Sink or Swim: The Role of Workplace Context in Shaping Career Advancement and Human-Capital Development

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We develop and test predictions on how early-career challenges arising from the workplace context affect short- and long-term career advancement of individuals. Typically an organization's decision to deploy a manager to one of several possible contexts is endogenous to unobservable factors, and selection makes it challenging to disentangle the effect of workplace context on individual career advancement. We work around this problem by studying an organization, the Indian Administrative Services, which deploys entry-level managers quasi-randomly across India. We find that managers deployed to more challenging contexts early in their careers experience faster career advancement in the short term. We present suggestive evidence that this is because challenging contexts provide managers more opportunities to develop skills ('crucible experiences'), and a greater motivation to relocate out of the challenging context. We also find that managers deployed to a challenging context early in their careers continue to experience faster advancement in the long term, suggesting that initial deployment to a challenging context is associated with human capital development. Managers initially deployed to more challenging contexts were not, however, more likely to break into the upper echelons of the organization

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Career advancement measured in terms of promotions, and human-capital development during employment, are important topics for both individuals and organizations (Coff 1997, Wang and Barney 2006). The path to career advancement affects future rewards for both individuals and organizations (Bidwell and Mollick 2015), and prior literature has shown that career experiences can shape and reveal human capital and affect career advancement of individuals (Campbell 2013, Dokko et al. 2009). The literature has also documented that early career experiences have a lasting effect on subsequent job performance via socialization, approaches to problem solving (Tilcsik 2014), and access to reputation-building opportunities (Briscoe and Kellogg 2011).

Past work has studied how contextual features like resource munificence affect individuals, but much of this work has focused on the impact of economic and technological factors on individual performance (Tilcisk 2014). A relatively unexplored area is studying the impact of workplace challenge—uncertainty and threats arising from the broader sociopolitical context of the workplace. In this paper we explore how career advancement and human capital development vary among individuals assigned to locations characterized by differing degrees of challenge.

We hypothesize that individuals in more challenging contexts will experience faster short-term career advancement than those in less challenging contexts. We theorize that there are two mechanisms behind this: opportunities to develop skills and the motivation to relocate out of the challenging context. More challenging contexts present managers with opportunities to develop skills through on-the-job learning, or 'crucible experiences'. More challenging contexts also impose greater constraints, motivating individuals to exert more effort in order to relocate out of the challenging context. Either or both of these mechanisms could lead to faster career advancement in the short term. We also posit that being deployed to challenging contexts is related to faster long-term career advancement and the eventual attainment of higher positions within the organization, through gains in human capital development.

We test these predictions by examining the short- and long-term career outcomes of high-ability officers in the Indian Administrative Service (IAS), whose job descriptions and explicit incentives are identical at the beginning of their careers, but who are deployed quasi-randomly to dissimilar regions of

India. These locations vary strikingly by the degree of challenge they present. Once deployed, these officers cannot change location without advancing vertically or leaving the IAS.

Investigating how workplace context affects career advancement can be hindered by a methodological roadblock: the problem of selection. In conventional settings, organizations' deployment decisions are endogenous to such observable and unobservable factors as firm strategy and individual differences (e.g., preferences and abilities).[2] But the IAS's quasi-random deployment of officers (validated by Iyer and Mani, 2012), in conjunction with several robustness checks, allows us to reasonably control for endogeneity stemming from unobservable factors that affect performance. Our setting also allows us to hold constant explicit financial incentives; thus we are largely able to disentangle the effect of workplace context on career advancement.

We find that individuals initially posted to challenging locations experience faster career advancement within the organization in the short term. Our setting does not allow us to isolate completely whether it is access to opportunities to develop skills, or higher levels of motivation to relocate out of the challenging context, that lead to faster advancement. We present suggestive evidence that both are contributory factors; individuals in more challenging contexts are presented more opportunities to engage and learn on the job. They also participate in a higher number of ongoing training courses, signaling greater motivation to build skills and exert effort, leading to faster advancement. We find that these individuals continue to advance faster over the long term, suggesting that they had accumulated human capital through their initial assignments. We do not, however, find any evidence that they are more likely to reach upper echelons in the organization than those who began in less challenging contexts.

Hypotheses Development

The terms *career advancement*, *progression*, and *growth* are understood to signify vertical mobility within an organization, characterized by change in an individual's job description, responsibilities, and wages (Baker et al. 2002). Vertical mobility is brought about by promotion, which is positively correlated

[2] Bray et al. (1974) conducted a rich study of the lives and careers of 167 AT&T managers beginning in the mid-1960s but do not take these factors into account.

with job performance. In this study, we did not observe actual performance but instead observed career advancement.

This paper argues that workplace context can influence career advancement of managers. When a set of individuals is deployed to various locations in an organization, the workplace context will alter the character of the actual task, rendering it more or less challenging. Following Dill (1958) and Duncan (1972), among others, we define the context of an organization as encompassing every aspect of its external environment that influences the decision-making, goal setting, and probability of goal attainment of its employees. This environment consists of physical, social, political, and regulatory factors that affect managerial tasks, external networks and relationships, labor supply, and technological inputs and outputs.

We define *challenging* workplace contexts as characterized by (1) high levels of uncertainty and (2) threats arising from external adversity. Uncertainty arises from internal or external conditions that render operations, processes, and task outcomes unpredictable. In uncertain contexts, for example, inputs to manufacturing processes cannot be counted on to arrive at consistent times; this circumstance requires managers to be creative about scheduling, stocking inventory, and meeting deadlines. Threats can have similarly negative consequences (Staw, Sandelands and Dutton, 1981) and can create barriers to attaining desirable outcomes. But uncertainty and threats are not limited to resource constraints and dynamic environments. They come in many shapes and forms, such as difficult external operational logistics, unsupportive colleagues or suppliers, or militant local factions. These would be universally perceived to be challenging, but challenge can also have an individual-specific component: for example, working in a new region entails more obstacles for individuals who do not speak the local language or understand its culture (Zaheer 1995). This paper focuses on the universally challenging components of a given context rather than individual-specific components.

We theorize that the challenge within workplace contexts affects short-term career advancement of managers. This happens through two routes: (1) more challenging contexts provide greater opportunities for managers to develop skills on the job and (2) more challenging contexts will generate a higher motivation to relocate, incentivizing individuals to exert more effort.

We first posit that challenging contexts present managers with opportunities to develop skills on the job. Past research has documented that around 70 percent of managerial learning is attributable to facing challenging[3] demands and experiences on the job (McCall 2010; McCall, Lombardo and Morrison 1988).[4] When faced with challenge, managers must bridge the gap between their existing skills and perspectives, and those required by the situation. Managers respond to challenging tasks positively, by seizing opportunities to acquire new skills (Eichinger, Lombardo and Ulrich 2004; DeRue and Wellman 2009, Dragoni et al. 2009) such as that required in dealing with 'nonauthority' relationships, i.e. relationships in which the manager must develop strategies for influencing others and gaining cooperation from people over whom he or she has no formal authority (McCauley, Ruderman and Ohlott; 1994). To successfully confront challenge, managers must develop skills in networking, problem solving, or negotiations (Courtright, Colbert and Choi. 2014).

There is, moreover, considerable anecdotal evidence that difficult managerial situations lead to intense unplanned experiences and call for extraordinary engagement by managers. In chronicling the experiences of managers contending with difficult situations, Bennis and Thomas (2002) assert that such situations offer managers opportunities to exert themselves in exceptional ways, often leading to transformative experiences that build superior leadership skills. These experiences can in turn lead to abandoning established methods of operation, as managers reexamine their own values and judgment and question their assumptions. Such experiences have been called "*crucibles, after vessels medieval alchemists used in their attempts to turn base metals into gold*" (Bennis and Thomas 2002). Challenging contexts can provide more opportunities for skill acquisition and thus be associated with positive career advancement outcomes.

[3] The literature has a broad definition of challenge that overlaps with our definition.

[4] Evidence is emerging that some managers do not respond positively to challenge (Courtright, Colbert and Choi 2014). Specifically, managers' perception of their own ability is found to moderate their responses to challenge. In our subsequent theorizing we make a latent assumption that managers of high observable ability will also have higher perceived ability. We will discuss the validity of this assumption in the Discussion section.

