Information Technologies and Economic Growth
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The term "new economy" has become fashionable throughout the media. It is as if the technological changes associated to the Internet, computing and telecommunications were bringing forth a new economic theory in such a way that classic approaches were no longer be useful. Nothing could be further from the truth.

This "new economy" is not really so new. The effects of the net and the increasing returns to scale which characterise it were important in the past with the diffusion of other inventions such as electricity, railways or television.

Does this mean that the phenomena we are currently observing are a passing fashion not worthy of too much attention? The answer to this question is no: we should judge the events prudently and without exaggerated enthusiasm. Let us see the reasons why. Are we going to see unlimited growth thanks to Communication and Information technologies (CIT)?

The current stage of strong economic growth in the United States is surprising in its duration and strength. However, in historical terms, what is happening in the USA, and we expect to happen in the rest of the world, is a repeat of the large-scale expansion registered throughout the Western world in the century which now ends. Researchers in technical progress such as Robert Gordon speak of the "Big Wave", a period of a high growth in technical progress, which can be situated between 1891 and 1979 (with growth levels of total productivity of the factors of between 1% and 2%). Historians such as Brad de Long use the concept of leading sectors for each stage of technical progress. They include the railways in the 1870s, the organic chemistry industry in the 1890s, the automobile industry in the 1920s, television in the 1950s and air transport in the 1960s.

Gordon distinguishes between four groups of innovations behind the Big Wave.

1) Electricity (electrical motors, electrical lighting and household electrical goods)
2) The internal combustion engine (vehicles, air transport, motorways, supermarkets and urban areas)
3) The "reordering of molecules" (petrochemical industry, plastics and pharmaceutical products)
4) Communications and entertainment (telephone, radio, films and TV).

Are the CITs a fifth wave of innovation which is allowing the conventional levels of technological progress to be recovered? This could indeed be an interpretation of the current Internet boom.

We would be living a period of normalisation which would help to end the problem of slowing productivity, which has been at annual levels of around 0.5% over the last 20 years, and has generated an intense debate in the USA.
As was the case with previous innovations, there seems to exist a delay between the introduction of the technology and its general impact on the economy. As Robert Solow once said, for many years "we have seen computers everywhere except in the statistics"; this anomalous situation would be solved by the technological development we are currently witnessing.

One way to understand this slow process of absorption of technological progress is by considering that specific technology usually needs complementary developments. The use of electricity in the productive processes required a redesign of the organisation of the installations, which took many years to achieve. The laser is another example of a technology which has had an enormous delayed effect and in fields which were completely unpredicted.

The current technological revolution is the sum of two kinds of innovations: the capacity to process and store information using computers, and the decrease in the cost of transmission of information. It is the joining together of both phenomena and the learning processes undertaken which have brought the progress.

However, it should be understood that the new technologies do not imply the disappearance of the classic restrictions of the economy. The old economy has rules which are still valid. In spite of the Internet, the growth of the economy is not going to see an explosion and has its limits. For example, the fact that information technologies have been developed strongly in United States does not mean this country can grow for many years above its new maximum potential (today estimated at 3.5%).

The current data indicate that the United States economy is growing due to demand, which is above the country's real possibilities, with increasing tendency towards financing and products from the rest of the world.

**Increasing returns**

What the new economy does do is confirm that in the world economy there are sources of increasing returns, and hence we are not necessarily headed towards a future of product per capita stabilisation as was feared in the light of the results of the last decades. Indeed, the "big wave" is an example of how humans can, by way of their unlimited ability to invent, innovate and initiate, overcome the law of decreasing returns.

This law, which Rev. Thomas Malthus applied in his model of growth as a rule which limited expansion after population increases, is applied to work and to physical capital, but not necessarily to intellectual capital and ideas. As Thomas Jefferson said, "He who receives an idea from me receives it without lessening me, as he who lights his candle at mine receives light without darkening me."

Technological progress, brought by ideas, allows us to defeat the law of decreasing returns which conventional productive factors are subjected to. The only factor which does not face decreasing returns is knowledge, which, in short, is generated by people through their interaction and socialisation.

The "new economy" is not El Dorado, but it does confirm the capacity of progress of our society.