SOCIAL SCIENCE AND POLICY BULLETIN

Winter/Spring 2014

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Lahore University of Management Sciences

Social Science and Policy Bulletin
VOLUME 5 No. 2
(Winter/Spring 2014)
ISSN

The Social Science and Policy Bulletin is published quarterly by the School of Humanities and Social Sciences 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

As Pakistan continues to experience violence and instability, it is by and large the case that discussions about the country tend to focus on its ongoing attempts to deal with seemingly intractable Islamist militancy. In the media and, indeed, in academic and policy circles, considerable time and energy is spent trying to understand the dynamics of this conflict, as well as mechanisms through which to resolve it. While the focus on militancy is understandable and, indeed, necessary, it sometimes comes at the expense of paying attention to other questions of governance that also affect Pakistan in substantive ways. Even if Pakistan were to somehow resolve its issues with the Taliban and their associated groups, it would still be a country characterized by widespread poverty, low levels of social development, and ineffective state institutions.

In this context, two of the articles in this issue of the SSPB deal with the question of education policy in Pakistan. The first of these, by Neelum Maqsood and Bisma Khan, highlights two of the biggest problems faced by public sector schools in the Punjab province, namely high student-teacher ratios and multi-grade teaching, both of which stem from a shortage of trained teachers, poor recruitment procedures, and the inefficient allocation of the staff that do exist. In its analysis of recent government policy aimed at addressing these issues, the article demonstrates that attempts at reform have largely failed, especially at the primary school level. Through the use of ethnographic research conducted in schools around the province, Maqsood and Khan argue that political interference in the recruitment and appointment of teachers is at least partially responsible for the failure of government policy. In turn, while suggesting alternative mechanisms through which reform could be tailored to address this issue, they also argue that the broader political economy of transfers needs to be understood when drafting policy in Pakistan. In a similar vein, the Revealing Facts section points towards the prevalence of severe inequalities within the Pakistani educational system, with huge gaps in attainment emerging between the rich and the poor and the country's different provinces. Absent any attempts to address these disparities, their persistence will have serious negative effects for Pakistan in the long-run.

On a different note, Turab Hussain's article provides some much needed clarity on the question of trade with India, an issue that has prompted renewed interest and speculation amidst talk of Pakistan awarding MFN 'most favoured nation' status to India. Hussain argues that trade with India would be in Pakistan's best interest, especially given Pakistan's relative advantage in the production of goods like citrus fruits and fish. However, for this potential to be realized, Hussain suggests that Pakistan should abandon unrealistic attempts to have India reduce the subsidies it provides to its agricultural sector and focus, instead, on having barriers to trade reduced so that Pakistani goods can have greater access to Indian markets. In a context where India and Pakistan will, in the future, face common problems regarding water scarcity and agricultural productivity, trade could also potentially open up the possibility for greater cooperation in dealing with these issues.

Finally, Khalid Mir takes on the concept of time in economics. Taking issue with neo-classical approaches that treat time as being 'static and mechanical', Mir points towards recent developments in economics in order to support the notion that time must be conceptualized in a way that pays more attention to history, and also accounts for how the future is often indeterminate and difficult to predict. Particularly with regards to climate change, and the effect the actions of people today will have on the generations of the future, Mir argues that economics needs to focus more on the issue of inter-generational justice when grappling with contemporary problems.

Ineffective Teacher Deployment: Are policies to blame?

By Neelum Maqsood and Bisma Khan

Introduction

Effective teacher deployment is one of the most complex challenges of the education service delivery network in South Asia (World Bank, 2005). The allocation of teachers has historically been sub-optimal in a wide range of developing countries, especially in the South Asia region. Pakistan is no exception. Weaknesses in teacher deployment manifest themselves in the form of rural-urban disparities, differences in class-size (pupil-teacher ratios), and the shortage of female teachers in regions where female teachers are especially important in increasing enrolments of girls and may be critical for their improved learning.

Ineffective deployment affects student-teacher ratios (STRs) and creates disparities amongst schools in terms of the number and types of teachers available. According to the current recruitment records, the Executive District Officer (EDO) (Education) and District Managing Officer (DMO) jointly identify schools for teacher allocation and give a listing of these schools when recruitment is advertised. Generally there is higher demand for Science, Math and English teachers and priority is given to schools lacking such teachers. The allotment is also conditioned upon each school achieving a STR of 40:1. Once candidates have been short-listed from within a *tehsil*, the placement of candidates in the selected schools is done on the basis of merit. Candidates express their preferences during the induction training, with popular posts allotted on merit.

Although the procedure for deployment prescribes teacher allocation such that all schools in a tehsil have a STR of 40:1, this is not the case. There is a lot of variation in the STRs across schools, resulting in a number of one-teacher schools and multi-grade teaching. In 2011, there were approximately 36 percent schools with multi-grade teaching in the Punjab, Pakistan. This suggests ineffective teacher allocation. A number of policy-related and political economy factors result in such skewed distribution of teacher. Per the 2011 recruitment policy, if any teachers leaves after the 190 day training period has expired, hiring is not done till the next recruitment cycle. This creates vacancies and hence leads to teacher shortages in certain schools. Teacher transfers also create vacancies – teachers, in particular those in remote areas, often get transferred to more desired locations, creating shortages in certain areas. The recently introduced teacher transfer policy tries to deal with this issue by allowing transfers if certain criteria are met, only for teachers who have completed three years at their current post. This policy gives the head teacher authority to recommend staff for performance-based transfers. This devolution of power to head teachers is an attempt to increase the accountability of teachers and reduce the number of politically motivated transfers, as politically affiliated teachers get more favourable postings, thereby creating surplus at these posts and shortages elsewhere.

To counter these issues of teacher shortages and skewed distribution of teachers across schools, the

Government of Punjab introduced three teacher rationalization policies in the past decade in 2005, 2008 and 2010. The aim of these policies was to create an STR of 40:1 in all schools and to address issues of multi-grade teaching and one-teacher schools. In order to achieve this, a two-pronged approach was adopted: school mergers and rationalization of teachers. Under the school merger policy, schools having very low STRs and overall enrolment were merged to form one school. The surplus staff resulting from this merger was to be shifted to other schools on the basis of achieving a STR of 40:1. Similarly, teacher rationalization focused on shifting surplus teachers to low staffed schools. These policies addressed the issue of vacancies created by teachers who either opted out during the initial induction period or resigned in order to apply to another post. This was also done to ensure that every teacher had a reasonable workload and multi-grade teaching was curtailed.