Our second argument is that challenging contexts characterized by uncertainty and threats to job execution may also inspire greater motivation and effort via a desire to relocate out of the challenging context. Evidence suggests that implicit career incentives play a strong role in employee performance (Baker et al., 2002). When advancement is the only way to relocate, context acts as an implicit incentive; individuals sent to challenging contexts will be highly motivated to win promotions and will thus exert greater effort. Managers who face obstacles to completing their tasks tend to be motivated to try to change their situation when they have the autonomy to do so (McCauley et al., 1994; Bandura, 1986, 1997). Moreover, individuals will be highly motivated to exert effort if they believe that doing so will lead to greater career rewards (Vroom, 1964; Katzell and Thompson, 1990). Finally, the Hull-Spence theory in psychology provides evidence that stress and anxiety arising from threats in an adverse environment increase individual motivation and effort (Taylor and Spence 1952; Farber and Spence 1953; Spence and Farber 1953). Building on this reasoning, we argue that individuals who find themselves in challenging contexts will be motivated to relocate and will exert greater effort.[5]

To summarize, we predict that opportunities presented in challenging locations will lead to development of skills. Individuals in such contexts may also be motivated to exert greater effort in order to relocate. Both motivation and opportunities will affect their rate of career advancement, at least in the initial years. This argument leads to our first hypothesis:

Hypothesis 1. *Individuals deployed to more challenging workplace contexts will be promoted faster in the short term.*

We next theorize that the gains of being deployed early to a challenging context lead to human capital development, thereby affecting long term career advancement. There is evidence in the human-capital literature that early workplace experiences shape and develop human capital in ways that persist long-term. Managers who build transferable skills will experience productivity gains in subsequent jobs

[5] Hackman and Oldham (1980) suggest that specific work contexts can increase employees' motivation to perform well. Kanfer and Ackerman (1989) show that individuals facing greater challenge in the workplace display higher motivation in executing their jobs. Locke and Latham (2004) have documented that uncertainty and obstacles at work can promote higher levels of focus, absorption, and engagement with the task.

throughout their careers (Becker 1964). Early-career individuals are more susceptible to environmental influence (Marquis and Tilcsik 2013) and to learning new skills, work routines, and practices, and these influences persist through their careers. Early professional training influences individuals' norms and habits (Bercovitz and Feldman 2008) and their likelihood of adopting certain types of organizational practices; early social networks and socialization also influence subsequent career decisions (McEvily et al. 2012; Phillips, 2005). External contexts also shape the learning managers develop on the job: managers tend to acquire a different set of skills if they learn their trade during a period of resource scarcity than if they do so when resources are abundant (Schoar and Zuo, 2011; Malmendier and Nagel, 2011) and the more similar the initial level of organizational munificence to subsequent periods, the higher managerial performance will be (Tilcsik, 2014). Lastly, early career information advantages lead to the development of skills that sustain these advantages over the long term (Burton, Sorensen, and Beckman; 2002). We draw on this well-established literature to hypothesize that early-career deployment to challenging contexts will have positive persistent effects on speed of subsequent career advancement via human capital development. Our second hypothesis is therefore:

Hypothesis 2. *Individuals initially deployed to more challenging workplace contexts continue to experience faster career advancement in the long term within the same organization.*

Assuming that there is a positive relationship between being deployed to a more challenging workplace context early on, and career advancement over the long term, we may also expect such individuals to attain a higher ultimate position in the organizational hierarchy. Early external contexts influence the final status managers attain within an organization: individuals who began their careers during recessions were more likely to rise close to the top of their organizations (Schoar and Zuo, 2011). Organizations are likely to promote their internal candidates to senior positions rather than hire externally when they have a high manager to employee ratio (Baron, Davis-Blake and Bielby, 1986). They do the same for certain upper management positions, especially when job performance has a strong firm-specific component (Bidwell and Keller, 2014) or when promotions entail a great expansion of job responsibilities, such as in promotions from lower to upper management positions (Bidwell and Mollick, 2015). When

choosing whom to promote among their internal candidates, organizations are likely to choose those who have an established track record of faster career advancement in their prior careers within the organization. When organizations use promotions to sort people on the basis of ability, and are able to sort accurately, in a heterogeneous population of employees, those who are promoted faster once should continue to be promoted quickly again and again (Baker, Gibbs and Holmstrom, 1994). We can therefore expect individuals initially deployed to challenging contexts to advance higher in the organizational career ladder. Thus our third hypothesis is:

Hypothesis 3: *Individuals initially deployed to more challenging workplace contexts advance to higher levels on the organizational career ladder.*

The Indian Administrative Services: "Managers of Managers"

To test our hypotheses, we examine the careers of officers in the Indian Administrative Services (IAS). IAS is the administrative service branch of the Civil Services of the Government of India. An IAS career is among the most prestigious in India. IAS officers enjoy considerable power and immense job security. Individuals enter the IAS after college graduation by taking a highly competitive and challenging three-part examination. According to 2013 results,[6] 776,565 candidates took the Civil Services examination and 1,078 were finally accepted[7], a final acceptance rate of approximately one successful candidate in 1,000.

Selection into the IAS is followed by a training period, after which individuals are assigned to "cadres," or the states in which they will spend much of their careers. As of 2015, India consists of 28 states, subdivided into a total of 688 districts, where 22 languages are spoken[8]. Entry-level IAS officers are assigned to administrative positions at the district level. The administrative office in each district functions as an autonomous unit and all IAS officers at the same rank have the same job descriptions. After completing training, new IAS officers are responsible for managing their districts, supervising subordinate

[6] Obtained from http://www.civilserviceindia.com/results.html (accessed 2 March 2015).

[7] This includes individuals who will join the IAS, Indian Police Services (IPS), Indian Foreign Services (IFS) and the Indian Revenue Services (IRS). The number of IAS officers joining each year is therefore a fraction of that the 1078 candidates who were selected into Civil Services.

[8] Typically, a cadre corresponds to a single Indian state; some small states are grouped into a single cadre.

officers, maintaining law and order, and implementing national-level development policies within their districts. Each officer operates autonomously, without a supervisor to monitor effort or help with task execution. The parameters of IAS officers' task execution are loosely defined; they have considerable freedom to choose the methods they use to complete tasks. The role IAS officers perform is thus simultaneously managerial and entrepreneurial, like that of a corporate executive. Ferguson and Hasan (2013, p. 4) describe IAS officers as "managers of managers."

The performance of an IAS officer is determined by monitoring direct outcomes (not effort) and achievement of targets. Explicit incentives are identical for all officers at the same rank as they receive the same salaries and perks. There are two tracks to promotion. Conventional promotion is based on performance and length of service, and is limited to the individual's state. On the second track, or fast track, IAS officers may start competing for "central postings" three years after beginning their service. Central postings, which are prestigious and highly coveted, are positions at the central headquarters of the IAS in New Delhi, the nation's capital. Officers who win such postings participate in national-level policy design. Central postings are not automatic; officers are assigned to the fast track when they meet or exceed certain performance benchmarks. The application consists of performance records and a CV. The posting is granted when the central office scrutinizes the application and approves the promotion.

The IAS provides officers the option to augment their managerial skills through annual training courses[9] held in management institutes throughout India. This training is entirely voluntary, and officers may request or decline it; officers are assigned the kind of training that is requested. New IAS officers are exposed to scholarly and practitioner-oriented knowledge about leadership tools and socioeconomic trends in India. The benefits of this training are twofold: managers learn new skills and their voluntary participation signals motivation and ability (Spence, 1973), as well as human-capital acquisition, to those who evaluate their suitability for a central posting.

[9] This training lasts between one and four weeks each year.

A Natural Experiment: Randomized Deployment of Individuals to Locations

The process of assignment to the cadres where IAS officers will spend most of their careers is quasi-random, which enables us to better disentangle the selection effect from the treatment effect. If there were any correlation between observed or unobserved correlates of individual ability and new officers' initial assigned destinations, the effect of locational context on subsequent individual performance could be biased. Thus our identification strategy hinges on quasi-random assignment.

