Policy brief
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Increasing Tax Compliance through Social Recognition

In brief

- High rates of economic growth, in-migration and urbanisation have resulted on increased stress on infrastructure in Dhaka, with firms reporting more than one power outage per working day.
- To improve infrastructure and sustain growth, investments need to be made. However, Bangladesh has one of the lowest tax to GDP ratios in the world. This study addresses how the Bangladeshi auhorities can increase tax compliance.
- A randomised controlled trial was implemented to evaluate the impact of a range of programs that attempted to exploit firms' interest in social incentives and peer recognition to increase voluntary tax compliance.
- The authors identified 23,034 VAT-relevant firms across 1,522 clusters suitable for the experiment. Eight different types of letters were randomly allocated across clusters, containing different combinations of recognition cards, peer group information and baseline information.
- Results show that in neighbourhoods where some firms were already complying, the promise of exposing information about all firms' tax payment behavior led to a positive behavioural response and an increase in tax compliance. These results suggest that social incentives and peer effects may be an effective way to improve compliance.
- Policy recommendations:
  - Consider mandating market and shop associations to display lists containing tax information about firms in public locations.
  - Scaling this may lead to revenue increases far greater than predicted by this study.

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Increasing Tax Compliance in Bangladesh

"We instead attempt to leverage firms' interest in social recognition to increase VAT compliance"

High rates of economic growth, in-migration and urbanisation have resulted in great stress on aging infrastructure in Dhaka, which is the epi-center for economic activity in Bangladesh. Bangladeshi firms report facing more than one power outage per working day in the World Bank Enterprise Survey, and Dhaka is consistently ranked near last place in the Economist Intelligence Unit's City Livability Index. Addressing these acute infrastructure challenges and sustaining economic growth requires investments, which in turn requires raising revenues, but Bangladesh have one of lowest tax to GDP ratios in the world. Revenue collection using audits, fines and other punishment-based methods has proven difficult due to firms' ability to evade payment, and the difficulties of enforcing legal sanctions. We instead attempt to leverage firms' interest in social recognition to increase VAT compliance. If a government agency can cheaply provide recognition, and firms find that valuable and attractive, then recognition and status programs may be cost-effective methods to raise tax revenues. Universities, charities and museums in the United States and other countries successfully leverage people's interest in status and public recognition to generate funding (e.g. by naming exhibits or buildings after large donors). This same approach may be applicable for tax collection.

Researchers from Harvard and Yale Universities have partnered with the Bangladesh National Board of Revenue to implement a range of programs that attempt to exploit firms' interest in social incentives and peer recognition to increase voluntary tax compliance among firms. The team conducted a multi-arm randomised controlled trial to rigorously evaluate the impact of these programs on tax payments. Our results suggest that in the neighborhoods where some firms were already complying, the promise of exposing information about all firms' tax payment behavior led to a positive behavioral response and an increase in tax compliance, especially among firms who had not paid the previous year. These results suggest that social incentives and peer effects may be an effective way to improve tax compliance. The promise to reveal information to neighboring firms yields a behavioral response only from firms who were not paying in areas where some of their neighbors were paying.

"The team conducted a multi-arm randomised controlled trial to rigorously evaluate the impact of these programs on tax payments"

Selecting Firms and Sending Letters

We worked with 32,432 firms in the area administered by the NBR Dhaka-South Commissionerate to investigate the impact of three distinct information interventions on tax compliance and payment. Based on information collected through a baseline survey, we identified 23,034 VAT-relevant firms across 1,522 clusters[1] suitable for our experiment. We were able to successfully deliver an initial letter to 16,252 firms containing information about that firm's registration and

1. Firms were clustered on the basis of geographic proximity, often by market block for outdoor firms and by floor for indoor markets. Clusters contain between 3 and 80 firms each with a median of 10 firms.

payment status and a list of firms in their cluster.[2] Eight different types of letters were randomly allocated across clusters, and each letter contained either zero, one, two or all three of the following information treatments:

1. Baseline information: Firms assigned to this treatment received additional information on the aggregate registration, filing, and payment rates for their cluster in the previous period.
2. Recognition cards: Firms in this treatment group were told that they would be eligible to receive a gold, silver or bronze recognition card based on their tax compliance and their cluster's tax compliance.
3. Peer group information: Firms assigned to this treatment were told their tax compliance behavior would be shared with other firms in their cluster in a subsequent letter.

