

Better jobs: A strategy to end fraud in skills training in Bangladesh

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Executive summary

Publicly funded skills training programmes have generated poor employment and productivity outcomes across developing countries because the governance of skills programmes is not straightforward. Value for money is best assessed by trainees actually getting jobs or getting jobs with better pay. But this is a difficult target, and different types of fraud, collusion and corruption can be used to misreport outcomes and to hide the problem that policy needs to address.

Training providers in the public sector in Bangladesh have suffered from severe governance problems. Apart from straightforward leakages of funds, there has been widespread political interference in the selection of trainers and trainees, as well as inefficiencies in the management and delivery of training. This paper focuses on private training providers (PTPs) which have emerged as the most significant segment of the market in Bangladesh. As the role of PTPs has increased across developing countries, a common strategy to align their incentives with good training outcomes has been to pay the training provider staggered fees for each trainee at the point of enrolment, graduation and finally employment. In theory, this should create incentives for the trainer to provide employment-generating training, but it can also create incentives to misreport employment and engage in other types of collusion and corruption when submitting invoices.

We examine the causes and possible solutions to this problem, as it affects a critically important activity for sustaining inclusive growth and improving wages and conditions for the poor. To access this sensitive information, we developed research relationships with two important skills programmes in Bangladesh. The first was a partnership with Palladium International, an international development company, who run the Sudokkho skills programme in Bangladesh and the second with UCEP, a well-known non-governmental organisation (NGO) providing skills training.

The partnership with Palladium International allowed us to exploit a unique opportunity to access sensitive data from private providers in the Sudokkho programme engaged in training entry-level workers for the Bangladesh garments industry. The analysis of invoices from these providers over a six-month period and random checking of trainees who were reported to be in employment showed significant variations in the extent of misreporting across otherwise similar training providers. This evidence enabled us to investigate plausible causes of differences in the 'propensity to misreport'.

We found that a significant part of the problem emanates from the demand side of the skills market. This is often ignored when designing incentive and governance schemes for training providers because it is assumed there is effective demand for skilled workers when firms report skills shortages (as is often the case in countries such as Bangladesh). In reality, regardless of their own perceptions, firms differ in their capacity to use skilled workers as a result of differences in their organisational capabilities – that is, the routines and processes within the firm that ensure rapid throughput, low rejection rates, the maintenance of quality, low input wastage, efficient order management, and so on.

Low-capability firms with poor internal organisation have production lines that move so slowly that better trained workers may make no appreciable impact on firm productivity or profitability. In contrast, high-capability firms will not only seek to employ skilled workers, they will immediately identify unskilled workers because they slow down their production lines. The non-linear relationship between skills and productivity is at the heart of the problem that drives both fraud and corruption by skills providers as well as the low success rates of skills programmes globally.

Trainers supplying low-capability firms either have to report low employment success (and suffer the financial consequences) or engage in fraudulent overreporting to get paid. Both the fraud by training providers and the low employment success that they often achieve are typically symptoms of a deeper problem that can only be addressed by investing in the organisational capabilities of firms. We demonstrate the relationship between organisational capabilities on the demand side of the skills market and fraud on the supply side by developing an indicator for the organisational capability of firms. The evidence shows that the propensity of a PTP to misreport is strongly correlated with the organisational capabilities of the factories they supply. Training providers are much more likely to misreport when they face low-capability firms on the demand side because the latter prefer to employ untrained workers at their factory gates. Training providers who are fortunate enough to supply high-capability firms appear to engage in no fraud or very low levels of fraud, even in the adverse governance context of Bangladesh.

Our second partnership with UCEP gave us access to valuable data on the destinations of trainees from four UCEP schools training entry-level garments workers. Armed with this information we could test the plausibility of the high employment rates reported across all UCEP schools against the organisational capabilities of the firms that they were supplying to. This test challenged the results reported by some UCEP schools. Further investigation suggested that the problem here was not fraud but the way in which employment was being measured and reported. The schools supplying low-capability clusters had a much higher percentage of employment in informal establishments and as self-employment, as opposed to employment in garments factories. Our research indicated that UCEP too could do much better if the constraints set by low capability firms on the demand side could be addressed.

Instead of the usual focus on monitoring and enforcement, our anti-corruption strategy combines skills training with investments to improve the organisational capabilities of firms. Investments to improve organisational capabilities are known to be feasible in the Bangladesh garments industry. If these strategies are joined up with skills training programmes, training providers who supply poorly trained workers will be quickly caught out as their trainees will slow down the production lines of higher-capability firms; PTPs will also find it difficult to misreport employment to high-capability firms that keep proper records; and most PTPs will have little incentive to misreport if proper training is quickly rewarded with jobs for trainees. Implementing agencies that incentivise training providers to generate jobs will be much less likely to engage in corruption to cover up overreporting as their PTPs are unlikely to systemically engage in fraud, firms will be able to profit from better-trained workers and by moving up the value chain they will be able to create more and better-paid jobs. Our research connects the dots across a number of different

observations to suggest an innovative, feasible and developmental anti-fraud strategy – an example of what we have described as ‘aligning incentives’, where redesigning policy incentives can create self-enforcing incentives for rule-following developmental behaviour in a sector (Khan, et al. 2019).

1. Introduction

Developing countries need to create many millions of jobs in globally competitive industries to achieve and sustain inclusive growth. However, between 40% to 50% of employers in Asia and Africa believe that their productivity and profitability are held back by the poor education and skills of their workers (Almeida, et al. 2012: 11). Huge sums have been pumped into skills programmes, but cross-country evidence shows that skills programmes have almost uniformly delivered disappointing results.

In the ten years from 2002 to 2012 the World Bank invested nearly US\$9 billion in 93 skills programmes across the world. However, evaluations show that few achieved any positive training effects (particularly for men) and even fewer could be justified on a cost-benefit basis (Blattman and Ralston 2015: 8-9). Another review of evaluations across countries concluded that these programmes generally did *not* have a significant effect on wages (a measure of increased productivity) though there was some impact on employment (Betcherman, et al. 2004: 53).

Indeed, a World Bank (2015) evaluation of five skills programmes in India training six million people over 2011-2015 at a cost of US\$500 million found that only 28% of trainees were in jobs after a year. The treatment effect, which indicates how many of these people had a job that they would not otherwise have had, was even smaller because many of these trainees would have found work anyway. Comparing trained with untrained cohorts, the study estimated a very unimpressive 7% of trainees to be in jobs that they may not otherwise have found. In estimates across countries, the same study estimated that the treatment effect of skills training ranges from 0% to 12% (ibid.). A World Bank (2007) tracer study in Bangladesh found that two years after graduation, only around 12% of trainees from public- and private-sector technical and vocational education and training (TVET) organisations had found employment. And, again, the treatment effect would be even lower.

These disappointing effects contradict the widespread perception of employers that skills shortages are holding them back. If the problem was simply a skills shortage, graduates of skills programmes should have achieved much greater success in finding jobs, particularly in countries like Bangladesh with big manufacturing sectors. Instead, skills programmes in developing countries usually result in an outmigration of skilled people to other countries when they are unable to find local jobs. All of this evidence tells us that we need to understand the skills problem better.

This paper focuses on the garments industry in Bangladesh and draws on research relationships with two important skills programmes in the country to test the hypothesis that improving the organisational capabilities of firms in tandem with skills training is an effective and feasible anti-corruption strategy in developing countries such as Bangladesh. The first partnership is with Palladium International, an international development company that runs the Sudokkho skills programme. The second is with the Underprivileged Children's Educational Program (UCEP), a well-known non-governmental organisation (NGO) and training provider in Bangladesh with a high employment success rate.

In section 2 we consider challenges in the governance of the skills sector in Bangladesh and the impact of fraud and corruption on the part of training providers and possibly implementing agencies, before describing in section 3 particular skills programmes and providers operating in the garments industry there. Importantly, in section 4, we consider the role of organisational capabilities in driving fraud in the skills sector and set out our hypothesis about an effective and feasible anti-corruption strategy. We analyse training and employment data provided by our research partners in section 5 to explore the ‘propensity to misreport’ among private training providers (PTPs) and develop an indicator to demonstrate the relationship between organisational capabilities on the demand side of the skills market and fraud on the supply side. Finally, in section 6, we discuss the policy implications of our analysis and evidence.

2. Governance of skills training in Bangladesh and the cost of corruption

The garments industry in Bangladesh is the most developed manufacturing sector in the country, employing around three million workers. But the labour market has a high turnover of workers, and employers regularly report skills and worker shortages.

As in other developing countries, surveys in Bangladesh have always identified significant skills gaps (ADB 2015; Rahman, et al. 2012; World Bank 2007; ADB 2014a; ILO 2012; GOB 2011, 2015). Around 500,000 students enrol in technical and vocational education and training (TVET) programmes in Bangladesh every year, but the Asian Development Bank (ADB, 2014b) estimates that this is only around 20% of the country's annual training needs. Around 95% of TVET institutes are now in the private sector covering around 75% of TVET students. But TVET trainees are only 2.8% of the number enrolled in secondary education and an even lower percentage of those in jobs. Labour force surveys show that for every employee with a TVET qualification, there are 104 with secondary school or higher secondary certificates, and 34 with university degrees (World Bank 2010). The very low share of TVET graduates in employment could reflect poor training quality, but it could also reflect low demand on the part of businesses, for reasons that need to be understood.

The provision of high-quality skills training in Bangladesh is constrained by numerous problems that many developing countries face (ADB 2015; Rahman, et al. 2012; World Bank 2007; ADB 2014a; ILO 2012; GOB 2011, 2015). First, there is a shortage of trained teachers due to the poor output of teacher-training colleges and institutes. Secondly, particularly in public TVET institutes, there are poor internal incentives to reward training quality. Thirdly, bureaucratic delays in getting financial sanctions, together with political lobbying, often block decisions on appointments. There is typically a 50% vacancy rate for teaching positions in public training institutes, and teaching positions are often filled by less qualified but politically connected individuals. Fourthly, there are pedagogic shortcomings in both public and private training institutes, with an overemphasis on theoretical rather than practical skills. Fifth, funding is often inadequate to maintain facilities, replace old equipment, or purchase adequate consumables and training materials. Finally, links with business are often inadequate.

Government rules provide limited flexibility to public training institutes to respond to market opportunities, to hire their own trainers or enter into partnerships with the private sector to provide training tailored to their needs. Private-sector and NGO TVET institutes are supposed to respond to market incentives, but they too get different types of subsidies from government and development partners. Their responsiveness too may be affected by the incentives created by these rents, and they may feel it is best to go along with current development partner narratives to ensure their flows of funds. But, most importantly, even with the best links with business, training providers have no way of adequately addressing the problem of low capabilities of firms on the demand side. All these problems cannot be immediately addressed, and some of them simply reflect resource constraints in a poor country.