New officers are asked to list their cadre preferences, but assignments are based on need, openings, and IAS examination rankings. Officers typically request their home cadres, but this request is granted only when four conditions are met: (1) the home state needs officers and has entry-level openings; (2) the officer most recently assigned to that state was from a different state; (3) quotas for members of disadvantaged social groups, amounting to 33 percent of all officers, have been met; and (4) the state's ratio of high-ranking and junior officers is appropriate. Individuals who are not assigned to their home cadres are assigned in alphabetical orders of their names to the next state with an opening, in alphabetical order. When the four conditions are met—which is typically quite rare—assignments follow IAS examination rankings and typically bind for the top 5–20 percent of a cohort. Thus, the top 5 percent of officers may be assigned to the cadres they requested, but others' preferences are typically not met. Iyer and Mani (2012), who use a dataset similar to ours to study a different question, find that the correlation between ranking in the top 20 percent and assignment to home cadres is 0.28, which is significant at the 5% level.

Data and Variables

We use two unique datasets for our statistical analysis. The first is a hand-collected personnel dataset of all 1343 officers who joined the IAS between 1975 and 2012. The second is a hand-collected dataset on district- and year-level crime rates for the same years, obtained from the Indian National Crime Record Bureau. (The full population consists of 4474 IAS officers, but district assignments are available for only 2874; district-level crime data is missing for an additional 1531, bringing the final sample size to 1343 officers.)

To determine whether a sample consisting of less than the full population of IAS officers is biased, we looked for patterns in the missing data. We found that crime data were missing for certain years from almost all districts, but not disproportionately from any district. Nor did we find any significant difference in means of individual level observables, such as number of languages known, degrees, rank, prizes awarded and so on, between included and excluded officers We also examined correlations among variables for individuals whose district assignments were missing and found no significant pattern. We thus believe the data to be missing at random and our analysis is conditional on this assumption.

Dependent Variables

To determine whether individuals from more challenging contexts are promoted faster, we determine how many years *(Years To Center)* it takes to do so. For our long-term measure of promotion, we observe only individuals posted to the center. We construct a variable, (*Average Years Taken to be Promoted after Center),* which represents the average number of years it takes an individual to be promoted after transfer to a central posting in New Delhi. We also create a dummy variable for each job title, and conduct a logistic estimation to estimate a difference in likelihood of attaining it based on initial assignment. We present the results of the estimation on the dummy variable *Joint Secretary*, set to 1 when the individual achieves the rank of joint secretary to the Government of India, an entry point into the upper echelons of the administration. An officer typically achieves this status on the fourth promotion after being promoted to the Center. (See Appendix for the hierarchy of positions within the center.)

We hypothesize two routes by which context could influence career advancement: opportunity to learn skills and motivation to relocate out of the context. Because we cannot observe either directly, we use data on training courses to shed light on potential mechanisms. First, we code the content of training courses, as specified by their titles. A course whose title specifies "managerial decision-making" or "leadership training" (and similar designations) is classified as a leadership-training course; a dummy *Leadership Training* is set to 1 when an individual takes such a course. Second, we observe the association

between total number of courses (*Number of Courses*) taken prior to central posting and the crime rate of a district to see whether individuals from high crime districts take a higher number of courses.

Independent Variables and Controls

The main independent variable measures the degree of challenge that characterizes the locational context of an individual's posting. Our proxy for challenge is the district's crime rate (*Crime*).[10] Indian districts differ widely in degree of law and order. Because crime rates are positively correlated with the prevailing degree of uncertainty and with threats to managerial goal attainment, crime is an appropriate way to quantify the challenge of a given location. Representative tasks of IAS officers include implementing poverty-reduction projects involving subsidized food grains, implementing irrigation schemes to facilitate agriculture, and developing village health centers. In districts with high crime rates, IAS officers may have to improvise new methods to convey goods and resources to their intended recipients; they may have to negotiate heavily with external candidates to recruit subordinates of their choice. In environments with conspicuous mafia presence or high levels of Maoist violence, officers' outreach to the community may require novel strategies. Thus we believe the crime rate of a district adequately and appropriately captures the challenge of the workplace context. To corroborate this assertion, we conducted field interviews. The Assistant Collector of a district in the state of Telengana explained, for instance, how the presence of Maoist groups near Adilabad creates a challenging environment for the IAS officer (District Collector) and his team. The Maoist presence impedes implementation of food-distribution programs, distribution of subsidies, and the like, and also promotes physical threats to safety stemming from adversity.

High-crime areas have been found to be associated with higher underreporting of data (Soares 2004); they tend to have lower-quality institutions and reporting mechanisms[11]. If that were the case, the higher-crime districts in our data are actually those with a higher institutional support, and our interpretations of the coefficient should be flipped. To address this question, we use two further proxies for

[10] We use the log of the raw crime rate (annual crime rate per 100,000 district inhabitants) as the variable *Crime.*

[11] We thank three anonymous reviewers and our editor for bringing this important point to our notice.

challenge, which are well-known measures of uncertainty and threats, and are decoupled from institutional strength. The first is the dummy variable *Red District,* which is set to 1 if a district is part of India's "red corridor": a well-known region characterized by high poverty and extreme levels of Maoist violence.[12] Mineral-rich districts in India have historically been associated with high levels of crime (Fernandes, 2006; Mahadevan, 2012[13]) and are not necessarily correlated with institutional strength[14]. We repeat the above estimation with a dummy for coal districts (*Coal Present)* as the independent variable[15].

Though we do not find evidence of selection into districts, we control for all observed correlates of ability that our data allows, such as rank on the IAS Entrance Examination (*IAS Rank*), number of degrees held (*Number of Degrees)*, number of languages known (*Number of Languages)*, and awards (*Whether Awarded Prize)*. We also control for gender (*Male*) and age (*Birth Year)*. Finally, to control for the possibility that certain individuals from high-crime-rate states may still wish to return to their home states, we control for whether or not the individual speaks a different language (*Language Migrant*). We construct a Herfindal index of the training courses taken by an officer to control for the specialization (*Specialization).*

There are plausible alternate hypotheses that might explain a correlation between crime rate of a district and the rate of career advancement of IAS officers deployed to the district. There may be direct organizational level factors that create structural differences in promotion rates among various districts. For example, organizations in high-crime districts may have better adapted to challenges and may have created routines and other institutional features that promote their employees faster to the center. This would mean that instead of context, individuals' promotion rates are associated with institutional adaptations to the context. A second alternate hypothesis is that IAS officers are promoted to Delhi as a reward for the risk they take by accepting placements in high-crime-rate districts. To account for the possibility that structural time-varying differences in average turnover rates in high- and low-crime-rate district are related to institutional or organizational factors or adaptations made, we control for the average number of years it

[12] Our list of Red Districts corresponds to that in http://www.satp.org/satporgtp/countries/india/database/conflictmap.htm;
[13] Also, Asher and Novosad, NEUDC Conference Proceedings, 2013
[14] There are some districts that have good quality institutions and those that have poor quality.
[15] Our list of districts where coal is presents corresponds to that in Fernandes (2006).

takes individuals from a given district to be posted to the center prior to the year of joining (*District Average Time to Center)*. District level fixed effects control for time-invariant differences. For all of our regressions, except where inappropriate, we also include year-of-joining (cohort) fixed effects to account for time-invariant changes at the cohort level that may influence institutional factors. Finally, we use the total number of police officers present (*Number of Armed Police*) as an additional control for institutional strength (Soares, 2004).[16]

Another source of endogeneity is close connections between high-crime-rate districts and the administrative center. It is plausible that political-party officials in high-crime-rate districts are well connected to their counterparts in the center, and can use their influence to send their IAS officers to Delhi faster than those in low-crime-rate districts. This can only happen, however, when the ruling national party is allied with the state ruling party. Therefore, we code the political party in power at the center and the party governing each state. When there is a match between the two, we designate the dummy variable *Whether State RP is Ally of Center* to equal 1.

