A SCIENCE ADMINISTRATOR'S VIEW OF THE NEW ECONOMY

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We are all living in a changing world. And over the years, particularly over the past few, we were conditioned to acclaim the catchy term "globalisation". But deep inside, many of us have come to harbour reservations about the sweeping changes the process entails. All right, the idea of unimpeded contact between the peoples of this very special globe, the only biosphere we so far know, sounds good. But along with it, different sounds have come: Protests of hunger, from societies unable to handle the scope and speed of the changes forced on them; sounds of hatred; noise of strife between peoples who have lived within alien political entities of the past and who, instead of sharing the opportunities brought by the new wind, want to exploit them at the expense of their one-time fellow citizens. It was not only investments, loans or consumer goods which flowed in from opened borders. In many instances, what came in were machines of destruction. Some of these were barely clothed bodies brandishing machetes. Some were state-of- the art weapons designed and produced for wholesale butchery. Thousands upon thousands hungry for the technology from the industrialised world, saw it only in the lethality of the weapons they were sold or were confronted with.

Globalisation, in fact, is not a new idea in our globe. Looking back, we see its examples thousands of years ago and see that it worked much better. Scientists, for instance, travelled vast distances to learn what others knew and in turn, inform them about what they did. Monasteries in Christianity, convents in Islam became centers for the production and exchange of knowledge. Universities sprouted everywhere with cosmopolitan staffs. Beside the academia, first the agriculture, then fledgling industry functioned as vectors of social globalisation, unifying peoples and cultures. Precious metals, with their universal currency, globalised the economies of the ancient and medieaval world, establishing bridges between the Middle East and Rome, setting up Silk Routes between the Far East and Europe. So what we are witnessing today may not be the materialisation of a novel concept, but, actually a much wider, if less refined, implementation of an old one.

The most indicative characteristic of the new era is the radically changing perception of the essence of economic value. It was Thomas Jefferson who, some 200 years ago, foresaw the value of information as an economic commodity. "He who receives an idea from me, receives information without lessening mine, as he who lights his taper at mine, receives light without darkening me. And the more candles lit, the brighter the light." His forgivable failure to anticipate today's network effects in no way depreciates the credit he deserves as a visionary.

Chief tool for change, without any doubt, has been the Internet with the wholesale changes it has wrought in the edifice of our economy-ruled civilisation. The rules, the actors, the organisations, the whole public policy succumbed to its irresistable power. Only the profit survived as an unchanged corporate goal.

Undisputed kings of the new era are the knowledge-based companies hard put to cope with the capital flooding in. Microsoft, vastly understaffed compared to other heavyweights with just 31,000 employees, boasts a market value of $600 billion. Conversely, the fastfood giant McDonald's has one-tenth the market capital of the software company despite ten times the staff it employs. Here, what sets aside Microsoft from others is the intellectual character of 90 % of its capital.

Evidently, the new era is marked by its reliance on human capital and it's clear that in the new century, creativity will be the engine of growth and prosperity. And to ensure it an undiminished supply of fuel, we need to overhaul the whole education system since the value and quality of education is paramount in an economy based on ideas and analytical thinking.

The collapse of the Soviet Union and the cessation of Cold War antagonisms have buried old ideological divisions, uniting almost every country under the joint altar of global markets. But on the reverse side of the coin, one can see a widening cleavage based on technology, with a small part of the globe, accounting for just a sixth of the world's population of about 6 billion, provides nearly all of the world's technological innovations, catering to a far-larger second part, accounting for half of the planet's inhabitants, who can adopt these technologies for production and consumption.

The remaining third of the world's population is classified as "technologically disconnected" (or, equivalently "technologically excluded") by Jeffrey Sachs of Harvard University. These have neither the indigenous capacity to innovate, or to adopt the foreign technologies since these technologies are not available in aggregate forms. Mostly, the technologies they need are the ones geared to combating poverty. Although package solutions which do not even call for a well developed capacity to adopt are available abroad, countries making up this part lack the means to buy or license them on required scales.

To be honest, one cannot say that today's version of globalisation is a picture of total gloom. There are, of course, people residing on the sunny side. And even where the clouds fill the skies, there's a silver lining to some of them. Even if the change does not necessarily increase our comfort, we still have to compare the benefits of resisting, or riding it. I, myself, believe in the latter. For me, falling customs walls or disappearing frontiers bring, along with difficult challenges, opportunities for our people to put their resourcefulness to good use. And to a remarkable extent, that's what the Turks have done. To the surprise of the sceptics, the country has withstood the impact of the customs union with the EU. Instead of collapsing under the onslaught of the much cheaper consumer goods, Turkey's industry thrived and adapted to competition. Our businessmen proved themselves to be a match for the hardy Western rivals all

over the globe. No one can overlook the fact that we have still a lot of homework to do, still some distance to cover to be on par with our industrialised role models. Our per-capita GNP of about 6000 dollars in purchasing power parities, is still a third of the West European Average. Customs union, perhaps the most brutal application of globalisation to an economy accustomed to state protection, keeps pushing imports to twice the level of imports.