The most useful response is to identify feasible policy levers that are most likely to have a positive effect, taking structural features of the context like the general poverty level as given. The question should be: how can policy be *feasibly* redesigned to improve skills training outcomes?

The first step is to ask if resources are being properly used or if inappropriate policy design is contributing to a misuse of resources. If it is possible to improve resource use without massive increases in funding and without expecting significant qualitative improvements in the overall governance environment in the country, then these improvements may be deemed to be feasible. They may then set off virtuous cycles if they allow the economy to grow faster and generate more tax resources for further investments in the system. However, *feasible* policy changes are not necessarily *easy*.

As a general observation, rent-seeking and governance problems arise whenever policy resources are allocated to solve a social problem. Policies that allocate public resources to address such problems create policy rents – that is, revenues that particular individuals or organisations get to deliver goods or services that may not otherwise have been provided. Individuals and organisations that have a chance of accessing these resources can be expected to try and engage in ‘rent-seeking’ to get these resources on terms favourable to them, and their interests may not always be aligned with the delivery of the policy goals. The outcomes of these rent-seeking activities depend on how the policy intends to allocate resources, to whom, and on what conditions; and on the interests and bargaining power of the individuals and organisations involved in delivering policy outcomes and of those governing the process.

Addressing skills shortages requires the allocation of policy rents because the skills market is subject to well-known market failures. In the absence of any policy, employers are likely to hold back from investing in training because their trainees may leave, taking their skills to other firms. Workers in turn may hold back from investing in skills if they are unsure of the requirements of employers, the quality of the training they are paying for, or the additional wages they may achieve. The result is likely to be an underinvestment in skills on both sides. Some degree of public coordination and financing of skills training is therefore often required. In Bangladesh, all the public TVET institutes, and around 1,600 of the 3,000 accredited private ones, receive monthly payment orders from the government that cover 100% of their basic teacher salaries (ADB 2015). Many of the remaining private TVET organisations receive programme funding from development partners under various programmes.

But policy has to be well-designed to ensure that these resources are not diverted or wasted, for instance as a result of engaging low-quality trainers, providing training not aligned with market demand, selecting trainees who are not seeking jobs, and so on. Unfortunately, any public policy, including skills policy, is likely to be subject to rent-seeking attempts and in developing countries some of this rent-seeking is likely to take the form of fraud, corruption or collusion of different types. The most serious problem with these types of corruption in the policy sphere is that they tend to hide the source of the problem and make it even more difficult to identify feasible solutions (Almeida, et al. 2012; Khan 2000).

There are broadly three ways in which public funds for skills training can be delivered, each with specific governance and rent-capture problems. The first is to provide financial support or tax breaks directly to the *firms* investing in the training. In theory this reduces (but does not eliminate) the loss to the firm if trainees subsequently leave the firm, and this should increase their willingness to invest in training. In theory, training that is paid for by the firm will also be directly aligned to their needs. But this policy can fail if firms choose to use the money for purposes other than training, and if the policy governance is weak so that firms can prevent external monitors to withdraw funds from them, either because they are too powerful or because they have the right connections, or because they can offer bribes. Moreover, low-capability firms may not be the best judge of the types of training they need, and governance agencies would have to assess if the firm's assessment of its skills requirements was appropriate. As these governance problems can be severe in developing countries, this strategy is rarely observed in these contexts.

A second alternative is to provide training subsidies directly to *workers* so they can seek out and buy their own training. A voucher system for training has been recommended by some development partners in Bangladesh (ADB 2014b: 8). Here there are likely to be different monitoring and enforcement conditions, and a different set of problems of fraud and corruption. Governance agencies have to ensure that subsidies for training are not used for any other purpose. Even if the subsidy is provided as a voucher, in the governance conditions of Bangladesh, the government has to be able to monitor that there is no collusion between voucher recipients and fraudulent skills providers to cash in vouchers and share the subsidy with 'trainees' without providing effective training. In addition, there are likely to be significant asymmetric information problems because workers may have inadequate knowledge of the types of skills that are most marketable. More seriously, workers may not be able to assess the relative quality of different training providers. Such a system would therefore only work if the state could accurately advise jobseekers of potential opportunities and credibly certify training institutes, neither of which are plausible in the structural conditions of most developing countries. This arrangement too is therefore not widely observed.

This brings us to the third alternative, which has a number of variants, and is the one that is most widely adopted. This is to provide public or development partner money to public and private *training institutes* and provide them with different types of incentives and support to provide high-quality training. Here a different set of corruption and collusion problems can emerge and, once again, appropriate incentives and governance structures are required to ensure that resources are not diverted or wasted. Training providers may appoint politically connected or bribe-paying trainers who do not have the proper qualifications for the job. They may enrol fake trainees or trainees who are not interested in seeking jobs, but who may be using their placement to collect stipends or diplomas that they can claim is higher education. Finally, training providers may also have poor internal incentives for maintaining quality and aligning with market demand even when the professional quality of their trainers is adequate.

Here, the governance requirement is that external auditors should be able to check these failures and withdraw funding from training providers who are persistent violators. We know

that external monitoring and enforcement is generally weak in developing countries, and that is why policy has tried to align the interests of training providers with good training outcomes. By linking part of their payment to training outcomes, the aim is to reduce the costs of external monitoring. This is more likely to be effective for private training providers and has been widely adopted by government, development partners and their implementing agencies in Bangladesh. As a result, most skills programmes in Bangladesh pay private PTPs in a staggered way, paying a part of the cost of each trainee at the point of enrolment, a part at graduation, and a final part if the trainee achieves employment within a defined period. Linking payments to specified employment outcomes should create incentives for trainers to provide training of the appropriate quality and type. Unfortunately, as we shall see, these schemes also create incentives to misreport these numbers, in particular of employment. Nevertheless, compared to the other two alternatives, public policy support for training institutes is *relatively* more likely to deliver acceptable training results in developing countries, and that is why this method of delivering training is most commonly observed.

The difference between fraud and corruption is that they refer to rule violations by different types of organizations. When private sector PTPs misreport their employment success, this is accurately described as fraud. However, if the implementing agency decides not to act on this information, their misuse of power is corruption. The implementing agencies, even if they are private sector, play a quasi-public role as governance agencies for the programmes they implement. Any self-interested misuse of this power is therefore corruption. The implementing agency may choose to cover up fraud by PTPs under their watch for a number of reasons. The most common one, of which we have some evidence in the case of some implementing agencies, is that any reported fraud by their PTPs may slow down the flow of funds on which *they* depend. In our case Palladium-Sudokkho was involved in our research, clearly not interested in covering up, making the research possible. In general, fraud by PTPs and corruption by implementing agencies or government authorities are likely to coexist. Our aim was not to detect instances of fraud, but to understand the sources of the problem so that feasible solutions may be found. In any case, even for implementing agencies that are not interested in covering up, random checking and enforcement are ineffective solutions if the underlying business model does not work for key players.

The efficacy of such incentive schemes depends on the training provider's assessment of the relative attractiveness of providing high-quality training compared to the cost and risk of organising fraud and corruption. The feasibility of providing high-quality training as a business strategy depends on the cost of training relative to the payment offered for the training. Even if the direct cost-benefit calculation is favourable, the feasibility of an honest strategy depends on the likelihood that the workers trained by the provider will actually find jobs even if the training is adequate. In other words, it depends on the characteristics of the demand-side of the job market, a fact that is often ignored in discussions of incentive schemes.

This strange omission is partly explained in countries like Bangladesh by the widespread perception that there is strong market demand for skilled workers in sectors like garments and textiles. When asked in surveys, employers repeatedly identify skills shortages as constraints to their business expansion. Employers may genuinely believe this and yet be

wrong. We find that in the same industry, low-capability employers behave very differently from high-capability ones even when they are supplied with trainees from training providers passing identical quality checks by the same implementing agency. Contrary to expectation, low-capability firms do not search out skilled workers to raise their productivity. Rather the reverse. The effective demand for skilled workers coming from lower-capability companies is too low to sustain incentives for training providers who supply to them. These training providers may soon find that a strategy of providing high-quality training without fraud is unsustainable for them, even if a non-fraudulent business strategy may have been feasible if the demand was there. These training providers may then engage in varying levels of fraud, depending on how difficult it is to find jobs for their trainees. Over time, their involvement in fraud is obviously likely to also affect the quality of their training. A PTP engaging in fraud will not be able to motivate its trainers to provide high-quality training for very long, and new trainers may begin to be selected more for their willingness to operate in a context of fraud rather than for their training skills.

In the longer run, this two-way relationship between placement success and training quality means that the lower employment success of some training providers may result in their training quality dropping. Subsequent observations may then appear to suggest that the cause of poor employment success of these providers is their poor training quality. Clearly, both directions of causality are plausible. The direction of causality from poor training quality to low employability is so obvious that it does not really require testing. It is, however, important to test the opposite direction of causality from low organisational capabilities of firms to low effective demand for skilled workers to fraud by training providers.

This direction of causality is important to test, because if true, focusing primarily on the quality of trainers will not suffice as training quality is likely to deteriorate if the *business model is unsustainable without further policy intervention*. We test this hypothesis by looking at the behaviour of a sample of newly selected training providers with similar initial training qualities. If these providers demonstrate differences in their level of fraud that correlates with the organisational capabilities of firms they supply, we have evidence of an important driver of fraud in the skills market that needs to be addressed.

We can now attempt a back-of-the-envelope calculation to suggest the scale of the problem. We limit ourselves to a best-case scenario where the training providers are considered to be of high quality in the context of the country and their quality and training methods have been checked by a credible implementing agency. The variation in the level of misreporting across otherwise similar training providers in Sudokkho, which we report in greater detail later, ranged from 0% for some PTPs to 60% of invoices or more in others. The average invoice misreporting across these PTPs was 18.4%. These ranges were picked up by random checking by a high-quality implementing agency, Palladium International, operating with a small number of PTPs selected as being of relatively high quality in the Bangladesh context. This scale of misreporting is therefore the lower bound of the misreporting that is likely to be found across the board in Bangladesh.

In the context of a budget of well over US\$1 billion that Bangladesh is spending on skills training in the next four to five years, the most conservative estimate of direct resource loss due to invoice fraud just of this type would be in the region of US\$200 million. But the true cost of this type of fraud, and any corruption it might then trigger on the part of implementing agencies monitoring the invoices, would be many times greater. That cost would include the lost opportunity of creating millions of jobs because of a badly designed skills programme whose weaknesses are hidden by the operation of this type of corruption.

In the section that follows we describe three particular skills programmes in Bangladesh, including the two organisations with which we collaborated during this research.