"Eight different types of letters were randomly allocated across clusters"

Table 1: Sample Sizes

	Neither Peer Information or Recognition Cards	Recognition Cards	Peer Group Information	Recognition Cards and Peer Group Information
No Baseline Information	2,178 firms (189 clusters)	1,991 firms (186 clusters)	2,005 firms (187 clusters)	2,146 firms (185 clusters)
Baseline information	1,979 firms (186 clusters)	1,833 firms (175 clusters)	1,970 firms (182 clusters)	2,100 firms (186 clusters)

Bringing Firms into the Tax Base

We digitised all registration and tax payment records for the Dhaka-South area before treatments were assigned. The pre- treatment data show low rates of VAT compliance and payment with only 9.3% of firms paying the VAT in 2012.

"In high compliance clusters, firms that received the peer group information treatment were 3.4 percentage points more likely to make a payment in the study period"

Given the low share of firms paying any amount of the VAT, the primary potential margin of improving tax collection is shifting firms from zero to positive VAT payments. In our analysis, we divided clusters into two groups based on baseline tax compliance: 'Low compliance' (where less than 15% of firms paid the VAT in 2012 and 'high compliance' areas where at least 15% of firms paid the VAT in 2012. In low compliance clusters, there were no statistically significant changes in VAT payment rates after treatments were assigned, across any of the letter types. In high compliance clusters, firms that received the peer group information treatment were 3.4 percentage points more likely to make a payment in the study period. The effect is even more pronounced for firms that did not pay any VAT in 2012; firms in this group were 6 percentage points more likely to make a payment during the study period.

2. The vast majority of the non-deliveries (85%) were due to firm closure between the baseline survey and intervention periods.

Figure 1: Map of Study Area by VAT Payment Rates

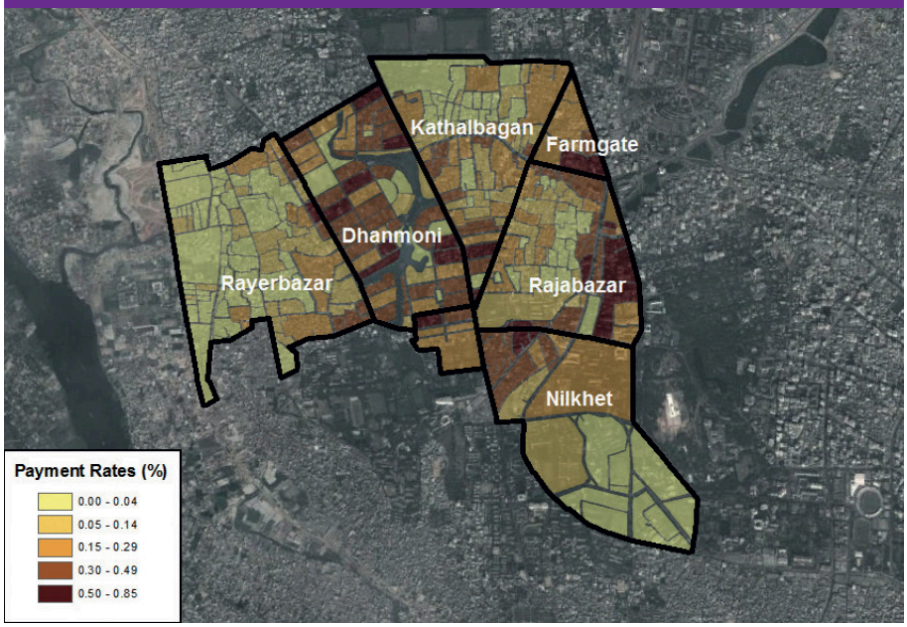
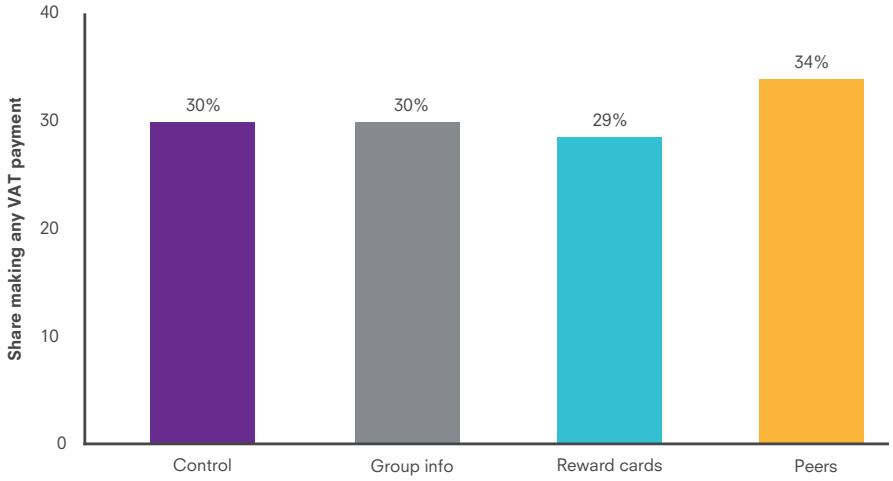