However, these deployment strategies for teachers exist only on paper, with the result that class sizes are bigger, class-room management more difficult, teacher motivation reduced and teacher quality and student learning comprised. A useful metric for indicating teacher inputs, therefore, is the student teacher ratio. The next section will look at the STRs across the Punjab.

Deployment: Efficiency in the delivery of teaching services

This section discusses the key issues pertaining to teacher allocation in the Punjab. While the decline in STRs across different education levels is encouraging, key challenges remain especially with respect to the very high STRs in primary schools, where the average class size still exceeds the officially regulated of 40:1. The decline in STRs in girls' schools is especially commendable as is that in rural regions. However, the fact remains that STRs in rural schools are substantially higher than those in urban locales (see figures 1A and 1B).

Figure 1A: Trend in average Student Teacher Ratio (STR), by region (2008-2012)

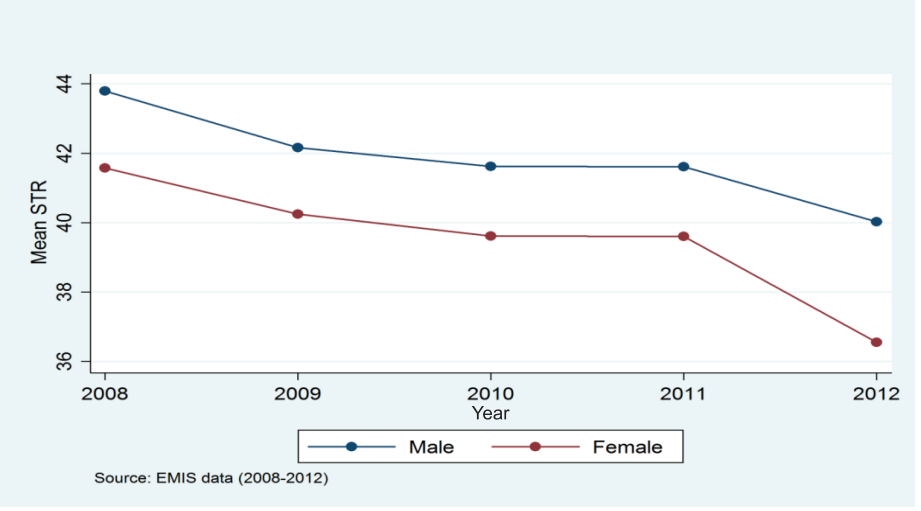
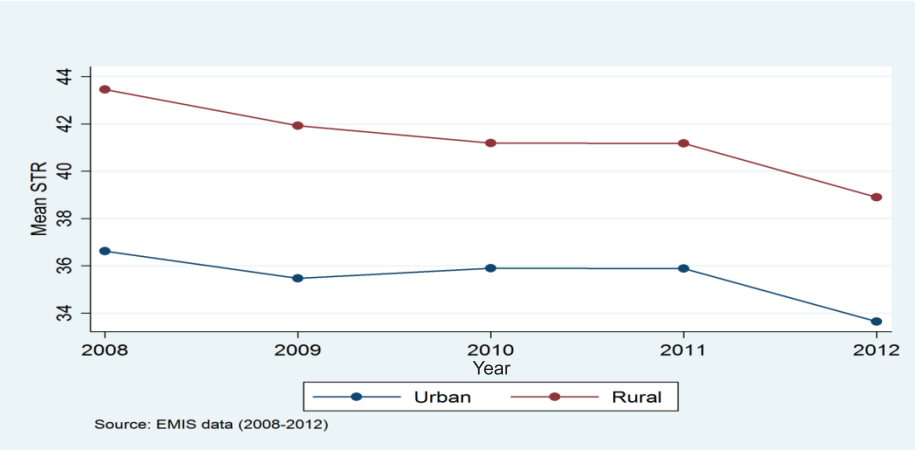
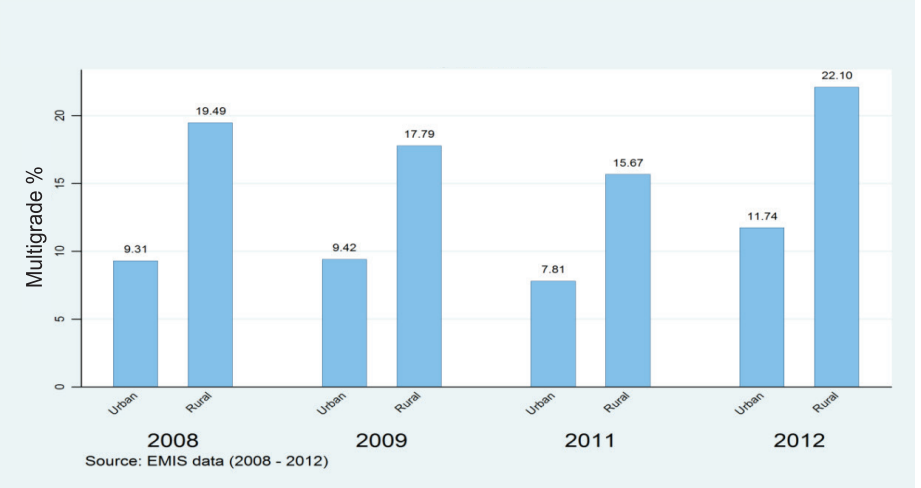


Figure 1B: Trend in average Student Teacher Ratio (STR), by region (2008-2012)



