
Наука та інноваційний розвиток економіки і суспільства

Jean-Patrick Connerade

The Mobility of Researchers as the Vector of Innovation in Europe and Beyond

I would like to start by drawing attention to a modern problem of timescales.

Nobody knows exactly how short significant fluctuations of the international markets can be in this electronic age. Surely, they can be much shorter than a day.

The time it takes to educate a researcher from school age, when he or she first makes a choice of subject, to international standard is of the order of ten years.

Consider how different these two times are.

At the moment, we are living through an economic crisis. It is not a fluctuation, but a long term trend. It started with the 'sub-primes' crash in the United States, spread around the world over more than a year and is clearly not finished yet.

Governments are trying to respond to this long-term crisis by short term measures, such as injecting more capital in banks, which induce new fluctuations.

All the indications are that the crisis is systemic, i.e. NOT resolvable by short-term measures which concern only the banking and financial sectors. A number of economists have pointed this out.

The only approach which is liable to restore a healthy economy is through innovation. Achieving innovation is not a simple process, but the first step is through supporting science. That is why the present crisis indicates the need to examine whether we are really doing that.

About thirty years ago, many countries of the Western World reduced manufacturing and concentrated their efforts on the service and financial sectors. This trend, spearheaded by Margaret Thatcher in the UK, was based on the notion that markets can be highly profitable without a long-term commitment to a manufacturing base. Countries which did NOT adopt this strategy (most notably Germany and China, which practise export-led manufacturing) have suffered far less in the world-wide recession.

Running a major economy by basing it on the services and financial sector alone now appears risky. It is like attempting to run a farm by producing only one kind of crop: sooner or later, it fails. The only way out for the economy is to re-invest in long-term growth based on scientific advances and technological progress and thereby to recreate a modern manufacturing industry.

One way or another, Europe must return to this path, which involves longer term investment in education and research. However, it is not easy to rebuild the manufacturing base. The first question to be answered again involves timescales. It is the question young people now keep asking:

“Why should I spend ten years of my life studying a difficult subject like science and end up in debt, when I can become

rich in a few moments if I manage to master market fluctuations?”

A preliminary answer to the second part of this question appeared to come from the markets themselves when the shares of banks collapsed in value BUT the governments quickly moved to cover their losses by cheap loans. So it is still possible to argue that studying science is a lengthy and difficult path towards relative poverty, whereas joining the banks to play with markets is the quick path towards wealth without any real risk.

Why does studying science not make people wealthy? The answer is that governments still believe they can find a short term solution to the current crisis without fundamental change. It is the responsibility of the Academies around the world to explain to them and to the public why this is not true. Probably, the public will prove more receptive, more willing to hear this message than governments themselves, whose private connections are usually close to the financial sector.

The only way for Western nations to sustain their expensive societies and save what is left of their generous welfare system is through long-term investment in scientific education, technology and innovation. Research leads to innovation, and innovation, to jobs. The first step in this process is to reward scientific achievement with real money. Otherwise, it will be impossible to keep the originators of innovation active and start the process of reconstruction.

Treat your scientists well, and young people will choose this profession. Treat them badly, and the few who have chosen the path of science will emigrate to a country which does treat them well.

Or indeed, they may choose to join banking, which is fast becoming a profession subsidised by the taxpayer. In other words, it is stupid not to pay scientific re-

searchers high wages and to pay excessive bonuses to bankers. We are simply rewarding the wrong people.

I would like to quote you some extracts from the speech Manuel Barroso made as his election statement to the European Parliament. Since he was re-elected, his statement is now the current political agenda of the European Union

“The United States draws great benefit from its continental scale in research, from a long tradition of close university-business cooperation and from the ease of movement enjoyed by researchers within and to the US. In contrast, despite its excellence, the European research effort remains fragmented. We need to stretch ourselves to achieve world excellence and to find new ways of combining our resources to make a reality of the European Research Area.”

In particular, Manuel Barroso urges creating “new opportunities for researchers, extending exchange programmes like Marie Curie and attracting world class researchers to the EU”

He does not say how this will all be achieved. For example, how young people can be attracted back into science. But he does say it is a priority, and that is clearly a step forward. He also says (in the same speech) that “the future agenda for science-driven frontier research should be set by the scientific community.”

