CONVERSATIONS
Debates and discussions about key national policy issues

THE WORLD TURNED UPSIDE DOWN
Business Innovation from the South

As the dynamic of economic growth shifts to the emerging markets of Asia and Latin America, some Western commentators cling to the belief that the strengths of these new centres of economic power are essentially imitative. According to Adrian Wooldridge, management editor of The Economist, nothing could be further from the truth. Mr. Wooldridge addressed an invited audience in Johannesburg on 30 August 2011 on innovative companies and entrepreneurs in countries like India, China and Brazil . The inventions and new business processes produced by this wave of innovation are 'turning the world upside down'. Such rapid changes create new challenges and opportunities. It is important that South Africans look more and more at other emerging markets, not only for trade and opportunities for cooperation but for new and better ways of producing and exchanging goods. Are South Africans following the innovative lead of other emerging countries? And if they are, what can be done to strengthen this trend so that South Africa can begin to generate the kinds of growth rates achieved by India, China and Brazil in recent years?

Adrian Wooldridge
Management Editor and 'Schumpeter' columnist, The Economist

The world has been turned upside down. Innovation, the force that has driven massive improvements in living standards during the past 500 years and has largely been a monopoly of the developed West, is now increasingly coming from emerging markets.

The longstanding division of labour between the West and the rest has led people to assume that anything requiring real creativity and brain power is only done in the West; anything requiring just hands or physical labour, is done in the rest of the world.

One can clearly see the way the West has driven progress in science and technology in the past, from the development of the steam engine, to the motor car, to the assembly line, to computers. The West pioneered the development of many important social technologies, such as the nation state and the company - especially the corporate version that first emerged in Britain and the United States. These innovations have created a huge amount of energy in the West. They also generated a sense of optimism in the inevitability of progress. It was this combination of innovation in science, technology, business processes and social structures that allowed the West to impose its will on the rest of the world, and reshape these other countries according to Western desires.

Such divisions were still strong as early as the 1990s. In that decade most people still believed that the West would continue doing the brain work, while the rest of the world would provide the consumption and cheap hands necessary to keep the circular flow of the global economy moving. In

this scheme, non-western countries were essentially still second-division players. This was one of the assumptions behind the Washington Consensus, the set of prescriptions on how to manage an economy, which Western policy makers urged on developing countries in the 1990s.

C. K. Prahalad, the late, great management thinker, used to talk about neo-colonial attitudes in the great corporations of the world. They were looking to the rest of the world for markets; they were looking for consumers, but they weren't looking to the rest of the world for ideas. Ideas were what the West was good at; it was their comparative advantage. And everyone from Bill Clinton to Tony Blair sold globalisation to their voters on these terms: 'We will eventually lose the manual jobs to China and to India and to other poor countries where people are willing to work hard for very little', they said. 'But that doesn't matter because we still have the comparative advantage in brainwork. We will do all the really high value-added jobs and prosper.

This division of labour persists today; for example, in the way the Apple corporation is structured. Apple products are designed in California with the high-end thinking and design of the technology done there. The products are put together in China and Taiwan, by companies like the Taiwan-based contractor, Foxconn Technology Group. The extent to which the work at Foxconn constitutes unpleasant grunt work may be borne out by the high suicide rates amongst its employees. These workers however face a new challenge as Foxconn plans to install a million robots in the next few years to automate its production process. Workers who despaired at the meaninglessness and slog of their working lives now face the prospect of unemployment.

These shifts to automation are, however, not the only, or even the most significant, changes taking place in the world economy. What we are currently going through is a complete change in emphasis within the global division of labour. The most visible element of this shift is the explosion of innovation coming from emerging markets.

