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Some deliberations on the prospects of frugal innovations

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"Too good" to succeed? Why not just try "good enough"!

Some deliberations on the prospects of frugal innovations

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High-tech, German companies are facing a curious problem: their products are reportedly "too good" for the expanding global markets. So in a way they get "penalised" for offering a superlative quality. At a second glance, though, this doesn't seem surprising. For, succeeding in the emerging markets like India or China often requires developing market-specific products and services that enable an attractive value proposition without taking recourse to (excessive) over-engineering. Furthermore, the innovations should be able to cope with, and successfully circumvent, the given infrastructural restrictions ever so present in the rural and semi-urban areas in such economies.

About half a year ago in April 2013, *Die Welt*, a German newspaper of repute, ran a somewhat unusual story; interestingly titled "German construction machinery too good for the world market". The report by Carsten Dierig added that German products continue to win a lot of innovation prizes at industrial fairs and exhibitions, but – sadly enough – not the purchasing orders (Dierig, 2013). The reporter wondered whether Germany's supposed technological prowess and edge is really worth much if its products cannot induce sells in the growing markets of the emerging economies. To find an answer he quoted from a recent study by a business consultancy firm that sees Chinese companies at the fore in serving price-sensitive markets in emerging economies. This report states:

> "Chinese companies are increasingly dominating the global construction equipment industry. They are ideally positioned for the world market and, in particular, the emerging markets of the future, and are resolutely continuing down their growth path. They possess something that is of paramount importance in the new markets – a robust, technically simple and affordable product that allows do-it-yourself repair."
> (Oliver Wyman, 2013)

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* An earlier, shorter version of this article is scheduled to appear in the Nov. 2013 issue of GermanyContact India (OWC Verlag, Berlin) in co-authorship of Dr. Stephan Buse.

It may be tempting but, nonetheless, overly simplistic to dismiss such reports as "alarmist" or as merely the creation of some sensation-seeking media. We can observe a growing apprehension especially in the mid-sized firms (revenues up to €5 billion) about their long-term growth prospects not only in the emerging economies but even in the own home markets in the face of inward foreign direct investments (FDI) from emerging market multinationals. Even firms that are often touted as the "hidden champions" of the global economy (Simon, 2009), are not immune to this development, as the takeover of Germany's Putzmeister by its Chinese competitor Sany for €360 million in 2012 shows (Bryant, 2012). Sany had, already prior to this acquisition, overtaken Putzmeister "as the world's largest concrete pumps manufacturer by sales" and the *Financial Times* quoted Prof. Hermann Simon, who is often credited with having created the term "hidden champion" as dubbing this acquisition a "wake-up call". According to Bryant (2012), Simon emphasized:

> "There is still a perception that Chinese companies produce only cheap wares. Sany is different – they are the vanguard of new Chinese competition."

Intensifying South-South Relations

Hard data, too, indicate towards the increasing intensity of economic relations between the nations of the "South" (the developing and transition economies). For example, India's merchandise imports from China had stood at \$1.5 billion in 2000; Germany exported goods worth \$1.8 billion and the USA worth \$3.0 billion to India then. By the end of fiscal year 2012-13 the scenario had changed completely, see Figure 1. While both Germany and the USA could boost their exports to India by an impressive 8-fold in some 12 years, the Chinese exports grew a mind-blogging 36-fold to \$54.3 billion in this period.[1]