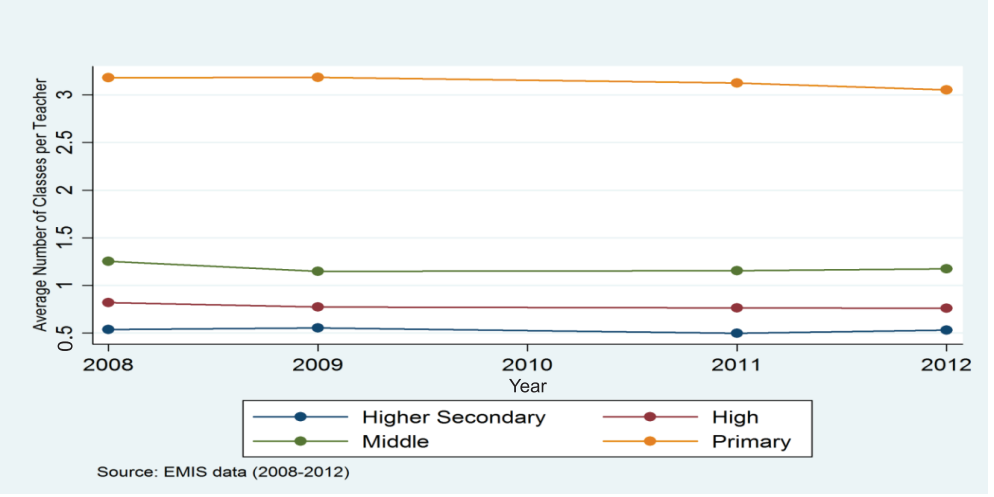
Multi-grade teaching has become a common strategy to deal with issues of teacher shortages and absences, particularly in remote rural areas in several developing countries. Multi-grade teaching has arisen due to necessity and is rarely accompanied by the requisite teacher training or resources to make this an effective teaching methodology. Figures 2A-B depict the extent of this phenomenon across Punjab in recent years. It is clear from Figure 2A that multi-grade teaching is common across the province, especially in rural areas, where more than 22% schools report multi-grade teaching, with the proportion increasing over time. While practised less often in urban areas, more than 10% of the schools allow multi-grade teaching and this practice has increased over the past five years. From an equity perspective this regional divide is of concern because remote rural areas already face educational deprivation and social marginalisatioin.

Figure 2A: Proportion of schools with multi-grade teaching, by region (2008-2012)



Of even more concern is the fact that on average, a primary school teacher teaches 3 grades together, with the teacher ill-equipped to teach a combined class comprising children of different ages and grades.

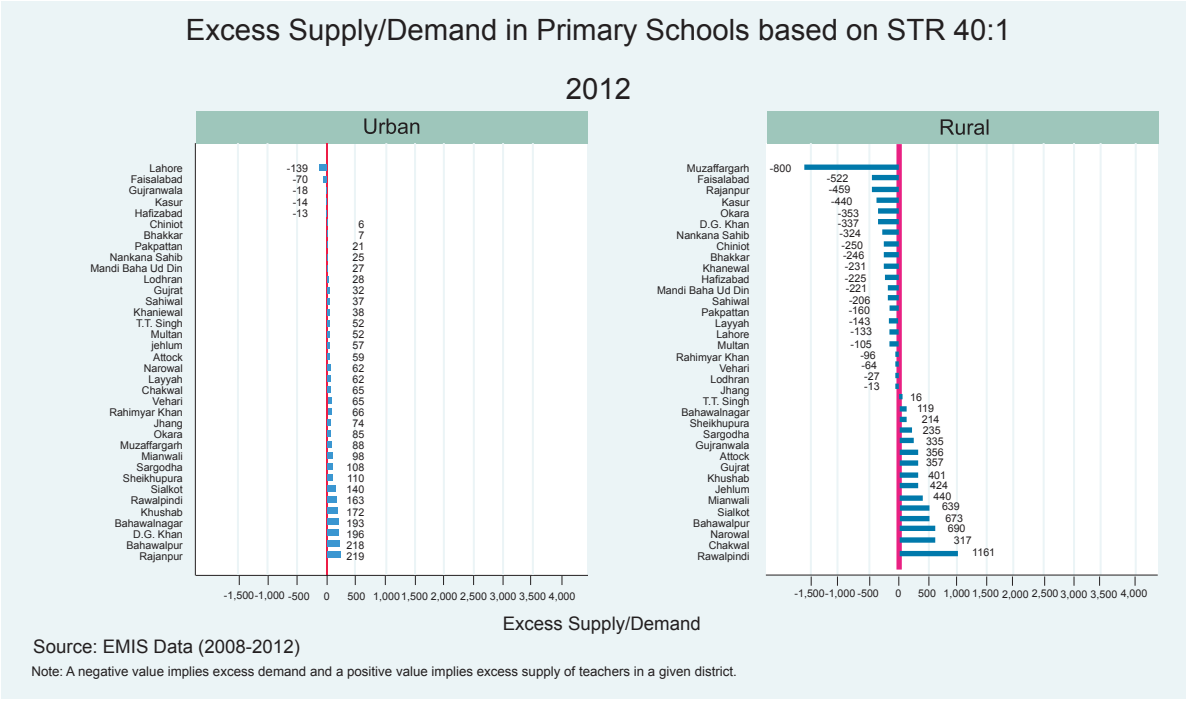
Figure 2B: Average number of grades taught in multi setting by school level (2008-2012)



Note: The number of classes taught by a teacher is calculated by dividing the number of classes in a school by the total number of teachers in that school. A value of less than 1 implies excess teachers i.e. more teachers than the number of classes.

The issue of multi-grade teaching is most obvious in primary schools which could be a result of inadequate teacher deployment. Figure 3 depicts highly inefficient deployment of teachers in primary schools within the province, with some districts in 2012 facing severe teacher shortages and others, excess supply. It is clear from the graph that the issue of poor deployment is starkest in rural areas, and is fairly persistent over time. Part of the problem stems from the fact that there is often little clarity on how teachers will be allocated. In many situations, effective re-deployment of teachers is sub-optimal due to the complexity of the transfer mechanism and the attendant political economy issues. As a result, there is often very little match between teacher skills and children needs. And although rationalization polices have frequently been introduced over the five year period from 2008 to 2012, these policies have failed to address weak deployment in primary schools. One reason behind this is the inadequate implementation of the policies due to political interference and lack of buy-in from the teachers and teacher unions. Moreover, the policies concentrate on having an overall STR of 40:1 in schools, but do not address the issue of teacher workload or of multi-grade teaching. These policy gaps need to be filled for efficient teacher deployment to take place.