3. Skills providers in the garments industry

3.1. The Skills for Employment and Investment Programme (SEIP)

The largest skills programme in Bangladesh is the Skills for Employment Investment Programme (SEIP), funded by loans from the ADB, grants from bilateral partners and contributions from government and industry. From 2014 to 2021 the programme had a budget of US\$1,070 million, with a target to train 1.5 million workers, around half of them in the garments and textiles sectors.

Participating ministries and sector associations act as implementing agencies and contract public and private training providers. Sector associations include the Bangladesh Garments Manufacturers and Exporters Association (BGMEA), which contracts training providers and manages payments to them against targets for training and placement in employment.¹ Unfortunately we could not persuade SEIP to give us access to their sensitive internal data. But, in fact, this turned out to be an advantage because the diversity of providers within a large programme like SEIP is so great that it is difficult to plausibly adjust for all the known factors affecting training quality without access to an implausibly large number of providers. Our work with smaller programmes where the training providers had been selected in ways that reduced the effects of other confounding factors was therefore crucial for testing the impact of a single critical factor that may affect training outcomes.

An officially sanctioned evaluation of the SEIP programme in 2019 found 68% of trainees were in employment a year after completing training (Ahmed 2019). This figure is much higher than comparable global assessments referred to earlier. However, employment is not clearly defined in this study and it is very likely that it includes self-employment as the study also says that 74.3% of the employed were ‘regular’ employees. This suggests that excluding the self-employed, the figure for regular employment may be closer to 50%. But even this figure is out of line with global, regional and country evaluations of skills training outcomes, so either the SEIP programme was performing much better than programmes anywhere else in the world or, more likely, the estimate reflects flaws in the evaluation method.

The evaluation was based on phoning a small sample of trainees, and the response rate within *the sample* was only 30%. The evaluation implicitly assumes that the 70% who did not answer were similar to the 30% who did. In fact, the likelihood is that genuine trainees who had found jobs were more likely to answer questions about their employment status

¹ <http://seip-fd.gov.bd/about-us/background/> accessed 15 September 2019.

when anonymously called. This is because trainees who attend SEIP programmes get paid a monthly stipend, and this can create a reluctance to be negative about their training experience. In the context of the widespread patronage networks in Bangladesh, at least some trainees have to pull strings to successfully enrol in a free training programme with a stipend. Our informal conversations with trainees and training providers confirmed this expectation. All of these factors make it unlikely that the trainees who did not respond were just the same as the trainees who did, and we therefore do not have great confidence in the numbers generated by the study.

As SEIP is the largest skills programme in Bangladesh, we talked extensively with several managers running SEIP programmes for the BGMEA, which is one of the implementing agencies for SEIP. In this role, the BGMEA appoints training providers and monitors and pays them under the SEIP programme. Several BGMEA implementation managers freely admitted, off the record, that their training providers frequently over-stated employment to meet their targets. The implementation managers did not think this type of overreporting was unjustified and were happy to release payments without a stringent protocol for checking the accuracy of the invoices. In justification they pointed out that the continuation of the programme required meeting ambitious targets. Instead, they blamed BGMEA's firms for dragging their feet in employing trainees while complaining about skills shortages. Interestingly, these programme managers were ostensibly working for the BGMEA's firms. While the programme managers were willing to admit that their training providers did some overreporting, they were not willing to share invoices with us to allow us to measure the extent of overreporting and the characteristics of training providers that engaged in higher levels of overreporting.

3.2. Sudokkho

Sudokkho, the training programme run by our research partner Palladium International, is a much smaller programme. Funded by the UK Department for International Development (DFID) and the Swiss Development Agency (SDC), its budget over 2015 to 2020 was just over £20 million. The programme aims to train around 100,000 people from disadvantaged backgrounds for the garments and construction sectors. Sudokkho's philosophy is to develop a zero-subsidy model to ensure that employers and trainees share the cost to make training a self-sustaining activity in Bangladesh.² Of course, this would only work if the market failures in skills training were not very serious. Otherwise, as explained earlier, policy resources would be required to support skills training. Apart from market failures, the programme faced the additional challenge that there were large competing programmes like SEIP that were not only free but also paid stipends to trainees.

² <https://sudokkho.org> accessed 15 September 2019.

From our perspective, Sudokkho's fee-based model was very fortunate as a mechanism of trainee selection. It ensured that trainees on the Sudokkho programme were more likely to be genuine jobseekers and not 'trainees' who enrolled to pick up a stipend while looking for, or being already engaged in, other jobs or activities. The fact that they had paid a nominal fee for the training further increased the probability that they were genuine jobseekers. This significantly reduced the impact of a confounding factor: the inclusion of dilettante trainees in training numbers who are not really interested in finding a job but are there for other reasons, such as to pick up a stipend. In addition, Sudokkho PTPs knew that their employment success would be measured in terms of jobs as sewing machine operators in the garments industry, so they had no incentive to recruit anyone for training who was unlikely to take such a job. Restricting our comparison of employment success across PTPs to a cohort of trainees who were very likely to be actual jobseekers in the garments industry removed the need to adjust for differences in the ratios of genuine jobseekers across PTPs when assessing their training outcomes.

Secondly, Sudokkho's selection process for contracting PTPs in the programme was also very useful for our study. Sudokkho enrolled PTPs through a careful process of vetting based on an examination of the qualifications of their trainers and their approach to training. It then invested in developing training capabilities and ensuring that the right machinery was available to the PTP to provide entry-level sewing machine operator training. The relatively small number of PTPs in the programme was useful for ensuring that this vetting and quality upgrading process was credible. There were 12 PTPs engaged in their garments sector training through our study period. While this number is small, the purposive selection and upgrading of training capabilities and machinery ensured that the training capabilities of Sudokkho PTPs were comparable. This too reduced the impact of another critically important confounding factor that could affect differences in employment outcomes, namely differences in the quality of training on the supply side. With a larger sample of PTPs of greater diversity, the data would have to be detailed enough to adjust for differences in PTP training quality.

Finally, all Sudokkho PTPs worked with the same incentive scheme, and they all came under a common governance structure. Sudokkho subsidies equated to a maximum of 60% of the total training costs, based on three instalments; 20% at enrolment, 50% on graduation and the final 30% on submitting evidence of employment. The management of the invoices, their checking and the subsequent random checking during the period of our study were all done by the same implementing agency. This too eliminated the effect of an important confounding factor that affects employment outcomes across PTPs in Bangladesh. Differences in incentive structures, the percentages paid for various milestones, the credibility of the invoice checking and differences in the likely severity of the actions that the implementing agency may take are all likely to affect the effort that the training provider puts into training, and therefore the quality of the training. Our sample did not face this problem as the incentive structure and governance mechanisms were identical across these PTPs. By being able to exclude a number of critically important variables that are known to affect the employability of trainees, our comparison of differences in fraud and employment outcomes across a relatively small number of PTPs has much greater validity than the number of PTPs in our sample may suggest.

The most important result of our partnership with Palladium was that we were able to access sensitive invoice data from Sudokkho PTPs, including random checking data that allowed us to identify which PTPs were engaged in invoice overreporting and the extent of their overreporting. Discussions around our hypothesis began with Palladium in 2016 and at around the same time Sudokkho began to randomly check invoices submitted by their PTPs for accuracy. The checking took the form of randomly calling trainees reported to be in employment and asking them various questions, including whether they had graduated, whether they were in employment, and where. Sudokkho made this checking data and the invoice data available to us from December 2017 to December 2018 for 40 or so PTPs, of which 12 focused on garments.

In early 2018 Sudokkho's random checks began to detect overreporting of employment and other anomalies in the invoices of some of their PTPs. What was particularly important was that the invoices also gave detailed information on the factories or establishments where trainees from the PTPs were being employed. Sudokkho tracked a number of red flags, including trainees not confirming employment when phoned, reporting self-employment, reporting incomplete training when full training was reported, and being employed in jobs that were not in the garments industry. Some red flags were detected directly from the invoices, in particular if the same mobile number was reported for multiple trainees. We excluded red flags that could be attributable to clerical errors because these were queried by Sudokkho and cleared on response. We estimated the propensity to misreport of each PTP as the percentage of red flags in their randomly sampled invoices in the first six months of invoice checking. We restricted our estimates to the sampling that happened in the first six months of invoice-checking because significant collusion between PTPs and trainees emerged after that. The percentage of 'red flags' identified by random invoice-checking does not necessarily tell us the true percentage of fraud or attempted fraud: that could be higher or lower in individual PTPs. However, the distribution of red flags tells us something about the propensities to misreport and therefore the *propensity to commit fraud* across these PTPs. Nor were we interested in the follow-up of the red flags. We were primarily interested in the distribution of the propensity to misreport across PTPs, which varied from 0% to 30% (but was much higher in two which resulted in contracts being cancelled).

An immediately interesting finding that aligned with our expectation was that invoice-checking on its own was unsustainable as a source of data for enforcing compliance, even in an implementing agency that was not interested in covering up this data. The political settlements framework suggests that organisations like PTPs are relatively powerful in the context of the skills business. These organisations can be expected to informally respond to attempts to enforce rules that are against their interests. Their responses distort or undermine attempts to make them follow rules given the weakness of the external enforcement of a rule of law, and likelihood of informal collusion emerging (Khan 2019b). The responses of powerful players are unreasonable and extractive in some cases. But at other times, their responses may be 'reasonable', in the sense that following the rules may not be feasible without other adjustments. In these cases, anti-corruption can only make progress by addressing the problems that make rule-following behaviour infeasible for many actors in the sector.

When an invoice was red flagged by Sudokkho, an investigation was initiated, payment withheld, and further justification requested from PTPs. On discovering the initial cases of fraud, Sudokkho introduced a tighter monitoring schedule and applied a zero-tolerance policy where documented fraudulent behaviour led to the cancellation of contracts and reported to both donors and government. Training providers were not allowed to continue their partnership with Sudokkho following a verified and documented case of fraud. However, after six months or so of picking up variations in invoice misreporting across the PTPs, Sudokkho discovered that the violating PTPs were beginning to ‘fix the system’. Random checking began to generate responses that tallied much more closely with what had been reported in the invoices. This was not because all PTPs had suddenly become compliant. Deeper investigations by Sudokkho revealed that trainees had been briefed that calls may come and had been asked (or incentivised) to respond appropriately.

Nevertheless, the early random checking data for the six months from December 2017 to May 2018, before the PTPs had time to respond, are a goldmine because the ‘propensity to misreport’ shows a significant variation across otherwise fairly similar PTPs. In section 4 we set out our hypothesis about the importance of the organisational capabilities of firms on the demand side – if this hypothesis is supported in this controlled case, it is also likely to hold for the more diverse population of training providers. A comparison across a larger number of training providers would have to be large enough to plausibly control for the three confounding factors discussed earlier, and sensitive invoice data would have to be available for such a large sample. The data requirements would therefore probably not be viable given that such a study would require access to sensitive data across a large number of different implementing agencies. As is described later in section 5, our study shows a statistically significant negative correlation between invoice misreporting by PTPs and the organisational capabilities of the firms they supply to. Although the correlation is based on a relatively small number of PTP observations, it shows the impact of one variable on the propensity to fraud in a comparison where important confounding factors were controlled by selection.