A good example of positive thinking is what is happening in China. In the recent past, the Chinese have grown rich by working very hard and exporting a lot of low-tech goods (for example: shirts), but that is not what they really want for their future. They want to lead a better life by becoming the world’s manufacturer of high technology, the hub of innovation. So, they are taking the sensible step of looking after their researchers. Scientists in China today are strongly supported by the system, and

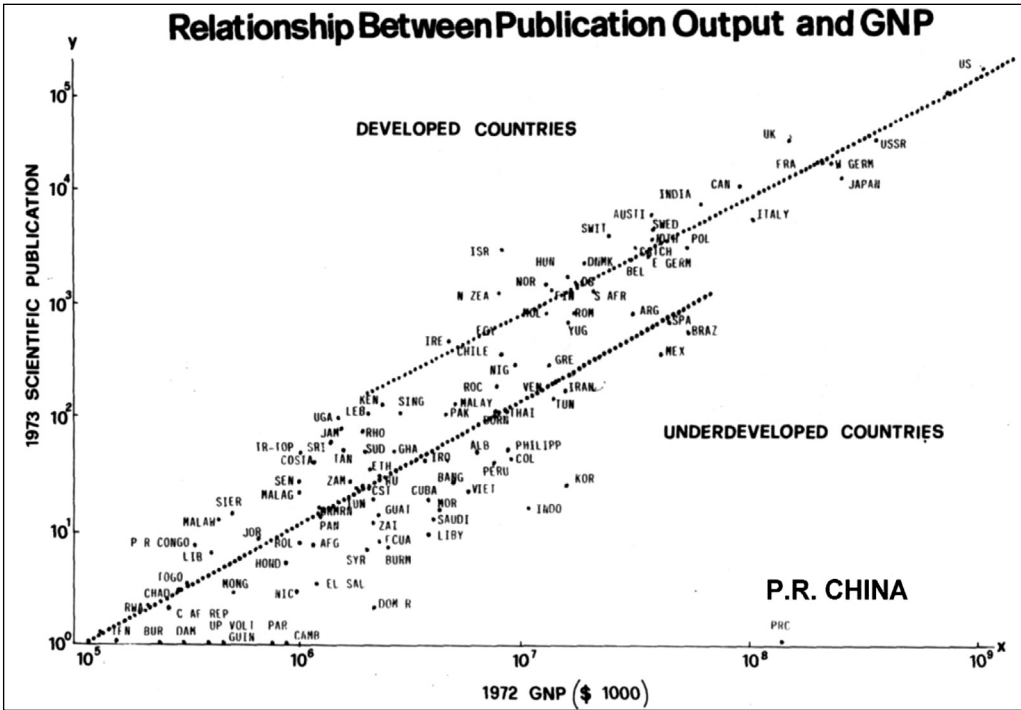
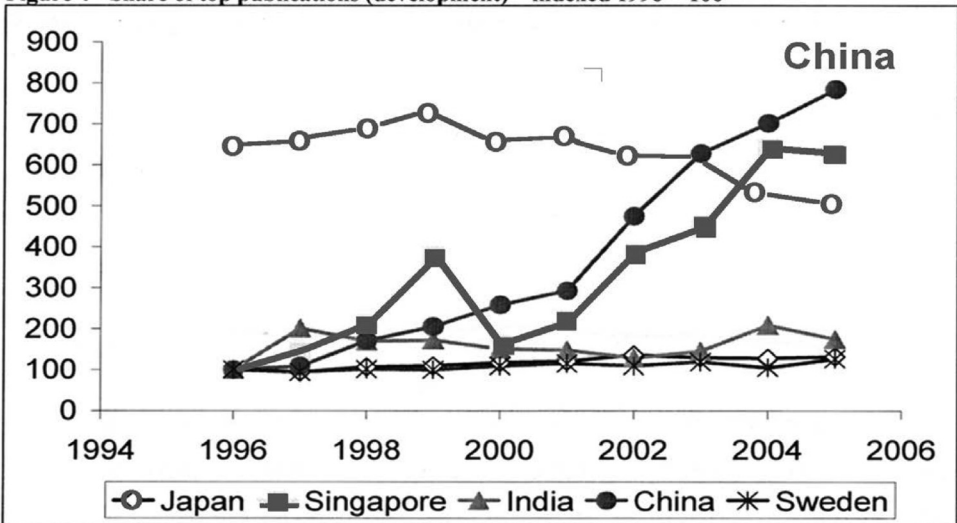


Figure 4 - Share of top publications (development) – indexed 1996 = 100



innovation is seen as the key to the future progress of the country.

Here is a picture of where China was at the end of the Cultural Revolution.

Consider the position of China as it was at the time of the Cultural Revolution. It is clearly revealed by studying the worldwide relationship between scientific and economic activity. China was just way-off the curve, an unstable situation.

So, China was clearly out-of line with the rest of the world at that time in history. Now, we hear that China is fast becoming one of the world's largest economies, that its scientific output is now huge and that it is one of the biggest spenders on research.

All of this did not happen overnight. China sent hundreds of thousands of young people into the world outside as soon as the Cultural Revolution stopped, in order to catch up with its own history.

This "catch-up" process was pursued systematically, and was soon visible in the growth rate. There is a message for us Europeans in these figures.

Again, the key is timescales. Governments in our part of the world are in power for a short time before elections are held. So, they are not attracted to long-term solutions. As long as this remains true, democracies will be at an economic disadvantage. This problem must be addressed. It is also necessary to look at education in a new way. Many studies have shown that the movement of young scientists between laboratories generates innovation simply by transporting ideas into a different context. That is why the People Advisory Group of the European Commission at-

taches enormous importance to moving young people around. It is not a luxury. It is a necessity.