Methods

We have cross-sectional data on whether the individual was ever promoted to the center and if so, how many years were taken. To account for the right-censored nature of our data, we use parametric survival analysis to obtain estimates of crime rate, with a lognormal distribution.[17] We measure the crime rate in an individual's district by computing the average crime rate during the first four years of his/her posting. For ease of interpretation, we compute the log (base 2) of the crime rate as the independent variable so that we may interpret the coefficient as the average change in the rate of career advancement. Because this is a survival model, we interpret a negative coefficient on crime to mean that individuals exposed to higher levels of crime take less time to achieve central postings. We also normalize the crime rate to eliminate

[16] Soares (2004) found that the number of police officers present in an area is positively associated with reporting of crime.
[17] We make this choice because Figures 1, 3, and 4 show that lognormal is a better fit than normal due to the skewness of the distribution.

undue influence of local trends and outlying observations and this helps alleviate concerns on time-varying confounding factors.

Empirical Results and Qualitative Evidence

To help mitigate concerns on the possibility that high-ability officers self-select into more challenging locational contexts, we examined the correlation between ranking in the top 20 percent and assignment to a high-crime district. This correlation is -0.0128 and insignificant. For the entire sample, the correlation between the crime rate of the district and observables is shown in Table 1.

[Table 1 goes here]

An OLS estimation finds a statistically insignificant association between all observable measures of ability (IAS entrance examination rank, number of degrees, number of languages known, whether or not the individual received an award) and the average crime rate of the district to which the individual is deployed. We also found a statistically insignificant association between gender and average crime rate but a statistically significant association with Birth Year; this is likely to be purely a mechanical association and we control for it in our estimations. Results appear in Table 2. Thus we can be reasonably confident that neither individuals with observable high ability nor highly motivated individuals are selecting themselves into high-crime-rate contexts, and our estimates measure the treatment effect of contextual challenge on individual career advancement.

[Table 2 goes here]

The summary statistics in Table 3 show that 84% of our sample is male, and 42% consists of language migrants (individuals who do not speak the language of the state to which they are assigned). Only 37% of the sample of 1347 officers ever achieves a central posting. The wait to do so varies from 4 to 39 years, with an average of 16 years and a very high standard deviation of 7 years, indicating wide variation in promotion rates. Our sample consists of 680 districts. The mean annual crime rate is 1.7 of penal code crime per 100,000 inhabitants; the standard deviation is 5.25. Annual crime rates range from .007 to 45.

[Table 3 goes here]

Table 4 shows the difference in mean short-term rates of advancement between high- and low-crime-rate districts. The mean number of years it takes to achieve a central promotion is 15.013 in a high-crime-rate district and 17.067 years in a low-crime-rate district. The difference in means, 2 years, is significant at the 1% level. Figure 1 (Kernel density estimates), Figure 2 (Kaplan-Meir estimates), and Figure 3 (in the Appendix) plot the distribution of short-term rates of promotion for high-and low-crime-rate districts. The distribution of years to achieve a central posting from high-crime-rate districts is shifted to the left of that of low-crime-rate districts, indicating that the average time taken is lower in high-crime districts.

[Table 4 and Figures 1 and 2 go here]

Next we present results from our statistical analyses. We conduct a survival analysis on the entire sample to estimate the number of years taken to reach the center (*Years To Center).* We include district and cohort fixed effects to account for time-invariant changes at the district and cohort level at the local level and other variables that may influence institutional factors. Results are presented in Table 5. Column (1) shows that when the crime rate is doubled, the time it takes to achieve a central posting decreases by 14%. We control for observable measures of ability and demographic characteristics. We also control for institutional level factors through the variable *Number of Armed Police.* Column (2) of Table 5 adds the control for average district turnover (*District Average Time To Center),* which has little effect on significance or coefficients. Among the other controls, the coefficient of the variable *Language Migrant* is significant and negative, suggesting that an individual who migrates from a state where a different language is spoken is likely to perform better in the short term and to take less time to achieve a central posting. Individuals with more degrees (*Number of Degrees)* also win promotions more quickly. We find that all other controls of observable measures of ability, such as initial rank in the IAS Entrance Examination (*Rank in IAS Exam*), and whether the individual ever received an award, are insignificant. Gender and Birth Year are also insignificant, in Columns (1) and (2). The number of police present (*Number of Armed Police),* which is a measure of institutional strength has no effect on the significance or magnitude of the coefficients. Column (3) adds the control variable *Whether State RP is Ally of Center* and shows that the coefficient is not statistically significant; the estimates do not change drastically. This result indicates that

a political alliance between the state and the central government does not influence the estimates; this finding alleviates some of our concern that political influence drives our results. Column (4) adds specialization of training courses as a control variable *(Specialization)* which is significantly associated with the promotion rates.

[Table 5 goes here]

Columns 1 to 3 of Table 6 tests Hypothesis 2, i.e. the relation between being initially deployed to more challenging workplace contexts and faster career advancement in the long term, by showing evidence on the association between crime rate and officers' average rate of promotion after reaching the center across all models. We find that doubling of the crime rate is associated with a ten-percent reduction in time until the next promotion. In Column (2) we add *Whether State RP is Ally of Center* and in Column (3) we add *Specialization* as control variables. In all columns we add the years take to reach the center (*Years To Center)* as a control variable in order to account for the possibility that the rate of early promotion acts as a positive signal on the manager's CV, and influences subsequent career advancement prospects. We do not find any effect of adding the control; our results are strengthened by the addition of this variable. The coefficient on the control itself is significant and positive but very small in magnitude and therefore economically insignificant.

[Table 6 goes here]

To test Hypothesis 3, i.e. whether or not being initially deployed to a more challenging workplace context is correlated to advancing to higher levels on the organizational career ladder, we conduct logistic estimation to check whether the likelihood of attaining particular high-level job titles (listed in Appendix) after reaching the center varies with challenge. We find that the benefits of challenge persist up to the level of deputy secretary—individuals from more challenging contexts are more likely to be promoted to the rank of deputy rank—but not further. Column (4) in Table 6 shows that initial assignment to a challenging context makes no significant difference in the likelihood of attaining the status of Joint Secretary (*Joint Secretary)*. The status of Joint Secretary is considered to be the stepping-stone into the upper echelons of

management within the organization. Thus we do not find any evidence that officers are more likely to be promoted to higher positions if they were initially assigned to more challenging contexts. [18]

Suggestive Evidence on Mechanisms

In this section we present some suggestive evidence on the two mechanisms by which challenging contexts influence career advancement: a) opportunities to acquire skills through on-the-job learning and b) motivation to relocate leading to higher effort. For this analysis, we use a hybrid approach of seeking qualitative and quantitative evidence.

To illustrate the first mechanism related to opportunities to acquire skills on the job, we conducted interviews with several IAS officers who had worked in high-crime-rate districts. We interviewed Sumita Dawra, a 1991 batch IAS officer who was collector of Karimnagar, a high-crime-rate district with a Maoist insurgency problem. Ms. Dawra described several examples of how the challenging context created opportunities for the development of problem solving skills[19]. One example relates to the creation of a bridge school for 147 orphaned or displaced girls who had no access to education, no real homes, and were being targeted by the Maoists to join their cause. Sumita did not officially have resources to rehabilitate and house these girls, but she recognized that it was imperative to educate and board the young girls. She was able to renovate an abandoned guesthouse of the Roads and Buildings department in a remote village to serve both as their school and their dorm. Four lady volunteers from adjoining villages served as teachers. No government official ever used this facility due to fear of the insurgents. While this project was being implemented, Sumita continued to travel to this remote village in a Government car but used fake number plates to avoid being spotted by the insurgents. Later, she would travel in the local village bus, after being told that the Maoists would not blow up the village bus and alienate the villagers. Sumita told the researchers

[18] A concern with this estimation is that the number of individuals at the upper echelons is small and the test may be too weak to estimate the true effect of challenge on status. At the suggestion of our editor we checked for the power of the test and found it to be adequate.