The beginnings of this shift took place as far back as the 1970s with the rise of Japan and that country's ability to develop new technologies, new products and new production processes. These changes, once confined to Japan, are now

GramatellerINDI ATM for rural India

The Indian Institute of Technology (Madras), Vortex Engineering, and ICICI Bank, found an innovative way of leveraging technology for rural benefit when they experimented with installing ATMs in a rural area near Madurai in Tamil Nadu. Conventional ATMs had high fees and were unreliable due to power cuts. After four years of conceptualising and designing, the Gramateller's cash dispensing machine (CDM) was introduced. It uses less power than conventional machines, consuming 72 units of electricity as opposed to the conventional 1 800 and is cheaper at US$ 790, a fifth of the normal price.[1] In conventional ATMs, the cassette where currency notes are stored, is installed vertically and requires a spring or piston to push the notes when they have to be dispensed. In Gramateller, this cassette is horizontal and the notes are dispensed using a gravity-assisted mechanism, saving power. It also has a built-in Uninterrupted Power Supply (UPS) as well as an option to run on solar energy, which ensures the ATM doesn't go down when there are power outages. Other unique features include fingerprint-based, biometric authentication and the ability to dispense soiled notes. There is a huge latent demand for the product, with enquiries coming from African countries and Indonesia, Malaysia, Afghanistan and Pakistan.[2]

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happening on a huge scale all around the world. Emerging markets are generating an increasing proportion of the new ideas, products and processes that make productivity improvements possible. This is a major transformation. It is changing the status quo that has existed for 500 years. It is shifting the axis of the world. It is turning the world upside-down.

For the emerging or developing world this shift means the creation of many new opportunities in those countries and companies capable of taking advantage of such opportunities. In such countries there has already been a seismic change in the levels of people's optimism about the future.

Global Companies from the South

The first driver behind this emerging market innovation explosion comes from locally-based companies that have gone to scale and are competing at a global level. The number of companies in the global Fortune 500 which come from BRIC countries (Brazil, Russia, India, China) increased from 35 in 2006 to 67 in 2011 (seven companies from Brazil, six from Russia, eight from India and 46 from China). These companies have scale and they have ambition. They are also moving very rapidly up the value chain. They are not content with simply putting together products; they are engaging in extensive, innovative thinking and undertaking a lot of process innovation.

In India, for example, there are companies, such as Tata Consulting Services and Infosys Labs, developing increasingly sophisticated software products. Infosys Labs, which employs 600 IT experts in India who focus on innovation, has built an application store for a mobile service provider. The store handles an average of 6 000 application downloads daily. Tata Consulting Services, which employs over 143 000 IT consultants in 42 countries, has created software products across several industries, particularly those relating to customer relations management.

In China, which has up to now largely been regarded as the workshop of the world, companies are rapidly moving up the value chain and undertaking intellectually demanding initiatives. Huawei, a Chinese telecom giant that until

The MAC 400 ECG for rural India

India has 23 000 clinics and 123 000 sub-centres in rural areas, but patients usually travel approximately 20 kilometres to seek primary hospital care. The country also has a large demand for medical equipment that almost reaches $1.5 billion every year. Responding to this situation, GE Healthcare's engineers designed the MAC 400. This is an electrocardiogram (ECG) specifically designed to help physicians predict and diagnose patients at risk of heart diseases. It is highly portable, weighing less than three pounds; is easy to use and allows for various patient configurations to assist the physician to make fast, confident cardiac assessment and provide better patient care. It has the same quality that is found in the premium ECG devices. The MAC 400 can take up to 100 ECGs or run for a week on just a single battery charge and the battery is rechargeable in less than three hours. It is also reliable because it uses the Marquette 12SL algorithm, which is also present in GE's premium ECG devices.[3]

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recently hardly featured as a notable innovator, has become the world's fourth largest patent applicant.

A company such as Brazil's Embraer is making world class aeroplanes. In addition, it is now contracting out its manufacturing work to rich western countries. This company has turned the traditional division of labour on its head. Embraer believes that its core expertise lies in engineering and in assembling aeroplanes. It leaves the more mundane task of building the components to less gifted people in the United States and other western countries.

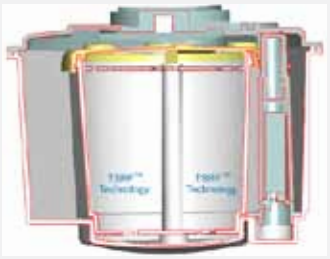
Similarly, it is likely that India's Tata is now the biggest single employer of manufacturing workers in the United Kingdom, after Tata purchased British Steel. When you talk to the owners and managers at Tata, you can detect an element of pleasure in their ability to turn things upside down and to, in some ways, humiliate the old imperial masters.