3.3. The Underprivileged Children’s Educational Program (UCEP)

The third skills programme that we looked at is one of the most successful skills providers in Bangladesh.³ UCEP is an NGO that began life in 1972 with a focus on primary education for a target population of the most underprivileged children in Bangladesh. Over time it has shifted its emphasis to provide vocational and technical training to broader cohorts of the poor. It serves around 55,000 children and young people in 53 general schools, 10 technical schools and in other programmes.

³ <http://www.ucepbd.org/ucep/> accessed 12 November 2019.

More than 95% of UCEP's job-seeking graduates are reported to be in employment within six months (ADB 2015: 20). However, unlike Sudokkho, the employment recorded by UCEP does not have to be in the sector for which training was provided and can include self-employment. The percentage in employment also excludes individuals who continue in different types of education after their skills training. This makes it difficult to assess the training-related employment effect achieved by UCEP because formal unemployment is always going to be low in a poor country like Bangladesh. Even so, UCEP's reported success is higher than the equivalent employment figures reported by SEIP, even ignoring the methodological questions about the latter's estimates.

The relative success of UCEP is widely recognised by international development partners. UCEP's training programmes are recognised for their use of appropriate machines and realistic production lines in their training, and for providing practical training that meets industry requirements. The organisation also has a reputation for placement success based on their contacts with high-capability employers.

UCEP is governed by a voluntary group known as the UCEP Association, which elects a seven-member Board of Governors for a two-year term. The Board typically includes representatives of successful businesses in Bangladesh who give their time as part of their corporate social responsibility. They appoint the Executive Director and the management team, they advise the Executive Director, and they establish contacts with the broader business community (UCEP 2015). These business mentors also provide machinery to UCEP of the type used in their firms to train students on production lines. This close relationship with high-capability businesses is one reason why UCEP trainees are both better trained (in the sense of practical relevance) and better connected to the types of employers who may employ them.

Apart from competent management and a knowledgeable board, the success of UCEP relates to its internal incentives. As an NGO it has been dependent on international donors for 99% of its financing until very recently. Maintaining its reputation for high employment success has therefore been critically important. This has created compelling internal incentives for high-quality outcomes (ADB 2015: 55). The challenge for UCEP is to maintain its success with lower external funding as Bangladesh becomes a middle-income country and grants from development partners begin to decline. Identifying a sustainable governance and business model for skills sector investments is therefore also important for UCEP. It too needs to understand the constraints in the skills market, and it enthusiastically partnered with our research, providing access to its monitoring and evaluation data for four of its schools servicing the garments industry.

As UCEP is both the implementing agency and the training provider in its schools, it does not randomly check invoices. Instead the organisation has a strong placement programme and reports between 95% and 99% employment success as defined earlier (UCEP 2015). Our interest in the UCEP data was to use placement evidence from this high-quality training provider to check whether their reported employment figures are consistent with our estimates of the organisational capabilities of the firms they supply.

We used information provided by UCEP on the destination of their entry-level trainees for the garments industry over the same period as Sudokkho to check whether the high employment recorded by all UCEP schools was consistent with what we had observed in Sudokkho. The high employment results reported by UCEP were indeed plausible for their flagship Gazipur school which supplied to high-capability garments firms. But the figures appeared to be less plausible (to varying degrees) for the three other schools, which supplied to lower capability firms. The resolution to the puzzle came when we looked at the detailed breakdown of types of employment reported. Some UCEP schools recorded much higher levels of self-employment or employment in low-wage informal establishments. This secondary test confirmed the usefulness of the relationship we identified between the skills training success in higher-wage formal sector factories and the organisational capabilities of these firms on the demand side. These findings are potentially very useful. In the absence of significant external funding, a viable business model of the type we identify would also enable UCEP to put its strong training capabilities to the best possible use in the future.

4. Organisational capabilities and productivity

A feasible strategy to address fraud and corruption in skills programmes requires a working hypothesis of the determinants of productivity and competitiveness in firms. In theory, the productivity of a worker depends on their skills and education, the type and quality of the machinery the worker operates, and other firm and country-specific variables. Some of these variables may affect productivity together with skills in additively separable ways, but others can interact with skills to determine productivity in more complex ways. These interactive relationships are potentially of great importance for understanding the anomalous outcomes of investments in skills, and why these can trigger some types of corruption.

Global comparisons show huge differences in productivity across firms producing the same products with the same machinery and with comparable human capital. These differences have to be attributed to firm-specific and country-specific differences, including differences in organisational capabilities – that is, the routines and processes within a firm that ensure rapid throughput, low rejection rates, the maintenance of quality, low input wastage, efficient order management, and so on. Clark and Wolcott (2012) show that in 1978, output per worker-hour in cotton spinning in the United States was 7.4 times higher than in India using *the same machinery*. What could possibly explain productivity differentials of this magnitude? Even if US workers had higher levels of education and skills, this cannot plausibly explain productivity differentials of 600% to 700% when using the *same* simple machinery. Clark and Wolcott explain this by saying that Indian workers engage in much greater ‘free riding’ because of their cultural attitudes. We do not find this argument convincing, particularly because the authors themselves point out that Indian workers migrating to advanced countries soon behave like native workers (Khan 2019a).

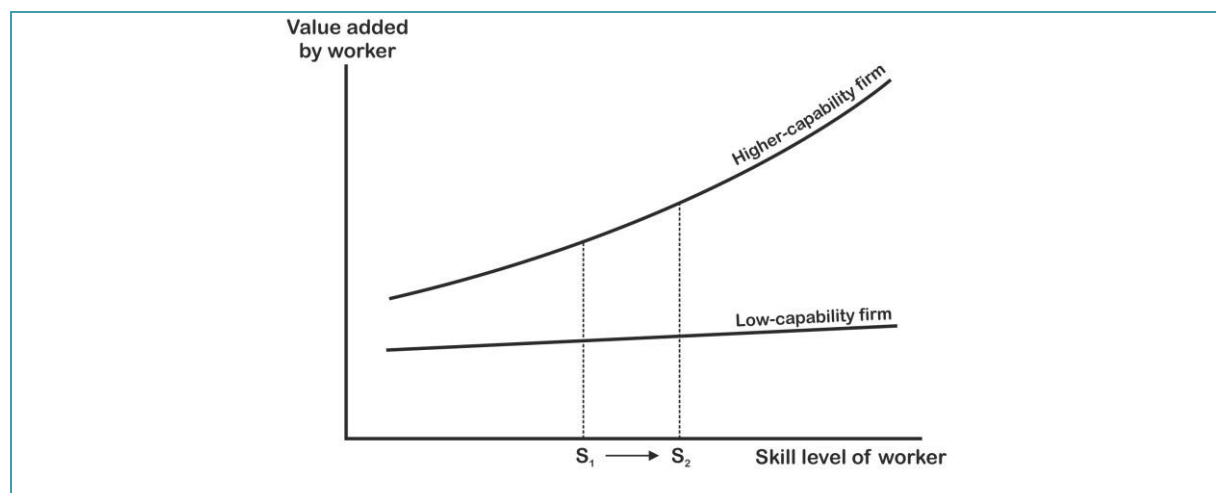
A more plausible explanation is that US factories are better organised. Organisational failures can significantly lower the output of a factory per day or hour by slowing down production lines or as a result of frequent stoppages beyond the control of individual workers. These differences in factory output will be arithmetically captured as differences in output per worker-hour with similar machines, regardless of the skills of individual workers or how hard they are working, or indeed their cultural differences. If the throughput of production is faster, if stoppages due to missing raw materials or product rejections are less frequent, if machine breakages are fixed more rapidly because organised systems are in place, if appropriate spare parts are present in the store and so on, one factory could produce much more output per worker-hour than another with similar machines and with workers of similar skills.

Productivity differentials are no less significant across firms producing identical goods *within* the same country. In India, the ratio of the productivity of firms in the 90th and 10th percentiles producing identical goods in the formal sector is 5.0, and in China 4.9 (Hsieh and Klenow 2009). In advanced countries like the US the difference is lower, but the ratio is still at least 2 (Foster, et al. 2008). The huge differences in manufacturing productivity between advanced and developing countries in producing identical products with identical machinery

can block the development of manufacturing production. Differences in productivity translate into differences in the unit costs of producing products of identical quality. If wages are low enough, they may compensate for the productivity differential, or the firm can specialise in lower quality products that have a different and lower profit market. Moreover, the huge differences in productivity *within* developing countries can block the spread of manufacturing activities and thereby block inclusive growth if follower firms cannot replicate the success of leader firms. In India, spinning emerged as a competitive industry despite the huge productivity differentials observed by Clark and Wolcott (2012) because Indian wage differentials with the US were even larger. Developing countries that failed to develop competitive spinning industries had productivity gaps that were so large that even their large wage differentials could not compensate.

These productivity differentials cannot be explained without reference to organisational differences between firms. The significant differences in productivity across otherwise similar firms partly relate to management skills (Bloom, et al. 2013). However organisational capabilities refer not just to the quality of management but to a wide range of routines describing the collective practices of the firm (Khan 2019a). Establishing effective routines goes beyond what is meant by good management, though management may play an important role in organising the collective learning-by-doing through which a firm's organisational capabilities improve. The difference between the analysis of Bloom et al. (2013) and our focus on organisational capabilities (Khan 2019a) is about whether *management practices* describe or can correct the full range of organisational differences that we describe as *organisational capabilities*. Bloom et al.'s intervention to improve management practices in a sample of Indian textile firms improved productivity by 17% over a year, which is clearly small relative to the differences described above. In any case, the presence of firm-specific organisational capabilities or management practices mean that skill improvements can no longer be expected to have an additively separable or linear effect on productivity. The effects of improvements in skills on productivity may range from zero to very positive depending on firm capabilities, as shown in Figure 1.

Figure 1. Skills, organisational capabilities and productivity



Source: the authors

In firms with low organisational capabilities, an improvement in the skills of specific workers from S_1 to S_2 may have no noticeable effects on the value added by these workers. This is because in these firms, production lines move slowly and there is frequent down time because of bad order flow, missing inventory and spare parts, product rejection, and so on. Skilled workers standing idle do not add value. Moreover, if the technology is relatively simple as in garments, unskilled workers may perform just as well on slow-moving production lines after a few days of on-the-job training. Employing skilled workers may appear to produce little additional effect for the firm. In contrast, for a firm with high organisational capability, production lines are moving rapidly, and the ability of a worker to perform quickly and precisely is at a premium. Here, an improvement in skills from S_1 to S_2 for lagging workers may have a big impact on the value added by these workers.