[19] Ms. Dawra has more examples in her bestselling book "Poor but Spirited in Karimnagar. Field Notes of a Civil Servant".

that her stint in Karimnagar taught her "*how to get things done, in the face of uncertainty, threats, and little resources.*"

We also interviewed another IAS officer, who elucidated how a challenging context demands novel problem solving and thereby creates opportunities for acquiring skills. The interviewee (who wished to remain unnamed), then a junior collector in the Telengana region, recounted how IAS officers posted to the Maoist-influenced Adilabad district of Telengana applied problem-solving techniques to two governmental policy initiatives: the "Anganwadi" (Mother-and-Child-Care center) program and the "individual household latrines" (IHHL) program to install toilets in homes. As noted earlier, Maoist presence increases uncertainty in the implementation of such programs and poses threats to the officials who administer them. To work around these challenges in Adilabad, one IAS officer deployed to the region painted the Anganwadi center in bright colors and employed relatives of known Maoists at the center. Painting the center vividly, an apparently trivial exercise, drew the attention of local residents to the activities of the center; employing Maoists' family members alleviated uncertainty about security and interference in the centers' operations.

The same IAS officer employed a unique approach to the IHHL program. The central government in India allocates approximately $200 to each household that installs a toilet: $100 when the pit is dug and a second installment of $100 when the project is completed. In Telengana, villagers are extremely wary *ex ante* digging a pit in anticipation of $100 that may never be disbursed, as Maoists, whose local operations have been characterized as an "*independent governance machinery,*" often disrupt the distribution of government subsidies. The IAS officer addressed their fears by diverting funds from another government program and prepaying villagers before the pit was dug. To ensure that the $100 payment was not siphoned, the IAS officer put extra layers of monitoring in place and negotiated a bulk deal with a contractor to reduce the costs of installing toilets.

In summary, the high-crime-rate context presented Ms. Dawra and the junior IAS officer opportunities to develop skills related to problem solving and utilization of scarce resources.

In Table 7 we provide evidence on the second mechanism, i.e. motivation to relocate, that would manifest in higher effort. In Column (1) of Table 7 we estimate the association of the number of courses *(Number of Courses)* taken with the degree of challenge (*Crime*) in the district. It shows that managers in more challenging contexts take a higher number of training courses prior to being posted to the center. Next we examine the kind of courses: whether they are targeted towards providing leadership skills or not *(LeadershipTraining)*[20]. Column (2) shows that managers in more challenging contexts are more likely to take more number of leadership courses. We interpret this evidence as signals of motivation of the individual. The higher number of courses and leadership-oriented courses signal preparation for higher organizational responsibilities and this is likely to influence speed of career advancement.

[Table 7 goes here]

Robustness Checks

High-crime areas have been found to be associated with higher underreporting of data (Soares 2004); they tend to have lower-quality institutions and reporting mechanisms. To address this question, we use two further proxies for challenge (*Red District* and *Coal Present*), which are measures of uncertainty and threats and are decoupled from institutional strength. We find that being deployed to a *Red District* is associated with a positive increase in the likelihood of reaching the center and, conditional on promotion, with a reduction in the time it takes (shown in Table (8) in Appendix) to reach the center. We repeat the above estimation with a dummy for coal districts (*Coal Present)* as the independent variable and find consistent results. This lends support to our findings even if underreporting of crime is systemic in certain districts.

We also collect data on the number of police officers killed or injured in each district, and use this as an explanatory variable (rather than using a district's reported crime rate as an independent variable)[21]. Our reasoning is that even if crime is systemically underreported, districts are unlikely to underreport police killings or injuries and this data is verifiable through the media. We do not find any difference in either the

[20] We use keywords in the title. Courses which have "Leadership" or "Decision-making" or "Executive" in the title are considered to be targeting leadership skills.
[21] Results available with authors.

order of magnitude of coefficients or the levels of significance in these regressions. This finding further alleviates our concerns about underreporting of data.

A significant concern about our study is that faster central postings might constitute rewards to young officers from the senior IAS bureaucracy for bearing the risks of deployment to high-crime district or a result of systematic corruption within the state. We conducted an additional test of this alternative hypothesis by categorizing individuals by the length of time taken to achieve a central posting. The results of our multinomial logit estimation show that crime rate does not differentially affect any particular category. If we had found evidence that those who took longer were benefitting differentially from higher crime rates, that result would have suggested that individuals who had spent more time in high-crime-rate districts were being "rewarded" for time spent. Since we do not find such evidence, our concerns are somewhat mitigated.

To follow up these robustness checks, we conducted interviews with two IAS officers to address this question: Mr. Dilip Ghosh and Mr. M.N. Roy. Mr. Ghosh joined the IAS in 1992 and retired in 2012; his last position was Secretary of the Health and Family Welfare Department of the State of West Bengal. He strongly rejected the notion of systematic interference by any party in decisions on central postings: "*I do not believe that there is any deliberate government policy to pull officers out of high-crime-rate states. The government is keen on staffing central offices with high-caliber individuals, not just anybody*." He also explained the motives of IAS officers from high-crime states who seek central postings: "*IAS officers posted in high-crime-rate states show a lot of* tadvir*, or motivation, to get themselves out of that situation. They are much more eager to get themselves to the center than officers posted in the better states like West Bengal or Gujarat*."

Mr. Ghosh's opinion was echoed by Mr. M.N. Ray, who joined the IAS in 1980 and retired as the Additional Chief Secretary and Director General of the Administration Training Institute of West Bengal. "*The center has no incentive to appoint anybody but the best to central postings,"* Mr. Ray asserted. "*After all, the final decision is carried out by the Ministerial Department itself. Why should they appoint inferior officers?*" He further explained the process of selection: "*Once an officer seeks central posting, there is a*

rigorous process that kicks in: the Personnel Ministry scrutinizes the CV, background, experience, and the inclination to join the center." Officers in high-crime-rate states are motivated not merely by safety considerations but also by family concerns other than career ambition. "*Often the spouse cannot find any work. Education for children becomes a concern*," he explained, adding: "*A central posting brings you all-India exposure, and you also have a shot at international assignments. There is just higher potential to rise at the national level*."

Discussion

This paper documents evidence that early-career assignment to a challenging workplace context is related to more rapid career advancement in both the short and the long term but is not associated with higher likelihood of promotion into the upper echelons. We also provide suggestive evidence on two mechanisms at play: opportunities for developing skills through on-the-job learning ('crucible opportunities') and motivation to exert greater effort and relocate out of the challenging context. It is also interesting that we are able to show lasting effects of initial conditions, long after the initial push created by the motivation to leave difficult postings has receded.

Our paper contributes to the literatures on careers, human capital, microfoundations of human-capital development, and imprinting. First, our conclusions add to the growing literature linking early work experience and career outcomes, such as (Burton, Sorenson and Beckman 2002; Castilla 2005; Higgins 2005; Huckman and Pisano 2006; Groysberg et al. 2008; McEvily et al. 2012; Campbell 2013; Tilcisk 2014). They show that early challenges can shape the rate of career advancement, possibly through mechanisms like learning, socialization, formation of norms, etc. Our study exploits the quasi-random assignment of individuals to address the selection concerns to which scholars in this literature have alluded. We also advance this literature by linking heterogeneity of career outcomes within a cohort of employees to the differences in the contextual environment of the location to which they are deployed. The prior literature has implicitly assumed that a cohort of new employees who join an organization at the same time encounter relative homogeneity in economic and technological conditions, such as macro-economic

resource environments (Schoar and Zuo, 2011, Tilcsik, 2014); organizational conditions, such as organizational culture and task environment (Higgins 2005, Dokko et al., 2009); and firm size, firm age, and structure of opportunities (Sorensen 2007, Sorensen and Sharkey, 2014). We argue theoretically and provide empirical evidence that there could be differences in such employees' context attributable to the locations they are deployed to, leading in turn to heterogeneity in individual career outcomes. Dokko et al. (2009) concede that "differences in context lead to differences in learning" while arguing that learning *at other firms* functions as an imperfect substitute for learning within the current firm. We extend this logic to argue for variation in career advancement due to differences in locational context, even for employees *within the same firm and the same cohort*. In the prior literature, this insight is related to the findings of Briscoe and Kellogg (2011), who find that initial assignment to powerful supervisors leads to heterogeneity in career outcomes. Our findings are also related to a call for further research in the imprinting literature, Marquis and Tilcsik's observation that "we are still far from a detailed understanding of how past conditions shape the distribution of opportunities and rewards within organizations" (Marquis and Tilcsik 2013, p. 232).