Research and Development in Emerging Markets

It has long been the case that western companies have moved large amounts of their production activities into the emerging world. But now they are also moving increasing amounts of the more sophisticated conceptualisation and design functions to developing countries. This is happening for three reasons. First, brains are often cheaper in countries like India and China than in the West. Second, companies see an advantage in spreading their creative functions across as large a geographical space as possible, obtaining inputs from a wide array of localities and cultures which can then be aggregated. Third, companies understand the benefits of innovating in places where markets are growing. They understand that effective innovation often only happens when undertaken by people who know the market for which new products and processes are intended. Seventy per cent of global growth over the next few years will come from emerging markets. This means that new and wealthier consumers will be located in increasing numbers in emerging markets. The emerging world is experiencing the most spectacular growth in history. Its share of GDP increased from 36 per cent in 1980 to 45 per cent

'Tata Swach' water purifier for rural India

Water-borne disease is the single greatest threat to global health, with diarrhoea, jaundice, typhoid, cholera, polio and gastroenteritis spread by contaminated water. In India, such diseases cause more than one and a half times the deaths caused by AIDS and double the deaths caused by road accidents. Based on an innovative concept developed by the Tata Research Development and Design Centre, Tata Consultancy Services developed the Swach technology which combines low-cost ingredients such as rice husk ash with superior nanotechnology. The efficiency of the product has been rigorously tested to meet internationally-accepted water purification standards. Tata Swach is convenient to use. It produces clean and safe water without using electric power or running water, which is often not available in rural areas. The cartridge bulb is packed with a purification medium, which has the capability to kill bacteria and disease-causing organisms. It can purify up to 3 000 litres of water, after which the cartridge stops water flow. The water purifier also gives the user enough lead time for cartridge replacement. The Swach delivers safe drinking water at a new market benchmark price of US$0.59 per month for a family of five.[4]



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in 2008 and looks set to grow to 51 per cent in 2014. Emerging-market consumers have been outspending Americans since 2007.

There are now 63 research and development (R&D) divisions of the top western companies based in India. In China the number is 98. Many of these divisions are undertaking very interesting, high-level R&D. For example, Cisco Systems, based in Silicon Valley, has set up an R&D division called Globalisation Centre East. It is located in Bangalore, India, and is the most sophisticated R&D complex the company has anywhere in the world. Initially, the facility was called the Optical Compliance Lab and was used to develop and conduct high-end testing on the company's optical products for its customers in the Asia Pacific region. In 2007 Cisco spent a billion dollars to turn the facility into a global R&D centre, employing over 4 700 engineers. The campus seeks to attract top talent and to take full advantage of collaborative technologies to support the company's continued growth across multiple emerging economies. Every Cisco employee with any ambition to move up in the company ranks will now have to spend time at Cisco East, with Cisco planning to have at least 20 per cent of its corporate leaders based there.

Also in Bangalore, just down the road from Cisco, is General Electric's John F. Welch Technology Centre, which was inaugurated in 2001. Spread over 50 acres, the $175 million centre houses state-of-the-art laboratories and facilities to conduct R&D for GE businesses worldwide. The centre supports 4 200 scientists, researchers and engineers, who redefine what is possible in the healthcare, energy, transportation, aviation, financial and entertainment businesses. At this facility GE conducts incredibly advanced, state-of-the-art medical research and innovation, working on breakthroughs such as molecular imaging and diagnostics, micro ultrasound machines and next-generation MRI systems. GE Healthcare has launched a six-year, six-billion dollar 'healthymagination' campaign to deliver low-cost, quality products globally. The three tenets of healthymagination are: to reduce costs, increase access and improve quality. R&D will receive half of the campaign's six-billion dollar budget.