Another way of interpreting Figure 1 is to say that the value added by a worker depends not just on the *individual* skills of the workers, nor even just the skills of other workers, but also on the *coordinated behaviour* of all the other individuals in the organisation. The organisational capability of a firm therefore describes its *collective* capability of cooperation and coordination as an organisation. This capability is typically embedded in the firm's organisational routines (Dosi 1988; Nelson and Winter 1982; Perez and Soete 1988). Routines describe how different departments and individuals coordinate when new orders are contracted and how their timing is aligned with orders being completed, how inventories of spare parts and raw materials are maintained and managed, how product quality is checked, how defects are identified and corrected, how wastages of raw materials and other inputs are minimised, how machinery breakdowns are fixed, how production lines are rebalanced against orders, and so on. These are not just questions of skills, but of systems that can use skills effectively. The *organisational capability* of a firm or organisation is a measure of the *relative* effectiveness of its organisational systems and routines compared to its competitors.

Unlike skills that are embodied in individuals, organisational capabilities refer to the *collective* knowledge embedded in the operational routines of an organisation. This knowledge is not about how to operate particular machines or carry out processes like accounting. Rather it is the tacit knowledge of how to *interact* within the organisation given its technologies of production and its formal governance structures to maximise output, profitability and competitiveness. This tacit knowledge cannot just be possessed by managers and supervisors but must be collectively practiced in routinised organisational behaviour. Everyone in an effective organisation does not have to have the same organisational knowledge, but all members of an effective organisation need to know their part of the organisational routines that enable the organisation to operate optimally (Khan 2019a).

Organisational capabilities are therefore *not* the same thing as the quality of management or supervision or even management practices. Putting a good manager into a badly organised factory may make no difference unless the manager is given the time and implementing power to recast many different organisational routines. This is usually beyond the capacity or remit of most managers and requires instead collective learning-by-doing and adaptation of routines by an organisation as a whole. Similarly, in a well-working organisation, particularly one that is engaged in the production of relatively simple products like

garments, the departure of particular managers or supervisors usually does not create any huge disruption because the major organisational routines are already in place.

The relative organisational capability of a firm can then be measured in a number of ways. Ideally, we would want to compare the target firm with another producing the same product with similar machinery and technologies, a workforce with similar skill levels, and similarities in other observable factors that may affect outcomes. Observed differences in the value added per worker can then give us a measure of the degree of organisational advantage or disadvantage that the target firm has relative to another, or relative to the average of similar firms. However, data on value added per worker are often quite hard to get. For instance, garments industries in Bangladesh do not even disclose their employment data and the employer's associations, the BGMEA and the Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) do not hold even approximate employment data at the firm level. Fortunately, organisational capabilities can be proxied in other ways. In the next section we describe how we were able to indirectly measure relative organisational capabilities using a number of different indicators.

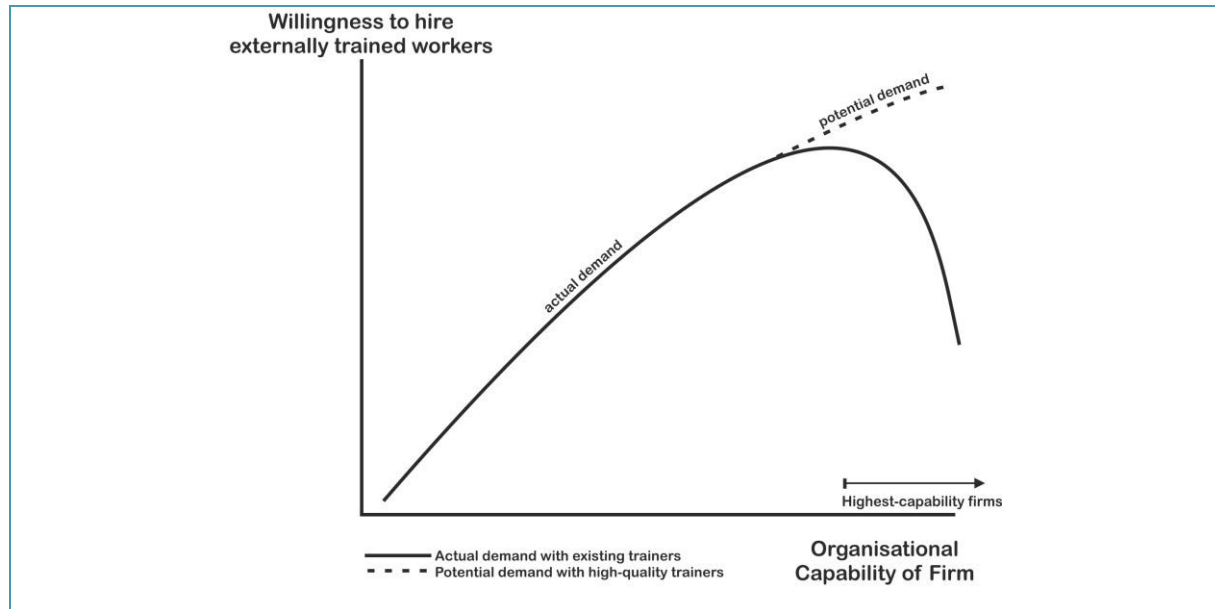
Without adjusting for the non-linear effects of organisational capabilities, the effects of skills training may appear to be indeterminate or random across the universe of firms. But if we distinguish firms in terms of their organisational capabilities, a pattern does emerge, but one that is the reverse of what we would expect: firms that are most in need of skilling up appear to be most resistant to employing skilled workers. When these employers discover that hiring skilled workers makes no difference to the speed of their production lines or their profitability, they tend to blame it on poor training and revert to employing cheaper unskilled workers at the factory gate. Of course, some trainers do a bad job of training, and the training is not aligned with the needs of the employer, making it even more difficult for the employer to identify the true causes behind their persistently low productivity. We exclude these and other factors that affect training quality by comparing outcomes across training providers whose quality was externally validated and supported by the same credible implementing agency. Any variation that still remains has to be explained by other factors like the demand-side capabilities of firms. For these firms in Figure 1, the gain in productivity when skills of some workers increase from S_1 to S_2 may be too low to justify paying them even a slightly higher wage, let alone justifying any employer contribution to training costs.

In contrast, high-capability firms may be willing to pay a wage premium for workers with greater skills and, in some cases, provided other contracting failures are not very serious, they may even be willing to pay some of the costs of training. In fact, the quality of skills may be so critical for the highest capability firms that they may invest in their own skills training rather than rely on external trainers whose quality they may find hard to assess.

In our interviews with Bangladeshi garments firms, we observed just such an inverse U-shaped demand for skills across firms of different capabilities when we asked them about their willingness to employ trained workers. This was part of our informal scoping before commencing the research. We observed a strong relationship between how well a factory appeared to be organised in its internal production systems and their willingness to employ

trainees from external training providers. The relationship that emerged through conversations with employers and trainers, and which we could theoretically explain using differences in organisational capabilities, is summarised as the paradox of skills demand in Figure 2.

Figure 2. The paradox of skills demand



Source: the authors

The upward sloping part of Figure 2 constitutes the paradox because the demand for skills should theoretically be highest in firms that have low capabilities and low productivity. Firms that appeared to be poorly organised, like subcontracting firms that relied on other factories to give them order spillovers, had low skill levels. They should have been the keenest to find skilled workers, but they preferred to employ workers at their factory gate. In contrast, intermediate-to-high-capability firms with steady export orders and good relationships with foreign buyers preferred to employ workers with some exposure to skills training. But the highest capability firms supplying to upmarket foreign retailers, which were also some of the biggest firms, did their own training because the quality of skills mattered most to them. They also had the scale to set aside entire production lines for training. An example is the Standard Group, which employs more than 50,000 workers in the garments industry. They expressed a preference *not* to employ workers trained by external training providers because their skills requirements are exacting, and they did not want externally trained workers to disrupt the flow of their lines. These employers are only likely to go to external skills providers if their training quality is assured to be very high. They are, however, a relatively small segment of the market in Bangladesh, given the distribution of firm capabilities. The relevant policy goal must be to ensure that skills trainers can help the vast majority of firms that are in the low-to-high range of organisational capabilities.

4.1. The hypothesis: improving organisational capabilities to end fraud and corruption in the skills sector

Our empirical analysis of fraud explores how this paradox of the skills market may be affecting the propensity to misreport in the skills training sector. The hypothesis we want to test is that PTPs that happen to supply to clusters of low-capability firms face low effective demand for their trainees. Everything else being the same (and we adjust for this by working with PTPs that are similar in terms of their trainee selection, training capabilities and incentive structures), PTPs supplying to low-capability firms are more likely to engage in fraud than PTPs supplying to more capable firms. Our hypothesis relies on the upward sloping part of Figure 2. Very high capability firms are not in the market for externally trained workers as they do their training themselves, but none of our PTPs supplied any significant numbers to these types of firms.

Of course, all firms do some in-house training. Statistical analysis using the World Bank's Investment Climate Survey data in Bangladesh shows that in-house training takes place across the industrial sector and is broadly effective in raising productivity and wages (World Bank 2007: 20 and Appendix 4). Nevertheless, our qualitative assessment suggests that with the exception of the highest capability firms, in-house training facilities are limited to learning-by-doing on working production lines. For most firms there is effective demand for externally trained workers, particularly in mid-to-high-capability firms. This is the upward-sloping part of the inverse U-shape in Figure 2.

If our hypothesis is correct, effective demand for skills can be increased and fraud reduced by working with firms to raise their organisational capabilities *towards* the level where the effective demand for skilled workers is highest in Figure 2. This is the level of capabilities where we would expect to see fraud disappearing when training providers supply to such firms. Improving effective demand for skills beyond that level would require significant improvements in the quality of training, because the highest-capability firms have more demanding requirements for skills than can be supplied by the average PTP. But this is possibly not the immediate policy priority as the highest capability firms can do their own training. This qualitative understanding provides the basis for our hypothesis, which we test against the available evidence in the next section.

5. Evidence and analysis

As described earlier, the selection of Sudokkho PTPs allowed us to control for at least three sets of factors that could result in differences in training outcomes and therefore the propensity to engage in fraud across providers. Thus, though our sample was limited by the actual number of PTPs that Sudokkho worked with, by being able to remove the effect of three known critical variables, our result is more robust than it would have been with a somewhat larger but unconstrained sample. A larger sample would have to be large enough to control for known factors affecting training outcomes and this would be infeasible simply because sensitive data on fraud would be impossible to access across such a large number of training providers and implementing agencies. A strong and significant negative correlation between the propensity to misreport and the average organisational capabilities of firms on the demand side in our sample provides the most robust support for our hypothesis that could be feasibly achieved given the sensitive nature of this data.

