

*The Mahbub Ul Haq Memorial Lecture*

**Private Sector Led Growth and  
the Entrepreneurship**

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Dr Mehboob Ul Haq is surely an inspiration for anyone like me, who is interested in working with applied data and thinking about how that might be used to inform economic policy in useful ways. It is possibly application to usefully inform policies.

Coming to the topic, it is important to consider two things. Firstly, what do the firm actually do, and secondly, what one should think about private sector as essentially fulfilling. Hence, there is a need to find out the most pressing research questions that need to be considered in this regard. I would start with the most fundamental question i.e. what does the firms do? Some would say it is a straight forward question. Firm takes different factors of production, sticks them together and then ends up with some output. As economists, we traditionally think obviously about the Cobb Douglas production function, which reflects concept of production. I am not going to talk today about the technology and capital, but I will discuss about workers role in production in a more holistic / comprehensive way.

Imagine a firm in Pakistan that have a number of workers. Let us call them “N” and these workers have different abilities and qualities, so how would one calculate the total productivity, output or total contribution of the labour force. The simplest way to do this is just to add them up and say that the total labour contribution is the sum of the individual labourer’s contribution. This means that if one were to improve the productivity of the first worker, then yes, it would improve the firm’s productivity, however, it will not affect the productivity of any other worker of the firm. In practice, let us suppose in a firm in Sialkot, there are two women workers producing soccer balls, and to know their productivity we sum their output. Hence, if one out of these two women increases her production, it will be imagined as the increase in firm’s total productivity (without affecting the productivity of the other woman) and that will be imagined as a good thing.

But let me change the hypothetical situation a little bit and suppose that these two women are not producing soccer balls but they are producing something a little bit complicated namely a space shuttle. The space shuttle according to National Aeronautics and Space Administration (NASA), have more than two million different parts. So, in

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such complicated situation, how can one define the typical concept of production? Suppose we have one part an o'ring,<sup>1</sup> and suppose I have asked about the risk of its failing. As the production function is additive, we should not stress too much. Surely, the effect on total output would be less than 1 to the ratio millions of its current performance. Of course, we know from our extreme example that this not the way of working in this high technical industry.

Hence, we came to know that for many production processes, not just as complicated as the space shuttle, we need not merely add different resources that we have, but rather to combine these in a much more complex fashion. It is the manner which requires the other part of the process to work well, if one part of the process has any meaningful contribution. So back to our soccer ball factory in Sialkot, we might think that soccer ball production is a very simple process. That is true up to a point but a soccer ball has 32 different panels. If I am buying a soccer ball, I would not be happy if only 31 of those 32 parts were properly stitched together; I would rather like the total 32 pieces to be properly stitched, in order to have it of any value. So another way to think about what is happening in this Pakistani manufacturing firm is to take a simple numeric example. Suppose, worker 1 is successful in her task with the probability of let us say 0.9 percent, suppose worker 2 has the probability of success 0.7 percent and suppose both of these women need to do their job right in order to produce the output. What is the probability that a firm manages to produce the output? Well it is not the sum, it is the product with probability 0.63 percent. This is the idea of Kremer's (1993) paper, the o'ring theory of economic development, which is highlighted here today and which I think is under appreciated contribution in the development economics.

Not to add but to multiply the workers productivity is what Kremer said exactly and is demonstrated here. The first reason that this is very profound is that we can say, what if we improve the performance of the first worker when the true production process is characterised by an o'ring function. In that case, it is not a good thing for the firm that the first worker has become more productive with the extent to reach her increase in productivity matters rather it is determined fundamentally by the productivity by all of the other workers. But why does this matter? I think there are two really important implications which have direct relevance to Pakistan. The first of these is that heterogeneity matters in form of what is called persistent productivity differences. Secondly, it implies that management matters. Management is certainly doing something very complicated in trying to combine the parts of a firm effectively. I want to talk about both of these very important implications one at a time.