Our findings have additional implications for the literature on imprinting (Briscoe and Kellogg 2011, Marquis and Tilcsik 2013, Tilcsik 2014). First, while this literature has mostly studied the effect of early conditions on individual performance, we contribute to this literature by linking conditions early in an individual's career to subsequent career advancement. Second, though the empirical literature on imprinting is relatively focused on resource imprinting, our study shows that challenge in initial conditions can stem from other environmental factors related to social and political conditions. This finding is in keeping with the broader imprinting literature, and with the characterization of the environment as a varied n-dimensional space in which a set of economic, technological, and other conditions jointly constitute the imprint of the period (Marquis and Tilcsik 2013). Third, our secondary findings on acquisition of specific skills during deployment to a challenging context are related to the construct of "exaptation" in the imprinting literature (Higgins 2005, Marquis and Huang 2010), a process whereby a capability developed as an adaptive response to initial conditions later becomes useful for a different purpose. Finally, our finding

that challenge is not associated with upper echelon promotions suggests a novel limitation of the effect of early conditions on subsequent individual performance. The prior literature has outlined limitations of early conditions: Tilcsik (2014) introduced the concept of "imprint-environment fit" to explain why an imprinted experience's direction of influence might be positive in one period and negative in another.

We also contribute to the stream of literature on human capital that deals with how organizations can persuade employees to invest in developing their own human capital (Wang et al. 2009, Wang and Barney 2006). An underlying assumption of this literature is that organizations must make formal investments to develop human capital of employees. We follow Campbell (2013) and Bidwell et al. (2014) in suggesting mechanisms of human-capital acquisition other than formal organizational investments to suggest that organizations may instead be well served by leveraging high-ability employees' job assignments; deploying high-ability employees to challenging contexts early in their careers may substitute for, or complement, costly formal investments in developing human capital. Practitioners also face the challenge of aligning incentives optimally to extract the best performance from early-careers and our findings will be of interest to them as well. Moreover, our paper theorizes about and provides suggestive evidence that, for high-ability employees, a challenging context can mitigate the moral hazard of shirking and low motivation (Alchian and Demsetz 1972, Coff 1997).

Lastly, we add to the conversation on microfoundations, in which scholars have recently called for studying macro-to-micro causation. The authors (Barney and Felin 2013, p. 15) cite Winter's (2011) recent call for scholars of strategy to focus on "contextual factors" and add, "(this call) raises micro questions: whose (objective) context are we talking about? Presumably, among different actors, there is large variance in what these contextual factors are. Or, is there indeed some macro-environmental context or situation that we can speak about?" We theorize and provide evidence that locational context—a macro-level variable—affects individual career advancement and human-capital development. Our findings contribute to the macro-to-micro causation research that Barney and Felin (2013) encourage scholars to undertake.

Limitations and Future Direction for Research

Our paper has limited external validity. We study a single organization in India—a diverse but singular country. A boundary condition of our paper is that we examine the career trajectories of a very skewed sample of the population: individuals with observably high ability who are likely to have a high degree of intrinsic motivation. Thus we are less likely to see such a divergence in career advancement outcomes. A more heterogeneous population might respond to challenge differently. It is conceivable that lower-ability individuals do in fact "sink" when deployed to challenging contexts. Though most of the literature has found challenge to be associated with higher leadership skill-acquisition, Courtright, Colbert and Choi (2014) have demonstrated that challenging contexts may influence individuals' skill acquisition differentially as challenge is also associated with greater managerial emotional exhaustion and destructive leadership behavior. What is a crucible experience for some can be a breaking experience for others. Contextual challenge could act as a filtration mechanism, distinguishing the sheep from the goats. Future work focused on a heterogeneous sample of individuals could explore the interaction effects of the distribution of individual characteristics, such as observed ability, with the distribution of challenge across locations[22].

In the human-capital literature, evidence of human-capital development has been established using the presence of pecuniary rewards or other such explicit mechanisms, such as in Campbell (2013). Because we do not observe managers' external mobility, we cannot determine the external wages they would command in the labor market. However, we do see faster promotions, which entail higher compensation for accumulated knowledge and skills, and is suggestive of human-capital development. This is evidence on value creation, as defined by Molloy and Barney (2015, p. 313). Our data does not allow us to observe value capture by the organization. A key area for future research would be to delineate how, at the macro level, organizations can appropriate value from human capital created at the micro level.

Our results showing positive effects of a challenging workplace context on rates of career advancement but not on final organizational position attained, suggests several possible interpretations and

[22] Based on suggestions of our reviewers and editor we examined the interaction effects of ability measures but did not find any significant results. A more heterogeneous sample may yield interesting differences by ability.

opens avenues for future research. An explanation is that challenge can burn out individuals faster: once individuals attain a certain status within the organization, they are unwilling to continue to make the effort to keep climbing the ladder. An individual who was thrown into a challenging context early, and swam rather than sank, is likely to rest on his or her laurels sooner than those who had no such early experiences. Our findings corroborate and extend those by Courtright, Colbert and Choi (2014) who point out that some individuals are more emotionally exhausted than others by challenging tasks; our findings suggest that, for some managers, emotional exhaustion may be delayed but not completely absent. A second explanation is that managers stop climbing simply because they did not acquire the "right" kind of human capital: managers initially assigned to challenging contexts develop the specific skill necessary to be promoted rather than how to be effective leaders, a scenario that eventually leads to mid-career plateauing. These are interesting questions for future research.

Future work could also evaluate our findings in other empirical settings. An example of a suitable alternative empirical setting is the military. For example, it would be interesting to study whether an early-career stint in the army has an impact on managers' career advancement.

Conclusion

In conclusion, our study provides managers insights into the variation in possible career advancement outcomes depending on exposure to different early workplace contexts. A recent worldwide survey of expatriate managers in 390 cities about the best and worst places to work used such indicators as "quality of life," "family life," "ease of settling in," and the like to measure managers' satisfaction.[23] Our findings suggest that, even if challenging job assignments cause personal disadvantages, it may be worthwhile to sacrifice short-term satisfaction for long-term human-capital development and career advancement. Our findings also have managerial relevance for practitioners responsible for hiring: recruiters should seek to use the '*individual-location*' pairing to differentiate individuals' learning, performance and human capital.

[23] http://www.internations.org/expat-insider/2014/the-best-and-worst-places-for-expats (accessed 31 March 2015).

As an example, a hiring manager should seek to understand differences in career advancement outcomes, and human capital development even among employees who worked at the same firm (e.g. Microsoft), across same years (e.g. 2010-2015) but were deployed across various locations such as Beijing, Herzelia, Israel, and Redmond, Washington.

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Table 1 Correlation Matrix

	Years To Center	Average Years Taken to be Promoted after Center	Crime	Language Migrant	Number of Languages	Number of Degrees	Whether awarded prize	IAS Rank	Birth Year	Male
Years To Center	1									
Average Years Taken to be Promoted after Center	0.085	1								
Crime	0.116	-0.047	1							
Language Migrant	-0.201	0.040	-0.218	1						
Number of Languages	-0.060	0.009	-0.121	0.217	1					
Number of Degrees	0.053	0.048	-0.052	-0.058	0.165	1				
Whether Awarded Prize	0.090	0.002	-0.109	0.079	-0.070	0.131	1			
IAS Rank	-0.042	0.025	0.001	0.161	0.048	-0.034	0.131	1		
Birth Year	-0.195	-0.107	-0.048	0.199	-0.067	-0.315	-0.043	-0.268	1	
Male	-0.008	-0.005	0.034	0.003	-0.001	-0.006	0.023	0.0601	-0.206	1