Figure 2: Percentage of Firms making VAT Payments (June-Oct 2013) by Treatment Group. Figure 2a: Firms in High Compliance Clusters



Increasing Total Tax Revenue

"In low compliance clusters, there were no statistically significant changes in VAT payment rates after treatments were assigned, across any of the letter types"

In high compliance clusters, firms receiving the peer information treatment were not only more likely to pay, but conditional on paying, paid more than firms not receiving this treatment.[3] Combining these two effects, firms receiving the peer information treatment paid 17% more on average during the study period than other firms. These high compliance areas account for 66% of all VAT revenues generated from the sample area, and the 17% increase therefore represents a

3. When conducting our analysis we top-coded the VAT payment variables at 10,000 Tk to control for outlying values and reduce noise

quantitatively meaningful increase in total revenues. The estimated increase in revenue from the small sample of firms in our study area alone is Tk 870,000 during the short duration of the experiment. The cost of printing and hand-delivering these letters is quite low, and results in a benefit-cost ratio of about 5 to 1.

The increase in payments is derived from a 17 percentage point increase in firms paying exactly the package VAT amount, and a 6 percentage point increase in firms that make payments exceeding the package VAT amount.[4]

"In high compliance clusters, firms receiving the peer information treatment were not only more likely to pay, but conditional on paying, paid more than firms not receiving this treatment"

Figure 2b: Firms in High Compliance Clusters that did not pay VAT in 2012

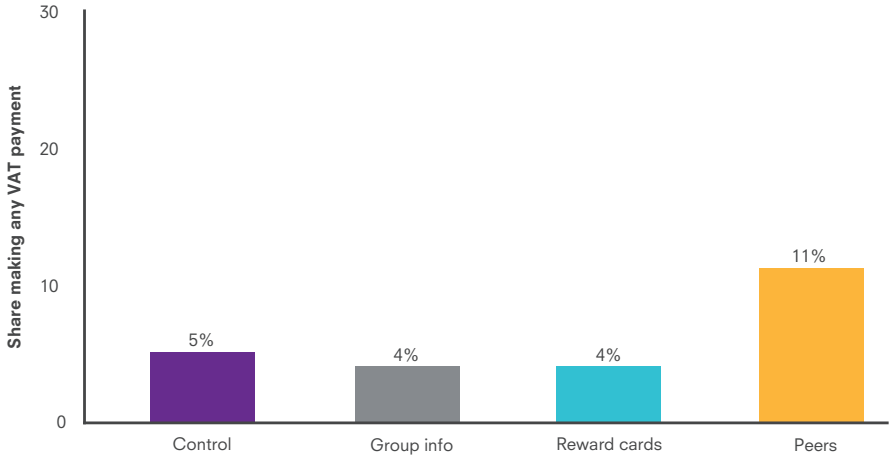
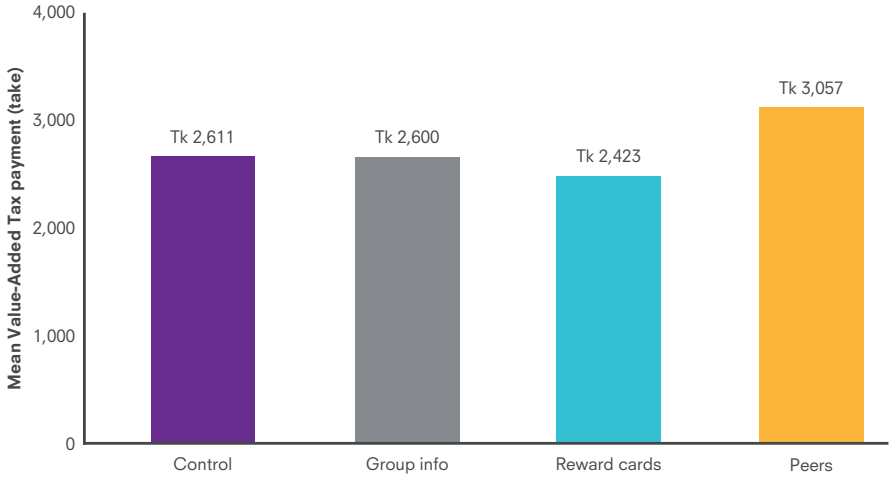


