

Ending Global Poverty through Tax Breaks to Bill Gates

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Sector-specific government support for the Information and Communications Technology (ICT) industry has spread around the World. South Korea, Taiwan and Singapore all enacted national policies to attract the IT industry as early as the 1980s, with support for training, R&D, technology transfer, promotion, tax breaks and IT parks, for example.¹ Malaysia launched perhaps the most ambitious plan with its Multimedia Super Corridor. The MSC began in the mid 1990s with promises of \$10 billion worth of public infrastructure investment, a government venture capital fund and significant tax breaks amongst other incentives to companies that would set up in the corridor. Since then, numerous other countries (as diverse as Russia, St Lucia and Rwanda) have launched programs to attract ICT industries, often involving considerable tax breaks, subsidies and infrastructure investments. There are arguments for government support of the ICT sector in developing countries as a strategy for growth and poverty reduction, but the evidence that we can end global poverty through tax breaks to Bill Gates is very much lacking.

From an economic perspective, what are the potential justifications for favoring ICT industries over the car industry or the steel industry, for example? One argument involves ‘leapfrogging’ –it is based on the idea that the ICT sector can generate significant productivity gains and so promote more rapid economic growth than other industries. The second argument suggests that ICT firms cluster, and so that a few initial subsidies to attract path-breaking investments will lay the foundation for the growth of a significant (unsubsidized) industry from the subsidized nucleus.

The leapfrogging argument garners empirical support from impressive TFP statistics in the ICT manufacturing sector. TFP measures the difference between actual economic output and that output which would be expected given a known level of capital and labor input and ‘normal’ returns to those inputs. Above-trend total factor productivity growth in ICT-producing industries in the 1990s meant that computer companies were able to produce smaller, better, faster machines (and software) using the same amount of capital and labor to make them. This is good news for the global economy –producers are producing more output for the same level of input. In the US, TFP growth from the ICT industry combined with higher investment in ICTs added perhaps three quarters of a percentage point to economic growth in the late 1990s.

But is TFP growth a reason for developing countries to subsidize ICT production? The TFP gains from IT companies that there are in developing countries are unlikely to return the kind of impact on real economic wealth that TFP gains in the US might. We can see this from the experience of East Asian countries heavily involved in such production.

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The East Asian Tigers are the countries in the Developing World where, in percentage terms at least, the ICT revolution has had the largest impact in terms of domestic product and employment –21 percent of Malaysia’s GDP is officially accounted for by the production of information and communication technologies for example. But the question remains as to who benefits from the TFP gains related to this production. In some cases, such as Microsoft products, the manufacturer can hold on to TFP gains to make profits and pay large salaries. But most of the time, we’d expect (in competitive markets) the benefits to go to the consumer. You can see that this usually happens in reality because the price of computers hasn’t gone up as they’ve got more powerful. Instead you, the consumer, are getting more bang (more 3-D playability in your kid’s shoot-‘em-up, faster processing of your turbotax program) for the same buck. If you are getting this benefit, the producer isn’t. And if you the consumer sit in the United States while the producer sits in Malaysia, that greater power, the TFP increase benefits the US economy, not the Malaysian economy. Putting it another way, the productivity increases in the ICT sector have led to rapidly declining terms of trade for (quality adjusted) output of ICTs. East Asia is producing more computer power at the same cost, but the computer power sells for less –so the net impact on East Asia is close to zero.

Evidence that developing country producers in competitive, commoditized ICT sectors do not see very significant returns from increasing total factor productivity is that one estimate suggests US companies produced 56 percent of the revenues yet garnered 96 percent of the profits from the global IT industry in the late 1990s.ⁱⁱ The US dominates patent ownership –where a publicly enforced monopoly allows technology creators to garner the returns from technology advance. The rest of the World, much more involved in commoditized production, cannot protect monopoly profits and so are forced to pass on the lower cost of ICT capacity to (largely rich-country) consumers.

And developing countries as commodity producers rather than technology inventors is a state of affairs unlikely to change any time soon, because they invest far less in developing new technologies. Expenditure on R&D in low income countries combined totaled approximately USD5 billion in 1999, compared to the figure for the US alone of USD234 billion. Not surprisingly, this translates into rich country dominance of world patent applications. 1,114,408 patent applications were filed in low income countries in 1998. Under 10,000 of these applications –or under one percent—were filed by residents. In turn, royalty and license fee payments by low income countries were nine times royalty receipts, whereas in the US, royalty receipts were 2.7 times payments.ⁱⁱⁱ The dissipation of productivity impacts from IT production is perhaps why even East Asia, the developing region with the largest IT industry, sees no correlation between the proportion of high-tech exports in total exports and total productivity growth measures.^{iv}

Whether it should be the first priority of the Malaysian premier to foster policies to benefit the US consumer is, surely, a question that might spark debate in Kuala Lumpur. And this is a reason against believing that LDC governments should subsidize ICT industry investment. There is no more reason to support the commoditized ICT sector than the agriculture sector on the grounds of different returns to TFP. Indeed, subsidizing industries such as agriculture where more of the inputs are locally produced and more of

the outputs are locally consumed may well have a larger economic benefit –a subject we will return to.