Table 3 Summary Statistics

Definition	(2) mean	(3) sd	(4) min	(5) max
Year joined IAS	1996	9.538	1975	2012
Birth Year	1969	8.871	1955	1989
Male	0.840	0.367	0	1
Years To Center	16	6.9	3.9	39.1
Raw Crime (Annual crime rate per 100,000 district inhabitants)	1.690	5.252	.0078	44.96
Language Migrant	0.417	0.493	0	1
Number of Languages	2.049	0.879	1	7
Number of Degrees	1.713	1.139	0	9
Whether Awarded Prize	0.019	0.137	0	1
IAS Rank	48.89	31.56	1	147
Average Years Taken to be Promoted after Center	1.630	0.778	1.066	7
Whether State's ruling party (RP) is an Ally of the Center	0.390	0.488	0	1
District Average Time to Center	6.203	168.0	5.419	7.222
Number of Armed Police (Annual number per 100,000 inhabitants)	9.339	0.869	5.922	10.462
Number of Courses	6.338	1.706	5	17

Table 4 Mean Number of Years until Promotion to the Center in High-Crime-Rate vs. Low-Crime-Rate Districts

	Years To Center	
	HighCrime	LowCrime
Means	15.013	17.067
Standard deviation	5.99	7.81
Skewness	1.10	2.31
Kurtosis	4.36	13.78

Notes. A district's crime rate is designated as high when it is one standard deviation higher than the median of the sample, and as low when it is more than one standard deviation lower than the median of the sample. The difference in means is significant at the 1% level, with a t-stat of 5.14. Both measures have positive measures of skewness and kurtosis, indicating that they are asymmetrical with long tails. The high-crime-rate districts have lower kurtosis values, indicating that the distribution is narrow and sharp relative to that of low-crime-rate districts. This pattern seems to indicate that, conditional on winning a central posting, most individuals from high-crime-rate districts are likely to achieve it sooner than those from low-crime-rate districts. In low-crime-rate districts, a greater proportion of individuals take longer to achieve central postings.

Table 5 Effect of Workplace Context on Number of Years to Promotion to Center

VARIABLES	(1) Years To Center	(2) Years To Center	(3) Years To Center	(4) Years To Center
Crime	-0.140**	-0.130**	-0.058**	-0.063**
	(0.066)	(0.066)	(0.029)	(0.031)
Male	-0.002	0.002	0.005	-0.004
	(0.045)	(0.047)	(0.049)	(0.052)
Number of Languages	-0.007	-0.007	-0.021	-0.025
	(0.016)	(0.016)	(0.017)	(0.018)
Birth Year	-0.038***	-0.038***	-0.033***	-0.038***
	(0.009)	(0.009)	(0.009)	(0.010)
Whether Awarded Prize	0.027	0.026	0.159	0.160
	(0.084)	(0.084)	(0.097)	(0.099)
Language Migrant	-0.157***	-0.166***	-0.209***	-0.202***
	(0.050)	(0.051)	(0.042)	(0.044)
Number of Degrees	-0.047***	-0.046***	-0.052***	-0.053***
	(0.016)	(0.016)	(0.018)	(0.018)
IAS Rank	0.001	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
District Average Time to Center		0.131	0.040	0.040
		(0.138)	(0.041)	(0.043)
Number of Armed Police	-0.008	-0.007	-0.008	-0.009
	(0.033)	(0.033)	(0.033)	(0.033)
Whether State RP is Ally of Center			0.057	0.063
			(0.037)	(0.039)
Specialization				-0.121*
				(0.069)
Observations	996	996	996	888

Notes. The table presents the parametric estimates of the survival analysis with number of years until posting to the center as the dependent variable. All columns include fixed effects for district and cohort. Columns 2 and 3 add new control variables but the baseline estimates remain unchanged. Column 4 adds specialized training courses as a variable: greater specialization is associated with faster promotion.
Robust standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6 Effect of Workplace Context on Average Number of Years it takes to be promoted after reaching Center (Delhi)

VARIABLES	(1) Average Years Taken to be Promoted after Center	(2) Average Years Taken to be Promoted after Center	(3) Average Years Taken to be Promoted after Center	(4) Joint Secretary
Crime	-0.089*	-0.095**	-0.102**	-1.634
	(0.048)	(0.048)	(0.049)	(1.017)
Specialization			0.092	-0.598
			(0.118)	(0.598)
Male	0.021	0.025	0.024	-0.693*
	(0.078)	(0.078)	(0.079)	(0.414)
Number of Languages	-0.030	-0.031	-0.030	-0.180
	(0.026)	(0.026)	(0.026)	(0.130)
Birth Year	-0.017***	-0.015**	-0.016**	-0.004
	(0.006)	(0.006)	(0.007)	(0.088)
Whether Awarded Prize	0.048	0.053	0.039	0.440
	(0.170)	(0.170)	(0.170)	(0.436)
Whether Language Migrant	-0.020	-0.022	-0.019	1.441
	(0.068)	(0.068)	(0.069)	(1.156)
Number of Degrees	-0.007	-0.008	-0.003	0.423
	(0.027)	(0.027)	(0.027)	(0.454)
IAS Rank	0.001	0.001	0.001	0.151
	(0.001)	(0.001)	(0.001)	(0.139)
District Average Time to Center	-0.098	-0.096	-0.094	-0.007
	(0.068)	(0.068)	(0.068)	(0.005)
Whether State RP is Ally of Center		0.045	0.055	-0.566
		(0.055)	(0.056)	(1.575)
Years To Center	0.007***	0.007***	0.007***	1.180***
	(0.002)	(0.002)	(0.002)	(0.357)
Observations	501	501	490	478

Notes. The table presents the parametric estimates of the survival analysis with the average wait to be promoted after reaching the Center (i.e. Delhi) as the dependent variable. All columns include fixed effects for the district and cohort. Columns 2 and 3 add new control variables but the baseline estimates remain unchanged. Column 4 estimates the logistic estimation of likelihood of being a Joint Secretary as a function of crime of the district of origin.
Robust Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

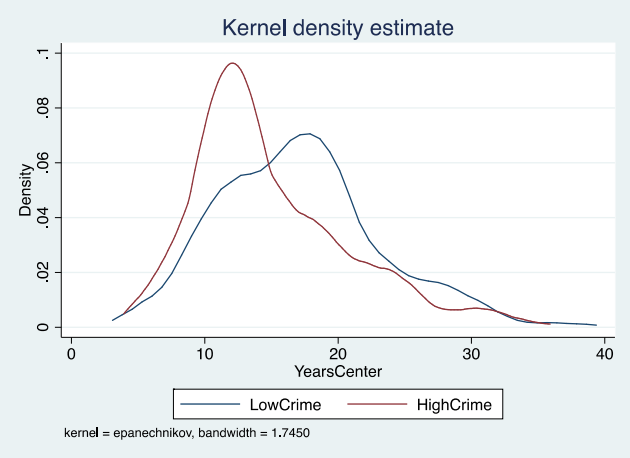
Table 7: Suggestive Evidence on mechanisms: Training courses

VARIABLES	(1) Number of Courses	(2) Leadership Training
Crime	0.376*	0.032*
	(0.196)	(0.016)
Male	0.254***	0.027
	(0.089)	(0.027)
Number of Languages	0.031	0.013
	(0.029)	(0.009)
Whether Awarded Prize	-0.157	0.012
	(0.207)	(0.020)
Language Migrant	-0.331***	0.010
	(0.071)	(0.021)
Number of Degrees	0.095***	0.014
	(0.026)	(0.055)
IAS Rank	0.002**	-0.003
	(0.001)	(0.091)
Observations	501	501

Notes. This table provides associations between number of courses and leadership training with crime for individuals posted to the center, prior to the posting. The sample in this table consists of individuals posted to the Center, but these results are robust to the entire sample of individuals: individuals from high crime districts take a higher number of courses and are more likely to take leadership training. Column 1 shows that individuals from higher crime rate districts take higher number of courses. Column 2 estimates the effect of average crime rate on propensity to seek leadership courses for the entire sample. The outcome variable is a dummy = 1 if the individual chose a course that teaches leadership skills. The estimation shows that individuals from high-crime districts are more likely to take leadership courses. All regressions include fixed effects for district and cohort.