Figure 3: VAT Payment Amounts (June-Oct 2013) by Treatment Group.
Figure 3a: Firms in High Compliance Clusters



4. Firms can elect to pay a package VAT, where they pay a flat amount of 9000 Tk once a year in lieu of submitting receipts and calculating their detailed VAT bill.

"There is significant potential for improving tax compliance and revenue collection through peer information programs"

Figure 3b: Firms in High Compliance Clusters that did not pay VAT in 2012

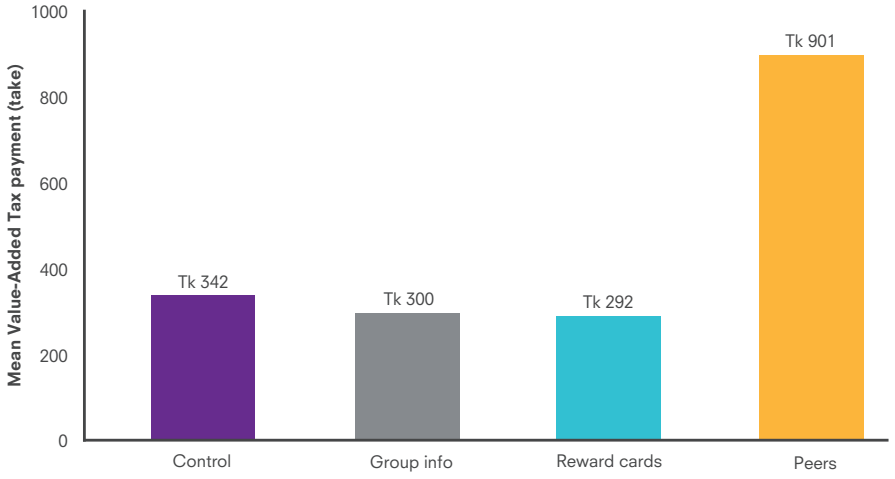


Figure 4a: Distribution of VAT Payments in High Compliance Clusters

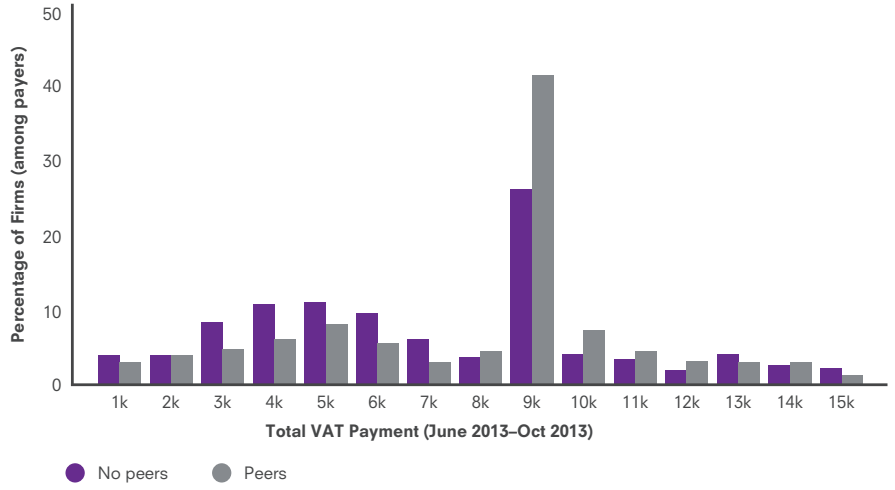
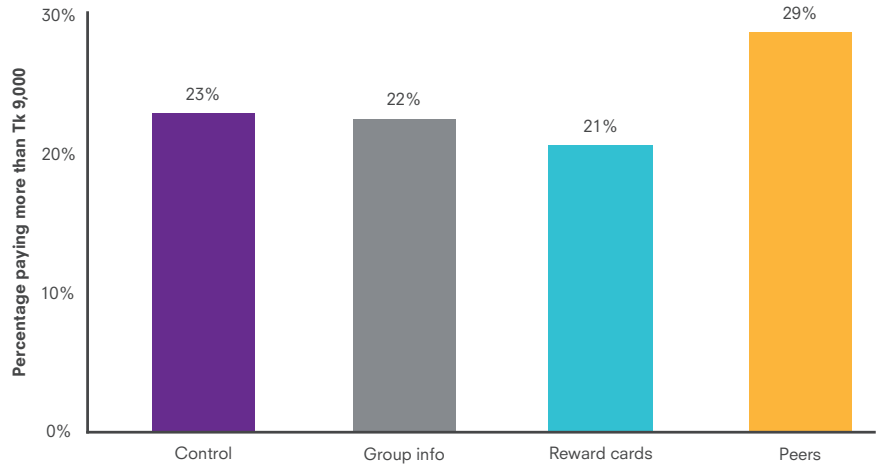


Figure 4b: Percent of Firms paying more than Package Amount in High Compliance Clusters



When examining the timing of the increase in VAT payments, we see that the spike in payments in the peer treatment group occurred exactly in the month when the intervention was implemented. Furthermore, the time series of payments in high compliance clusters by those who did not pay VAT in the previous year shows a substantial increase in payments over the control group in the month of the intervention.