Godrej & Boyce Manufacturing's ChotuKool fridge 'the little cool'

In 2009, Godrej & Boyce launched ChotuKool, a $70 refrigerator targeting the 85 per cent of Indians who found existing models too bulky, expensive, and power hungry. It opens from the top and is about forty six centimetres tall by 60 centimetres wide. It is tiny because the poor live in small homes and don't buy food in bulk. It has handles to make it portable for the migrant workers who move a lot. It has no compressor that could break or make a noise. Instead, it runs on a cooling chip and fan similar to those used to cool computers. It can survive power surges and outages common in the country and even has the option of running on batteries. While designed with cost in mind, it uses high-end insulation to stay cool for hours without power. By keeping it small and reducing the number of parts to around 20 instead of the 200 that go into regular refrigerators, Godrej has been able to sell the fridge for only $70, which is less than one third of the price of a regular bottom-of-the-line fridge. It also consumes only half the power so it keeps electricity bills at a level the poor can afford. [6]

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The Importance of Higher Education

Another important change is the improved capacity of a number of emerging market countries to produce high levels of education. This has led to a significant increase in the supply of educated labour. The number of people graduating from Chinese universities since 1990 has quintupled. The number of students' graduating from Asian universities in 2011 will be about 270 million. In 2011 China will surpass the United States in producing PhDs.

We must not over-react to these numbers. It is not clear how reliable they are and McKinsey has done research showing that only about 20 per cent of engineering PhDs from China are up to global standards. Nevertheless, the growth in education is real, and countries like China are very committed to generating very high-end research in their universities. They are talking about creating Ivy League universities and are focused on elite education. In terms of refereed scientific publications, the emerging world went from around zero in 1990, to about 15 per cent currently. That is a very rapid increase.

As a result of all these changes a lot of high-end, breakthrough innovation now comes out of developing countries. For example, in Microsoft a lot of the best work in the recognition of characters is done in China rather than in Seattle. In Cisco Systems, the best work the company is doing now in the area of communicating over the Internet again takes place in Bangalore rather than in the United States.

First Energy's 'Oorja' wood-burning stove

Hoping to help village women who spend hours a day looking for wood and keeping a fire going to cook for their families, the Pune-based company, First Energy, with the help of BP plc adopted the gasifier technology used in power plants to make a stove that would burn more efficiently and with less smoke. The stove's efficiency is 300 per cent higher than traditional stoves. Engineers from the Indian Institute of Science in Bangalore designed a stove with a perforated chamber that uses a small fan to get just the right amount of air to keep a fire burning at a high temperature, meaning less smoke and quicker cooking. The stove uses biomass gasification technology. For fuel, it uses dry pellets made of agricultural waste, like corn husks and peanut shells. The company has sold around 400 000 of the $23 stoves across India.[7]

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Frugal Innovation

Even more important than this high-end innovation, perhaps, is the amount of what we might call low-end innovation. Too often people focus on the cutting edge, big-bang scientific breakthroughs; the sort of thing discussed in the science section of the Economist. The most interesting innovations, insofar as business is concerned, however, take place at the lower end. These often consist of process innovations, that is, ways of doing things more simply and more cheaply. For example, Michael Dell established one of the largest computer companies in the world by applying just-in-time production to the making of personal computers. Before that, Henry Ford

revolutionised the production of cars by adopting the idea of the production line, an idea he originally got from watching cattle being processed at an abattoir. These ideas did as much to revolutionise our world and to massively improve standards of living, as the discovery of new technologies by scientists in sophisticated laboratories.

In India they have taken an emphasis on low-end innovations to a new level. They call it frugal innovation, or *Jugaad*. The core idea is that by eliminating complications, by simplifying products and by using cheaper materials, it is possible to cut the cost of producing existing products, not by five or 10 per cent, but by 90 per cent. Indians, operating in the kinds of low-income markets that are the core feature of that country's economy, have seen that producers in the West have added numerous unnecessary bells and whistles to their products. These features may make the products more attractive to wealthier consumers, but the bells and whistles don't really deliver any essential value. This trend of adding many unnecessary frills started during the 1960s in America, the time of the 'affluent society', when many products had features, such as numerous knobs on appliances and elaborate fins on cars, which were there for their aesthetic value but did nothing to make the products work any better. This kind of anti-frugal self-indulgence is captured well in the recent TV series, *Mad Men,* about advertising agencies in the 1960s.

