

SOCIAL
SCIENCE
AND
POLICY
BULLETIN

Winter/Spring 2013

SOCIAL
SCIENCE
AND
POLICY
BULLETIN



Social Science and Policy Bulletin

VOLUME 4 No. 2

(Winter/Spring 2013)

ISSN 2073-6789

Editorial Board

Syed Turab Hussain

Maryam Khan

Hadia Majid

Muhammad Farooq Naseer

Nadia Mukhtar Sayed

Editorial Assistants

Tehmina Khan

The opinions and views expressed here belong to the individual authors and do not necessarily reflect the views of the editors. Some rights reserved.

The *Social Science and Policy Bulletin* is published quarterly by the School of Humanities, Social Sciences and Law at LUMS. It provides a forum for debate on the economic and socio-political issues pertaining to the formulation and conduct of public policy as well as its impact. The Bulletin aims to disseminate, to a wider audience, high quality research and policy-oriented work being done by social scientists. The editors of the Bulletin welcome short essays, either analytical or quantitative, that are relevant as well as intellectually stimulating.

In this Issue

Editors' Note	1
Exports and the Region: The Case of Pakistan <i>Tareena Musaddiq, Atiyab Sultan, and Kiran Javaid</i>	2
Are <i>Madrassahs</i> Teaching According to the National Curricula? <i>Ravish Amjad</i>	12
The Ethics of Climate Change <i>Khalid Mir</i>	19
Revealing Facts: Mapping Economic Activity and Human Development in Pakistan	27

Editors' Note

Economists continue to play a significant role in informing policy debates. This is partly because the discipline provides the tools to engage in both positive and normative analyses. Thus, when examining the economic theory of public policy, Musgrave notes that it is possible to take two distinct approaches: the normative approach, which focuses on the role that the government should play in allocating scarce resources and in helping society achieve its vision of a just society; or the positive approach, which emphasizes how self-interested citizens, groups, politicians and government employees interact to define the range, scope and future direction of public actions. Yet, an emphasis on a normative analysis without a concurrent positive one is likely to paint only half the picture. After all, only upon adequately analyzing what is can we provide a sensitive and informed judgment regarding what ought to be.

The inability of the discipline to not only deliver a timely forecast of the 2008 financial crisis, but also the failure to provide an informed consensus on the appropriate road to recovery has pointed towards large gaps within the current economic framework. Much of the recent work in Behavioral Economics has also indicated that the core assumptions of mainstream economics do not always hold when tested. Hence, it seems that the tools to engage in positive analysis need to be developed further. One of the primary challenges that the discipline faces right now is that mainstream economic theory does not provide suitable techniques to model altruism, or to include dimensions of ethics and morality in the preference framework. With an incomplete understanding of the forces driving human behavior and interaction, the discipline then falls short in its prescriptive analysis. The research direction in a few sub-fields of economics in recent years, particularly in Behavioral and Development Economics, has been to overcome the deficiencies in core economic theory by incorporating aspects of altruism in economic modeling and by specifically

tackling issues related to morality in individual decision-making. Nonetheless, these developments have not yet filtered through to conventional economic approaches and in particular to the way that economics is taught at the college and graduate levels.

The articles in this issue of the Social Science and Policy Bulletin highlight positive and normative approaches. Musaddiq, Sultan and Javaid study the different product lines in which Pakistan has a revealed comparative advantage in order to provide policy recommendations regarding the positioning of Pakistan's export so as to gain in regional and world trade. Their results show that Pakistan does not enjoy revealed comparative advantage in seven of its twenty product line exports, while their policy recommendations include a move towards product mix diversification. Amjad provides a look into *madrassah* education in Pakistan and compares the achievement levels of students enrolled in *madrassahs* with those enrolled in public schools. Her results reveal that children enrolled in *madrassahs* perform significantly worse, particularly with regard to reading, due to the content of the curriculum. Finally, Mir's article is a normative analysis of the ethics of climate change. He argues that the standard utilitarian approach does not adequately model the inter-temporal aspects of the issues surrounding climate change and suggests that the debate should instead be formulated in terms of the current generation's obligations towards future generations by "imagining ourselves as part of a continuous moral community".

Exports and the Region: The Case of Pakistan

By Tareena Musaddiq, Atiyab Sultan, and Kiran Javaid



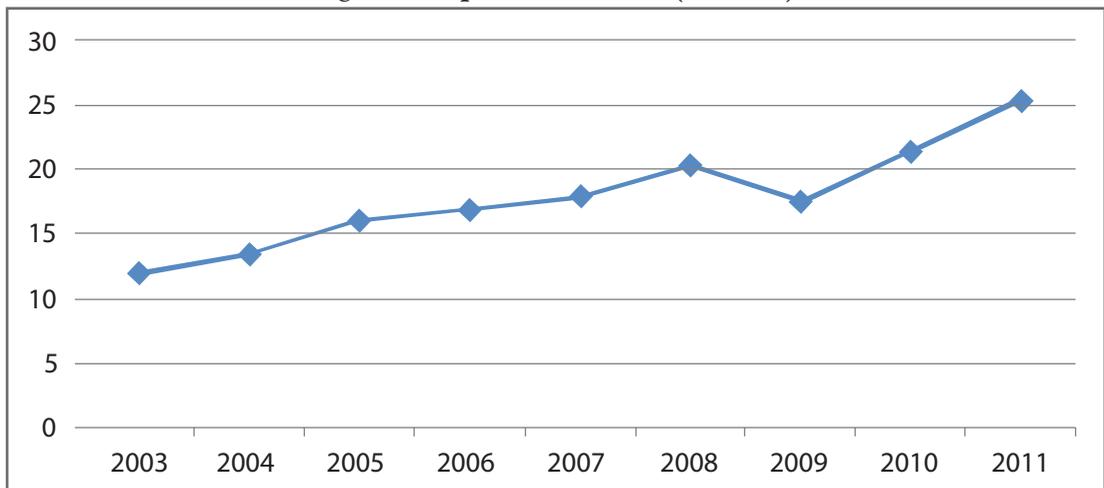
Increasing international trade has been established as a key component of development strategies by economists, whether in export promotion arguments or pro-globalization views. In a rapidly integrating world where increased trade flows across countries and regions are of particular importance, there is a need to design trade policies that accommodate changing conditions.

Historically, Pakistan has followed varying trade regimes from phases of closed economy for Import Substitution Industrialization (ISI) in the 1950s and 1960s to policies encouraging trade-openness and export promotion. More recently, the subject of regional trade, in particular with its neighbor India (with which Pakistan shares a 2900 km long

border), has come into the limelight. On the one hand, there is the chance of benefiting from the huge market that Indian consumers will provide for Pakistani businesses, as well as the import of cheap machinery and raw materials. On the other hand, critics point out that the domestic industry may be choked by the influx of inexpensive Indian goods, particularly from the heavily subsidized agricultural sector. Furthermore, given the political history of the region, there is the omnipresent fear that increased regional trade may not be possible in the long run given the tumultuous relationship between the two countries.

On a more general note, it becomes important to assess the ability of Pakistani goods to successfully compete with the products of its trading partners. Not only should Pakistan produce goods that are in demand in the world market (as well as in its neighboring countries), it also needs to produce them in a cost-effective and competitive manner. Figure 1 traces the exports of Pakistan in the last decade. Pakistani exports experienced slow growth

Figure 1: Exports of Pakistan (billion \$)



Source: Authors' graph based on data from UN Comtrade database.

in 2005 and 2006 and registered negative growth in 2009, possibly owing to the global financial crisis before picking up in 2010 again. As of 2011, Pakistan's export figure stands at \$25.5 billion.¹ The USA is the biggest buyer of Pakistani exports while Afghanistan is the only country from the SAARC region featuring in the top five export destinations of Pakistan.² Pakistan's eastern neighbor, India, currently buys a very small proportion of Pakistani exports. Figure 2 shows imports from Pakistan's major trading partners. China and the Gulf countries are Pakistan's major import partners in the last year (i.e. 2011).

With minimal regional penetration, it is clear that there is great potential for regional expansion of Pakistani exports and we attempt to assess their competitiveness using the latest data from the UN Comtrade database. For the calculation of revealed comparative advantage, data pertaining to Pakistani exports at the two-digit Harmonized System (HS) code level was used. For regional trade, the latest data available for total exports and imports of the major SAARC countries (India, Pakistan,

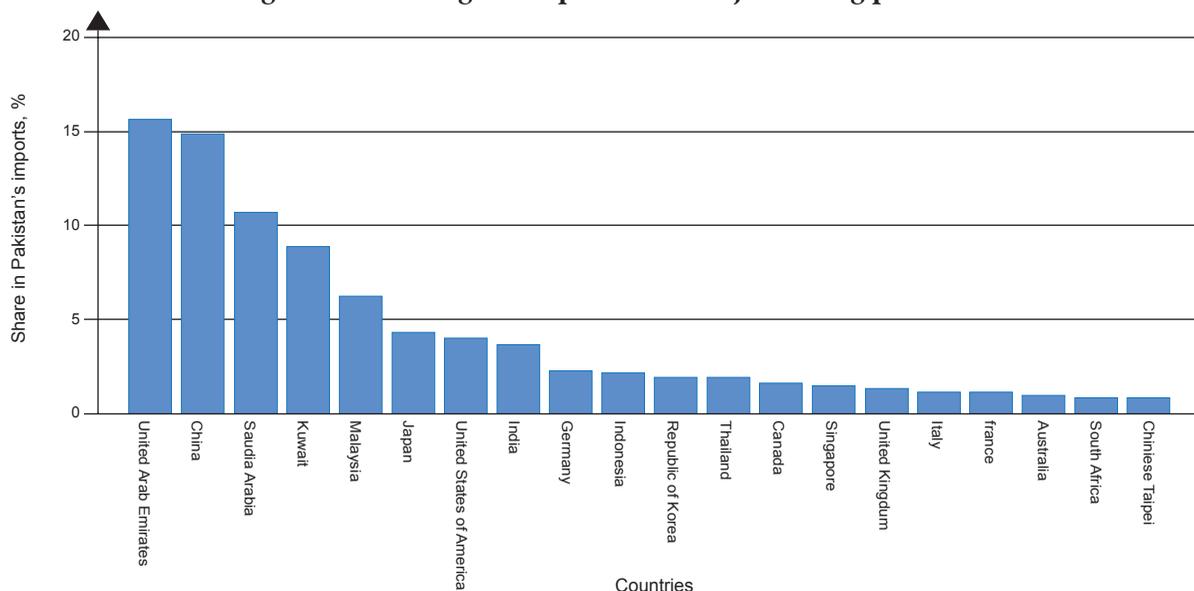
Bangladesh and Afghanistan) was used.³ We use the Revealed Competitive Advantage theory to gauge whether or not Pakistan is exporting goods in which it has a comparative advantage, and link this with the positioning of Pakistani exports with respect to both regional and world trade.