Figure 3: Inefficeiencies in teacher deployment in Punjab, for primary schools and by region (2012)



Source: EMIS Data (2008-2012)

Note: A negative value implies excess demand and a positive value implies excess supply of teachers in a given district.

Political interference in transfers and postings

Political interference is one of the main drivers of inefficiencies in teacher resource delivery. There is anecdotal evidence to suggest that there is significant political penetration of teachers in Pakistan (as in the rest of South Asia) and that this potentially undermines efficiency in the delivery of teacher services. The extent of politicisation of teachers is evident through newspaper reports of strike actions and political lobbying by teachers in the country. More robust evidence on the extent of politicisation of teachers in education is very hard to come by. The Punjab Teachers Union in Pakistan claims membership of almost 350,000 government teachers across the province, spanning 63,000 schools in 38 districts. This is equivalent to almost 100% union participation of all government school teachers in Punjab alone. When asked what percentage of teachers at the school are members of a teachers union, SchoolTELLS data shows that in rural Pakistan, as many as 85% stated that no-one is a member of teacher unions. This illustrates reluctance to reveal union membership, which may be linked to the motives behind joining unions. When asked if unions can help teachers in transfer-related problems, 35% of teachers answered in the affirmative, suggesting that teachers recognise and possibly utilise their unions in getting transfers. In the sample, 64% also believed that paying a bribe was an effective method of accomplishing a transfer. Moreover, 43% of the teachers in the sample claimed that their transfer to the current school was a 'routine' transfer, whereas up to 44% acknowledged that their position in the current school was due to 'personal requests' and efforts.

One teacher even admitted that she had paid an official a bribe to reach her current position. The extent of politicisation of the teaching profession is reflected in the role of the bureaucracy and politicians in providing political favours in the form of transfer and postings in exchange for votes. When asked about the extent to which it is helpful for teachers in the district to engage with local and national political representatives for transfers and postings, almost 60% of the teachers in the sample suggested that these persons can prove somewhat or very helpful in securing postings.

In the education department, there are two forms of corruption:nepotism and rent-seeking. The teachers either use political connections or bribe the clerks to manoeuvre the system to get their desired transfer or promotion. As a part of a study on teacher recruitment and retention conducted by IDEAS 'Institute of Development and Economic Alternatives', an ethnographic study of the day-to-day workings of district-level education departments in Attock, Rahimyar Khan and Gujranwala was carried out. Through this ethnographic study, which included interviews and participant observations, it was evident that the implementation process is rife with political patronage. Be it teachers or department officials, all agreed that policies are not implemented properly. Although the intensity of political involvement in policy implementation has decreased overtime because of improved policies, the departmental process fares worse. There is permeation of political patronage from the lower rungs of the hierarchy (Personal assistant and clerks) to the higher ranks of the department (EDO 'Executive District Officer' and DCO 'District Coordination Officer'). The introduction of the 2013 transfer policy however has curtailed the discretionary powers of the political leadership. Yet the perception remains in all three districts that transfers are done on political grounds and policy is often ignored.

The record of previous rationalization policies is poor due to political interference. Whether the new transfer policy would be able to withstand political pressure depends on implementation by the officials. If the officials fear that they might be penalized for succumbing to political pressure, they will resist. Teachers do not hold the education department in high esteem, claiming that fair, but politically unconnected teachers, are targeted. Undoubtedly, the accountability mechanism in the education department is very weak. Decisions against any teacher can be overturned with the help of connections. If someone wants to report any mismanagement on the part of the local education departments, the complaint redressal cell in the EDO's office is seldom used, for fear of retribution of officials, who can use the Punjab Employees Efficiency, Discipline and Accountability Act 2006 to transfer the teachers to a remote area or worse, terminate their employment.

Policy recommendations

The previous section presents a dismal picture of the distribution of teachers across schools in the Punjab. It shows a skewed distribution with certain districts having an excess supply and others a shortage of teachers. Further, it indicates a high proportion of one-teacher schools and schools with multi-grade teaching across Punjab, particularly in rural areas. This inefficient deployment results from inadequate allocation of posts upon recruitment in the first instance and politically motivated and unwarranted transfers in the second.

According to the current recruitment policy, the EDO and DMO of a particular district allocate sanctioned posts across schools typically on the basis of a STR of 40:1. This might not lead to the best allocation of seats as some schools may have an STR of 40:1, but may lack subject specialists.

Others may have multi-grade teaching or may be one teacher schools. These concerns are not addressed by ensuring a STR of 40:1. A better approach would be to look at the work load of a teacher and the number of grades assigned per teacher and then decide how many and what types of posts to sanction in that school. One way of efficiently doing this is to have the head teachers of the schools identify school needs and propose posts for their respective schools. Then the DMO and EDO can jointly verify and approve these proposals and finalize the allotment of posts across schools. This will ensure more efficient deployment of teaching resources.

Rural areas particularly lose out in terms of quality, as no teacher wants be posted in a remote or disadvantaged area. To counter this, contract terms for teachers should include compulsory one to two year tenure in such areas. But this may not be favourable for female teachers, who may have concerns about conveyance. Caveats in the policy can allow female teachers, who do not want to be posted in remote areas, to serve this service term in a disadvantaged school near their place of residence. At present, big city allowances are in place, but no such benefits are stipulated for teachers in remote areas. This makes teaching in big cities even more attractive. Remote area allowances and benefits, such as transport facilities and accommodation, need to be introduced to counter this.

Politically motivated transfers that distort teacher deployment can be limited by banning transfers altogether or discouraging them by having school-specific appointments as discussed above. Further, transfer applications should also be made online and the scrutiny of these applications should be automated. This will limit political interference and also curb the discretionary power of the clerks in transfer matters.

This article has highlighted the importance of designing policies to curtail political interference in teacher deployment. Well-thought out policies are essential in mitigating the issue of skewed teacher distribution and ensuring effective implementation of policies. Further, a balance needs to be struck between facilitating the teachers and making schools functional. A better use of teaching resources in turn can go a long way in improving student learning outcomes in public schools of the Punjab.