Innovators in India and other emerging countries with similar markets have decided to strip everything down to its fundamental function. At GE headquarters in Bangalore they have developed an electrocardiogram (ECG) machine that will cost $400. In the United States the standard ECG machine sells for $4 000. The Indian version of the ECG machine can perform all the essential functions of such a machine. It doesn't have as many buttons as the standard machine and to print out the results it uses a cheap ticketing device originally designed to print tickets on buses. Everything has been reduced to its simplest components. The machine is also very durable, so it can be used in difficult, rural environments. This combination of greater durability and massive reduction in costs allows companies such as GE to bring essential products to masses of people who were previously excluded.

Tata Nano car

In 2009 Tata Motors made 60 000 Nano cars at a cost of $2 200 each after taxes and dealer costs. At the time, the car had the smallest carbon footprint and turning radius of any car in India. The Nano is about three metres long and less than one and a half metres wide. On 3.7 litres of petrol, it can travel for approximately 76km and its top speed is about 105km/h. To keep the weight low, engineers lightened the engine to two cylinders; they installed only one windshield wiper and they mounted 12-inch wheels that use three lug nuts instead of four or five. Keeping it simple meant no radio, no glove-box, no power steering, no power windows and no air conditioning. The instrument panel only had the basics: speedometer, odometer and fuel gauge.
Tata estimated it would sell 100 000 Nanos every month, but has only been able to sell 1 000 vehicles a month. This has been attributed to India's middle-class perception that cheap goods carry with them a stigma of poverty. Another issue is that of safety. Since 2009 at least six Nanos have gone up in flamesfrom fires starting in the exhaust or electrical system.[5]

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In Kenya, innovations are taking place that are driven by a similar impetus. Banks are using cell phones to send money to remote rural areas. Kenya's largest mobile network has set up a remittance facility called M-Pesa or mobile money, to help migrant workers reliably send money home to rural areas where banks are scarce *(see box on page 9)*.

Back in India, Tata chemicals has produced a water purifier that uses a combination of rice husks and nanotechnology. This technology produces very clear water at extremely low costs. It costs about $20 a year and lets you filter as much water as you need. As in the case of Kenyan cell-phone banking, this represents an interesting combination of low- and high-end innovation that has produced huge benefits to masses of people *(see box on page 9)*.

Lithium–ion battery Hybrid cars for China

In 2008 the world's first mass-produced, plug-in hybrid, the F3DM, and the world's first production series hybrid car, went on sale in China. The F3DM uses BYD's self-developed iron-phosphate-based lithium-ion batteries, which can be recharged more than 2 000 times. Charge time with a standard 220V 10A wall socket is seven hours, while using a high-powered charger three-hours full charge is possible. Due to the characteristics of iron-phosphate lithium-ion batteries, which have very high charge and discharge rates, it is possible to half charge the battery in as little as 10 minutes or 80% charge in 15 minutes. As the F3DM is a series hybrid, the wheels are always driven by the electric motor which has 405Nm (300ft/lb) of torque, with full torque available from zero rpm. The electric motor can be used as a generator for regenerative braking, which re-collects kinetic energy used to accelerate the vehicle for storage in the battery and can greatly extend EV mode range. [8]

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Social Technologies

Emerging markets are also generating many innovations in the area of social technologies. The corporation, which has probably done more to create mass prosperity than any other institution, was invented in the West. It then spread to the rest of the world, and we are now seeing new corporate forms coming out of emerging markets. These new corporate forms are very different from the publicly-listed, focused companies that have dominated the West. Instead, many of the most exciting companies in emerging countries are complex conglomerates. India's Tata is a classic example of a company which undertakes a plethora of initiatives in economic areas that often seem unconnected to one another. This may seem surprising to people in the West, but it makes sense in a developing country context. In places where infrastructure is inadequate, where government is weak, property rights uncertain and where there are many holes in the regulatory environment, it makes sense for large conglomerates to operate. They can mobilise significant resources and, through their market power, lay the foundations for a workable business environment. At the same time, by coordinating efforts across a range of business areas, these companies can also detect connections that may never have been seen by smaller, more focussed companies. For example, the water cooler discussed earlier emerged

out of a combination of Tata Chemicals, which provided the chemical inputs, and Tata Consulting, which developed the Swach technology *(See box on page 4)*.

Because ownership is concentrated, companies find it easier to take risks. Business families and founding entrepreneurs, with large shareholdings in their companies, are willing to make longer-term bets on growth and do not have to worry about losing control of their companies if their stocks take a temporary nosedive.