Pakistan and regional trade

A closer look at Pakistan's regional trade in recent years reveals that the bulk of Pakistani imports come from India (3.8 percent of total Pakistani imports in 2011). All other countries from the region form a small proportion as seen in Figure 3.

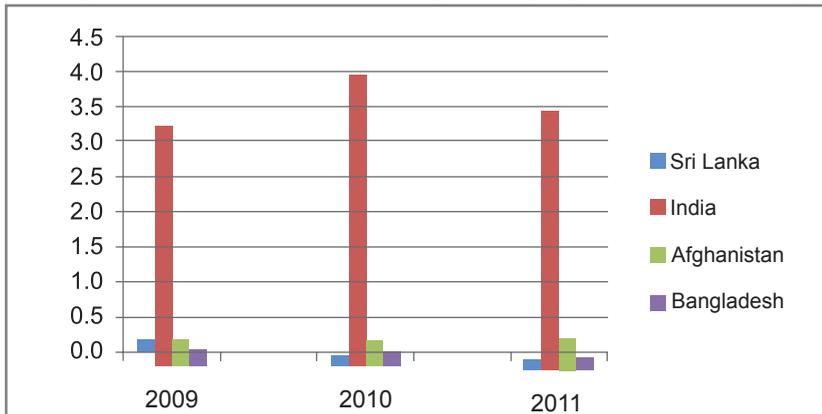
Over the last three years, the proportion of Pakistani exports to Afghanistan and Bangladesh has risen (Figure 4). This might be owing to the post-war recovery of Afghanistan and possibly better control over smuggling and informal trade. The proportion going to Sri Lanka is mostly stagnant, while that with India fell between 2010 and 2011 despite optimism about trade relations between the two countries.

Figure 2: Percentage of imports from major trading partners



Source: Authors' graph based on data from UN Comtrade database.

Figure 3: Imports of Pakistan from the region as proportion of total imports (%)

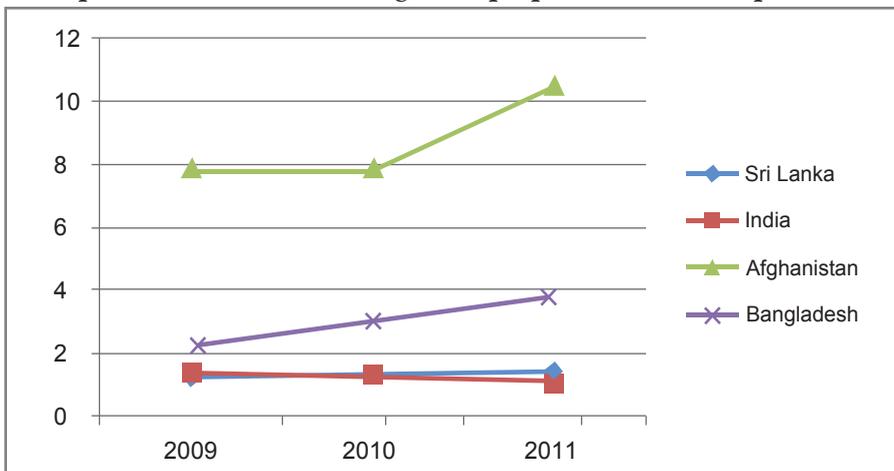


Source: Authors' graph based on data from UN Comtrade database.

Figure 5 plots Pakistan's top 20 export partners, identifying the growth in Pakistan's exports to these partners against their growth in world imports (the size of the circle signifies the partner country's share in world imports). The graph is divided into two sections, dynamic markets (when partner countries' imports from the world grow by more than four percent) and declining markets (when partner countries' imports from the world grow by less than four percent). A large proportion of Pakistan's exports are in declining markets, with only a few major players like China, Hong Kong, South Korea and India in the dynamic region.

It is interesting to note that contrary to expectations, the figures show that regional trade forms a small proportion of Pakistan's total exports. Yet the regional markets are also the most dynamic for Pakistan's export items. This indicates lost opportunities that are right next door. Afghanistan is the most dynamic market with world import growth of around 34 percent. Given that Pakistan is currently fulfilling 11.6 percent of Afghanistan's import needs, there still exists significant potential for growth. This is evident from the fact that the bubble for Afghanistan is yellow, signifying that Pakistan's export growth to Afghanistan is still less

Figure 4: Exports of Pakistan to the region as proportion of total exports to world (%)



Source: Authors' graph based on data from UN Comtrade database.

than Afghanistan's import growth from the world.⁴ The second most dynamic market is Bangladesh. Growth in Pakistan's exports to Bangladesh is around 33 percent, which is higher than Bangladesh's growth in imports from the world (23 percent) between 2007 and 2011.

However, most of Pakistan's export growth to Bangladesh in the five-year period seems to be dominated by the 50 percent increase in exports between 2010 and 2011. Given the dynamic nature of Bangladesh's economy, sustaining export growth to Bangladesh is recommended. Sri Lanka is another dynamic economy, with high import growth from the world, and even higher export growth from Pakistan.

Pakistan's trade relationship with India has seen both positive and negative growth. Pakistan's average export growth over the past five years

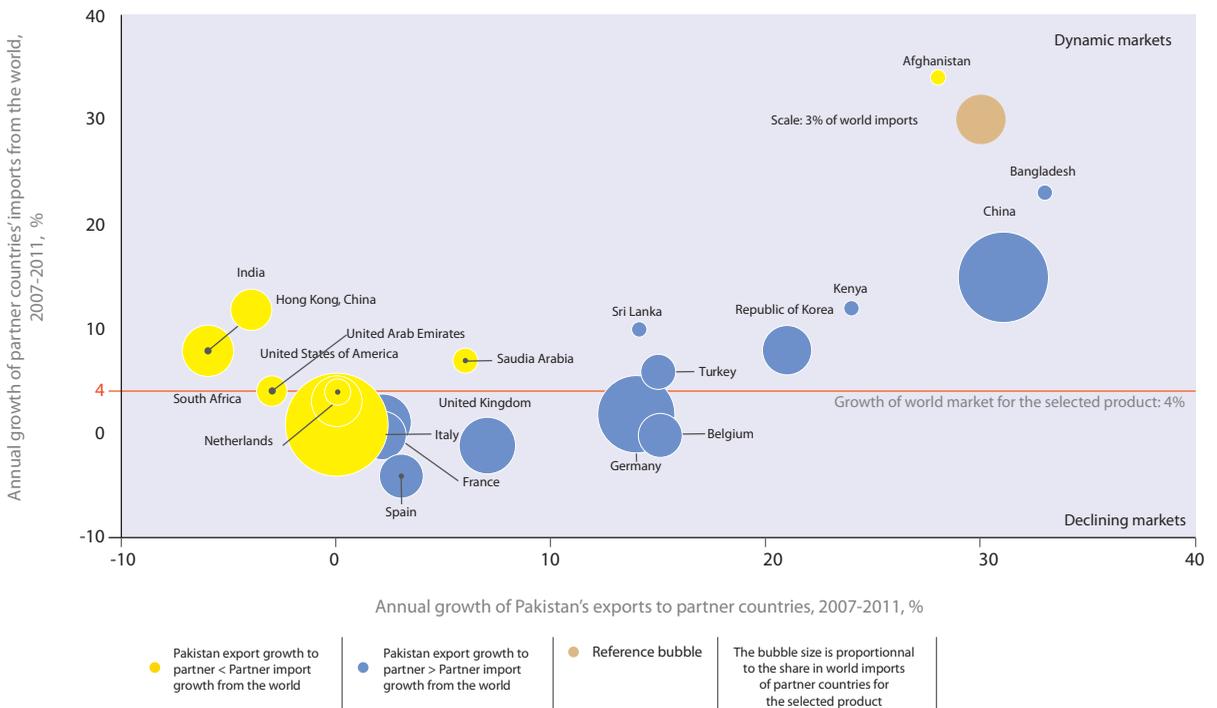
has been negative, while India is classified as a dynamic market with a growth in world imports equal to around 12 percent. The size of the circle shows that India comprises a sizeable proportion of world's share of imports, which means that it is a big market that is worth exploring for Pakistan. The yellow colored bubble also indicates that the potential for export growth exists, as Pakistan's export growth to India is a lot less than India's import growth from the world.

Given that most of Pakistan's major export partners (US, UAE, UK, Germany and Italy, for instance) are classified as declining markets, there is a need to change its partner mix and move towards greater regional trade.

Revealed Comparative Advantage (RCA)

Trade theory suggests that in order to reap the

Figure 5: Growth in demand for top exports of Pakistan



Source: Authors' graph based on data from UN Comtrade database.

benefits of free trade, each country needs to specialize in goods in which it has a comparative advantage compared to other countries. A country is said to have a comparative advantage in the production of a good if the opportunity cost of producing that good is lower compared to other countries. Indicators are commonly employed to gauge the degree of export specialization and the level of competitiveness of a country. Revealed Comparative Advantage (RCA) is one of the indices used to measure a country's comparative advantage. Although it is not an exact measure of comparative advantage, it provides a basis for the assessment of a country's export potential.⁵

The index measures the share of a specific product in the country's total exports relative to the share of this product in world trade. If the product's share in national exports is higher than the product's share in total world exports, the RCA value is greater than one. This is then interpreted as the country having a revealed comparative advantage in the particular product. On the other hand, for products with an RCA of less than one, the country is said to have a revealed comparative disadvantage.

Over time there have been improvements in measuring comparative advantage and often Normalized Revealed Comparative Advantage (NRCA) is used.⁶ The value of NRCA ranges between -1 to +1, where a negative value suggests a revealed comparative disadvantage in a given product, and an index value equal to or greater than zero suggests revealed comparative advantage in the product. Use of the NRCA helps in doing cross-country, cross-sector and cross-time analyses. For the purpose of this study, RCA and NRCA have been calculated for Pakistani exports at the two-digit HS code level.

Pakistan's export portfolio

Before analyzing Pakistan's top exports, we identified the product categories in which Pakistan has a comparative advantage and hence potential for growth.⁷ Table 1 shows the product lines at the HS two-digit code level for which Pakistan appears to have an RCA based on trade statistics for 2011. These product lines include primary and manufactured goods.