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Trade with India in agriculture: Prospects and challenges

By Syed Turab Hussain

Trade in agriculture is arguably one of the most contentious issues in global trade, especially when contextualized in trade relations between industrialized economies and the developing world. However, it is seldom that one hears about agriculture being a stumbling block towards increased bilateral trade between developing countries. When it comes to the topic of trade between India and Pakistan, the general perception is that politics trumps economics—any effort to normalize trade and economic relations between the two countries is susceptible to an unpredictable and fragile political relationship. The Mumbai attack, for example, undid whatever little was achieved to improve economic linkages in the years prior to it. More recently, the decision by the Pakistan government to grant Most Favored Nation (MFN) status to India by December 2012 got delayed because of clashes at the border. However this time political tensions were not the only reason—the agricultural lobby in Pakistan also played a significant role in delaying the decision to grant MFN to India. Various farmer associations across the country led demonstrations in the capital city, claiming that subsidized and cheap agricultural products from India would flood markets in Pakistan at the cost of the farmers and the rural population. The Pakistan Senate took notice of their concerns, which subsequently led to the postponement in the implementation of MFN. Given that agriculture is likely to become the Achilles' heel of Pakistan-India trade relations, this article is an attempt to analyze the issue and identify the challenges and opportunities of trade in this sector.

The importance of agriculture to the economies of both India and Pakistan cannot be overstated. The sector contributes a significant amount to the GDP and employment of both countries.[1] In terms of size, India's agricultural production is more than five times that of Pakistan, yet Pakistan's per capita production across major crops is substantially higher than in India. Although there are similarities in the structure of agricultural production across geographically contiguous regions of the two countries, there are major differences as well. While Pakistan has grown substantially in livestock over the past couple of years, Indian agriculture has been dominated by the rise of cotton production that trebled in the last 10 years, since its adoption of bio-genetic varieties. Moreover, the geographical and climatic diversity across the two countries is a major factor behind differences in variety and pattern of agriculture produce, creating considerable opportunities for trade. But perhaps the most important difference between the agriculture sectors of the two countries is their contrasting policy regime.

Post-Independence India, driven primarily by the objective of achieving food security for its masses, adopted and maintained an interventionist regime in agriculture. The state continues to subsidize agricultural inputs, provides price support for 24 crops and maintains a high average applied tariff rate on agriculture. In contrast, Pakistan has liberalized its agriculture sector over the years,

with minimal state intervention. Market liberalization reforms have meant a gradual phasing out of subsidies and price supports and a reduction in agricultural tariff rates. The only crop procured by the government at a fixed pre-announced price is wheat: the rest are freely traded at market prices. From the standpoint of the agricultural sector of Pakistan, this difference in policy regime creates an uneven playing field—subsidies reduce costs of cultivation, distort prices and affect the direction and volume of trade.

The other contentious issue is that of market access. High average tariffs on agriculture goods and non tariff barriers (NTBs) on the Indian side, such as health and quality standards (SPS and quarantine standards), are cited as the major reasons for the relatively low Pakistani agriculture exports, despite India giving MFN to Pakistan in 1996. The non-issuance of visa for Indian Punjab is also highlighted as a major obstacle to trade in agricultural goods. In fact, according to the World Bank, the Overall Trade Restrictiveness Index (OTRI) in agriculture in India was 69.5% compared to Pakistan's 5.8% in 2009.

Given the current policy regimes in the two countries, the recent trends in agriculture trade are quite instructive. Despite the fact that Pakistan has not extended MFN and maintains a negative list with India, both the overall and agricultural trade balance is still heavily tilted in India's favor.[2] The major agriculture imports from India have been cotton, refined sugar and more recently, fresh vegetables.[3] On the other hand, the main agricultural export of Pakistan to India over the past two years has been dried dates (US$ 47.2 million in 2011). Exports of onions, shallots, shrimps and apricots have recently picked up, but are still very small in terms of volume and value. Interestingly, trade in the major crops (wheat and rice) between the two countries is non-existent, perhaps because of the relatively high applied tariffs.

Analysis of relative competiveness in agricultural products indicates that Pakistan has considerable potential in exporting to India. Various studies which have carried out Revealed Comparative Advantage (RCA) calculations show that Pakistan is competitive in citrus fruit, mangoes, apricots, peaches, olives, fish and fish products. These products have the potential to attract significant demand in Indian markets. Furthermore, India with its huge population (of more than 300 million people belonging to the middle-class) offers a lot of opportunities for export of value-added agricultural processed fresh and preserved food, dairy products, juices and vegetable food supplements. Also, niche export market opportunities exist for vegetarian, *halal, kosher* and organic products.

For the agricultural sector of Pakistan to realise the potential of trade with India, it is imperative that the issue of market access be addressed in the bilateral trade negotiations between the two countries. The WTO-compliant agricultural subsidies and price support given by the Indian government to its farmers is a domestic issue. Given the political economy of subsidy provision in India, it is highly unlikely that India would reduce these in the near future. Therefore, in the short term, what Pakistan needs to negotiate for is Indian reductions in both its applied MFN tariffs on agriculture goods and the specific agriculture-related NTBs that hinder Pakistan's potential exports. Opening of the Indian market to Pakistan would go a long way in pacifying the agriculture lobby.

Over the medium- to long-run, there is considerable opportunity for cross-border investments in agriculture and processed food, given the fact that there have been significant efforts to liberalise

the investment regime in both the countries. Likewise, there is tremendous scope in trade and joint ventures/investments in inputs, such as seeds and agricultural appliances. Moreover, with increased water scarcity and changing weather patterns, there is a dire need for the two countries to resolve their outstanding water issues and treat water as a common resource. Finally, both India and Pakistan should institutionalise research linkages to facilitate transfers of technology for more sustainable agricultural practices in the region.

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Notes

[1] Agriculture contributes to 21% of GDP and constitutes 45% of the labor force in Pakistan. In India, it contributes 15% to GDP and constitutes 58% of the labor force.

[2] The top ten agricultural related exports from Pakistan amounted to US$ 50 million, while its top ten imports of the same from India were over US$ 500 million.

[3] The decision by the Pakistan government to allow duty free import of vegetables from India via the Wagha border was taken to control rising food prices in the country. Though benefiting the urban consumer, it caused considerable chagrin amongst the farmers and drew criticism from various agricultural associations across the country.