Figure 5a: VAT Payments by Month

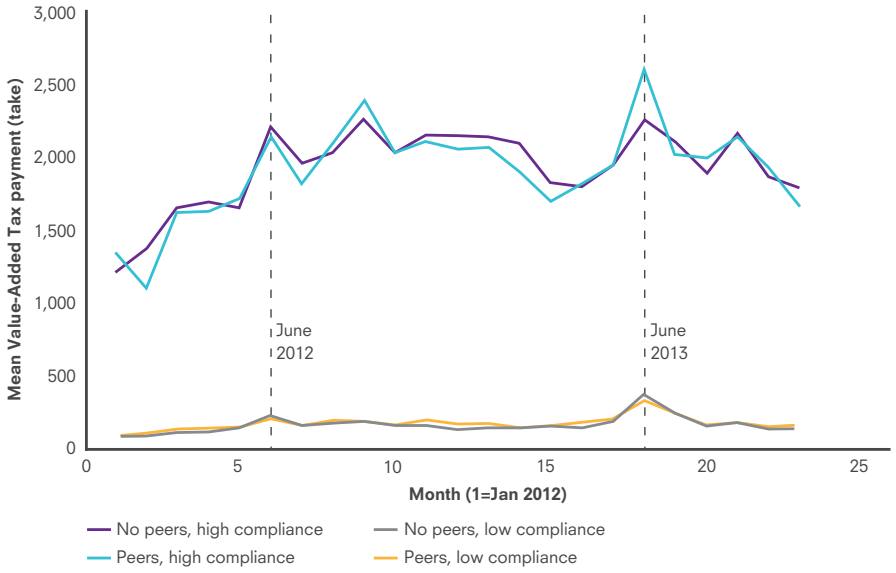
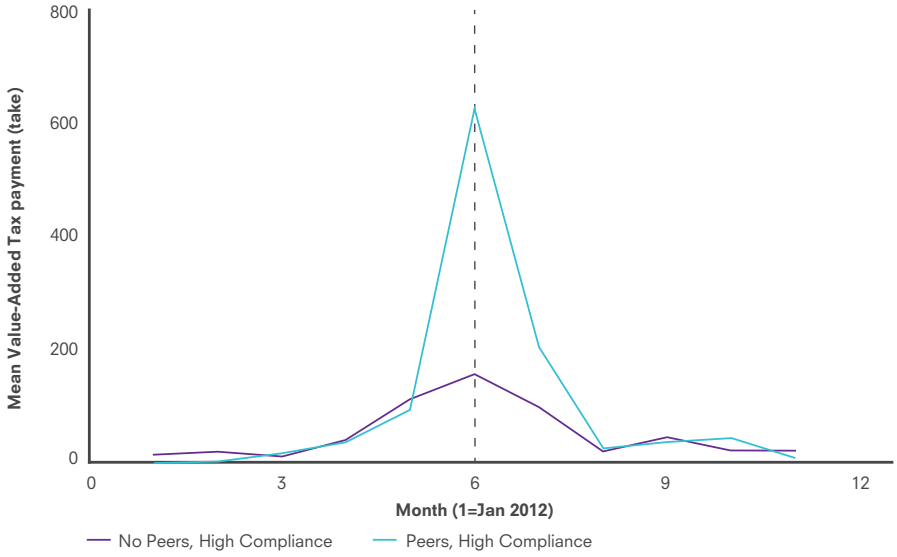


Figure 5b: VAT Payments by Month for Firms who did not pay in 2012



"When examining the timing of the increase in VAT payments, we see that the spike in payments in the peer treatment group occurred exactly in the month when the intervention was implemented"

It is clear that there is a strong behavioral response to the peer information treatment, however what drives the observed increase in payments may be attenuated by firms who had already committed to paying at the bank, but exert more effort after receiving the treatment letters to ensure that their payments are correctly recorded by the NBR. In other words, all the estimates we report are

"Scaling this program to a larger geographic area than that of our study...may lead to increases in revenue far greater than what is predicted by our study."

the combined behavioral response of firms of increased tax payments and the improved recording of payments. While improved record-keeping is valuable for the NBR, generating new revenues is the bigger prize. Regardless, our findings clearly demonstrate that firms pay attention to peer recognition letters and react in ways predicted by simple economic theory. Firms who are deviating from the norm of some tax payments in their cluster, and therefore at greatest risk of "negative" information revelation relative to their peers react most strongly. This suggests that there is significant potential for improving tax compliance and revenue collection through peer information programs. Firms are either paying as a result of the treatment or are ensuring that their tax payments are recorded – which are both important behavioural changes that are vital to establishing an effective tax collection system.

Policy Recommendations

The treatments we tested consist of interventions that governments could feasibly implement on a large scale in practice. Our results suggest that exposing information about firms to their peers can increase tax compliance and payment. An example of a potential program for the NBR to consider is to mandate market and shop associations to displays lists containing tax information about firms in public locations inside these shopping centers. This intervention could act in a similar way to the peer information treatment in our experiment to increase tax revenues. Further, it may induce additional incentives for firms to become tax compliant since publicly available information about tax compliance may affect consumer behavior, perhaps steering customers towards tax compliant businesses. Scaling this program to a larger geographic area than that of our study, in addition to potential changes in consumer behavior, may lead to increases in revenue far greater than what is predicted by our study.

About the authors

Raj Chetty is the Bloomberg Professor of Economics at Harvard University. Chetty's research combines empirical evidence and economic theory to help design more effective government policies. His work on tax policy, unemployment insurance, and education has been widely cited in media outlets and Congressional testimony. Chetty was recently awarded a MacArthur "Genius" Fellowship and the John Bates Clark medal. He received his Ph.D. from Harvard in 2003 at the age of 23 and is one of the youngest tenured professors in the university's history.

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