Figure 6 compares the growth of Pakistan's export share and the world imports for the top 20 exports of Pakistan in 2011. The horizontal axis represents the annual increase in the share of a Pakistani product's export in that product's total world exports, while the vertical axis shows the annual growth of a product's world imports or, in other words, the growth in international demand. The size of the circle denotes the value of the exports. The graph has been divided into four quadrants with the top right quadrant containing "winners in growing sectors"—sectors where world imports are growing, as is Pakistan's share in the world exports, thereby indicating greater international competitiveness. Of Pakistan's major exports, around eight product categories lie in this quadrant including pearls, precious stones, edible vegetables, edible fruit, fish, milling products, plastics, cereals, and cotton, with articles of apparel, accessories, knit or crochet just making it through with one percent growth in Pakistan's share. Most of these are agricultural products that tend to have a set of disadvantages like falling terms of trade and fluctuating exports earnings associated with them.

While around 48.7 percent of Pakistan's exports fall in this quadrant, 82 percent of this is cereals, cotton and knitwear; therefore, the exports are fairly concentrated and the share of the products in the top-right quadrant other than these three is very small. In three of the eight product categories

Table 1: Product lines in which Pakistan has RCA

HS code	Definition
3	Fish and crustaceans, molluscs and other aquatic invertebrates
5	Products of animal origin not elsewhere specified or included
7	Edible vegetables and certain roots and tubers
8	Edible fruit and nuts; peel of citrus fruit or melons
10	Cereals
11	Products of the milling industry; malt; starches; inulin; wheat gluten.
13	Lac; gums, resins and other vegetable saps and extracts.
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes
17	Sugars and sugar confectionery
22	Beverages, spirits and vinegar
25	Salt; sulphur, earths and stone; plastering materials, lime and cement
41	Raw hides and skins (other than fur skins) and leather
42	Articles of leather; saddlery and harness; travel goods, handbags and similar container; articles of animal gut (other than silk-worm gut).
52	Cotton
54	Man-made filaments; strip and the like of man-made textile materials.
55	Man-made staple fibres
57	Carpets and other textile floor coverings
58	Special woven fabrics; tufted textile fabrics; lace; tapestries, trimmings; Embroidery
61	Articles of apparel and clothing accessories knitted or crocheted
62	Articles of apparel and clothing accessories, not knitted or crocheted
63	Other made up textile articles; sets; worn clothing and worn textile articles; rags.
78	Lead and articles thereof
82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal
95	Toys, games and sports requisites; parts and accessories thereof.

Source: Authors' tabulation based on data from UN Comtrade database.

in the top-right quadrant (pearls, precious stones, metals etc.; plastics and articles thereof; and milling products, malt, starches etc.) Pakistan does not have a comparative advantage but has experienced a growth in exports over the five-year period.

Seven of the top 20 export items are “winners

in declining sectors” lying in the bottom right quadrant and comprise 16.4 percent of Pakistan's exports. These are the sectors in which world growth is declining while their share in Pakistan's exports is rising. The product with the largest share (42.3 percent of the 16.4 percent) in this category is articles of apparel, not knit or crochet. In two of

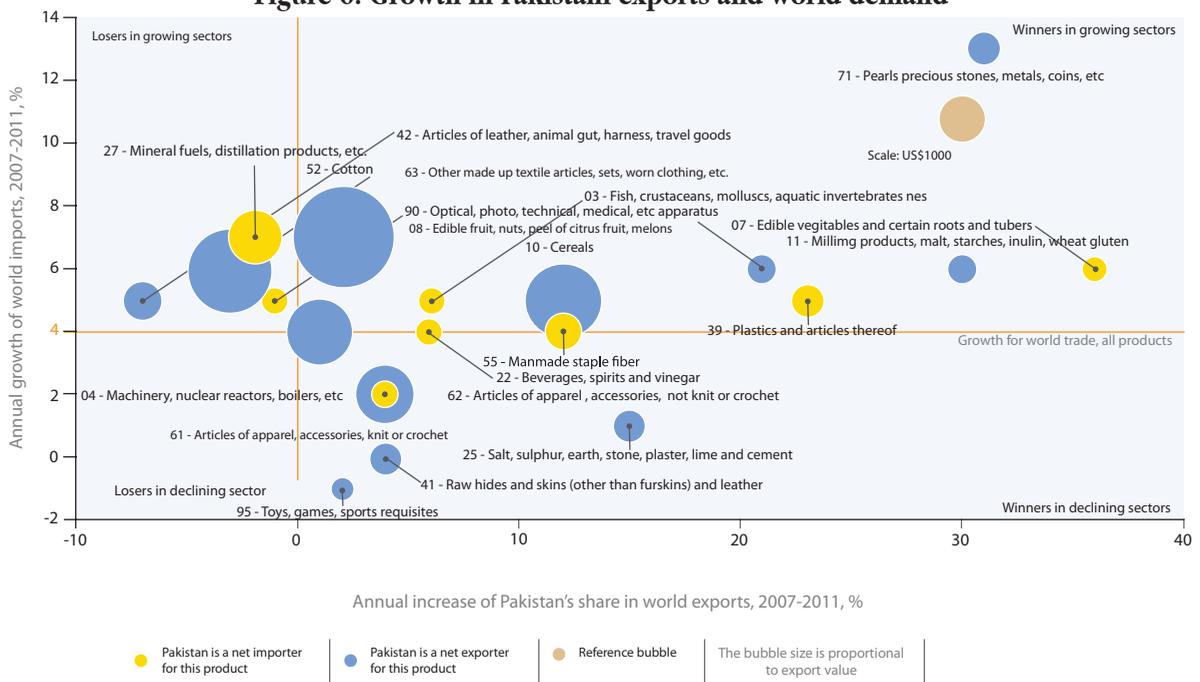
the product categories Pakistan does not enjoy a comparative advantage and while it does have an advantage in the other five items, it is advisable that Pakistan should start shifting its attention towards products that lie in the growing sectors in order to ensure future earnings.

There are no products in the “losers in declining sectors” quadrant and the remaining 23 percent is held by products in the top-left quadrant of “losers in growing sectors”, namely textile made-ups, leather products, mineral fuels, and optical, photo, medical etc. apparatus. Of this, textile made-ups being the second largest export category of Pakistan comprises more than 60 percent. Both leather articles and made-ups are categories in which Pakistan has a comparative advantage. Furthermore, these are high value-added products, which help diversify the current largely primary focus of Pakistan’s exports. This quadrant represents the areas where growth potential

exists—the world import is growing and Pakistan exports a substantial amount of these products as well (though growth in the past five years has been negative); concentrating on these products and growing Pakistan’s exports will align them with the world market and make these products “winners in growing sectors”.

Pakistan’s exports are highly concentrated as represented by a few very large circles in Figure 6 and most of these are situated close to the origin (the point where the two red lines intersect—zero exports growth for Pakistan and four percent growth in world imports) with little positive or negative growth in Pakistan’s own share and the world exports. Thus, Pakistan needs to change its export mix not just because of low diversification but also because in seven of the top 20 export products it does not even have a comparative advantage. The need then is to shift away from these categories and concentrate on those products

Figure 6: Growth in Pakistani exports and world demand



Source: Authors’ graph based on data from UN Comtrade database.

which are high value-added, and in which it also enjoys a comparative advantage as highlighted in the next sub-section.

Top exports and RCA

Out of the top 20 exports of Pakistan for the years 2010 and 2011, Pakistan does not have a revealed comparative advantage in 35 percent of them. Table 2 lists the top 20 exports of Pakistan for 2011 and depicts the product lines for which Pakistan enjoys a revealed comparative advantage. Interestingly Pakistan does not have an RCA in one of its most famous exports of surgical goods. Stones, plastics, machinery and articles of iron or steel are other products which appear in Pakistan's top exports but for which the country lacks comparative advantage. For its top exports of cotton, apparel, textile and cereals however Pakistan does have an RCA. Our recommendations for redesigning Pakistan's export mix are discussed below.

Conclusion and recommendations

Though trade volume varies over time, it remains uncontested that there is no substantial inter-country trade in the South Asian region despite trade agreements like SAFTA and ISFTA. Only 7.47 percent of Pakistan's total trade is in the region, despite the presence of dynamic markets like Afghanistan, Bangladesh, Sri Lanka and India in its vicinity. These countries have shown substantially positive growth in their import demand from the world, indicating untapped trade potential. While exports to Afghanistan, Bangladesh and Sri Lanka have increased in recent years, there remains an opportunity for further growth. Trade with India has been unsteady over the years and although it is also a dynamic market, Pakistan's exports to India have declined over the last five years. Given the increasing size and proportion of Indian imports in total world imports, Pakistan stands to benefit

enormously through exporting more to India. However the ability to reap these trade benefits depends largely on the removal of barriers, in particular numerous non-trade barriers.

Pakistan's trade portfolio is largely biased towards a few products—articles related to cotton and textile, apparel, and cereals make up almost 60 percent of Pakistan's exports, and the top 20 export categories comprise 90 percent of the total exports. The top five exports of Pakistan contribute more than 60 percent to the total exports, with two of the products being primary products including the top export category, cotton. Collectively almost 90 percent of the exports of Pakistan come from 20 product lines. These statistics indicate a need for Pakistan to diversify its export basket particularly because four out of the top five exports that comprise more than 60 percent of the total belong to the cotton and textile industry. This indicates far too much reliance of Pakistan's exports on just one sector. The study reveals that in seven of the top 20 exports lines, Pakistan does not have a comparative advantage. Of Pakistan's top 20 exports, most items that are "winners in growing sectors" comprise primary products whereas some of the value-added products in which Pakistan also has comparative advantage lie presently in the losers in growing sectors (textile made-ups and leather articles). Therefore Pakistan should enact trade policies that can help in turning these sectors from losers to winners, particularly since these products contribute substantially to the total exports of Pakistan.