Let me start by talking about heterogeneity. As just explained, if one increases the productivity of one worker that will automatically increase the productivity of all the other workers. This is called positive assortative matching which means that different firms might employ workers of different qualities. But within each firm (and admittedly in this simple example) we end up employing all of the workers having the same quality. So some firms in Pakistan would be full of excellent workers and would produce more complex goods, while other firms might have less excellent workers and would produce less complex goods. We often think of aggregation or agglomeration policies (like business parks and export processing zones) but this idea says that agglomeration begins

<sup>1</sup>An instrument that prevent excess leakage from the solid rocket boosters.

at the level of the firm, and I found a beautiful explanation of this idea by non-other than Steve Jobs who was not trying to explain the O'ring theory of development, rather he was trying to explain his thoughts about the success of the apple corporation. He said, A players (the best workers) do not want to work with B and C players, so it becomes a sort of policing where firms only hire more A players to build up these pockets of players and it propagates.

So what does this mean empirically? Hsieh and Klenow (2009) looked at the distribution of total factor productivity i.e. firm's productivity taking across three different countries i.e. India, China and the USA. The graph presented by them was in the log scale and one can say by looking at it that India has the lowest average productivity followed by Chinese firms, followed by American firms. That seems apparently right but when assessed deeper, I would say that what is immediately apparent is not about the average. The fascinating thing about that graph in my view is that it's all about the dispersion, and this shows that even in the modern capitalist economies, even in firms that appear quite similar in many aspects, we can see massive heterogeneity in terms of productivity.

I think heterogeneity is very important for two reasons. First that when we are talking about the private sector we should not fall in the trap of thinking about a representative firm, worrying that "How my policy will affect the representative firm?". We must think about the distribution of different types of coexisting firms, almost as if an eco-system of different firms, that together comprise the private sector. Second, even though the O'ring theory predicts that we should see heterogeneity in different types of firms, it does not give us any firm prediction about how wide that heterogeneity should be. In particular, if we think that there are important policies that distort the effect of operation of firms, then we should also expect to see greater dispersion in productivity. This is the interpretation of Hsieh and Klenow (2009) as to why in China and India we have greater dispersion of productivity than in the United States.

This work that has been replicated last year in a paper by two researchers from the Lahore School of Economics (LUMS) (using the data from 'Punjab census of Manufacturing and Industries') and you would see that the results are broadly similar. What does this mean though? Well the dispersion in different firms productivity might be a measure of the extent of distortion in an economy. So let's compare the four different contexts, I am about to show you that all are right. That's exactly what the O'ring theory states. As a result, a firm can figure out that it is behind, know what it needs to do, trying hard to do it, and yet may not be able to get the many pieces of the organisation sufficiently coordinated to get the job done. So that is the part of the challenge of management but I am only here to speak about the private sector.

Many of you are working in the public sector and it is quite possible that you may think that are exactly some of the problems faced by the public sector. There is a research funded by the International Growth Centre through the (LUMS) that does actually look directly into the production processes in Sialkot soccer ball factories. This is the typical traditional dice that is used to make the soccer ball. So you have hexagonal dices and pentagonal dices. What the researchers did was to replace the pentagonal dices by the design that turns out with less wastage. So, this is the technology that improves productivity and surely every firm should adopt it. In fact, what the researchers found to

the surprise of everyone is that the vast majority of the soccer ball manufacturers in the soccer ball industries in Sialkot, when offered this technology of improvement, did not take it. Why not? Researchers looked further into this and it was founded that the new dice slows cutters down. If cutters are paid a pure per-piece rate, their effective rate falls in the short run. Realising this, the workers resist adoption. In other words, something that is good for the firm as a whole may not be compatible regarding individual's incentives. So, there is real challenge for management not just to stick stuff together but to coordinate the different incentives at work under the same firms' roof. So what this could mean for some of the current research challenges around private sector in Pakistan? This may not be compatible regarding individual's incentives a universal description but I would highlight a couple of interesting things that come out of these findings.

The first question is simple, if entrepreneurship matters for firm's performance (and O'ring theory implies that it does) then how do we identify the promising entrepreneurs? It is clear that some people are not very entrepreneurial though one of the interesting aspects was to judge one's entrepreneurial abilities by running 'business plans' competitions. These competitions are targeted to young aspiring entrepreneurs who would love to have the opportunity to start a business if only that opportunity was financially supported. I, along with a co-author at Stanford University (USA) conducted the aspired business plans competition in Ethiopia, Tanzania and Zambia where a young entrepreneur presented a new business idea that he/she wished to be funded. It was presented not to a panel of professors but to people who actually know running business in Zambia; successful established managers of small and medium enterprises. We asked those managers to enter the following questions among other questions (on a scale between 0 and 100) that what is the growth potential of the business idea and what were their recommendations to invest? If they think that (out of the twelve different applications) they have seen the best application, then the best applicant gets a US \$1000 from the funds provided by the World Bank.