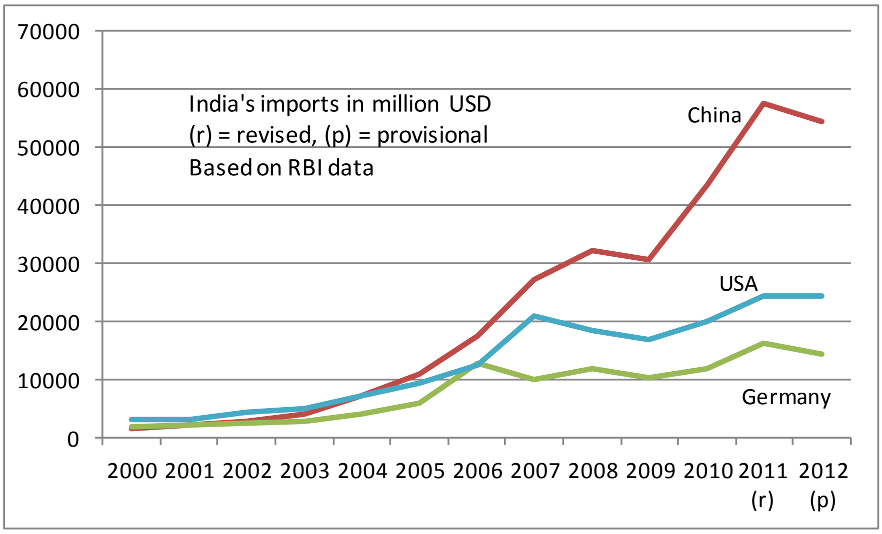

Figure 1: India's imports from selected trade partners[2]

[1] This is even more incredible if one takes a few steps back to year 1991. As India began its economic reforms Chinese exports to India were practically non-existent at \$20.9 million, while German and US exports already stood at formidable levels of \$1.6 billion and \$2.0 billion respectively.

[2] Data concerns fiscal years that run from April of a given year to March-end of the following year.

The discussion above suggests that China-based companies, despite their still low R&D intensity, are probably more successful in meeting customer needs of the emerging markets than are those based in Germany, the USA or for that matter in the other developed nations. In part, this success might be explained by the lower production costs and the FDI from other nations to China making it their production hub. These factors have also led to a surge in the Chinese exports to the developed Western economies. However, this phenomenon is not limited to the Chinese firms alone, and is not entirely driven by mere production. The trade increasingly involves innovative products (Khanna, 2008; Govindarajan and Trimble, 2012; Tiwari and Herstatt, 2014). India's own exports of engineering goods, and its exports to other developing countries in general, have grown very substantially in the past decade (Tiwari and Herstatt, 2011).

In general terms, we can observe a global trend in this respect. United Nations' statistics on international trade (UNCTAD, 2013) show that the share of the developed economies in the global export of goods and services decreased from 65% in 2000 to about 50% in 2012, even as the volume of exports from the developing and transition economies rose from $2.2 trillion to $9.0 trillion. The share of these nations in the global imports also increased from 30% to 45% reaching $7.0 trillion in 2012, up from $1.9 trillion in 2000. The growing share of *both* exports and imports from the non-developed economies suggests increasing "south-south" cooperation and the intensifying economic relations.

Why the "good enough" approach?

The raison d'être for the frugal or "good enough" approach is beautifully delivered by a verse of Abdul Rahim Khan-i-Khana, one of the nine "jewels" in the court of India's great Moghul Emperor Akbar. Rahim, an avid poet known for packing pointed insights in small couplets, cautions in one of his *dohas* (verses) against relying excessively on the "big" solutions. "A task that can be achieved by a needle," reminds Rahim, "often cannot be performed by a sword", even though a needle is small and inexpensive and a sword big and much more expensive, maybe even made of metals much more precious. In German and English languages too, as probably in most others, there are idioms that warn against losing sight of proportionality (e.g. "using a sledgehammer to crack a nut").

Such metaphors, perhaps, can succinctly summarize the appeal of "frugal" solutions that are sought by the large and voluminous markets in China, India and other emerging economies. Most consumers here are wary of purchasing products that are beset with functionalities not required, costs of ownership too high, a build too fragile, and a price point not affordable. An average consumer in a market like India is basically carrying a paradox within. On the one hand, he (or correspondingly she) aspires for consumption and yearns for a better standard of living; on the other hand the consumer is often driven by something like a "passionate rationality" about his purchase decisions. It is this challenge of simultaneously addressing these two paradoxical wants, which firms need to master for succeeding in such a market, and what we call is the "frugal challenge".

