully address the problem of rational highway pricing.

Local residential streets have even more the character of private goods than trunk lines, and are appropriately supported by local property taxes. Property taxes, well designed, reflect local value and the enjoyment of local (private good) services and should therefore pay for them.

Fossil fuels are the prime candidate for the third category of revenues, Pigou fees (or taxes), because, arguably, fossil fuels do the greatest environmental damage, Pigou fees are simple to impose and are highly efficient in correcting the most alarming environmental problem the world faces: global warming resulting from the creation of greenhouse gases. A tax on carbon, depending on how heavy, would go far towards reducing its consumption. This is important because the best recent data project the doubling of atmospheric CO₂ in the next 50 to 100 years.

The efficiencies in a motor fuel tax grounded in environmental cost recovery could be further enhanced by converting the measure from direct count by gallons to count by carbon content. Either way this is several times the actual price of the product itself.

One might reasonably ask whether putting such a heavy burden of fees on motor fuel is realistic, regardless of its theoretical merits. A combination of user fee and environmental fee is obviously

politically impossible in the current context, and would likely lead to an underground economy as well. Even granting its theoretical soundness, it would need to be phased in at the same time a substantial educational campaign was waged to help the public understand its logic and necessity.

Bringing driving prices into line with costs would go far toward facilitating the success of public transportation services, even given the disparate location of residential and occupational trip patterns. One could conclude that pricing changes of this magnitude would alter the configurations of urban land use as well. Personal choice would still be preserved, no longer skewed by the distortions imposed by the subsidies inherent in current transportation finance policies. There would be every inducement to increase fuel efficiencies from the current average passenger car miles per gallon. And these forces would in turn likely work in the opposite direction to reduce the revenues paid from this base—all to the good.

METHODS OF DETERMINING THE EFFECTIVENESS OF AN ADVERTISING CAMPAIGN

T. Bashuk, PhD student

No matter how large or small a business is, all promotional efforts should be tested in some manner. The two categories of testing of promotions are pretesting and post-testing.

PRETESTING OF PROMOTIONS. The various factors to be pretested are the ability of the ad to stand out from others in the same media, the choice of media, the impact of the message, the copy, the illustrations, the credibility of the spokesperson, budgeting decisions.

POST-TESTING OF PROMOTIONS. Post-testing includes all methods of determining the effectiveness of a single advertisement or an entire campaign. The most popular of these are readership, unaided recall, attitude change, sales increases, and inquiry tests.

Readership (or Aided Recall). Respondents, who are either subscribers or have been given a copy of a magazine or newspaper, are asked questions to determine how effective the ad was. The interviewer turns to an ad and then asks if the respondent