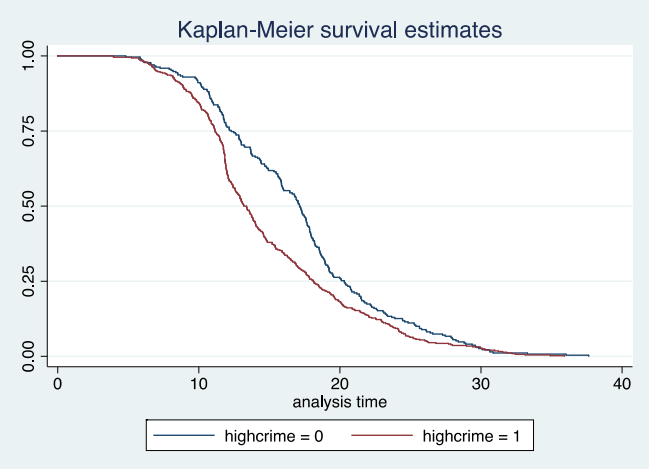
Robust standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Figure 1. Kernel Density Distribution of Years To Center across High- and Low-Crime-Rate Districts



Notes. A district is designated as high-crime when its crime rate is more than one standard deviation higher than the median of the sample and as low-crime rate when its crime rate is more than one standard deviation lower than the median of the sample. The mean number of years it takes to achieve a central posting from a high-crime-rate district is 15.013 years; from a low-crime-rate district it is 17.067 years, the difference being significant at the 1% level, with a t-stat of 4.64. Both measures have positive measures of skewness and kurtosis, indicating that they are asymmetrical with long tails. The high-crime-rate districts have higher kurtosis values, indicating that the distribution is narrow and sharp relative to that of low-crime-rate districts. This pattern seems to indicate that, conditional on promotion to the center, most individuals from high-crime-rate districts achieve promotion within a narrower time frame than their counterparts in low-crime-rate districts. In low-crime-rate districts, a greater proportion of individuals take longer to be promoted to the center.

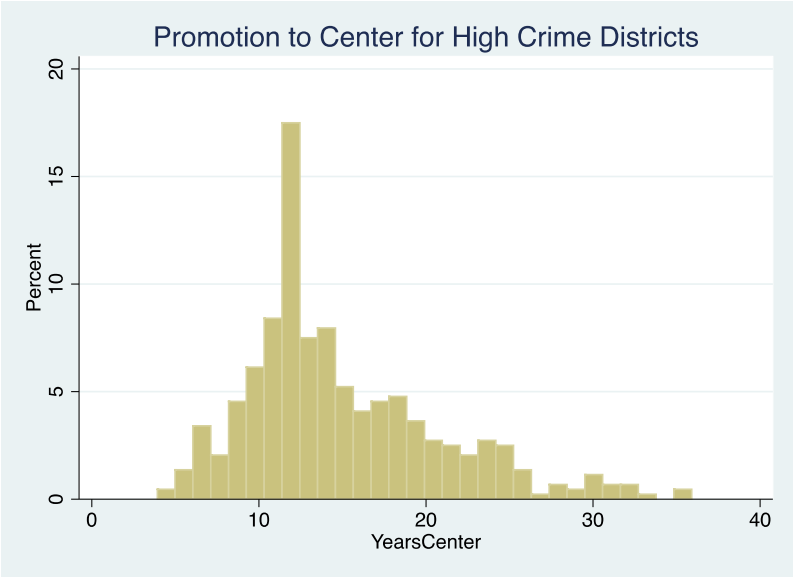
Figure 2 Kaplan-Meier Survival Estimates of Years To Center

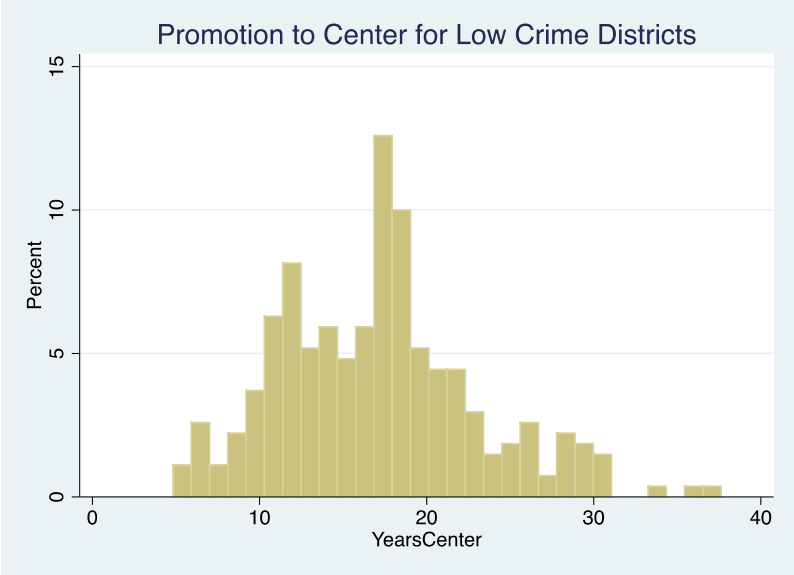


Notes: The figure shows the Kaplan-Meier Survival Estimates of Years to Center. On average individuals from high crime-rate districts take fewer number of years to reach the center.

Appendix

Figure 3 Short-Term Performance, High-Crime-Rate Districts (top panel, mean = 17 years) and Low-Crime-Rate Districts (bottom panel, mean = 15 years)





Promotion Hierarchy within the Center	Designation Title
1	Under Secretary in the Government of India
2	Deputy Secretary in the Government of India
3	Director in the Government of India
4	Joint Secretary in the Government of India

5 Additional Secretary in the Government of India

6 Secretary to the Government of India/Chief Secretary

7 Cabinet Secretary

Table 2 Validation of Quasi-Random Assignment: OLS Estimates Showing Association between Observables and Crime Rate of Assigned District

Variable	(1) Crime	(2) Crime	(4) Crime	(5) Crime	(6) Crime	(7) Crime	(8) Crime
Number of Languages	-0.011						
	(0.0122)						
Language Migrant		0.040					
		(0.0255)					
Number of Degrees			-0.002				
			(0.0117)				
Whether Awarded Prize				-0.092			
				(0.0617)			
IAS Rank					-0.000		
					(0.000401)		
Birth Year						0.011***	
						(0.00304)	
Male							0.002
							(0.0299)
Observations	1,329	1,226	1,343	1,343	1,227	1,343	1,343

Notes. OLS regression of the log of average crime rate on IAS rank on independent variables. This table shows that there is no statistically meaningful or significant association between the average crime rate of a district and all independent variables used (other than Birth Year) and all observable measures of ability. The finding of no association between crime rate and IAS rank (Column 6) lends support to the quasi-random assignment of individuals to locational contexts.
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 Robustness Check: Survival Analysis estimates of years taken to be promoted to the Center by presence of Coal and whether the district is in the Red Corridor or not

VARIABLES	(1) Years To Center	(2) Years To Center
Red District	-0.035**	
	(0.019)	
Male	-0.005	-0.008
	(0.052)	(0.052)
Number of Languages	-0.016	-0.011
	(0.018)	(0.037)
Birth Year	-0.040***	-0.041***
	(0.010)	(0.010)
Whether Awarded Prize	0.175*	0.173*
	(0.099)	(0.098)
Language Migrant	-0.220***	-0.217***
	(0.044)	(0.043)
Number of Degrees	-0.064***	-0.078***
	(0.018)	(0.019)
IAS Rank	0.000	0.000
	(0.001)	(0.003)
District Average Time to Center	0.054	0.087
	(0.043)	(0.043)
Number of Armed Police	0.021	0.019
	(0.022)	(0.038)
Whether State RP is Ally of Center	0.045	0.036
	(0.038)	(0.039)
Specialization	-0.108	-0.106
	(0.070)	(0.070)
Coal Present		-0.106*
		(0.064)
Observations	888	888

Notes. Column 1 presents the survival analysis estimates of years taken promoted to the center if the district is in the red corridor of not is present in the district. Column 2 presents survival-analysis estimates presenting estimates of years taken to be promoted to the center if coal is present in the district or not. District and cohort fixed effects were used to control for time-invariant correlates.
Robust Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1