Nevertheless, our research shows that it is a "difficult-yet-achievable" paradox. Score of domestic and global firms, from established incumbents to start-ups, have demonstrated how this can be made possible. In our forthcoming book "*Aiming Big with Small Cars: Emergence of a Lead Market in India*" (Springer Verlag, Heidelberg; referenced in this paper as: Tiwari and Herstatt, 2014) we showcase innovations by companies such as, India's Tata Group, Godrej or the little known manufacturer of solar-powered ATMs, Vortex and global concerns like GE, Maruti Suzuki and Siemens. These cases demonstrate amply that it is possible to reach out to the price-sensitive customer, profitably.

What is frugal?

In terms of dictionary meaning frugal refers to "economical in use or expenditure; prudently saving or sparing; not wasteful; entailing little expense; or requiring few resources". It therefore implies "careful and saving use of resources", e.g. "through prudent planning in the disposition of resources so as to avoid unnecessary waste or expense". Not surprisingly, its antonyms are "wasteful; extravagant; luxurious; or lavish".[3]

Seen in conjunction with innovation, it can refer to products and services that seek to minimize the use of material and financial resources in the complete value chain with the objective of substantially reducing not just the price point but the complete cost of ownership/usage of a product while fulfilling or even exceeding pre-defined criteria of acceptable quality standards (Tiwari and Herstatt, 2014).

Our long-running, cross-industry research shows that frugal innovations are characterized by affordability, robustness, user-friendliness, scalability, and an attractive value proposition. A recent comparison of product prices has shown that frugal innovations can lower the price point by anywhere between 50% to 97% (Rao, 2013). Targeted at consumers who might hitherto have never had the occasion to use a similar product they should be able to cope with "unsophisticated" users, and withstand hazards like dust, heat or power failure. Such frugal products – aimed at serving volume-driven markets with comparatively thin margins – can lead to success in price-sensitive markets of the developing world.

What frugal is not!

There is a famous cartoon by India's legendary cartoonist R.K. Laxman, which shows a minister along with his secretary standing opposite a slum apparently discussing its removal. The secretary is seen suggesting: "It will be a problem demolishing it, sir. Why not just put a board 'low cost housing complex' and leave it?" That sums up beautifully what frugal innovations are at least not. Frugal does not mean a poor-quality, off-the-mark, improvised solution; often sold as a "Jugaad" product.

Rather, frugal innovations enable an excellent value proposition that prudently takes into account the specific needs of the customer and does not seek to compel him (or her) into

[3] Source: http://dictionary.reference.com, last retrieved: 23.10.2013.

purchasing more than what his perceived requirements are. In a sense, it is a “democratization” of innovation, because a customer can choose “add-on” features and upgrades depending on his taste, choice and financial resources governed by the parameters of the regulatory quality standards. To illustrate this point with an example, a basic version of the Euro-IV compliant Tata Nano (BS4) can be purchased for as low as Rs. 145,000 (approx. €1,720), or a customer can spend as high as Rs. 265,260 (approx. €3,150) for a CNG-driven Nano LX.[4] This flexibility to “furnish up” rather than “strip down” seems to be at the core of the frugal principle.

Reminding ourselves of the basic objective of innovation activity

At another level, frugal innovations also signify a transition from heavily technology and R&D centred “inventions” to more market-driven “innovations”. Frugal innovations remind us that the primary purpose of a product development activity is to tap an unfulfilled demand, and enable consumption. The rationale for market-specific, frugal solutions is evident in the following statement of the R&D chief of a carmaker in India, who told us:

> “Small cars have 5 doors in India, while the dominant standard in Europe is to have 3 doors. […] Indians are also very touchy with the luggage space. An auto purchase here is a ‘once-in-a-life-time’ investment. While European cars have heavy doors and heavy steering, India is just opposite; it prefers ‘feather touch’. Due to larger family size on average and the tradition of having chauffeur-driven cars, Indian cars, even small ones, need more passenger seats. Finally, technological package needs to be optimized to achieve a specific price position; otherwise it will be very difficult to promote the product.” *(Excerpted from the authors’ forthcoming book)*

Frugal innovations show that the sophistication of a solution is not by default rooted in the newest and most advanced *technology* but in a comfortable, robust, and affordable *solution* capable to uplift the standard of living to the next better level. Researchers based at the Frugal Innovation Lab of the Santa Clara University remind us of this very objective, when they state:

> “Frugal Innovation is a design innovation process in which the needs and context of citizens in the developing world are put first in order to develop appropriate, adaptable, affordable, and accessible services and products for emerging markets” (Basu *et al*, 2013: 64).