Time and Economics

By Khalid Mir

"Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time."

—Kenneth Arrow.

On reflection it turns out that a number of economic decisions incorporate our relative evaluations over different time periods. We allocate resources, effort and consumption over time, assessing the trade-offs between present and future values. Investments in education, the decision to save, retire, or borrow all depend to some degree on time, as do our work/leisure trade-offs. In fact, Alfred Marshall[1] wrote, "the element of time is the centre of the chief difficulty of almost every economic problem." It is somewhat surprising, then, that economists pay such little explicit attention to the question of the relation between time and economics.

But what, exactly, is the problem Marshall is alluding to? In the standard economic framework (the neo-classical model), economic agents have perfect information (or can acquire it in a costless way) and they act in environments characterized by certainty and effective legal systems that ensure the enforcement of contractual arrangements. Given those background assumptions, it is difficult to imagine time having any intrinsic importance and economics, by and large, carries on as if it does not.

In economic thinking, our models are generally forward-looking and so the past does not really matter. In development economics, for example, we tend to think that "history" or the original starting points of different countries, given the same fundamental parameters, is not significant since there will eventually be convergence to the same state of affairs. And in much of macroeconomics it is as if time is laid out in front of us, "spatialized", as it were, such that economic agents can perfectly foresee the future, the shape of preferences and technology, and thereby make optimal decisions. In game theory, too, we often assume that though we "live life forwards, we understand it backwards" (Kierkegaard) and solve using 'backward induction', assuming we can see the final 'play' before we formulate our current strategy.

Of course, it is now widely recognized that actual markets may differ from this theoretical construct in significant ways and are in fact shot through with various types of imperfections and incompleteness. Perhaps the "chief difficulty" Marshall was hinting at then, is the possibility that in the absence of perfect condition, actual markets may have to rely on non-economic factors to co-ordinate actions, namely: norms, power, and ethics. The difficulty arises not only because information may be incomplete but, more radically, because agents may face what Roman Frydman[2] calls "imperfect knowledge": there may be some things that we simply cannot know beforehand. That idea has long been recognized by some economists. In public economics, Nelson[3] (1970) described what he called "experience goods"—goods such as education and health services, whose quality we cannot assess until we've actually 'consumed' them. That in itself is not too surprising given that we make such decisions in these areas on an infrequent basis.

For an older generation of economists as well, there was the recognition of the importance of having a better account of time, and in particular, of the view that time is experienced as both throwing up unpredictable futures, as well as being irreversible. Both of these features sit uncomfortably with the mechanical and static view of time in the neo-classical framework. It is not surprising, therefore, that John Hicks[4] could write of the need for an economics *in* time, as well as an economics *of* time.

In a similar vein, no less an economist than Keynes could make the distinction between household consumption patterns that might be stable and business investment spending that was volatile and subject to uncertainty, or what he called "animal spirits". Frank Knight,[5] a neo-classical economist writing at around the same time as Keynes, emphasized the notion of uncertainty (unknown unknowns) as opposed to risk, which involves a known probability distribution over events. For Knight, markets and economic activity are much more creative and innovative than what standard economic theory suggests. Under that standard view, markets are valuable because they result in people optimally satisfying their (given) preferences and because they afford people the freedom to do so. But for Knight and other thinkers like him, the real power of markets was to create new products, new ways of doing things, and to realize new opportunities that could not be previously foreseen. This suggests a much more open view of time than the closed one of our mechanical models with their emphasis on equilibrium. If we think of economic activity in terms of radical innovation such that the world is fast-changing and the future unformed and at least partly unknowable, then the notion that there is a pre-existing static equilibrium to which we will rationally converge seems wrong.

Adam Smith[6] can also be read in part as suggesting a different view of time to that of the standard model. In his parable of the poor man's son, we see someone towards the end of their life feeling profoundly dissatisfied at the way their life has turned out—even though they had achieved what they had set out to do at the beginning. I think it is erroneous to see the problem residing in a lack of available information; instead, it seems more plausible to read Smith's parable as indicating that we may not always have stable or known preferences and that we can learn over time. In some sense, this ties in with Knight's discussion, since one of the advantages of markets and frequent choice is that they are supposed to help us refine our decisions over time. Both economists, then, might agree that we do not always know what we want, and this may in turn derive from the fact that at any point in time, we only have a partial understanding of our identity and values. In fact, disappointment and "deception" may be what drives the economy forward (according to Smith). To some extent progress depends on us being continuously unhappy with or frustrated by what we have.

In recent years economists such as Oliver Hart[7] have suggested that not all contracts are complete, in the sense of economic agents being able to perfectly foresee or specify all future contingencies. In such cases it may not even be theoretically possible to imagine a world of perfect contracts across different time periods and so "perfection" should not serve as our benchmark—as it does in the neo-classical model. Further, even if perfect contracts did exist, they might be too costly to set up, too complex to understand or have negative motivational effects.

The abstract notion of time we have is further undermined when we think of emotions or attitudes such as regret or disappointment. These seem

hardly admissible in the standard economic framework and point to the central difficulty of imagining how agents could ever make systemic mistakes if time is "spatialized". If the past is irrelevant and if we have perfect foresight, how can the economy ever be off-equilibrium? And yet we know from history that economies slump and financial sectors undergo periodic crises.

In behavioural economics, too, there is evidence to suggest that we do not always rationally optimize over time in the way implied by our models and may instead have 'satisficing' preferences,[8] or lack the self-control to forego current pleasures for ones that occur in the distant future. Kahneman[9] adds weight to the view that we may need a more nuanced approach to time by outlining the difference between instant utility (happiness) and remembered utility. In addition, recent work by Avner Offer[10] suggests that as societies become richer, they may be becoming more impatient—with serious repercussions for work and savings decisions, as well as for health outcomes. In market societies the sheer speed of change, the abundance and variety of choices and the thinning out of our associations with a particular place, a type of work and even with our families and history may mean that novelty trumps prudence and that ultimately "liquidity" is more important than durability, continuity or—what E. P. Thompson[11] called "customary expectations".