The second argument in favor of ICT industry support involves ‘cluster economies.’ Broadly, the cluster economy argument suggests that there is a strong advantage to ICT firms that position themselves geographically close to other ICT firms (perhaps because they can share a specialized work force or benefit from ideas). So, countries that first attract a few ICT firms may well get the added benefit of far more firms coming to join them. This suggests a potentially high return to the small initial outlay of attracting a first few firms through a subsidy scheme, then.

Evidence is mounting that advanced production of ICT goods and services does cluster –thus the emergence of areas such as Silicon Valley and Bangalore as centers of ICT innovation. Looking at the US as a whole, industry data suggests that the rate of convergence across regions in terms of employment in IT-intensive industries occurs at one half of the rate for all industries. In other words, areas that had more IT employees in 1990 remain areas with more IT employees today. This suggests clustering at work. And the development of such a technology cluster can generate significant income –not least, India is forecast to export around \$60 billion in software products in 2008.^v

However, it does not follow that government subsidy to ICT firms is a way to attract considerable industry at little cost. One reason for this is that ‘clustering’ may have less to do with the presence of other ICT firms and more to do with the fact that all ICT firms are attracted to similar locations. The US study that found evidence of clustering, for example, suggested that it occurred because IT-intensive industries tend to rely on (unequally distributed) high-skilled labor. IT-intensive industries that do not rely on high-skilled labor see faster convergence –suggesting smaller clustering effects.^{vi} This suggests that ICT firms are not attracted to Silicon Valley because there are other ICT firms as much as because there is a large pool of labor with ICT skills, strong local universities with ICT programs, sources of venture capital, an economic and political climate that allows for innovation and attracts innovative people and so on.

In turn, this suggests that fostering clusters is only likely to have an impact where they are already forming in environments already suited to such industries. Indeed, such an approach does appear to have worked in parts of East Asia where even critics of intervention admit the role that government support had in the development of the IT industry in Taiwan, for example (through public-sector laboratories, arranging technology-transfer agreements and even the creation of companies).

But short-term government policies covering subsidies to ICT firms are only a very small part of the picture looked at by companies choosing to invest in a new venture. Even in East Asia, for example, success has been mixed. Korea’s attempt to expand computer production floundered, as it supported the development of manufacturing for large systems just as the global market was moving towards PCs. Hong Kong’s \$100 million public venture capital fund for IT was forced to return funds to the treasury for lack of suitable investments.^{vii} The city’s Cyberport initiative, which involved significant

government incentives (not least a generous government land sale to the operating company), attracted only fifteen tenants in the two years after it was announced. A competing IT park in Hong Kong, opened without government support, is already six times larger than the Cyberport ever hoped to become.^{viii}

Malaysia's multimedia supercorridor is a particularly powerful case study here. The \$10 billion-plus investment by the government was matched by just \$475 million of private investment and 7,300 jobs (that works out at more than \$1 million per job) up until 2000. Reasons that companies cited for not moving to the corridor included concerns about government monitoring of Internet traffic, capital controls, red tape, slow visa approval, weak intellectual property rights and the absence of an appropriate skills base.^{ix}

Some argue that the Indian IT boom was closely tied to tax breaks and subsidies to the industry by government. As early as 1986, India's software promotion policy included tax holidays, tariff breaks and export subsidies, and by 1990 software technology parks were being established. By 1999, such parks accounted for 68 percent of the country's IT exports.^x But most of the tax breaks, subsidies and parks came after the industry had already started its growth, not at the birth of the cluster.

Furthermore, it is hard to evaluate the role of technology parks in sustaining growth. Indian IT exports from outside IT parks rapidly increased along with the rest of the industry (from \$164m in 1991 to \$1,248m in 1999). The most successful parks are those near engineering colleges such as Bangalore and Hyderabad, while parks set up in areas otherwise unattractive to the IT industry such as Gandhinagar have floundered (only around a fifth of initially registered firms in the park remain).^{xi} It is difficult to evaluate the percentage of firms in the parks that established themselves in parks rather than not establishing in India at all as compared to the percentage that established in parks rather than elsewhere in India.