In China a different development is taking place as new state-owned companies are starting to emerge. Unlike the older, inefficient state-owned entities, these new companies are seeking to combine elements of the free market with state direction and cheap money. Since 1980, China has been implementing a policy known as *zhengqifenkai* which separates government functions from business operations and therefore minimises government's favouritism towards state-owned companies, forcing these operations to become as efficient and profitable as possible. They cannot afford to be inefficient, as they are global players competing with western companies. Many of these Chinese companies are extremely innovative, as well as having clear, long-term plans for the future, and also aggressive in acquiring resources. A case in point is the 2008 multi-billion dollar purchase of a stake in Rio Tinto by the Aluminium Corporation of China (Chinalco).

Because these companies have ready access to capital, there has been a steady increase in investment in research and development. In 2006, China became the world's second-ranking investor, with telecommunications company Huawei investing 10 per cent of its revenue in research and development.

Another factor which is increasing the innovation levels of these companies is that they are attracting a large number of young graduates. According to a survey conducted in 2010, there were 33 state-owned enterprises among the 50 best employers in China. In a world that is increasingly becoming resource constrained, these companies may represent a way of sustaining rapid growth in the future.

Another innovative corporate form can be found in the rise of social entrepreneurship, where companies effectively combine the profit motive with the moral imperative of providing charity. It is about creating business models

M-Pesa: mobile money for rural Kenya

M-Pesa (M for mobile, Pesa is Swahili for money) is the product name of a mobile-phone-based money transfer service for Safaricom, Kenya's leading mobile network operator. M-Pesa was launched in 2007 as a way of sending remittances home across the country and making payments. To use the service, customers first register with Safaricom at an M-Pesa outlet, usually a shop, chemist or petrol station. They can then load money onto their phone. The money is sent on to a third party by text message. The recipient takes the phone to their nearest vendor, (there are over 11 000 agents) where they can pick up the cash. Funds can even be transferred to non-registered users, pay bills, and purchase mobile airtime credit. All transactions are authorised and recorded in real time using secure SMS, and are capped at $500. The service is designed to enable users to complete basic banking transactions without the need to visit a bank branch. In rural Kenya, this is a huge attraction, as the villagers do not need to spend money on transport going to the nearest town to collect money. M-Pesa is also a lot safer than the previous alternative, where urban migrants had to send money to the rural areas in envelopes given to bus drivers.[9]

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revolving around low-cost products and services to resolve social inequities and the realisation that social progress and profit aren't mutually exclusive. This rise of social entrepreneurship has been especially visible in India. In 2010, four of the top 10 most innovative companies in India could be defined as social enterprises or at least they included socially-entrepreneurial initiatives as part of their business strategy. Profitable sectors for social entrepreneurship in India include education, health and rural development. A growing number of venture capitalist firms are increasing investments in this area, with $220 million being invested in 77 social businesses in 2010 in India.

A well-established example of social entrepreneurship is Basix. Owned by the holding group Bhartiya Samruddhi Investments and Consulting Services, Basix was established in 1996 and focuses on improving the livelihoods of poor people by providing financial services and technical assistance to more than three and a half million customers, over 90 per cent of whom live in poor rural households. The company operates in 17 states, 223 districts and over 39 251 villages. It has a staff of over 10 000, 80 per cent of whom are based in small towns and villages.

The Peepoo: sanitation for slum dwellers in Kenya

The Peepoo was developed as a way of minimising the effects of the shortage of clean water, sanitation and infrastructure in many parts of the developing world, where conventional wastewater treatment and sanitation systems are expensive and difficult to install. It is a personal, single-use bag that has been described as the hygienic version of Nairobi's flying toilet, intended, to begin with, for Kenyan users. The Peepoo bag is a long thin bag (14 x 38 cm) with a gauze liner, and coated on the inside by a thin film of Urea, the most common fertiliser in the world. When the urea comes into contact with faeces or urine, the bag acts as a micro treatment plant, breaking down the excreta and increasing the pH of the material. Waste-borne pathogens (viruses, bacteria and parasites) are killed over a period of a couple hours to a few weeks. Since the bag is made of degradable bio-plastic, when it has served its primary purpose it can be sold with its contents as fertiliser. The hope is that a market will develop in which the same people will trade in the bags before and after use. Each will sell for between five and seven cents, about the same cost as a conventional plastic bag. [10]