There are some categories in which Pakistan appears to have a comparative advantage but these form a very small proportion of the total exports such that they do not even qualify in the top 20. Products for which Pakistan has RCA but that fare quite low in Pakistan's exports include some primary products, as well as carpets, matches,

Table 2: Top exports and RCA

	HS code and product line	RCA
1	52-Cotton	✓
2	63-Other made up textile articles; sets; worn clothing and worn textile articles; rags.	✓
3	10-Cereals	✓
4	61-Articles of apparel and clothing accessories, knitted or crocheted.	✓
5	62-Articles of apparel and clothing accessories, not knitted or crocheted.	✓
6	27-Mineral fuels, mineral oil and products of their distillation; bituminous substances; mineral waxes.	
7	42-Articles of leather; saddlery and harness; travel goods, handbags and similar container; article of animal gut (other than silk-worn gut)	✓
8	71-Natural or cultured pearls, precious or semi-precious stones, precious metals, metal clad with precious metal and article thereof; imitation jewellery; coin	
9	25-Salt; sulphur, earths and stone; plastering materials, lime and cement.	✓
10	55-Man-made staples fibers	✓
11	41-Raw hides and skins (other than furskins) and leather	✓
12	39-Plastic and articles thereof	
13	90-Optical, photographic cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof	
14	8-Edible fruit and nuts; peel of citrus fruit or melons	✓
15	84-Nuclear reactors, boilers, machinery and medical appliances; parts thereof	
16	3-Fish and crustaceans, molluscs and other aquatic invertebrates	✓
17	95-Toys, games and sports requisites; parts and accessories thereof	✓
18	22-Beverages, spirits and viniger	✓
19	26-Ores, slag and ash	
20	73-Articles of iron or steel	

Source: Authors' tabulation based on data from UN Comtrade database.

pyrotechnic products, lead articles, fabrics, tools, spoons and forks of base metal. These categories represent possible avenues where Pakistan can expand in order to have a more balanced trade composition. A shift in export portfolio to include these classes, particularly to the value-added products like cutlery, lead articles, carpets etc., will help in diversifying the product mix by moving away from primary to higher value and more stable product lines.

Diversification should be sought not just in export products, but also in export markets. Diversifying within the region will help in easier, more timely and less costly access to machinery, raw materials and technology as compared to existing suppliers. Knowledge and technical spillovers can also help Pakistan gain a competitive edge in producing goods that it is lagging behind in at the moment. Lastly, to boost export diversification and growth,

government policies oriented towards promoting the potential sectors through suitable investment incentives and facilitation of exporting is also recommended.

Tareena Musaddiq is a Teaching Fellow in the Department of Economics at the Lahore University of Management Sciences. She can be reached at tareena@lums.edu.pk.

Atiyab Sultan is a PhD candidate in Economic History at the University of Cambridge. She can be reached at as2066@cam.ac.uk.

Kiran Javaid is a Teaching Fellow in the Department of Economics at the Lahore University of Management Sciences. She can be reached at kiran.javaid@lums.edu.pk.

Notes

¹Data from UN Comtrade database.

²Data from UN Comtrade database.

³All data employed is for the year 2011 except for Afghanistan for which data from 2010 was used.

⁴However, it needs to be borne in mind that the amount of informal trade between Afghanistan and Pakistan is quite substantial and the value of exports will be larger if that is included.

⁵RCA in its simplest form is calculated as:

$$RCA_{ij} = \frac{x_{ij} / x_i}{x_{wj} / x_w} \times 100 \quad (1)$$

x_{ij} is exports of good J by country I. x_i is total exports of country I, x_{wj} is world exports of good J and x_w is total world exports. Multiplication by 100 is done to facilitate interpretation.

⁶Normalized Revealed Comparative advantage (NRCA) is used, which is calculated as:

$$\text{Normalized RCA} = (RCA-1)/(RCA+1) \quad (2)$$

⁷This is done using formula (1) in note 5.

Are *Madrassahs* Teaching According to the National Curricula?

By Ravish Amjad



There has been increased debate on whether the role of *madrassahs*, or religious schools, in the education sector of Pakistan has warranted the growing interest of policy-makers in the past two decades. Many studies examine whether the share of enrolment in *madrassahs* has substantially increased in the past few years. This article tries to gauge whether *madrassahs* teach according to the national curricula by comparing the learning achievement in terms of literacy and numeracy of *madrassah* students with those of government and private schools. Education is a fundamental right of each child by law in Pakistan, after the inclusion of Article 25A in the Constitution of Pakistan under the 18th Amendment. Whether these *madrassahs* provide this basic right to education is highly critical. Should the government support their formation and expansion is a highly contentious issue in the public policy domain. Data from the 2011 Annual Status of Education Report (ASER) Pakistan is used to determine the differences across the three main education sectors in the country.¹

Background

The concept of a *madrassah* stems from the emphasis Islam puts on both religious and secular knowledge. There are three types of religious schools in Pakistan: a Quranic school or *maktab*, mosque schools and *madrassahs*. A *maktab*

is a school where only the Quran is read and recited. A *madrassah* is an organized institute, with classrooms and teachers for different levels that teaches only religious substance, while a mosque school includes both religious as well as secular subjects like Arithmetic and Science, taught according to the national curricula. In this article, all religious schools are considered *madrassahs*. While this is an empirical weakness, the data that is used does not allow disaggregation.

The increasing presence of *madrassahs* in Pakistan became a popular debate after 9/11. Looney (2003) and Ali (2009) contend that increasing *madrassah* enrolment is an important determinant of terrorism in the country. However, according to Bergen and Pandey (2005, 2006), the increase in terrorism is not linked to increases in *madrassah* enrolment, while Andrabi, Das and Khwaja (2005, 2009, 2010, 2011) through their Learning and Education Achievement in Punjab Schools (LEAPS) data point out that *madrassahs* are increasing at very slow, if not negligible, rates. Yet none of the literature thus far looks at the difference in the quality of education across *madrassahs* and government schools.

According to ASER (2011), around two percent of the children enrolled in the 84 rural districts surveyed nation-wide were in *madrassahs*. Government statistics confirm the increasing trend. While historically, enrolment in *madrassahs* was less than one percent of all enrolled children aged five to 19 years, this rose to around five percent of the total enrolment in the country by 2005 (National Education Census, 2005).²

The share of enrolment in *madrassahs* varies across provinces and is much higher in some districts as

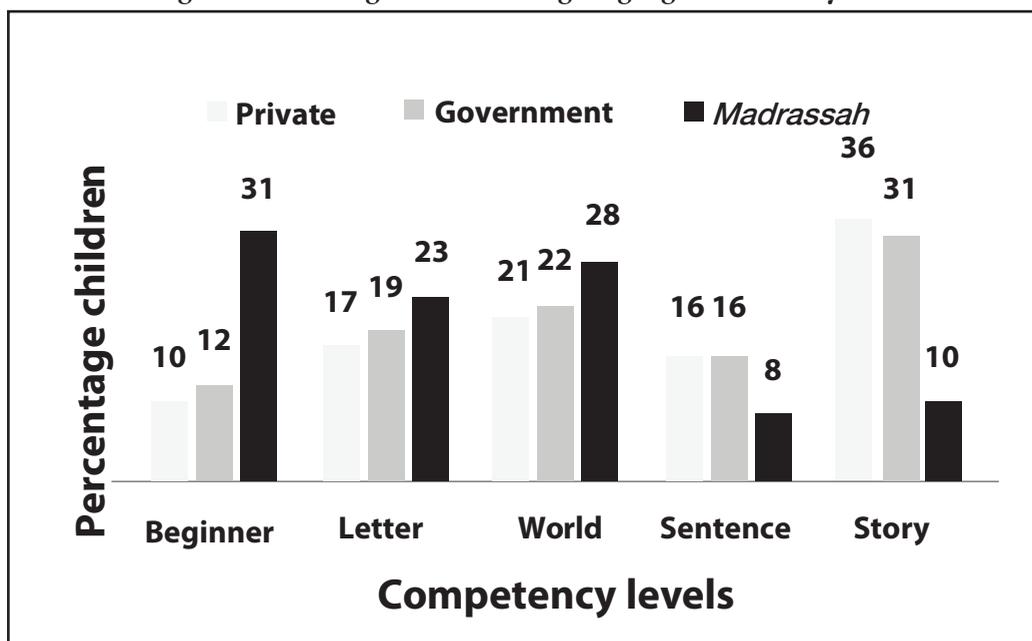
compared to others. Even though the province of Balochistan has fewer children as compared to other provinces, according to the ASER data, it had the highest percentage of enrolment in *madrassabs* at seven percent. Sindh had the lowest percentage—less than one percent—while all other provinces lay in between the two extremes.

More importantly, the question arises as to whether children in *madrassabs* are actually taught according to the national curricula or simply religious teachings. This article tries to answer this question by using a set of student assessment results from the ASER dataset. The assessment under the survey gauged basic literacy and numeracy skills in all children aged five to 16 years. The assessment is conducted for all children available in the households during the ASER survey. It has been developed according to the national curricula for children at the grade-two level. This article uses the results for children from government, private and

madrassah schools only. Information of a total of 102,340 children is used, of which 75,530 are from government schools, 24,560 from private schools and 2,250 from *madrassahs*.

The ASER 2011 raw data gives some idea of the distribution of learning achievement of children from *madrassahs*. The ASER assessment tools are designed in accordance with the national curriculum standards of Pakistan. They test for the lowest order of skills that are required, according to grade one and grade two curricula. Assessment outcomes are divided into five competency levels, with “story” being the highest level (grade two) of competency tested. The “sentence” level is the second highest level of competency (grade one), while the “letter” and “word” levels represent pre-school levels of competency. A child at the “beginner” level is unable to perform any of the tasks included in the assessment.

Figure 1: Learning levels—reading language: five to 16 years



Source: Annual Status of Education Report (ASER), 2011.

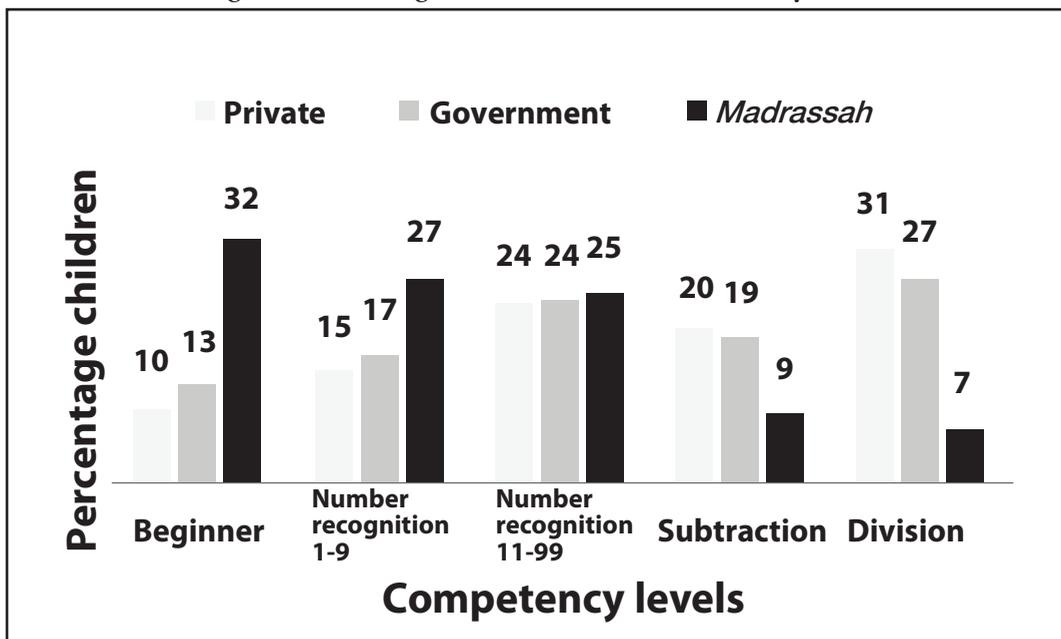
Figure 1 shows the results in each of the three types of schooling options for all children in the age band of five to 16 years. Of all the children in *madrassahs*, 31 percent are at the “beginner” level, as opposed to only 12 and ten percent of the children in government and private schools respectively. 51 percent of all children in *madrassahs* were found to be at the pre-school level of skills. Only 18 percent of *madrassah* children were able to read “sentences” or “story”, in contrast to 47 percent of the children from government schools and 52 percent of the children from private schools who could do so.