To test our hypothesis, we needed data on two variables. The first is the PTPs' propensity to misreport in invoices and the second is the organisational capability of the firms that each PTP supplies. The first variable, the 'Propensity to Misreport' by training provider p , PM_p , was constructed from the data collected across Sudokkho PTPs through the random invoice checking conducted by Sudokkho during the first six months of our study period. The figure for each PTP is the percentage of red-flagged invoices in total invoices, as explained earlier. The second variable is the mean 'Demand-Side Organisational Capability' of the firms supplied by each PTP p during the study period. We define this as $DSOC_p$

Our initial plan was to construct the $DSOC$ index directly through a survey, but this had to be abandoned when we discovered that factories were very suspicious of external research into their operations. Our 12 PTPs listed 1,098 trainees and 346 exporting factories and a number of other types of establishments in their invoices for the first six months of 2018 when the random checking of trainees was most effective. In our pilot survey of the first 150 factories we found that we could only gain access to 23 factories, leading us to abandon the survey. We were asking potentially sensitive questions, such as how many separate orders the factory could simultaneously manage, how many order deadlines they had missed in the last year, how many shipments had to be airfreighted as a result, their estimates of product rejection rates, and the names of the foreign high street retailers they supplied, to identify their product quality. We discovered that it was too optimistic to expect firms to answer these types of questions. Indeed, firms were reluctant even to disclose their current employee numbers. However, abandoning the survey forced us down an alternative and ultimately better path, and we were able to construct a robust proxy indicator based on externally verifiable evidence.

We looked for indices that could give us indirect measures of organisational capabilities of firms, and which could be constructed from data that we could potentially acquire. As Sudokkho PTPs had to report jobs in the garments industry, their trainees went to three types of establishments. Most of the establishments were export-oriented factories. A number were not direct exporters, but subcontractors who were not listed as exporters but

which indirectly exported by getting the overflow business from exporting factories when the latter had more orders than they could supply. These exports would normally take place in the name of the mother company. There is no record of the value or type of production of subcontracting factories in Bangladesh, but we know that high-quality products are not subcontracted to such firms if the contracting firm has to maintain high product quality. Finally, some employers were not proper factories at all but variants of tailor shops of various sizes that supplied clothing to the local market.

We used three indices that each capture different aspects of the organisational capabilities of firms. We then combined the three indices using principal components to give us an aggregate indicator of organisational capability that maintained the variations within the three indices. Our first index is the unit value of the exports of a factory at the 4-digit HS code, relative to the average unit value of the same items for all factories in Bangladesh. The 4-digit HS code disaggregates products down to the level of men's and women's shirts or trousers and so on. The intuition here is that a factory that exports, say, higher-valued men's shirts or women's trousers than the average garments factory in Bangladesh producing these items must have correspondingly better organisational capabilities. Producing higher-valued versions of the same products is likely to mean that it has better systems of internal quality control, better marketing and order management systems integrated with higher-quality foreign retailers with more demanding timelines, better internal systems to manage inventories of more expensive fabrics with stricter quality and colour requirements, better systems for minimising wastage and quality rejections of more expensive fabrics, and so on.

Our data to calculate the indicator on relative unit value of exports came from the National Board of Revenue (NBR), which records the dollar values of exports of every export-oriented firm in Bangladesh as well as the physical weight of their exports at the 4-digit HS code level. This record is based on information in letters of credit and is therefore fairly accurate. We needed data not only for our 346 exporting firms, but also for all the thousands of exporting garments factories in Bangladesh exporting items with the same HS codes as any of our firms in 2018, the period of our study. We were able to access this comprehensive data because our research partner, the Bangladesh Institute of Governance and Development, BIGD, works with and is trusted by the NBR, and could assure the NBR that commercially sensitive information would be anonymised.

The relative unit value index was calculated as follows: we first calculated U_{ih_1} , the unit value of the product with HS code h_1 exported by factory i

$$U_{ih_1} = \frac{\text{Dollar value of product with HS code } h_1 \text{ exported by factory } i}{\text{Net weight of product with HS code } h_1 \text{ exported by factory } i}$$

We then computed U_{Ah_1} , the unit value of the product with HS code h_1 exported by all factories, A .

$$U_{Ah_1} = \frac{\text{Dollar value of product with HS Code } h_1 \text{ exported by all factories}}{\text{Net weight of product with HS code } h_1 \text{ exported by all factories}}$$

Next, we calculated the relative performance of factory i in producing products with HS code h_1 by comparing its unit value with the average unit value achieved by all factories collectively: $\frac{U_{ih_1}}{U_{Ah_1}}$. If this ratio is greater than 1, factory i is correspondingly above average in its organisational capabilities in producing this product and below average if less than 1. As a factory typically exports several products with different HS codes h_1, h_2 , etc, we then calculate the weighted sum of the relative unit values of exports of factory i across all relevant HS codes, and this is our first index of the organisational capability of factory i , O_i^1 :

$$O_i^1 = \frac{\frac{U_{ih_1}}{U_{Ah_1}} * V_{ih_1} + \frac{U_{ih_2}}{U_{Ah_2}} * V_{ih_2} + \dots + \frac{U_{ih_n}}{U_{Ah_n}} * V_{ih_n}}{V_{ih_1} + V_{ih_2} + \dots + V_{ih_n}}$$

where V_{ih_m} is the dollar value of exports of the product with HS code h_m booked by factory i .

Our second index of organisational capability for factory i , O_i^2 , looks at a different dimension of organisational capability, the capability of a firm to comply with building and safety rules. This is a good proxy for an important dimension of organisational capability because compliant firms have to set up internal systems to respond to changing compliance codes in different dimensions. There is reasonably good data in Bangladesh on the externally certified compliance of garments factories with building safety codes and we decided to use this as another proxy for looking at variations between firms. Factories can only be compliant if they have the internal organisational procedures to ensure that appropriate improvements in building and safety infrastructure are implemented. External inspections of building and safety standards of Bangladeshi garments factories began shortly after the Rana Plaza tragedy in 2013 in which the collapse of a building that housed a garments factory resulted in more than 1,100 deaths. Since then, two external agencies, Alliance and Accord, have carried out inspections of garments factories and provided certifications of compliance. We used data on the degree of compliance (full, partial or not at all) to construct an index that gives every inspected garment factory a score of 2, 1, or 0 respectively.

Finally, our third index of organisational capabilities, O_i^3 , scores each establishment for its type. The list of employees from the PTPs included a number of small ‘factories’ that were more like tailor shops and these needed to be given a score relative to others. They had neither export-based unit value data nor external certification of their building safety compliance. We distinguished between three types of establishments in the sector. First, there are garments factories whose exports are recorded in NBR records. Then there are smaller factories that are likely to be subcontracting factories or factories that exported in the name of other factories. They have no records of direct exports but do so through a mother company that holds the letter of credit. Finally, there are tailor shop operations that may employ several people and produce for the local market or the grey export market where exports are not properly recorded in NBR statistics. We score these establishment types from 3 to 1 to produce an index that gives all establishments a number. The intuition behind this is that export-oriented industries have the highest organisational capabilities while tailor shops that employ people as tailors for the local market have the lowest organisational capabilities as they operate the simplest type of organisation, with limited requirements for effective organisational routines.

The final index O_i , representing the organisational capability of firm i , aggregates the variations in O_i^1 , O_i^2 and O_i^3 using principal component analysis (PCA). This technique aggregates variations in our three component indices to construct a composite index of the organisational capabilities O_i of each firm that still retains as much information as is possible on cross-firm variations in each of the three indices (Abdi and Williams 2010). Our aggregation strategy is similar to Greco (2018), who uses PCA to compute a single index of women's capabilities using a set of capabilities indicators relevant to women's wellbeing. The organisational capability of firm i , O_i , is one of the core building blocks of our subsequent analysis.

The final stage is to look at the average organisational capability of all the establishments that each PTP sends its trainees to. This gives us the demand-side organisational capabilities that each PTP faces. For each PTP, designated by p , this number is the simple sum of the organisational capabilities, O_i , of all the establishments that each of their trainees $t(p)$, are reported to have gone to, divided by the total number of trainees in the PTP. For each PTP p , we compute the demand-side organisational capabilities, $DSOC_p$, faced by that PTP as follows:

$$DSOC_p = \frac{\sum_t O_i^{t(p)}}{\sum t(p)}$$

where $O_i^{t(p)}$ is the organisational capability of firm i where trainee t of PTP p has found employment according to the invoice data. The list of trainees in each PTP p over the period is $t(p)$.

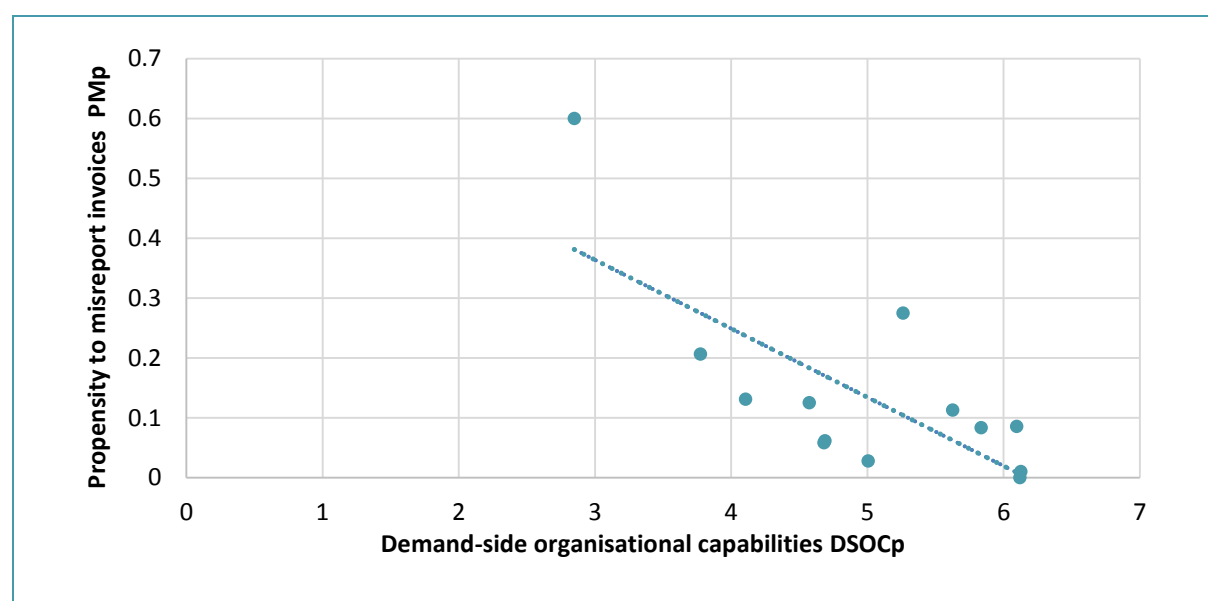
Table 1. Trainer propensity to misreport and demand-side organisational capabilities

Anonymised PTP number	Propensity to misreport invoices, PM_p	Demand-side organisational capabilities: $DSOC_p$
1	0.6000	2.8484
2	0.2061	3.7757
3	0.1307	4.1055
4	0.1250	4.5751
5	0.0584	4.6815
6	0.0612	4.6894
7	0.0278	5.0062
8	0.2750	5.2621
9	0.1125	5.6275
10	0.0833	5.8359
11	0.0857	6.0964
12	0.0100	6.1283

Note: The PCA exercise generated an index for demand-side organisational capabilities with several negative values. We normalised these figures by adding a constant of 5 to each number. This translation maintains the intervals and does not affect our correlation results.