"All that is solid melts into air," Marx wrote many years ago. Some would say prophetically so. Our inability to picture "the long now" and the concurrent demise of cultural and institutional "commitment devices" that ensure restraint may not just be responsible for myopic choices in developed countries, though. Mullainathan[12] contends that poverty in developing countries, may in part, be explained by the poor favouring short-term rewards over greater long-term ones in education and savings markets. But the biggest challenge to the standard way in which time is incorporated into our models is the looming environmental crisis.

It is now widely acknowledged that climate change is a serious problem, but one of the striking features of that problem is the sheer level of uncertainty surrounding it. We cannot be sure how technologies will evolve or what the underlying processes governing climate change are. So, when it comes to the impact of economic activity on emissions, the relation between those emissions and temperature increases, or the impact of those temperature changes on economic activity and well-being, we are faced with a "cascade of uncertainty".[13] For some economists like Weitzman[14], uncertainty is the fundamental characteristic of climate change. Given that, along with the possibility of "tipping points," it is not clear how useful our standard economic approaches are when it comes to assessing the likely net damage from climate change.

The standard economic approach used in policy analysis has, broadly speaking, been some version of utilitarianism. But utilitarianism encourages a very peculiar understanding of time. At the individual level, the assumption of "additive separability," which is to say that the utility I have is independent of the order or sequence of utilities, tends to break down the notion of a narrative unity to our lives. My relation to future utilities encourages the view that I relate to the bearers of these future utilities as if they were almost autonomous, "time-slices" of me. The philosopher John O'Neill[15] elaborates upon this point with the following example: imagine couple "1" on their honeymoon. They argue for the first four days and experience unhappiness, but on the fifth day they

make up and are happy. Let's assume their lives end at that point. Now compare their lives with couple "2", who are happy for the first four days, but quarrel bitterly on the final day. Which couple has the "better" life? If we give credence to the notion of additive separability, then we would tot up all the amounts of happiness and unhappiness as experienced on each day and conclude that couple "2" were the happier (this point is reinforced if we include discounting since couple "1's" happiness is achieved much later). But if we were to reasonably see their lives as two stories, then it is plausible to conclude that couple "1" has a better life. In some sense, then, a final event can redeem (or sour) the past.

Some greenhouse gasses can stay in the atmosphere for hundreds of years. This makes climate change an inter-temporal problem. The policy question then becomes:how does an impartial social planner weigh up the welfare of current generations against future ones? One answer is to throw one's weight behind an inter-generational view of justice, with the notion of "harm" at its core. A more typical response is to rely on utilitarianism. Both are problematic because we are not sure of the existence, number or identity of future generations. In addition, utilitarianism is unlikely to generate a psychologically realistic set of motivations. To see this, remember that at the individual level additive separability tends to foster an abstract relation to our future selves. In a similar fashion, in an inter-generational maximization problem, we tend to see other people as abstract individuals, as strangers. It is hard to imagine how we can go from our normal non-moral selves —how we usually view ourselves in market relations— to endorsing such a universalist, impartial and temporally-neutral position. To put it in simple terms:why should I care about the welfare of future generations when I stand in an asymmetrical relation to them? I can harm or benefit them, but they cannot have a similar impact on me.

It could be argued that at least in some respects, economists take account of the importance of time in the inter-generational problem by introducing discounting. But this in itself is highly contested with some maintaining that the "pure discounting" of utility is "ethically indefensible" (Frank Ramsey). Why, after all, should the fact that utility occurs at a later date and to a future person matter to an impartial social planner? That seems unfair. Others freely admit, however, that commodities can and ought to be discounted but this, to me, seems to be really an argument about taking inequalities seriously:if future generations are richer (have more commodities), then on the margin commodities will not be as valuable to them as they are to current generations and optimization would require giving more importance to the latter. Discounting is not, then, about time per se. But if we take the opposite view and hold that future generations should be given roughly the same weight in our calculations as current ones, then this could impose huge sacrifices on current generations given the sheer number of expected future people. It seems unrealistic to expect such a view to be widely endorsed. It is not surprising given these highly contested views that some of the fiercest debates should revolve around what the appropriate discount rate should be. Utilitarianism, it turns out, is either too demanding and unrealistic, or unfair.

When it comes to the inter-generational problem, we might ask if there is an alternative view of time, one that is analogous to the idea of narrative unity of the individual. Annette Baier[16] has written on how we can fruitfully see ourselves as belonging to a "continuous moral community" and how this might serve as a useful framework which might go

some way to resolving the environmental problem. In a similar vein, Scheffler[17] maintains that at least part of what goes in to making us 'valuing creatures' is the sense of both things and people continuing over time. In that sense, it is incorrect to think that future generations cannot harm or benefit us—even after our own death. Many of the projects and objects we value—cancer research, aesthetic appreciation, intellectual, artistic, and political activities—depend on future generations being around to complete, understand, maintain or further deepen them. Just as those presently alive can alter the past (T.S. Eliot), so too can future generations alter the meaning and purpose of our present endeavours. If we have obligations to future generations, then it could also be said that we have them to past generations as well since, as the late Seamus Heaney[18] wrote, it is important to "keep the imagination's supply lines to the past open". Such an attitude to time seems far removed from that taken up by our neo-classical models. If choice is a genuinely originating force and if human creativity and imagination mean anything, then human history is open-ended. If time cannot "pass without modifying knowledge" then economic theory needs to incorporate both a logical, as well as historical, notion of time.