Well, the consequence of this is best summed up by this graph here. The x-axis depicts the place they have come up in the competition and the y-axis indicates the probability showing that person is self-employed about six months after winning the competition. This shows that if one finds aspiring entrepreneurs, support them with a US \$1000 (which may not be much, I-phones think about the benefits of a potential growing enterprise), the probability of self-employability can increase by about 30 percentage points. One might say that it is not a big deal, but it is. Let us say that there are people out there with interesting creative ideas about new businesses and they cannot get those ideas funded at the moment, then it does have the potential implication for the policy. In fact in Nigeria, in a competition run by the Nigerian government, the government awarded 1200 prizes of an average of US \$ 50,000. This huge expense generated 7000 additional jobs, generated more investment, higher sales and higher profits. Hence business plans' competition is an idea that can bring better managers to the front, a legitimate interest of the government to find those people and support them to get their businesses off the ground.

Second question, if firms are fundamentally heterogeneous (and if we should not be thinking about the average manufacturing firms) then how should we think about financing those firms' investment? I have two ongoing projects which think about this

idea in the Pakistani context. These projects do not involve me, coming as an outsider with a brilliant new idea, for financing new investment in Pakistan. Rather both of these projects are trying to draw upon existing evolved established local wisdom about financing. Think about using that local wisdom as a way of further encouraging firms' growth. It is now fair to say that there is a robust body of research suggesting that the traditional micro lending model is not effective for supporting firm growth. It does not mean that it does huge harm but it does not do a lot of good either. And I think a lot of praise that we hear about the micro-finance is now much moderated as a result of this recent research.

So the question is, "Are there better ways of doing micro-finance?" Let me give you just two suggestions. The first is inspired by, among other things, the work of Rutherford in South Asia who spent a lot of time in India and other places in South Asia and was thinking about some of the local institutions that he observed. He said that saving up is the most obvious thing to convert savings into lump sums. It allows lump sums to be enjoyed in future in exchange of series of savings now. Rutherford made a more certain point which states that another way to turn the same series of savings into the lump sums and that is to get someone to give the lump sum first as a loan and then in return one may use the savings to repay the loan over time. This is what he calls "saving down". All of which is to say that motivation behind taking a loan is actually driven by the desire to save. We can think about this idea in the context very familiar in Pakistan namely the "savings committee". So let suppose that we have participants who pays Rs 200 each for five days and receives Rs 1000 on the sixth day. This is what Rutherford would term "saving up". But of course as the committee would commence, some of the committee member would draw on the different day and would receive Rs 1000 on the first day and then they repay it back. One might call it a loan, but Rutherford would call it a form of savings. This is saving down while he also talks about "saving through".

This form is very familiar in Pakistan and this is the evolved wisdom of "savings committee", which is sometimes called RSCA-Rotating Savings and Credit Association. So, we thought this structure is clearly very insightful, thinking "could this be a part of future for bank offered financial products"? So we went to Sargodha, working with National Rural Support Programme (NRSP) and implemented a simple pilot trial in which the NRSP offered products like this. However, NRSP did not form a group of savers but rather it played the role of all the other members of the committee, taking that counterparty role. So it took the evolved wisdom of a "savings committee" but tried to offer the individual savings product with the view that it might overcome some of the incentive problems that sometimes exist in term of group lending.

We implemented this idea two years ago in Sargodha and we asked the participant in the end what they thought about the product. We had over 90 percent saying that they understood how the product worked, 80 percent saying it helped them to commit the savings, about 2/3rd said it helped them to resist pressure, almost everyone said that they were glad they participated and about 90 percent saying they would recommend the product to a friend. Now to me this is not solid evidence that this product is necessarily a good thing. So to get solid evidence, we need to do more research and we have ongoing analysis, supported again by the Internal Growth Centre which was implemented in Bhakkar and Chakwal, about a year ago, in a larger trial and we are running a larger trial

again now also with the NRSP. So I would not say that this is the answer but it might be a part of the answer to draw on the established wisdom of savings committee to allow for returns in the context of heterogeneous opportunities.