Table 1 summarises the statistics for the Sudokkho PTPs. A list of the characteristics of these PTPs and of UCEP schools is provided as an Appendix table. Our correlation assumes that when PTPs put in fake invoices, they name firms they tried to send their workers to but failed. But if a provider misreports both the employment status of workers *and* the names of factories their trainees tried to get jobs in, our method will pick up a high demand-side capability index for PTPs engaging in fraud when in fact the factories their trainees actually tried to get jobs in may have been much lower. We will see later that there is some evidence that some PTPs may be engaging in this double misreporting, not only reporting employment when there was none, but also misreporting the factories their trainees approached.

Figure 3. Trainer propensity to misreport and demand-side firm capabilities



Source: The authors.

Table 2. Correlation of trainer propensity to misreport and demand-side firm capabilities

	PM_p	$DOSC_p$
PM_p	1.000	
$DOSC_p$	-0.704***	1.000
	0.010	

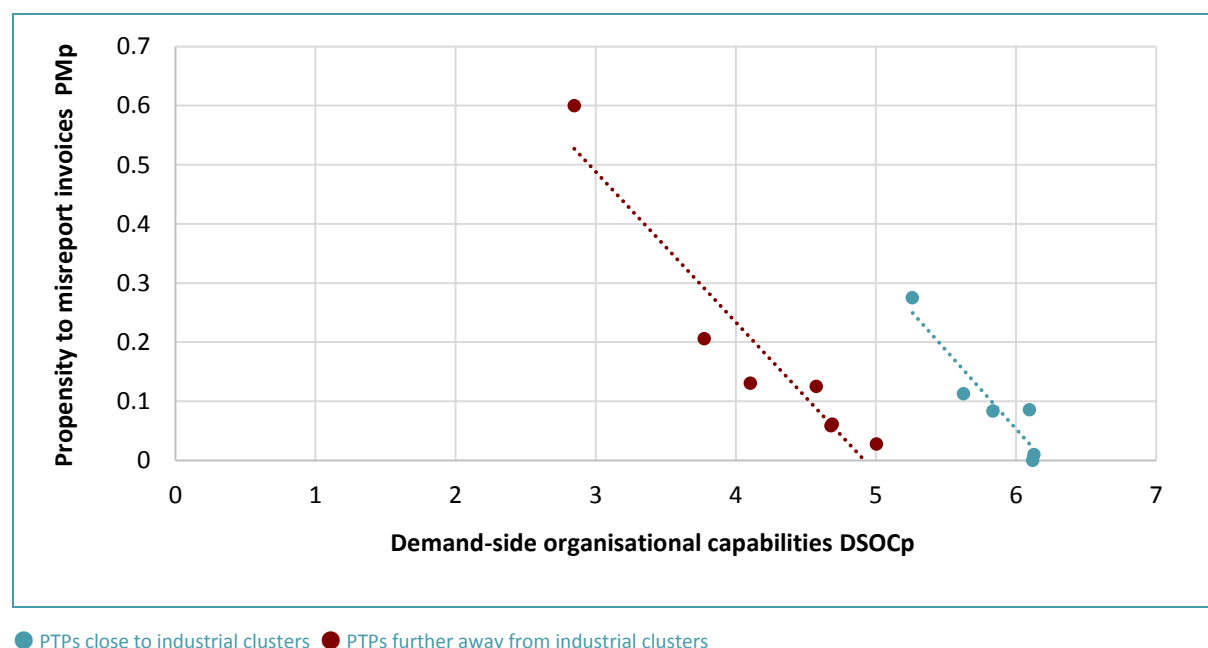
Source: The authors.

Ignoring the double misreporting problem, to which we return later, Figure 3 and Table 2 summarise the correlation between our two variables of interest. We find a significant correlation of the right sign. The plausible direction of causality here can only be from demand-side organisational capabilities to the propensity to misreport. The reverse causality is not theoretically plausible, nor are there obvious missing third variables that could explain why our two variables should move simultaneously in this way. The correlation coefficient of -0.7 is significant at the 1 percent level. Our selection of PTPs eliminated or significantly reduced confounding effects of the most important other factors that could explain variations in employment success and therefore invoice fraud. Our result is also in line with our qualitative understanding of how fraud happens in training providers based on in-depth

conversations with many different training providers, firms and implementing agencies. It is also aligned with our theoretical and empirical understanding of how organisational capabilities can significantly affect firm productivity and profitability. Taken together, all of this evidence makes us confident that our result is a robust one that highlights an important structural determinant of the propensity to engage in invoice fraud.

Looking at the scatter points and line of fit in Figure 3, we see that there are two distinct sets of PTPs, one above the line of fit and one below. An investigation into the characteristics of these sets revealed an interesting pattern that may relate to the distortion, referred to earlier, when the misreporting is not only about employment but also about the firms that trainees tried to get jobs in. In Figure 4 we look at the two sets of PTPs separately. The PTPs on the higher blue line were almost all located close to industrial clusters and therefore knew the names of firms near them. These PTPs had an advantage in that their trainees were more likely to get jobs, as we expect, but their misreporting when it occurred also put in names of higher-capability firms that further enhanced the apparent demand-side capabilities their trainees faced. The PTPs on the lower red line were almost all further away from industrial clusters and while their propensity for fraud was higher as a result, when they did misreport, they were more likely to put in names of lower-capability nearby factories so their demand-side capabilities appear to be lower.

Figure 4. Misreporting by PTPs and distance from industrial clusters



Source: The authors.

We note this inbuilt bias in the data but also that it did not significantly affect the detection of a negative correlation between our two variables even with the bias. If anything, it shows that the underlying negative correlation may be even stronger than Table 2 suggests. Table 3 and Table 4 show that when the correlation coefficients for the two sets of PTPs are calculated separately, they are higher, with higher levels of significance. This is an example of problems of dealing with data on fraud and misreporting. The fraud can involve a number of dimensions and therefore the data has to be used with care. However, in our case, if the fraud jointly reported false employment and false firms, this should weaken the relationship we observe between the propensity to misreport and organisational capabilities. Despite this, it is reassuring that the unadjusted data still show a strong and significant negative relationship as already seen in Figure 3 and Table 2. This too increases our confidence in our result.

Table 3. Correlation for PTPs close to industrial clusters

	PM_p	$DOSC_p$
PM_p	1.000	
$DOSC_p$	-0.980*** 0.0006	1.000

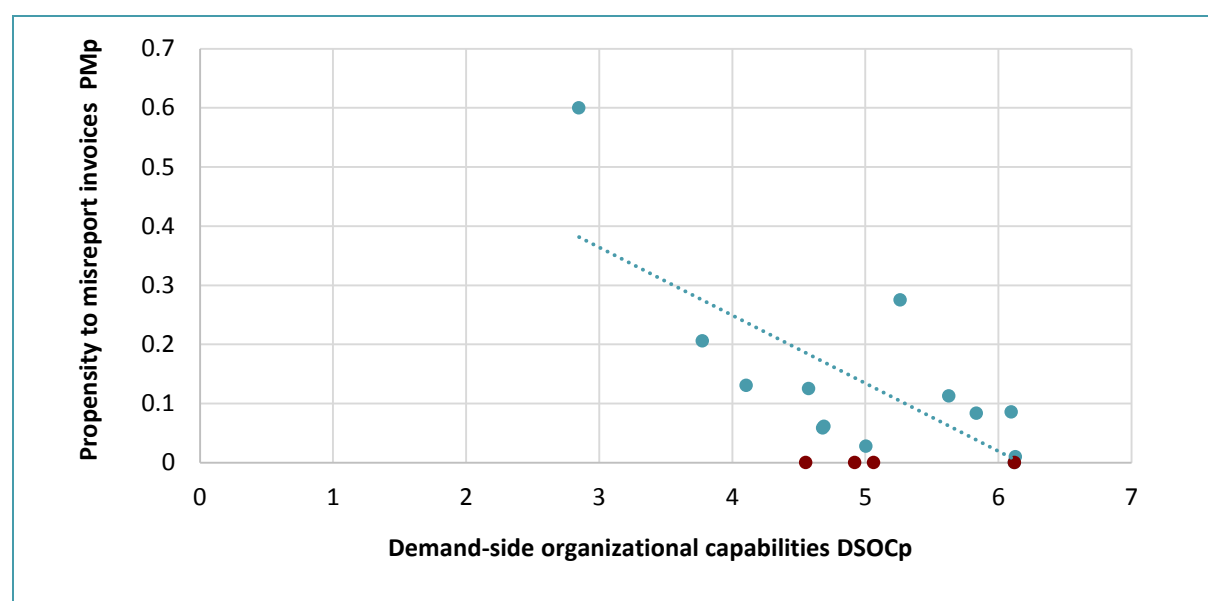
Source: The authors.

Table 4. Correlation for PTPs further from industrial clusters

	PM_p	$DOSC_p$
PM_p	1.000	
$DOSC_p$	-0.889*** 0.007	1.000

Source: The authors.

We were also given access to internal invoice data by UCEP, the successful skills training NGO referred to earlier. We computed demand-side organisational capabilities for the four UCEP schools whose training and placement data suggested a uniformly high 90% plus employment success rate. We wanted to test whether this was compatible with our hypothesis about the importance of demand-side organisational capabilities of firms. Figure 5 shows the values we computed for the mean demand-side organisational capabilities $DSOC_p$ for cohorts from each of the four UCEP schools that were training for the garments industry. We put this into the same scatter plot for Sudokkho shown in Figure 3, so Figure 5 simply adds the plots of the four additional UCEP schools. We attributed zero overreporting to UCEP schools as UCEP assured us that their internal monitoring was rigorous, and schools would not be able to systematically misreport their employment success over time. The observations plotted for UCEP therefore assume that all employment reported was true.