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Contrasting Global Moods

The rich world has lost its monopoly on ideas. And this loss is contributing to a very glum mood in the West. The mood in the United States and Europe is very pessimistic at the moment. The sense of being the chosen people in charge of the destiny of the world has all but gone. Unemployment levels are very high and there no longer appears to be any virtuous connection between innovation and job creation. In the early days of capitalism, inventors like Thomas Edison would come up with a good idea, which would lead to factories being set up in Detroit or New Jersey. This link no longer exists. Even when Americans produce good ideas in Silicon Valley (and they certainly produce a lot of them) it's quite likely that most of the jobs, including many high value-added jobs, will be done in India or in China, not in the United States.

We are probably only at the beginning of this process and we are only starting to see the repercussions of this. The rise of frugal innovation has the potential to

produce goods from computers, to medical machinery and to cars, that are 90 per cent cheaper than the standard products. Once these goods are rolled out from India and China, they are going to destroy entire categories of businesses in Europe and the United States. And the challengers from emerging markets, including India and China, will have all the advantages. They have lower labour costs, new, home-grown business models and direct experience in how to sell to low-income, mass markets. As a result, the mood in Europe and the United States is likely to become glummer as these developments play themselves out.

The mood in India, China and Brazil , by contrast, is extremely buoyant. The 2009 Pew Attitudes Project reveals that 94 per cent of Indians, 87 per cent of Brazilians and 85 per cent of Chinese are satisfied with their lives. People in these countries are hugely optimistic about the future, probably with good reason.

What is striking about South Africa in this context is that the mood here tends more towards the glum than the buoyant. There is decreasing optimism and hope in South Africa. It appears that the country is haunted by its history, and as a result, keeps on reliving the past. It then fails to participate as much as it should in the new opportunities that the world turned upside down is throwing up. It is true that South Africa has a brutal and depressing history. But that is also true of China, of India or of Vietnam. Those countries, it seems, have said, let us not dwell on history, because whatever happened in the past we are going to rule the future. Why can't South Africa follow suit?

General discussion

In response to this presentation, participants raised a number of questions relating to South Africa's place in this new world. There was agreement that, while South Africa certainly did have innovative industries and globally-competitive firms, the country as whole was not benefitting as much as China, India and Brazil from these new global trends. Participants wanted to know what was behind this relatively poor performance, as well as how South Africa would be affected by the on-going changes in the global economy. The main questions included:

- Is there something fundamentally wrong with South Africa's education system which is preventing South Africans from participating as much as possible in these recent innovation trends?
- Do government restrictions on business undermine South Africa's performance?
- How important is it for countries to develop a strong sense of self-reliance and individual responsibility?

- Does the policy environment matter for the levels of innovation that countries achieve?
- How will these innovation trends be affected by climate-change?
- Is frugal innovation the answer for promoting the rapid economic growth of emerging nations like South Africa?

Response by Adrian Wooldridge

Education

It is true that South Africa faces many challenges at the basic education level. However, the same can be said about India and Brazil. It is likely that the differences between the education systems of the three countries are not that great. A more important difference for innovation may exist at the level of university education. Elite universities and a focus on producing excellence are becoming increasingly important in the current context. Bill Gates has pointed out that, in the information technology industry, the very best people are often 100 times better than the next best. China and India have made great strides in promoting elite universities. In China there are deliberate attempts to create an Ivy League group of universities. A combination of ancient university traditions and a lack of concern with egalitarianism amongst communist party officials mean that China has progressed strongly towards encouraging elite university education. In India, by contrast, a strong egalitarian undercurrent can be found in much of their thinking. However, Indians are very quick to talk about the brilliant people who passed high-level exams or were promoted to leadership positions in global companies. There is a strong preoccupation with elites in India. It seems that countries that are obsessed with equality and do not value the achievements of the gifted few will not be able to participate effectively in the new world of emerging market innovation.