Drivers of Frugal Innovation

Opportunities for future growth now mainly lie in the unsaturated markets of the emerging economies. The contribution of the developing nations to the global GDP has almost doubled since the advent of the new millennium. With a great reduction in the absolute number of people living below poverty line a new and large class of consumers has emerged in the developing world. Since the purchasing power of the most of these consumers does

[4] Source: http://www.tatanano.com/price-list.php. All prices are ex-showroom in Delhi, as on Oct. 22, 2013; exchange rate 1 EUR = 84.2790 INR

not allow them, yet, to consume at the same level as the most of their counterparts in the industrialized West, they need products which can match their aspirations while catering to their specific environmental and socio-cultural requirements (Tiwari and Herstatt, 2014). Research by Elvire Meier-Comte in a specific Western multinational corporation (MNC) context also supports the proposition that even when cost and simplicity play an important role in frugal innovations they are not sufficient unto themselves for success unless they respond to local needs and aspirations (Meier-Comte, 2012). These insights are corroborated by statements of practitioners interviewed by the authors. For instance, managing director of a renowned and successfully operating German auto component supplier in India succinctly summarized the “credo to success” during an interview, thus:

> “To succeed in India, you need a product which costs 30% of the global price and offers 95% of the performance” (Tiwari and Herstatt, 2014: 6).

The R&D head of an equally successful carmaker seconded:

> “It’s about the aspirations of the youth in India. They want everything; they know everything; but they are not prepared to pay extra!” (Tiwari and Herstatt, 2014: 6 f.)

In the era of the Internet and television the traditional concepts building upon the international product life-cycle (PLC) theory have been rendered redundant. It is no more feasible for companies to send their commoditized “outdated” products to the countries of the “Third World”. Not surprisingly, management scholars like the late C.K. Prahalad have even gone to the extent of comparing this approach to “corporate imperialism” (Prahalad and Lieberthal, 1998). Research by Meier-Comte too has brought to fore that:

> “[…] innovation in emerging markets is an intelligent use of the state of the art technology in products which are simple and easy to use” (Meier-Comte, 2012: 290 f.).

A study conducted by Denmark-based Universe Foundation has led to creation of a manual for frugal innovations, which states that:

> “Now, there are clear indications that many companies will need to rethink and develop their offerings in an entirely different direction, if they wish to remain relevant to the future growth markets. […] The demands of these consumers, however, are for much lower priced solutions than what Western companies can typically provide.” (Universe Foundation, 2013: 2)

The relative importance of developing nations is set to increase even further. They have not only become major recipients, but also major sources, of FDI (see Figure 2). Between 1992 and 2012, the stock of inward FDI in developing nations rose from $611 billion to $8.6 trillion. At the same time their contribution to the global stock of outward FDI rose from $185 billion to $4.9 trillion. These facts underscore the growing economic activity and a deepening global integration of the developing nations in the economic value chain.