Figure 5. A comparison of Sudokkho PTPs and UCEP schools

● Sudokkho PTPs ● UCEP schools

Source: The authors.

The Sudokkho data shown in Figure 5 shows the relationship between the difficulty of placing trainees in jobs and the propensity to fraud. The difficulty of placing trainees in jobs goes up as demand-side organisational capabilities decline. By superimposing the UCEP data on the same diagram it appears that the high employment success of UCEP schools is fully credible in only one school, their flagship school located near the industrial cluster at Gazipur. Here the demand-side organisational capability is high enough for there to be zero misreporting of high employment. The high employment levels are less credible to varying extents in the three other UCEP schools. As we have no indication or evidence of any institutionalised overreporting problems at UCEP, we sought an answer in the way in which employment was being measured. A closer look at the breakdown of employment across UCEP schools in Table 5 confirms that this can indeed explain the puzzle. UCEP trainees were primarily employed in factories only in school 4, where 92% of placements were in factories. In all three other schools, the majority of the employment was in tailor shops or in self-employment. Recalling our earlier discussion on the treatment effect of skills training in developing countries where most individuals would in any case be compelled to find informal or self-employed jobs, the treatment effect in UCEP schools 1 to 3 is therefore likely to be low.

Table 5. Explaining employment success in UCEP schools

UCEP school	DSOC _p	Employed in export factories	Employed in subcontracting factories	Tailor shops, self-employed and unemployed
1	4.553	26%	17%	57%
2	4.922	12%	23%	65%
3	5.063	16%	29%	55%
4	6.120	60%	32%	8%

Source: The authors.

The UCEP data are therefore consistent with the evidence we have from Sudokkho and show that skills training on its own cannot generate jobs in factories if factories have low organisational capabilities. This finding will be of interest to high-quality skills trainers like UCEP because the longer-term problem is not only how to address fraud and corruption, but also how to devise strategies and governance structures that can sustain inclusive growth. Clearly, a simple (but ineffective) way of removing fraud is to change the governance structure of the skills programme so that the placement of trainees in high-value jobs is not tracked or rewarded. This solves the problem of fraud and corruption but does not address the problem of how to get a skills programme to deliver value for money. The challenge is to ensure value for money in a skills programme *and* ensure that the governance of these conditions is not subject to fraud and corruption.

While our research was going on, Sudokkho analysed the risk of fraudulent behaviour connected to their payment schedule and terminated the payment for job placement, as its management was too demanding on project resources. Instead, they commissioned impact evaluation studies to provide reliable information on employment and income generation. To reduce the risk of fraudulent behaviour in reporting enrolment and graduation, it contracted consulting companies to verify these numbers. To incentivise PTPs to support effective job placement, Sudokkho have introduced a system rewarding PTPs for verified job placement and linkages with factories. Thus, Sudokkho kept adjusting its systems to ensure a high level of integrity in its programme. These responses are somewhat aligned with what we recommend in the next section on policy implications, but we would argue that an employment target should be retained for PTPs to ensure value-for-money outcomes. Without that, it is likely that the treatment effect of training may descend to the low global averages that make skills programmes unsustainable on a cost-benefit calculation. The challenge is to make the employment targets feasible by working on the demand side. We would argue that governance arrangements for employment targets, including a random-checking strategy, can be made feasible by joining up skills training with demand-side capability development programmes. There is clearly an exciting prospect of carrying this thinking forward with development partners and implementing agencies like Sudokkho, UCEP and others for further testing on the ground. In the meantime, most skills programmes in Bangladesh, including SEIP, continue with the incentive systems that have proved so difficult to operate without fraud.

6. Policy implications for governance and anti-corruption

The evidence presented in this paper suggests that a feasible and effective anti-fraud and anti-corruption strategy for the skills sector is possible, but it must include a policy component that has so far not been fully recognised. The propensity for fraud on the part of training providers is virtually zero in the presence of feasible governance and external monitoring by a credible implementing agency provided the placement of trainees in factory jobs is feasible. The feasibility of placements depends on the demand-side organisational capabilities of firms, which determines whether they in turn are able to profit from better-trained workers.

Dropping the condition of setting employment targets for training providers is not a solution that we would recommend because the treatment effect of the training is likely to fall without implausible levels of ongoing monitoring by implementing agencies. We know that the treatment effect of skills programmes across developing countries is already very low. The challenge is to improve this low treatment effect by identifying incentive and governance structures combined with supportive policies to improve the demand for skills. This is essential if we want to support inclusive growth outcomes. To succeed, an effective policy combination must create incentives for training providers to achieve high-quality employment outcomes, but it must also address relevant types of fraud and corruption. Otherwise as we have seen, the governance of the programme is likely to either fail or prove to be too expensive.

Our assessment of the magnitude of the problem suggests that we need to go beyond providing supervisory and management support to firms to increase their effective demand for skilled workers. Supervisory and management support can make some difference, but organisational capabilities have to improve quite significantly to have a substantive effect on the propensity for fraud on the part of training providers. In terms of our proxy indicator of demand-side organisational capabilities (*DSOC*), the move from a firm cluster that has a score of 4 to one that has a score of 6 implies substantive upgrading of a range of organisational routines within firms. Our indicator is only a proxy, and the relevant routines are the ones that are essential for raising productivity and product quality, as well as reducing wastage and downtime. The necessary investments to improve the organisational capabilities of firms cannot feasibly be made by skills programmes directly. However, we believe that these investments are commercially feasible and need to be organised in a joined-up way by development partners or governments. This may be the most useful contribution that development partners and governments can make to cut through the governance and fraud problems that have bedevilled the skills sector.

The commercial feasibility of improving organisational capabilities can be demonstrated using evidence from Bangladesh. The dramatic take-off of the garments industry in Bangladesh in the late 1970s was not preceded by any change in the governance context at the national level, or even by any significant skills programmes for workers. It was entirely

driven by the acquisition of critical organisational capabilities in *one* firm that was rapidly replicated through imitation by hundreds of others when the organisational routines were understood and carried from firm to firm by managers and supervisors (Khan 2019a). The managers and supervisors could do this because they understood what a well-organised but low-productivity garments factory looked like. However this organisational picture is no longer valid as Bangladesh is moving up the value chain, and the necessary organisational upgrading cannot be done by incremental improvements in management skills. It requires the import of new organisational models from next tier countries that can then be replicated by many firms. Replication of more complex models is more difficult but may be feasible if some of the investment in acquiring this organisational knowledge is provided as a public good by developmental investment agencies like the CDC Group (the UK's development finance institution) or the International Finance Corporation (IFC).

A contemporary example from Bangladesh helps to demonstrate the feasibility and impact of investments in organisational learning. The German investment corporation (Deutsche Investitions- und Entwicklungsgesellschaft or DEG) supported and later evaluated a skills and organisational upgrading programme of a Bangladeshi garments manufacturer, JMS Holdings Ltd (DEG 2016). JMS is one of the larger and higher-capability garments manufacturing groups in Bangladesh, with a total employment of around 6,300 workers, around 70% of whom are women. Like most Bangladeshi garment manufacturers, the group suffered from low labour productivity and competitiveness. Between 2012 and 2014 it engaged in a programme that combined investments in skills with a capacity expansion plan and support for organisational capability development partially financed by loans from DEG. The programme engaged an international textile consulting company, Gherzi, to assist with skills training and organisational development. The upgrading included an internal skills training programme and an organisational restructuring of production lines. The total investment was US\$1.5 million, of which \$820,000 was invested in skills upgrading.

The results were 'tremendously positive', with productivity going up by 37% and capacity by 74% in two years. Just as important, the quality and unit value of products improved, and input wastage declined by more than 80% just between 2014 and 2015. Profits increased by more than \$1 million over this period and the loan was repaid over two years. According to the consultants from Gherzi, around 30% of the 37% productivity growth was attributable to the skills programme, and the other 70% to the 'optimization of the production layout' and new equipment. However, most of this 70% is actually attributed to the reorganisation of the production process because according to the consultants 'the most important productivity lever is the optimization of production layout, followed by the training of employees, and *lastly* the usage of new machines' (DEG 2016: 7, emphasis ours). The contribution of new machinery was therefore less than the 30% attributed to training. *This implies that the biggest effect, possibly around 50% of the substantial total productivity growth, is attributed to better production organisation.* What is important is that these figures should *not* be understood as additively separable effects. Without the investment in organisational change, even the 30% of the growth in productivity that was attributed to skills may not have been realised because we know that the capacity of a firm to use skills depends on its organisational capabilities.

Clearly, JMS self-selected itself in this programme and was a relatively high-capability firm to begin with. The precise strategy that JMS adopted with DEG support is not a blueprint for the very heterogeneous Bangladeshi garments industry. Firms in the industry have to be seen as being on an escalator, and the policy goal must be to help firms graduate from basic organisational capabilities towards intermediate and then advanced capabilities (Khan 2019a). An organisational capability programme should be tailored to fit the starting point of a cluster of firms. Our capabilities indicator provides a quick way of establishing the initial organisational capabilities of a cluster, and this can indicate the viable upgrading strategy for that cluster of firms and the appropriate levels of skills that they will have effective demand for once their own capabilities improve.

This strategy for raising the organisational capabilities of firm clusters, combined with employment targets for training providers supplying to these clusters, and adequate governance and oversight by implementing agencies (including occasional random checking), constitutes the combination of policy and governance that we believe will result in low levels of fraud and corruption in the skills sector and at the same time high levels of job creation and inclusion.

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Appendix: Summary characteristics of Sudokkho PTPs and UCEP schools

Anonymised Sudokkho PTP no.	Employment characteristics						
	Total trainees	Total employed	Total unemployed	Total export factory	Total non- export factory	Tailor shop	Self-employed
1	1	1	0	0	0	1	0
2	17	13	4	2	5	6	0
3	237	220	17	23	197	0	0
4	122	102	20	34	45	23	0
5	36	20	9	8	9	3	7
6	18	3	15	0	3	0	0
7	166	26	125	3	23	0	15
8	56	42	13	30	12	0	1
9	172	107	30	70	33	4	35
10	37	17	20	15	2	1	0
11	163	135	28	119	11	5	0
12	74	54	20	43	8	3	0

Anonymised UCEP schools no.	Employment characteristics						
	Total trainees	Total employed	Total unemployed	Total export factory	Total non- export factory	Tailor shop	Self-employed
1	76	18	18	20	13	14	11
2	136	118	38	16	31	51	0
3	110	91	19	18	32	41	0
4	101	93	8	61	32	0	0

Note: Trainee numbers reflect those for which we could access invoice or monitoring/evaluation data.

Source: The authors

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