Political Restrictions

There may be numerous political restrictions on businesses in South Africa, but the interesting counter example is Brazil. Brazil has a very large and intrusive state, which is in many ways obsessed with redistribution. There are also massive restrictions in the labour market, including a complete ban on temporary labour. At the same time significant changes have taken place in Brazilian society and culture. An entrepreneurial class has risen. It used to be the case that if Brazilians wanted to achieve respectability they would look for a job in the state sector. This has now

turned around and Brazilians are increasingly looking to the private sector, not just for jobs and upward mobility, but also to drive their country forward into the future.

Self-Reliance

What matters for innovation and entrepreneurship more than restrictions on individual freedoms is the sense amongst the general population that it is up to them to find solutions for the challenges they confront. Pew Charitable Trusts has undertaken world-wide surveys of people asking whether their fate is determined by themselves or by external forces. What these surveys reveal is that Americans essentially believe that their fate is in their own hands; continental Europeans are much more status conscious and tend to see themselves more as victims of the social system. In the developing world, especially India and China, dramatic changes in attitude have taken place. Increasing numbers of people in these countries now believe that individual people can and should make their own futures; that they are in charge of their destinies and not merely subject to the whims of fate. People who hold such views are more likely than others to be innovative and entrepreneurial and will often be able to overcome all sorts of obstacles, even the ones put in their way by interfering states.

The Policy Environment

The policy environment does matter. If a country is able to set up appropriate institutions and create the right incentives, it ensures that people's productive efforts are channelled into economic innovation and hard work. Where rules are unclear and accountability and transparency are absent, it becomes very tempting for people who might otherwise have become productive members of society to shirk or to steal. Property rights are very important in this regard. Without property rights many potential entrepreneurs may not be interested in expanding their business activities, if they feel that the fruits of their labour will be expropriated by others. Without property rights it is very difficult for poor people to obtain the credit they need to own their own houses or start their own businesses.

Climate Change

The growing acceptance that drastic action has to be taken to ward off climate change is pushing the world to transform many established practices. Anything that is disruptive of the established way of doing things is good for innovators and people with new ideas. For example, in the motor car industry, the rise of the electric car is likely to shift the centre of production away from the established centre of

Detroit to a variety of new places with new ideas on how to build eco-friendly cars; for example Denmark, Israel and California. Climate change should, therefore, strengthen the trend of innovation coming from increasingly diverse places in the world. At the same time, climate change is leading governments to dole out large sums in subsidies for clean energy. However, it is not clear that these will deliver results, as they tend to go to established, dominant companies who may not be the best source of new ideas for clean energy production. In addition, governments tend to lump a whole lot of goals together in their climate change strategies. An example of this is the idea of encouraging job creation through environmentally-friendly investments. Attempts to solve two problems at once often result in neither problem being solved.

Frugal Innovation

Frugal innovation is not the way that all business will be conducted in the future. Businesses produce to meet the demands of consumers. Much consumption is aspirational and, strictly speaking, wasteful. The Tata Nano, for example, may not turn out to be a great success. It is the cheapest car ever made, but most consumers do not want to drive the cheapest car possible. They want their car to be exciting in some way, and to be a reflection of their upwardly mobile status. However, when it comes to medical or even military equipment, frugal innovation will probably show that there are cheaper ways of producing currently very costly machines, without losing any of the machine's functionality. This will have very positive consequences in allowing governments, like the one in the United States, to significantly reduce their expenditures in these areas. Tata has now turned its attention from producing the cheapest car to producing the cheapest house. This could have the effect of making decent housing available to a much broader range of consumers than ever before, thereby significantly improving many people's lives.

Lastly, companies in emerging markets have discovered ways to produce goods in such a way that they become affordable to the millions of poor consumers who constitute a significant proportion of the markets in which these companies operate. If they adapt these goods and begin to sell them in richer markets, they will introduce major disruptions into these markets. Frugal innovators have the potential to introduce new choices for rich-country consumers, who will now have the option of buying the cheaper goods and potentially spending the money they save on additional goods.

Notes

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This publication summarises the proceedings of a presentation by Adrian Wooldridge. The summary was written by Dr Stefan Schirmer, Dr Sandy Johnston and Ann Bernstein.

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