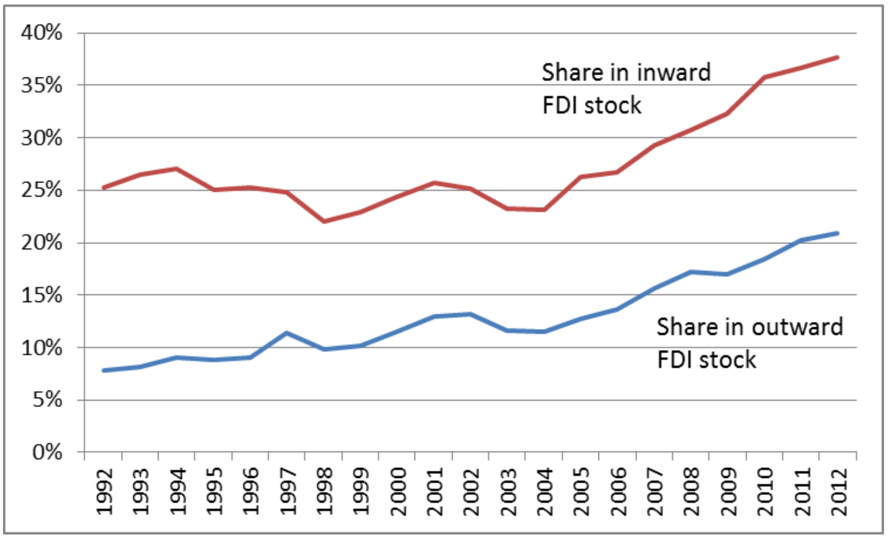

Figure 2: Share of developing countries in global stock of FDI

Increased FDI by emerging market firms also leads to bringing in of their frugal products to the Western markets. To pre-empt this threat many Western multinational (e.g. GE and Siemens) are also taking recourse to frugal products. This strategy has been called "reverse innovation" (Govindarajan and Trimble, 2012).

Third, environmental concerns and resource constraints are driving up the price of commodities. UN Data show that the price of commodities, like minerals, ores and metals, has increased up to 322% between 2000 and 2012. With increased global consumption, and the entry of a couple of billion new consumers it will not be possible to continue with the treaded path in the use of commodities. We need products that are more efficient and effective in the complete value chain, from development to production and distribution, and from utilization to disposal. The nature, after all, also does not know the concept of "waste".

Frugal in Europe

Slowly, but surely, we also witness an increasing demand for affordable, functional, and resource-efficient products in the Western markets. Many consumers in the developed countries are turning apprehensive of over-engineered products and the planned obsolescence, which deliberately creates products that deteriorate almost as soon as the guarantee period is over, inducing the customer to make a new purchase (Slade, 2007).

The earlier-mentioned study by the Universe Foundation (2013: 2) states:

> "Economic growth in Western countries has stagnated and in many regions, the economy is in serious crisis. Consumers are under pressure and reluctant to spend, and public budgets have been reduced. The result is that the middle segment of the market is increasingly squeezed as more customers are buying cheaper solutions than before."

A recent report even revealed that there are "43 million who do not get enough to eat each day" in Europe (IFRC, 2013). Official data recently released by Eurostat show that 24.2% of the population (120 million people) in the EU-27 "were at risk of poverty or social exclusion" due to material deprivation in 2011, up from 23.6% one year ago. Poverty risk is also not limited to Eastern or Southern Europe alone but even concerns large economies such as France, Italy and Germany, as evident from Table 1.

Country/region	Total	Children (up to 17 years)	Adults (18-64 years)	Elderly (65 and above)
EU-27*	24.2	27.1	24.4	20.4
Euro area*	22.6	25.1	23.3	18.2
Bulgaria	49.1	51.8	45.2	61.1
France	19.3	23.0	20.1	11.5
Germany	19.9	19.9	21.3	15.3
Greece	31.0	30.4	31.6	29.3
Italy	28.2	32.3	28.4	24.2
Poland	27.2	29.8	27.0	24.7
Spain	27.0	30.6	27.2	22.3
United Kingdom	22.7	26.9	21.4	22.7

Table 1: Percentage of population at risk of poverty or social exclusion in select EU countries[5]

Figure 3 shows the EU member states where the share of population at risk of poverty has increased between 2006 and 2012. Surprisingly, Germany recorded the strongest increase. While 11.9% of the German population was seen at the poverty threshold after including social transfers in 2006, this share increased to 15.4% in 2012 (Eurostat, 2013a).