The assessment outcomes for arithmetic were also divided similar to the language assessment outcomes. The three-digit division problems (grade two level) were the highest level of competency tested, with subtraction (grade one level) the second highest level, followed by number recognition. Children unable to perform

any of the tasks in the assessment were categorized as beginner level. As shown in Figure 2, 32 percent of all *madrassah* children were at the beginner level, 52 percent were at pre-school level of competency and only 16 percent could either solve subtraction or problems. The percentage of children in private and government schools—51 and 46 percent respectively—who could solve the same subtraction and division problems were much larger as compared to the *madrassah* school children.

The above results are at an absolute scale. In order to better understand the learning achievement of the *madrassahs* in comparison to government and private schools at a relative scale, a regression analysis is used to check for differences at an individual level. A regression analysis is important, as it is not possible to make inferences about the quality of education in any type of institute on the basis of raw differences in learning alone. This is

Figure 2: Learning levels—arithmetic: five to 16 years



Source: Annual Status of Education Report (ASER), 2011.

because many factors like family background, ability and level of motivation etc. may be driving these raw differences. If however even after controlling for socio-economic status and other observed factors a difference remains, it could potentially be attributed to real differences in learning by school type.

The following regression analysis is undertaken with the view to estimate 'achievement production functions'. These are estimated using logistic regression with 'reading story' and 'solving division problems' as the dependent variables for the two models.³ The factors being controlled include: age, gender, parental education, number of siblings, school type, school, wealth,⁴ province of residence, if the child takes any private supplementary tuition and whether the child had attended pre-schooling in the past.⁵ The effect of 'school type' on learning achievement is measured using dummy variables for *madrassabs*, government schools and private schools. The '*madrassab*' dummy variable is used with the view that the coefficient on this variable will help capture any possible differences in learning across *madrassabs*, private and government schools.

It is important to note that there are likely to be unobserved factors that are not being controlled for when undertaking this regression analysis. For example, more religiously motivated parents may choose to send their children to *madrassabs*. As we are unable to control for innate ability and religious motivation, the coefficient on the '*madrassab*' variable will clearly yield a biased estimate of the true *madrassab* effect. However, the data does not allow controlling for these unobservables.

Findings

The odds ratios estimates are presented in Table 1, after controlling for several observed factors that

may be important determinants of learning. The odds ratio indicates the likelihood or odds of one group being more likely to succeed on a particular task than another group. In interpreting an odds ratio, it is useful to look at how much it diverges from one.⁶ All results are statistically significant, unless otherwise specified. With each yearly increase in age, the likelihood of a child being a "reader" increases three times. Household income and wealth can also affect the learning results of children, regardless of which school they go to.

Amongst other controls, paid private supplementary tuition and having attended pre-school led to a 45 and 15 percent higher probability of being a "reader", respectively. Moreover, the odds of being a "reader" increase as the number of siblings increase, i.e. with one additional sibling, the child's likelihood of being a "reader" increases by three percent. However, after a certain threshold, an increase in the number of siblings has no effect on learning achievement (Table 1).

Differences in learning were also observed across regions in the country using provincial fixed effects. The data shows that children belonging to any region, other than Azad Jammu and Kashmir (AJK), have lower probabilities of being "readers" as compared to their counterparts from Punjab.

Once we control for all the above factors, children going to *madrassabs* still have a statistically significant learning disadvantage over children going to government or private schools. The disadvantage was such that children going to government and private schools had five and six times higher odds, respectively, of being "readers" as compared to children going to *madrassabs*. Thus, the claim that teaching in *madrassabs* is at par with at least that of government schools may be considered incorrect, or alternatively, it may be the case that while some of the *madrassabs* do adhere

to the national curricula, most do not. Provincial-level analysis was also conducted to account for diversity across regions. Table 2 shows differentials in the learning levels between *madrasah* and government school children, after controlling for all factors other than school type, across different regions of Pakistan. Balochistan was the province with the largest difference.

Conclusion

In answer to our primary question as to whether

madrasah education is at par with that of government schools, this analysis does not find support for that claim. However, it must be noted that these findings are for the dependent variable 'reading', while in reality differences in learning achievement may be more prominent across school types in other subjects, for instance, Mathematics. According to an analysis using arithmetic assessment results from ASER Pakistan (2011), the differential between the performance in *madrasahs* relative to government schools increases even further. The probability of a child

Table 1: Results from the logistical regression analysis

Dependent variable	Reading story	Solving division problems
	Odds ratios	Odds ratios
Child's age	3.19	3.09
Male	1.02	1.04
Kutcha	0.80	0.84
Semi-pucca	0.87	0.92
Father's schooling	1.31	1.16
Mother's schooling	1.23	1.25
Number of siblings	1.03	1.02
Private tuition	1.39	1.33
School absenteeism	0.68	0.74
Pre-Schooling	1.21	1.05*
Government	5.19	6.48
Private	6.00	7.70
Azad Jammu & Kashmir	1.25	1.36
Balochistan	0.43	0.65
FATA	0.37	0.49
Gilgit-Baltistan	0.86	1.21
Islamabad Capital Territory	0.79	1.32
Khyber-Pakhtunkhwa	0.36	0.56
Sindh	0.51	0.50

Source: Author's estimation.

Note: Omitted base categories for dummy variables include: female, *pucca*, *madrasah*, and Punjab. The regression included other controls such as number of siblings squared and age-squared. All coefficients reported above are significant at 5% significance level except the ones marked with asterisks. The coefficients marked with asterisks are statistically *insignificant* at 5% level.

Table 2: Provincial effect sizes between children from different school types

Regions	Government schools	Private schools
Azad Jammu Kashmir (AJK)	2.9	3.3
Balochistan	11.2	14.0
FATA	3.8	5.3
Gilgit-Baltistan (GB)	4.9	5.4
Khyber Pakhtunkhwa (KP)	1.3*	1.9*
Punjab	3.7	4.6
Sindh	8.6	9.4

Source: Author's estimation.

Note: The coefficients marked with asterisks are statistically insignificant at 5% level.

being able to accomplish grade two level division, after controlling for all the observable factors in government and private schools, is six and eight times higher respectively than for children in *madrassahs*.

It may be said that the estimates do not fully test if the *madrassahs* are actually teaching the national curricula, as this analysis compares learning outcomes amongst the different types of schools, rather than the difference in inputs. However, the above analysis gives a direction to the debate of whether children from *madrassahs* in comparison to government and private schools differ relatively in terms of basic literacy and numeracy skills.

In addition, there are a number of *madrassahs* in the country which provide lodging to the students. As the ASER assessment is conducted in the households, only children available at home are assessed, thus all children living in *madrassahs* are not represented in the analysis. The analysis might be even more accurate and nuanced if these children were included.

In terms of policy concerns, the government needs to work on regulating the activities and subject matter taught in the *madrassahs*. This can be done either by bringing up to par the quality of

teachers and content being taught in the publically-owned *madrassahs*, or by setting up minimum standards for the subject matter actually being used in all types of non-government *madrassahs*, without which they may not be allowed to operate.

Ravish Amjad is a Research and Policy Analyst at the Idara-e-Taleem-o-Aagahi (ITA), and a core team member of ASER Pakistan. She can be reached at ravish.ita@gmail.com.

References and further reading

Ali, S. H., (2009). Pakistan's madrassas: The need for internal reform and the role of international assistance. Retrieved from http://www.brookings.edu/~media/research/files/papers/2009/8/pakistan%20ali/08_pakistan_ali.pdf

Andrabi, T., Das, J., & Khwaja, A. I., (2010). School of last resort? Madrassa, private or public schools. Retrieved from <http://economics-files.pomona.edu/Andrabi/Research/AndrabiPapers/MadrassaSchoolingofLastResortDuke.pdf>

Andrabi, T., Das, J., & Khwaja, A. I., (2011). The madrassa controversy: The story does not fit the facts. Retrieved from <http://economics-files.pomona.edu/Andrabi/Research/MadrassaStanford.pdf>

Andrabi, T., Das, J., Khwaja, A. I., & Fair, C. C., (2009). The madrasa myth. Retrieved from <http://www.hks.harvard.edu/fs/akhwaja/papers/MadrassaMythFP.pdf>

Andrabi, T., Das, J., Khwaja, A. I., & Zajonc, T., (2005). Religious school enrollment in Pakistan: A look at the data. Retrieved from http://economics-files.pomona.edu/Andrabi/Research/madrassa_CER_final.pdf

Andrabi, T., Das, J., Khwaja, A. I., & Zajonc, T., (2009) Madrasa Metrics: The Statistics and Rhetoric of Religious Enrollment in Pakistan. Retrieved from http://www.hks.harvard.edu/fs/akhwaja/papers/madrassas_beyondcrisis_final.pdf

Anzar, U., (2003). Islamic Education: A brief history of madrassas with comments on curricula and current pedagogical practices. Retrieved from <http://schools.nashua.edu/myclass/fenlonm/block1/Lists/DueDates/Attachments/10/madrassah-history.pdf>

Federal Bureau of Statistics. (2005). National education census 2005.

Looney, R., (2003). Reforming Pakistan's educational system: The challenge of the madrassas. *The Journal of Social, Political and Economic Studies*, 28(3). California, USA

Pandey, S., & Bergen, P. (2005). The madrasa myth. Retrieved from http://01fe00c.netsolhost.com/images/Indonesia-14-Jun-05-The_Madrassa_Myth.pdf

Pandey, S., & Bergen, P. (2006). The madrasa scapegoat. Retrieved from <http://www.maeganandjoe.info/temp/School/A-PSMG%204347%20-%20GLOBAL%20PERSPECTIVES%20>

[ON%20TERRORISM/Unit%205/06spring_bergen.pdf](http://www.safed.org/ON%20TERRORISM/Unit%205/06spring_bergen.pdf)

South Asia Forum for Education Development (SAFED). (2011). Annual status of education report Pakistan 2011.