But on the whole, one can say with confidence that Turkey has managed to benefit from globalisation despite some heavy odds. On balance, Turkey's profits from globalisation appear overweighing its losses: its successful efforts to modernise its communications infrastructure have paid off in a flood of information and know-how, which the people have readily exploited to the country's economic and cultural benefit. The globalising market, while opening Turkey's industry to vicious competition, also caused the country's economy to break its shell and expand. Globetrotting Turkish businessmen have now become rivals taken seriously all over the world.

This does not mean, however, that we'll live happily ever after in our warm little corner. To start with, in this part of the globe "warmth" becomes a relative term which cannot easily associate with snugness. The region is perhaps a bit too warm, overheated by constant conflicts going all around. In contrast, our home itself is not warm enough despite our proximity to the sources of fuel, the energy-rich Middle East, Central Asia and the Caucasus.

The paradox also serves to highlight one fundamental question which, even the most ardent supporters of globalisation have failed to answer convincingly. Is globalisation a consciously promoted process to ensure a more equitable distribution of wealth across the globe, or a process driven by the selfish interests of the industrialised world bent on smashing open new markets and sources for raw materials? That is the central question. So, regardless of true motives of the champions of globalisation or the independent mechanics of the process, we have a duty to follow the fluid dynamics of energy closely and adjust our attitudes to globalisation accordingly.

At first look, energy and globalisation appear to have a natural association. Energy is a common need for the whole mankind, and (although not totally,) the distribution of energy resources and the wealth they bring help paper over the vast chasm between the technology producers and technology users in terms of income. So, in a sense it globalizes the wealth to a limited extent. Energy, or, rather its use, has been insisted upon by the West as a measure of a country's development. Then, according to its advocates, globalisation smoothes out the irregularities in the distribution of wealth, and hence, of energy. So, ultimately, globalisation should lift the per capita energy consumption in the developing world to levels prevailing in the industrialised West.

Some simple arithmetics, however, can expose this reasoning as the Achille's heel of the arguments in favour of globalising: First consider Germany as a representative example for the

West with its 80 million population and 45 million registered cars. Its annual energy consumption is roughly 4 % of the world total for 1998.

Next, let us turn to China with its population of 1.2 billion people, to see a striking example of what happens if it follows the advice to completely switch to market economy, lets the globalisation run its course and as a reward, draws abreast of Germany, say, in energy consumption. Its current energy consumption, which is roughly a tenth of the annual world consumption, will rise sixfold when that happens, something we can hardly see as conforming to the best interests of the globe.

This illustrates that globalisation is a give and take business. So while riding the wave, the administrators of an industrialising country have a responsibility to see the true picture and be on constant vigil against falling to the trench.

Despite the disparities, these diverse realms are not hermetically sealed to outsiders. Many of the technologically excluded are poised to move up the ladder to join the ranks of technological adopters. Upward mobility can be seen in the top floors as well: Taiwan, South Korea, and Israel, for instance, have advanced to the next group, becoming innovators themselves. This, however, should not convey a picture of countries freely transiting through the boundaries. Some two billion people living in technologically excluded countries waiting to sample benefits of globalisation, need a strong push across the threshold. For that, the commanding role of technology in the global economy should be well understood, while the richer governments have to be more generous with their aid and the poorer ones, more careful in using it to build up technological capacity. Multinational companies as well as universities and scientific establishments of industrialised countries should join in the effort. The tasks of international organisations, including, IMF, the World Bank and the OECD, have to be redefined for the effort to bear fruit.

It is, of course, not easy to overturn a deep rooted culture of fending national interests and mobilise an international effort to diffuse the technology with a snap of the fingers. But the ended ideological conflict and record wealth of the industrialised world raise hopes that selfishness can be overcome.

And as for us scientists, we, too, have a responsibility to help our politicians and the public to see the grand picture and do that both on the winning and the losing side. We should help our peoples navigate stormy patches. Our unselfish cooperation, our will to share should set an ethical example for the politicians, for the businessmen to follow. For we know better than anyone that science could not have progressed to its present glory without this spirit of sharing. And we know that we cannot go any further if we do not rid ourselves of selfish interests for the benefit of the truth.