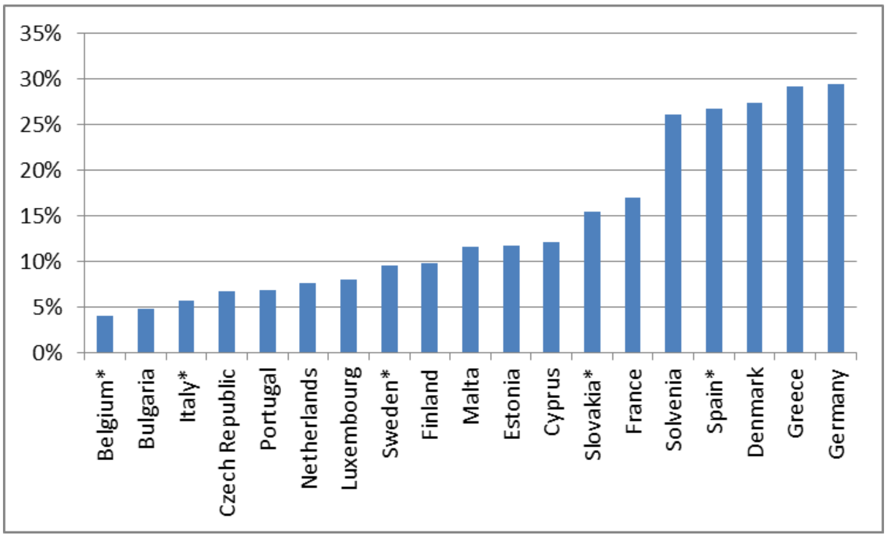

Figure 3: Growth in the share of population at risk of poverty in EU (2006-2012)[6]

Companies like consumer goods manufacturer Unilever are already responding to the increasing (relative) poverty in Europe and implementing the low-cost (frugal) strategies learnt in countries like Indonesia (Daily Mail, 2012; Spiegel, 2012). Unilever has apparently

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[5] Source: (Eurostat, 2013b); * = estimates.

[6] Source: Own calculations based on Eurostat (2013a); * = data refers to 2011. No data was available for Croatia and Romania for 2006, while 7 other nations (Austria, Hungary, Ireland, Latvia, Lithuania, Poland, and the United Kingdom) could, to varying degrees, achieve a reduction in the share of population at poverty risk.

"created a low cost brand for basic goods such as tea and olive oil in Greece" (Daily Mail, 2012). Jan Zijderveld, chief of Unilever's European business, tellingly, said:

> "In Indonesia we sell packs of shampoo for two to three cents and still make decent money. We know how to do that, but in Europe we have forgotten [that] in the years before the crisis." (Jan Zijderveld cited in Daily Mail, 2012)

The demographic developments and the rising costs of healthcare are another reason why frugal innovations would also be increasingly required in the West. Hesseldahl (2013: 24) sees numerous indications that consumers in the developed nations will become "very conscious of choosing solutions that focus on real needs and deliver at low prices".

Summary

Summarizing, it may be stated that there is a large and unsaturated young population in emerging economies that is driven by aspirations. It creates a unique opportunity for firms to offer new and affordable solutions. The high volumes can compensate for thin margins. Innovation eco systems in countries like India allow access to significant technological capabilities so that products can be developed in "open global innovation networks" (Tiwari and Herstatt, 2012). This can lower the associated development costs and risks. Collaborating with the emerging market firms and institutions can produce win-win results for all parties concerned. Products that succeed in a lead market like India can be reasonably expected to have a large potential in other emerging economies with similar socio-economic conditions. But also in Europe and elsewhere there is an increasing demand for affordable, "good enough" solutions. A singular focus on technology-driven, "high tech, high price" innovations runs the risk of losing the sight of the changing consumer wants. In this respect, it would be probably worthwhile to listen to Adam Smith, the much misunderstood founding father of the free market economy, who famously wrote:

> "Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer." (Smith, 1776: 715)

If this is made the guiding principle of product development for the emerging markets like China and India – and indeed elsewhere – this would be a right step in the right direction.

Coming back to the example of the German construction equipment industry whose products supposedly are "too good" to succeed, the reason for the problems faced by the construction machinery manufacturers might be rooted in a prohibitive price caused by a superlative performance *not required by the customer*. There is a need for a greater flexibility and market orientation. The lesson, possibly, is to become "good enough" for the respective customer segments. As they say in Germany: "don't shoot sparrows with canons".

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