The Express Tribune. (2012). The truth behind madrassas. Retrieved from <http://tribune.com.pk/story/329853/the-truth-behind-madrassas/>

Notes

¹The ASER Pakistan data is a snapshot of the state of education in Pakistan. The country-wide data is robust, accurate and detailed. However it still does not cover the entire population in the year 2011. The above analysis is aimed at shedding light on the quality of education, rather than enrolment of children in *madrassahs* in Pakistan.

²This is calculated as $= 1,549,242/33,379,578 * 100$ from the NEC 2005 data.

³The estimated model is a logistic regression model with the form: $g(L_i) = 1 / (1 + e^{-L_i})$ for student i , for $L_i = \sum \beta_j X_{ij} + \mu_i$ where:

L_i is the learning achievement of child i on the test given; β_j is the vector of each parameter j ; X_{ij} denotes characteristics j for child i ; μ_i is the disturbance term.

⁴A wealth index was formed using the following factors available in the child's home; availability of a toilet, availability of electricity connection, cellular phone, television, cycle, motorcycle, car, tractor, miscellaneous vehicles, type of house (*kutcha*, *pucca* or *semi-pucca*).

⁵Whether each parent ever attended school.

⁶For example, an odds ratio of 1.26 means that in one group the outcome is 26 percent more likely, while an odds ratio of 0.86 means that in one group, the outcome is 14 percent less likely.

The Ethics of Climate Change

By Khalid Mir



The bad news is that there is a not insignificant chance that life on earth as we know it may come to a catastrophic end; the good news is that we may not be around to see it! How do we weigh up or compare good and bad things, costs and benefits—a standard question that as economists we often address? How do we weigh up different types of good things and how do we weigh up (or aggregate) good things that accrue to different people across different states of affairs at different times? For example, even though the prospect of life ending is bad it is not clear how bad it is. We may plausibly think that the event is so far off in the future or so unlikely that it is not that bad after all. Sartre once said: to know what one does not know is as important as ignoring what one does (Biaer, 2009). I want to take up the first part of that and suggest that, as economists, we may not know that much about the environment and, more to the point, we may not even know what it is we do not know. Our aim in what follows, then, is merely to give some shape to our ignorance.

The magnitude of the problem

It is now widely recognized that one of the most pressing problems we face, a problem that is global in its dimensions, is the degradation of the environment. Its manifestations are manifold: the depletion of the ozone layer, global warming, acid rain, air pollution, soil erosion, the shrinking

of Arctic sea ice, reductions in biodiversity, and the contamination of ground water supplies by toxic pollutants. It is also now equally clear that accelerated economic activity is the major cause of these changes.

If we look at trends in the world carbon dioxide (CO₂) concentration levels we see that they were at 280 ppm (parts per million) in 1769 and 380 ppm now (or, if we include other greenhouse gases, the CO₂ level can be thought to be equivalent to 430 ppm (CO₂e)) (Roemer, 2008). It is estimated that 50 percent of these emissions are not absorbed and it seems perfectly reasonable to extrapolate from current trends that the absorptive capacity itself will continue to decline with time. If things were to stabilize at 450 ppm, temperatures are expected to rise, on average, anywhere between 1 and 3.8 degrees Celsius (with 90 percent confidence) (Roemer, 2008).¹

If we stabilize at 550 ppm, however, then temperatures are likely to rise by anywhere in the region of 1.5 to 5.2 degrees Celsius (again, with 90 percent confidence) (Roemer, 2008). However, based on the evidence of the last 800,000 years it appears that emissions have never risen above the 300 ppm level and the rate of increase over any thousand year period has never been greater than 30 ppm. Over the last 17 years alone there has been such an increase. The Arctic sea is melting. The summer arctic covered half the area it did in 1979 (and probably about one quarter its volume). Less ice means higher sea levels and more global warming.

The effect of climate change on human lives is likely to be manifold: crop failure, famines, floods, and reduced supply of water from melting glaciers (which supplies up to one sixth the world's population). In fact, it is estimated that by 2020 somewhere between 75 and 200 million people will suffer from increased water shortage due to climate

change (Broome, 2012). In addition, migration, disease, rates of technological innovation, population, the distribution of resources, and, in all likelihood, political power will be affected.

How should we assess the damage from climate change and how do we, for instance, take into account distributional concerns?

Background: Ethics and economics

Ever since the financial crisis, a lot of serious questions have been raised about the scope and relevance of economic theories and how much light they can shine on particular problems. Part of the response to those questions has been to broaden the discipline by reconnecting it with its historical roots in moral philosophy. Seen in this light, it is my contention that our understanding and analysis of the environmental problem can be further enhanced by taking on board ethical considerations.

The central point can be stated thus: we know that climate change is a result of economic activity but it does not necessarily follow from that that we ought to rely exclusively on economic analysis to evaluate its impact—the ‘costs’ and ‘benefits’.

Fundamental to any assessment of the environmental problem, I maintain, is the question of values, and if that is true then economics, with its usual skirting around issues of ultimate ‘ends’, may not be any great assistance to our inquiries. When it comes to climate change it seems that the standard economic approach to evaluation in its pure form—Utilitarianism—falls short of what we might want from a theory and neglects some important features of the problem.

As economists we are used to thinking that (relative) prices convey information about (relative) values and that markets are a good way of aggregating

individuals’ values. In that sense markets are social decision mechanisms. Instinctively, we feel other social systems are paternalistic, constraining our choices or preferences. However, they don’t have to be; there can, after all, be a democratic consensus or public reasoning on our relative values. Furthermore, we are not always sure that prices do reflect value, or the value we are after.

Our economic approaches, Utilitarianism, as previously discussed, as well as Cost-Benefit Analysis (CBA), may not be helpful partly because of their inherent deficiencies, but also partly for reasons stemming from the fundamental features of the climate change process itself. In particular, the climate change problem raises questions about dealing with uncertainty, the relation between preferences and value, and intra-temporal as well as inter-temporal trade-offs. These are really questions about individual values and social values. We need some sort of ethical framework, then, because our actions and policies affect the shape of the world we live in, the quality or ‘goodness’ of our lives, and the distribution of that goodness amongst those currently living and between them and future generations.

However, on the other hand, if market economies are self-correcting, as many of their advocates maintain them to be, then the environmental problem will largely be solved on its own—at least in the long-run—via prices and incentives and the impetus they give to discovery, innovation, improvements in efficiency, and substitutability. If such a view is true then there is little scope for ethical considerations or an ‘ethics of climate change’ analysis.

Uncertainty

As stated earlier, uncertainty is one of the central features of climate change. In fact, we have a cascade of uncertainties since we are not sure

how fast CO₂, the main greenhouse gas (GHG), will increase under different projected economic changes or how increased emissions will impact temperature change. Furthermore, there is some uncertainty about how those temperature changes translate into ‘damages’.

The Intergovernmental Panel on Climate Change (2007) states that there is a five percent chance that temperatures will increase by more than eight degrees and a one to two percentage chance that they will do so by more than ten degrees Celsius. The point being, we are not even sure of the impact of such large changes in temperature because our estimates are based on observed data and extrapolation, not on the occurrence of rare events.

This deep structural uncertainty may mean that our traditional CBA analysis is problematic. There is some uncertainty surrounding the estimates of future emission levels because of endogenous global warming (climate change affects the economy and technology which in turn affect climate change) and partly because of feedback effects from natural processes (like the melting of arctic ice or the release of sequestered methane from the arctic permafrost). In addition, uncertainty stems from ‘threshold effects’. Estimates of temperature changes are based on extrapolations, but we are entering unprecedented territory. Our sensitivity analysis is based on relatively small changes, not the large ones that might easily arise.²

Ways of approaching

The standard approach to evaluating the economic impact consists of what we usually term Utilitarian and derivatives of it (CBA). Following Amartya Sen, we can factor Utilitarianism into three components for analytical convenience:

1. *Consequentialism*: the impact of a project/

policy/technology should be assessed in terms of its consequences (and only its consequences).

It is generally thought that Consequentialism rules out paying attention to things we think are ‘intrinsically’ right as well as to processes that we have reason to value independently of their consequences. Whether such a way of thinking is ultimately too reductive or not is not something I am going to dwell on, but I do think we should be attentive to the possible limitations implied by this view of things. Another way of stating this is: not everything is a means to an end.

2. *Welfarism*: Not all consequences are to be counted or considered. Not surprisingly, what matters to the Utilitarian are people’s utilities or welfares. To use Sen’s terminology: utility is the relevant ‘evaluative space’.

3. *Sum-ranking*: This suggests how we go from an individual perspective to a social one: how we aggregate across individuals. In simple terms sum-ranking gives us the rule: whatever actions or choices maximize the sum of utilities are the ‘best’. Utilitarianism has been critiqued along each of these three dimensions. The point worth emphasizing here is that it is not clear whether it can, as a theory, capture some of the important ethical features of the environmental problem and it is to this criticism of it that we now turn.

Preferences or values: The evaluative space

The standard approach is teleological: choose actions that lead to the best state of affairs, ones that maximize overall goodness (or expected goodness if we take into account probabilities). There are, of course, other perspectives, such as that of justice, which maintain that we have a moral duty not to inflict harm on anyone irrespective of the overall level of ‘goodness’. It might be said, therefore, that unlike Utilitarianism, considerations of fairness,

rights, responsibility, and justice resist the impulse to ‘weigh up’.

Of course, it is not unreasonable to be concerned about the impact of a project on individuals’ utility although it is questionable whether this is the only thing we should take into consideration. However, even if we give our assent to this view we would still be left wondering what precisely is meant by this term ‘utility’ and what its relation to goodness is or ought to be. For example, do we mean by utility happiness or pleasure? Is it a mental state or does it imply something more objective, such as a determinate ethical way of life? Is it, as economists would have us believe, actually a vacuous concept, a formal and not a substantive notion, one that is a mere numerical representation of someone’s underlying preferences?