Prior to the growth of the industry, the government did relax a number of regulations governing ICT infrastructure and business regulation. These reforms continued during the 1990s, including simplified export procedures, and waived limits on foreign ownership and foreign exchange purchase. It also trained up thousands of highly skilled graduates in Indian Institutes of Technology. Perhaps best of all, it began training up those graduates starting in the 60s and 70s, but by creating such a miserable business environment at that time, it forced many of them to go abroad to find work—the Indian diaspora ended up running a considerable chunk of Silicon Valley. In 2000, Indians headed 972 Silicon Valley firms accounting for \$50 billion in sales and 26,000 jobs.^{xii} When the government finally got around to improving the business climate, there was a ready-made army of Indian entrepreneurs and managers with good qualifications, US experience and contacts happy to return back home and found companies or manage subsidiaries.

The Indian experience suggests a novel role for government --focus on high quality tertiary education in fields with a labor shortage in the developed world while ensuring a poor home business environment and/or exiling anyone with a tertiary degree. Wait

twenty years, and then reform the business environment and rescind the exile orders. But this is not the usual strategy that ICT proponents envisage.

If government subsidies and tax breaks for ICT production have often floundered in the more economically successful parts of Asia, they have to be a particularly high risk strategy for a Rwanda or a Laos to follow. It would of course be an even more risky strategy for Laos to follow if Rwanda was already following it, because of the potential for a ‘race to the bottom’ in terms of competing subsidies and tax breaks of the sort that have frequently destroyed the economic benefits of export processing zones.^{xiii} The ‘fallacy of composition’ (that what works for one country will work as well if every country tries it) begins to bite hard if the whole developing world decides to set itself up as a haven for programmers working on Doom Six or manufacturers of multi-terabyte disk drives –as Russia, Eastern Europe and South Africa, also attempting to build IT industries, may soon discover.^{xiv} There is only a finite demand for new computers or programs or ICT-enabled services. If the whole world starts to produce them, their price will inevitably fall. And less efficient countries (where the broader institutional environment is not as favorable, for example) will be priced out of the ICT market. In turn, they will either have to subsidize the IT industry at to ever greater degree, or see all of their earlier subsidies come to naught. Such a race to the bottom would be a costly mistake.

Yet it appears that this race to the bottom has already commenced. Looking at call centers, in the Highlands and Islands of Scotland required incentives have included subsidies to telecommunications service providers (this alone at a cost of over \$2,000 per job created) and construction of low-rent facilities in government-owned business parks.^{xv} Many successful call centers in developing countries also appear to have garnered such support –Daksh India, which has 3,600 call center employees in New Delhi and Mumbai, operates under a regime of tax breaks and financial support that includes exemption from income taxes.^{xvi} And despite (surely) having achieved the scale of a successful cluster, manufacturers in technology parks in India are still provided with infrastructure, core computer facilities, ready to use office space and the right to duty and license-free imports in addition to tax exemptions, all at a significant cost to the government.^{xvii}

Furthermore the benefits of this expenditure accrue to an economic elite. We have seen that clusters are likely to form where there are concentrations of highly educated people, venture capital, and other factors of success. Meanwhile, the spillover effects of clusters on poor communities are unclear –poor people don’t produce much needed by ICT firms, and they are not major consumers of software. As Nobel-prizewinning economist Amartya Sen notes of Bangalore’s software export industry: “even 100 Bangalores would not solve India’s poverty and deep-seated inequality. For this to happen many more people must participate in growth. This will be difficult to achieve across the barriers of illiteracy, ill health and inequalities in social and economic opportunities.” One recent study estimates the impact of TFP growth in the ICT-producing sector of India added but 0.05 percentage points of growth to the Indian economy 1995-99 –and we have seen this may over-estimate the real impact on India’s economy.^{xviii} However

successful the Indian ICT model, and even if it was to some extent driven by government subsidy, challenges of replication, limited evidence of spillovers and the highly regressive nature of subsidizing jobs for the highly educated and the investments of multinationals and elites suggest that ICT industry promotion is a comparable pop-gun in the armory for the global fight against poverty.

Governments do have some role in the development of local ICT industry. Perhaps most importantly, they have a role in creating a broader environment that is attractive to venture capital and to entrepreneurial activities. They have a role in ensuring access to quality information infrastructure. They have a role in providing education to their citizenry, and this will support human capacity building in some of the underlying skills needed for the exploitation and development of ICTs. There are a number of government functions that can frequently be provided more effectively with the help of information and communications technology, and governments can stimulate a local industry to develop and support such applications purely by taking advantage of such opportunities. But, given little evidence of supra-normal returns accruing to developing country producers, there appears little grounds for sector-specific subsidies, tax breaks, government investment funds or 'IT zones.' In a few countries at particular times, such subsidies and tax breaks may provide the required marginal incentive to promote industry development in an economically efficient manner. In most countries at most times, they will not.

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