There is of course another structure, which is potentially very interesting and known to the people of Pakistan i.e. the “Islamic finance”. We draw upon the Islamic finance, in order to think about the advantages in terms of allowing better productivity for heterogeneous firms. It was fascinating to read in a report by the International Monetary Fund (IMF) this year that Islamic finance has the potential for further contributions. It was emphasised that it is the emphasis on assets based financing and risk sharing feature of Islamic finance that it could provide support to small and medium enterprises as well as the investment in the public infrastructure. This can happen through a full scale micro equity product, where the financial institution directly has the choice to take equity stake in a small firm. It could also happen, as the IMF implies, through a lease based product, essentially exploiting the traditional diminishing Musharika kind of structure. So the IGC project tries to test the latent demand of the entrepreneurs in Pakistan at the micro enterprise level for this kind of financial product.

I have talked a lot about the firms, but the word “Firms” does not appear in the title of the talk, the title is rather about the “Private Sector”. And I want to finish, somewhat provocatively, by asking “Does private sector need always to mean firms?” I think there is one fascinating way, in particular in which Pakistan is really a model for many developing countries and that is the depth and the extent of engagement through community organisations. So one of my research projects that I am sharing in Pakistan with Pakistan Poverty Alleviation Programme (and that also supported by the IGC), is thinking about the way that local support organisations organise themselves and the incentives they face all across Pakistan. So we have a project in which we are working with 836 local support organisations across Pakistan. What we are trying to do is to recognise the work of those local support organisations and to think about whether there are simple (low cost, minimum disturbance) ways in which we might help those organisations to streamline the target they aimed for and the way in which they report to their partner organisations and ultimately to the Pakistan Poverty Alleviation Fund (PPAF).

So, what we have done among those 836 Local support Organisations, we have broken them up into different groups in a randomise experiment. Those different groups are faced with certainly different reporting and monitoring requirements, so we were giving those posters to 119 out of 836 local support organisations. It was basically asking information from the Local community organisations on a very wide range of activities in a lot of different ways. But what is the implications, if we can streamline that and emphasise on something that we really like to have numbers on. We were basically asking those community organisations to report the number of men on the executive body, the number of women on the executive body and the number of men and women on the governing body at the local support organisation. So the community organisations were required to meet and think about this, they also have to report the number that brings those different weights (11, 4 and 1) attached to the different forms of representation, and which lead to an aggregate score. That score can lead to something very gentle, a little prize ceremony and a general kind of thanks but the score makes it

salient to the local support organisation the fact that the peak body of PPAF is very serious about expanding the representation and particularly the representation of women in local support organisations.

We also have another 119, where they have to report about the men and women involved in governance, without having scores attached, and then we repeat those cases where we look into the number of services and the information campaigns that are provided. The result for that are a long way off and I do not know what the results will be but the point I am trying to make is, if we think about the local support organisations, we are not going to call them 'firms'. Rather they are the private sector and they are a very crucial part of the contribution of the private sector to growth in Pakistan. They are the part that faces many of the same issues in terms of the heterogeneity, management and coordination that we saw in the O'ring theory.

So to sum up, first I think that combining workers and perhaps by implication combining capital is not just about aggregation. It is also about interaction. As a result this is one reason that productivity differs substantially across firms. However it is not the only reason, another really important reason that Pakistan has such a large dispersion of productivity across its firms, at least in Punjab, is potentially due to the large distortions in the market place. Second, I think it reminds us that management and more generally the entrepreneurship is not just a mechanical problem and it is not about sticking things together, instead it is a complicated coordination of different tasks and different competing interests. The implications I suggest for research is that we can do more to identify the towns of potential entrepreneurs and business plans competitions are one way of doing this. Third, I think there is plenty of scope especially here in Pakistan, as there is a lot of enthusiasm among financial institutions, to think about creating financial innovations that might be more efficient than traditional micro lending. And as I say, not creating financial innovations invented by some professor sitting in Oxford but, the ones that have already been invented here in Pakistan which can possibly be scaled up and formalised within the financial institutions more effectively. Finally I think that the most of the key challenges facing firms in terms of the entrepreneurship, management, coordination, project choice, reporting and many more are also faced by the community organisations. So, if we are thinking about the role of the private sector in growth, we have to remember the important innovative work done by the local support organisations as well.

Thank you very much for having me; it is a privilege to deliver a lecture in the honour of such a fantastic economist.

#### REFERENCES

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