So, what constitutes ‘goodness’ or value in this perspective? I think economists do typically say that individuals want to maximize their well-being. In that sense goodness or utility is equivalent to well-being. But, in general, economic theory is not committed to such a view: utility is not a substantive term and economics hasn’t got much to say on ‘ends’—the Aristotelian question of ‘what is a good life’. This really follows from what Griffin calls “the Taste Model” (Griffin, 1996) with value following desire and not the other way around and from the assumption that “tastes” are just “given” (Stigler and Becker, 1977) or, equivalently, preferences are “wanton” (Hirschman, 1985).

There are several drawbacks with each of the associated points mentioned above but for our purposes I only want to highlight a few of them. The first point to note is that the utilitarian is someone who subscribes to the notion that the different arguments in his utility function are, ultimately, commensurable. So, we are to assume that we, or any individual, can aggregate across various ‘goods’ by comparing them to get to some overall

level of utility. This view is in stark contrast to the notion that some values may be incommensurable and that there are, in fact, appropriate ways to value different things, depending on our ideals, the context of our choices, and our conceptions of the self (Beckerman and Pasek, 1996). We can, for instance, be concerned about other things than our own well-being, assigning value to freedoms, social engagement, fairness, equity, the aesthetic or spiritual value of nature, rights, and the existence value of species. Some of our values, then, are associated with ethical judgments and they cannot be priced because they are not fundamentally about our well-being.

In addition to this theoretical problem we face a practical problem, since it is not at all clear whether in practice we can always ascertain what the value of environmental goods is. We are used to assuming markets reveal the relative value of commodities through their equilibrium prices since they indicate how much we would be willing to sacrifice one good for another. But how are we supposed to value environmental goods if there is no market for them? It is not self-evident that the willingness-to-pay method is very insightful when it comes to things such as clean air, the aesthetic value of woodlands, etc.

At the heart of Utilitarianism, then, is a particular view of the individual and of human rationality. Individuals know what they want, have perfect foresight, have sovereignty over their choices, and try to maximally satisfy their preferences. Ultimately, if revealed preferences reflect value they should be derived from “individual behavior in the context of an international, inter-generational, non-marginal, risky and uncertain environmental policy problem” (Stern, 2009). This seems a lot to ask. To take the discussion in the direction of asking whether there are appropriate ways of evaluating things, ways that relate to social relations, obligations, a sense of solidarity (all of which we

may call ‘the ethical’) is to talk in terms that the standard approach typically ignores. And to bring in the perspective of human needs, as opposed to desire satisfaction, is to raise both the general question of what type of person we would like to be as well as the more particular one of whether we need a view of rationality that is broader than the one presupposed in Utilitarianism.

Sum-ranking

I want to now turn to a different category of problems associated with the standard economic approach and its relevance for evaluating the impact of technologies and projects on the environment. I want to suggest that Utilitarianism as a theory or a guide to policy is found to be lacking, offering only partial insights because, firstly, there is little explicit recognition of the underlying ethical standpoint that it presupposes and, secondly, because the theory may fail to take into account important ethical considerations.

Built into Utilitarianism is the notion that at any point in time the best overall outcome or state of affairs is one in which the aggregate level of well-being is maximized. One of the criticisms of this approach, however, is that it doesn’t give due consideration to the distinctness of persons. To see this, imagine a scenario in which we shifted resources in such a way that a rich person was made a lot better off and a poor person only slightly worse off. Under our approach such a move would be approved of since it would improve the aggregate level of well-being and that is all that is of relevance. A generalization of this point can be illustrated by the infamous Larry Summers’ memo (Hausman and McPherson, 2006). If people in rich, advanced countries value clean air, say, more than additional units of money in comparison with those in poor, less developed countries, and if the costs of marginal increases in pollution (in terms of foregone wages due to ill-health) are relatively

lower in the latter as well then doesn’t it make economic sense to shift ‘dirty industries’ to those poorer countries since overall welfare would be enhanced? In support of this argument it might be pointed out that since initial levels of pollution are likely to be lower in the developing countries the marginal impact of more pollution will be lower there.

This is the kind of policy that economists would say leads to a Pareto improvement in the sense that benefits and costs are so arranged that at least one party (country) is made better off without any other being made worse off. Pareto, then, doesn’t seem like a very reasonable aggregating principle, though it is one that is central to how economists think. The Utilitarian aggregating principle, however, is even more oblivious of distributional concerns. If resources are reallocated, or production relocated, in such a way that those who are initially at a high level of welfare are made a lot better off at the expense of those who are initially at a low level then Utilitarianism would endorse such a change as long as the overall levels increased.

Using the standard approach we would not ask if each citizen has an equal right to a pollution-free environment or if it is something she can or ought to trade-off for greater welfare. More pointedly, it glosses over the problem of how we value (statistical) lives. Typically wage differentials are held to be a reflection of increased risk but that means assuming choices are free, made on the basis of risk, and that information about the risks is available. Furthermore, these differentials are assumed to reflect value to the whole population and require us to say something about subjective assessments of different, contextualized risks, as well as preferences over risk.

The economics approach typically assumes that each generation is represented by a single agent. This at once cuts off all discussions about the very

real and significant conflicts between individuals in any given country as well as those between countries.

Future generations

In this section I want to suggest that there are in fact two distinct problems related to the aggregation of individuals' utilities over time. This two-fold aspect corresponds to the two drawbacks of the Utilitarian approach already mentioned, namely: on the one hand it doesn't explicitly recognize the ethical standpoint it entails and on the other it fails to take account of important ethical considerations.

Discounting

Climate change, our projects, and choices of technology will have impacts not just on those people who are alive now but also on future generations. The aggregation problem, seen in this light, is how to determine social welfare over time. The Utilitarian view implies that social welfare should equal the sum of each generation's utility (which is derived from a consumption bundle of a representative agent in that time period), giving equal weightage to all generations, from current to future. However, surprisingly, economists do not use this form of the social welfare function but, instead, one that discounts the utility of future generations. The discounted form embodies an ethical standpoint that is not explicitly acknowledged, namely: it claims that the welfare of future generations is of less value than an equal amount of welfare accruing to someone living now. The choice of the discount rate, then, cannot be made simply on technical grounds. In fact, writing back in 1928 Frank Ramsey, the distinguished economist, wrote that discounting is "a practice which is ethically indefensible and arises merely from the weakness of the imagination". In fact, Stern in his influential review of climate change (2006) explicitly states that ethics and

value judgements play a role in evaluating not only aggregating utilities across individuals at any one given point in time, but also in aggregating them across generations. Stern tends to favour a discount rate which is close to one, which means that in effect people in the future are not discriminated against in our policy analysis simply because they are born much later. This is the view of impersonal consequentialism. However, it should be noted that questions surrounding the discount rate continue to be a point of fierce contention between economists and philosophers.

Missing persons

Another dimension of the aggregating problem is also related to time. Life is full of blank spaces. As a result of our choices of technology or projects some people will exist that otherwise wouldn't have existed and, conversely, some people who might have existed will not. The point that John Broome (1999) raises, then, is this: should we take into account the well-being of such people in our evaluation of policies/technologies even if they do not affect our own well-being? What we would like to know is whether the existence of such people and their well-being should be given weight in an assessment of climate change.

Previously, we had stated that our concern was over the relative weights assigned to members in a given series. The point being raised here, on the other hand, is that there may not be a given series. Some argue that we ought to indeed acknowledge that the possible existence of individuals at high (or low) levels of well-being is relevant but beyond that we should be neutral to population. The intuition of neutrality is that we're not really concerned about possible total levels of well-being but, rather, with that of those who actually exist. However, it turns out that the intuition of the neutrality assumption is faulty (inconsistent). It follows that we have to take into account the

impact of climate change on population and since these latter effects are larger than the initial effects we are going to face difficulties.

This is an unpalatable conclusion. Surely global warming will kill many people and that is unequivocally a bad thing? But if we take steps to prevent it, we will have to sacrifice resources or utility now. That much is taken for granted. The additional point made by Broome is that the world's population will change by following some precautionary steps to reduce emissions. For instance, as a result of reduced emissions, the size of the future population and the level of their well-being may be quite different from the 'business-as-usual' scenario. It is quite conceivable that there will be lots more people who are at low levels of utility. Should we take into account the value of this extra population? If so, it is quite possible that this (negative) value outweighs the disvalue of all the killing that follows from not taking those steps. Subsequently we can't unambiguously say global warming is a bad thing!

Conclusion: Take care!

Never before in human history have our choices had such a momentous significance. In fact, given the chances of an environmental catastrophe, an outcome that we have created by our choices of technology and lifestyles, we must face up to the very real possibility that our choices now make future existence itself a precarious condition. Given that uncomfortable fact it may well be that we need a radically new form of ethical thinking, since the older versions never countenanced this as a possibility. In our discussion above it was argued that Utilitarianism may not be the best way of evaluating and guiding our decisions. Why should we, the current generation, sacrifice our well-being for people we do not even know or who may not even exist as of now?

Are there other ways, then, of thinking about

climate change? Can we think, perhaps, of future generations having rights (to clean air, say) and does that translate into a set of corresponding obligations on our behalf? Does our ultimate responsibility to them derive from the fact that our choices/policies alter the size and nature of the future population? "We owe it to them," we might say, even though we don't know who 'them' is (or, in fact, how many there will be), what their desires and goals will be and so on. Can we meaningfully talk about people's rights when they're not even around to make claims on us and what type of political arrangements might we conceive to ensure that they have some form of current representation? By raising such questions I am trying to point to the importance of shifting our discussion of the problem away from the standard approach, with its heavy historical debt to economics, to one that encompasses political analysis.

Thinking about climate change seriously will demand more of us than speculations about politics; it will require us, all of us, to think about ethics, values, and its supporting culture more seriously. We might begin by asking what, eventually, grounds our obligations to future generations? We can quite reasonably accept that the extent of our obligations is dependent on how many future people there are, but beyond that we surely have a fundamental obligation to, at the very minimum, ensure that there will be people like us around, people with the same responsibilities towards their future generations and the same ability to form their own goals and satisfy their own preferences—even if we're not quite sure what the nature of those goals and preferences might be. Perhaps further work on Sen's capability approach would be helpful in this respect since it explicitly recognizes the role of our freedom to achieve and isn't wedded to notions of well-being.

One way out of the impasse, then, would be to imagine ourselves as part of a continuous moral

community (Baier, 2009). Here we are, part of the human chain, between past and future. We stand in an asymmetric relation to the future generations, one in which they are dependent on us. But we, too, were dependent on others. And perhaps it is this system of inter-relations, of mutual dependencies, that offers the way forward. Instead of thinking of ourselves as autonomous, self-interested utility maximizers—which is the foundation of the Utilitarian view we have been discussing—would it not make more sense to think of ourselves as “dependent rational animals” (Macintyre, 2001) and to think of our relation to the environment and future generations in terms of stewardship: our obligation to preserve, regenerate, and renew that which we didn’t generate but simply inherited? To do so would mean to radically rethink what we mean by words like ‘austerity’, ‘community’, and ‘resources. It would also mean an acute awareness that we’re nearly out of time.