In terms of movement, Europe as a whole has a very poor record. An analysis by the ESF a few years ago showed that most researchers in Europe pursue their long term careers in their country of origin, and even rather often in their original place of study. This situation breeds independent local scientific cultures. Usually, it does not generate innovation or wealth, but is rather synonymous with stagnation.

For all these reasons, the European Commission has wisely decided to set up a large programme of Mobility of researchers, by instituting the European Research Area and setting up such programmes as the Marie Curie fellowships and the Erasmus programmes. In a short time, these have become the most successful and popular schemes in the whole of the Commission's panoply of actions in support of training and research. Why? Because they concern PEOPLE.

The final point I want to make is that these programmes need to be widened as far as we can. There should be no pre-selection of research areas, no nationality bars, no intellectual or institutional protectionism of any kind. If we want these programmes to breed success, they must be open. It is our responsibility to fight for this against all the opposing forces, which are many, and to ensure that excellence is supported where and when it appears. Only then will we regain the intellectual initiative which our future depends on.

Жан-Патрик Конрад

Мобильность исследователей как вектор инноваций в Европе и за ее пределами

Рассматривается политика поддержки инноваций в Европейском Союзе, в частности перемещение ученых и создание единого исследовательского пространства. Финансовый экономический кризис 2008 года со всей остротой выявил недальновидность правительств многих стран, ориентировавшихся в развитии экономики на поддержку сектора услуг и финансового сектора в ущерб поддержке материального производ-

ства и инноваций. Страны, которые поддерживают экспортно-ориентированное производство (Германия и Китай), пострадали во время мировой рецессии меньше. Многие правительства пытаются ответить на текущий долгосрочный кризис краткосрочными мерами, увеличивая инвестирование банков. Однако кризис носит системный характер и не разрешим такими мерами поддержки банковского и финансового сектора. Единственный подход, который способен восстановить здоровую экономику, это использование инноваций. Инновационное развитие – непрерывный процесс, но первый шаг на этом пути – поддержка науки. Единственный выход для экономики – реинвестировать в долгосрочный экономический рост на основе достижений технического прогресса и воссоздать современное промышленное производство.

Для западных стран единственный вариант выхода из кризиса — долгосрочные инвестиции в научное образование, технологии и инновации. Исследования приводят к инновациям, а инновации – к созданию рабочих мест. Первым шагом в этом процессе является вознаграждение научных достижений реальными деньгами. В противном случае невозможно поддерживать активность авторов инноваций и начать процесс восстановления. Автор пишет: «Относитесь к своим ученым хорошо, и молодые люди будут выбирать эту профессию. Относитесь к ним плохо, и те немногие, кто выбрал путь науки, будут эмигрировать в страну, которая относится к ним хорошо. Недальновидно не платить ученым высокую заработную плату и давать чрезмерные бонусы банкирам. Мы просто вознаграждаем не тех людей».

Приводится заявление Мануэля Баррозо о необходимости добиться научных достижений мирового уровня, найти новые пути, объединить ресурсы и реально создать единое европейское научное пространство.

Хорошим примером позитивного мышления является политика китайского правительства, которое стремится стать мировым производителем высоких технологий и центром инноваций. Успех Китая в развитии науки и инноваций подтверждается данными статистики, приведенными на диаграммах. Все это произошло не в одночасье. Китай отправил сотни тысяч молодых людей за рубеж после окончания культурной революции, чтобы преодолеть разрыв в инновационном развитии.

Ключевым аспектом анализа государственной политики являются временные рамки: необходимо вкладывать в долгосрочные цели развития науки, образования и инноваций, а не в краткосрочное решение проблемы финансового кризиса за счет поддержки банков.

Многие исследования показали, что движение молодых ученых, меняющих лаборатории, генерирует инновации просто за счет переноса идей в другой контекст. Научная мобильность и перемещение молодых ученых — это не роскошь, а необходимость. По результатам анализа Европейского научного фонда, большинство исследователей в Европе продолжают свою карьеру в течение длительного срока в стране своего происхождения и довольно часто даже в той организации, где они получили образование. Эта ситуация подпитывает развитие независимых местных научных культур. Как правило, такая научная культура не генерирует инновации или богатство, а скорее является синонимом застоя.

По этим причинам Европейская Комиссия создала масштабную программу мобильности ученых для формирования европейского исследовательского пространства за счет таких инициатив, как программа стипендий Мари Кюри и программа «Эразмус», которые стали успешными и популярными схемами Европейской Комиссии по поддержке подготовки научных кадров и научных исследований.

В заключение автор отмечает, что эти программы должны быть расширены, не должно быть никакого предварительного отбора направлений исследований, никаких национальных барьеров, никакого интеллектуального или институционального протекционизма. Программы должны быть открытыми и гарантировать, что передовые научные результаты получают поддержку независимо от того, где и когда они получены. Только так можно восстановить интеллектуальную инициативу, от которой зависит будущее Европы.