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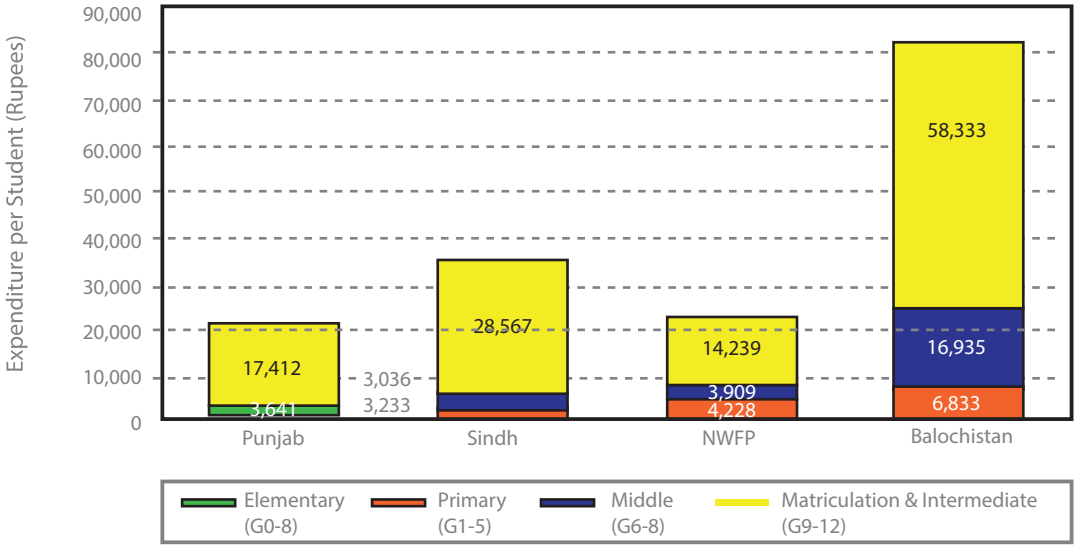
Revealing Facts: Public Schooling in Pakistan

The education sector of Pakistan has not been a top priority of the federal and provincial governments, as evidenced by historically low budget allocations. In 2010, education accounted for only 10% of the total federal budget, which was seven times less than what Pakistan spent on the military. The budgetary allocation to provinces is decided on the basis of the National Finance Award (NFA) formula, which ensures balance in management and division of financial resources to all the provinces in order to meet their expenditures. This allocation, however, is largely insufficient and the deficit is met in greater proportion by provincial tax collections. Innovative educational projects are usually funded by foreign loans, grants from international aid agencies or the private sector. Public-sector schools and institutions are funded and managed by provincial governments through their respective Higher Education Departments.

There are significant variations in the public sector educational records of different provinces. Figure 1 shows the per student annual expenditure on school education during 2005-2006 across the country. Expenditure is highest in Balochistan, roughly at Rs.80000, while Punjab and Khyber Pakhtunkhwa (KPK) witness lower levels. This paradox could be explained by the low population levels in Balochistan and the civil turmoil in the province. KPK on the other hand, has suffered greatly due to both terrorist attacks on schools and the 2005 earthquake, which has shifted the focus to other more immediate needs. Recurring expenditure is the least in Punjab due to the availability of existing infrastructure and a higher school-age population. Within each province, the expenditure is the highest at the secondary level.

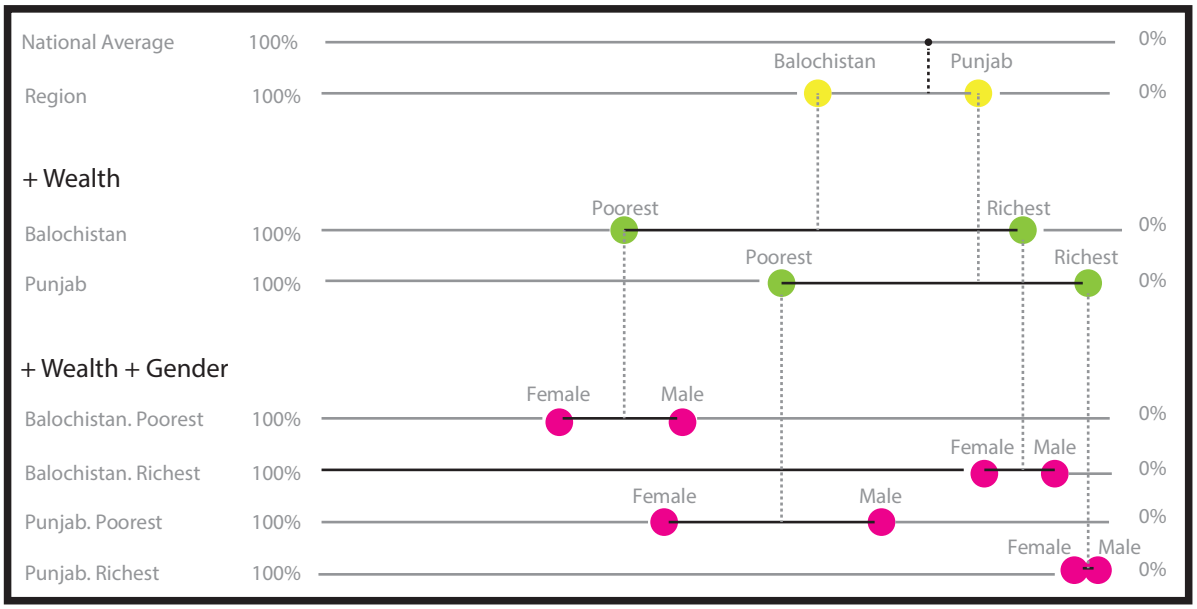
Figure 1: Average Expenditure per Student by Province:An assessment of per student public sector expenditure on school education at district level was conducted during 2005/06.



Source: Ministry of Education. 2008a. *Financing of Education in the Public Sector.*

Differences in educational attainment levels between the two most divergent provinces, Punjab and Balochistan as measured by percentage of children aged 7 to 16 who have never been to school are captured in Fugure 2 below. As expected, Punjab falls below the national average, with 17% children never in school, while Balochistan, with 37%, is well above the national average. Interestingly, children belonging to richer households are more likely to go to school in Punjab than in Balochistan. However, inequity in educational achievement is much higher among poorer than richer households. While gender biases persist in both provinces, the gap is most pronounced for the poor in Punjab, but is the same between rich and poor households in Balochistan.

Figure 2: Percentage of 7-16 year olds who have never been to school, 2007



Source: *World Inequality Database on Education.* Retrieved from www.education-inequlaities.org/

This widening intra- and inter-provincial inequality in attaining education is likely to widen the skill deficit amongst the disadvantaged classes. Almost 12 million in the 15-24 age bracket lack basic skills in Pakistan, which is the second highest skills gap among developing countries. Neglecting education for children is going to have long-term negative effects on the economy and society, and prevent us from reaping an economic return to demographic dividend.

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