Khalid Mir is an Assistant Professor in the Department of Economics at Lahore University of Management Sciences (LUMS). He can be reached at kmir@lums.edu.pk.

References and further reading

Baier, A. (2009). *Reflections on how we live*. New York: Oxford University Press.

Beckerman, W., & Pasek, J. (1996). Plural values and environmental valuation. CSERGE *Working Paper*, GEC-1996-11.

Broome, J. (1999). *Ethics out of economics*. Cambridge: Cambridge University Press.

Griffin, J. (1996). *Value judgement: Improving our ethical beliefs*. Oxford: Oxford University Press.

Hausman, D., & McPherson, M. S. (2006). *Economic analysis, moral philosophy and public policy*. Cambridge: Cambridge University Press.

Hirschman, A. O. (1985). Against parsimony: Three easy ways of complicating some categories of economic discourse. *Economics and Philosophy*, 1(1).

Macintyre, A. (2001). *Dependent rational animals: Why human beings need the virtues*. Open Court.

Ramsey, F. (1928). *A Mathematical theory of savings*. *Economic Journal*, 38, 543.

Roemer, J. (2009). The ethics of distribution in a warming planet. *Cowles Foundation Discussion Paper*, no. 1693.

Stern, N. (2006). *The Stern review on the economics of climate change*. Cambridge: Cambridge University Press.

Stern, N. et al. (2009). *Economics, ethics and climate change*. IOP Conference Series: Earth and Environmental Science, 12.

Stigler, G., Becker, G., 1977. De gustibus non est disputandum. *American Economic Review*, 67.

The Royal Society. (2012). *People and the planet*. The Royal Society Policy Centre Report.

Weitzman, M. (2011). Fat-tailed uncertainty in the economics of catastrophic climate change. *Review of Environmental Economics and Policy*, 5(2).

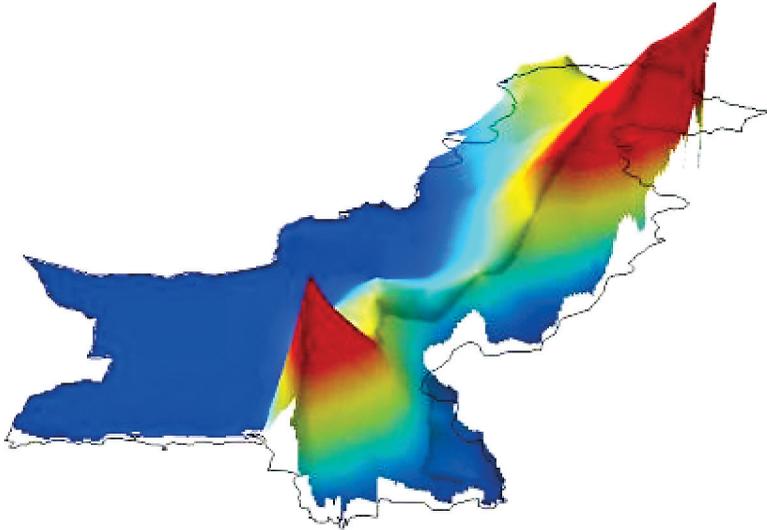
Notes

¹It is worth emphasizing that these are average figures with the reality for different communities or countries likely to be a lot more varied.

²It may be that in reality we have “fat tails” such that the probability of a catastrophic event is not negligible. Weitzman (2011) cites a number of studies that point to a 1% chance of there being a 10 degrees increase in temperature.

Revealing Facts: Mapping Economic Activity and Human Development in Pakistan

Figure 1: Economic contour map of Pakistan, 1990.

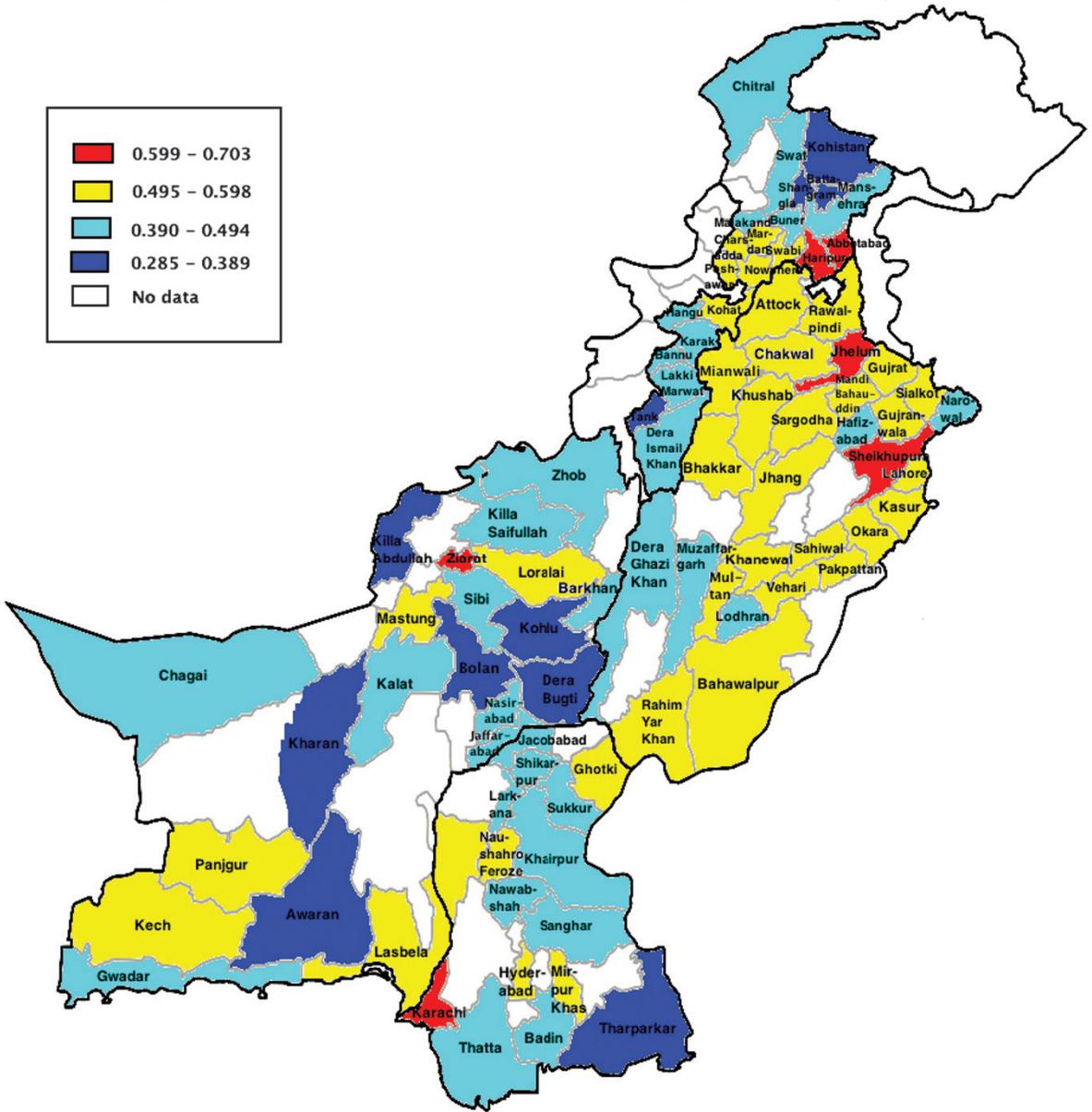


Source: G-Econ project, Yale University. Retrieved 5 December, 2012, from <http://gecon.yale.edu/pakistan>¹

The red spikes in the figure above depict the hotbeds of economic activity in Pakistan based on 1990 data, centring around Karachi District in the south and the areas around Lahore, Faisalabad, and Rawalpindi Districts in the north. Mapping Pakistan's districts on the basis of the Human Development Index (HDI) yields Figure 2, where HDI is a composite index based on life expectancy, education, and income levels. HDI assigns a value between zero and one; a value of one indicates the highest level of human development.

A comparison of Figures 1 and 2 reveals a positive correlation between economic activity and human development: districts that have high economic activity in 1990 also rank relatively higher on the HDI scale in 2003. This poses some interesting questions: are affluent districts better able to provide superior access to education, healthcare, and other services that result in higher HDI levels? Or are districts that generate high economic activity better able to attract a skilled, healthier labour force which then pushes the district to a higher HDI level? Moreover, many deeper questions remain. For instance, the Ziarat district in Balochistan has a high HDI ranking (as shown in Figure 2), but registers as a low economic activity district in Figure 1. A casual reading of the relationship between economic activity and HDI is clearly not enough to understand the real issues underlying the spatial inequality in Pakistan.

Figure 2: Districts of Pakistan by Human Development Index (HDI), 2003.



Source: Author’s map. All HDI figures were taken from the Pakistan National Human Development Report 2003, compiled by Akmal Hussain, for United Nations Development Programme (UNDP). Retrieved 4 March, 2013, from http://hdr.undp.org/en/reports/nationalreports/asiathepacific/pakistan/pakistan_2003_en.pdf

Notes

¹Yale University’s Geographically-based Economic data (G-Econ) research project maps economic activity based on geographic location, using a data set on “gross cell product” for various years. It uses the GDP specific to the area covered, measured over a “cell” which is a 1-degree longitude by 1-degree latitude area. For Pakistan, all figures were rescaled using 1990 as the base year. A more detailed methodology is available at <http://gecon.yale.edu/pakistan>

Guidelines for Authors

All submissions will be handled electronically and should be sent to sspb@lums.edu.pk. Submitted articles, not exceeding 3500 words in length, should preferably be in the form of plain text or as a word editor document. The Editorial board will review all submissions to determine their suitability for publication. Articles should not be simultaneously submitted for publication to another journal or newspaper. If a different version of the article has previously been published, please provide a copy of that version along with the submitted article. All correspondence, including notification of the editorial decision and requests for revision will take place by email. In case the author(s) do not respond in a timely manner, the Editors reserve the right to make final revisions before publication.

SOCIAL
SCIENCE
A N D
POLICY
BULLETIN

Social Science and Policy Bulletin
Lahore University of Management Sciences
Opposite Sector 'U', D.H.A.,
Lahore Cantt.54792, Pakistan
Phone: 92-42-35608000
Fax: 92-42-35894990 E-mail: sspb@lums.edu.pk