Learning within the State: a research Agenda

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October, 2013

Draft prepared for "Making Growth Happen: Implementing Policies for Competitive Industries" October 16-17, 2013, World Bank , Washington, DC.

Abstract

This paper studies incentives for improving policy systems, in the sense of improving the pace and quality of policy formulation and implementation given the exogenous constraints of political structure, institutional history and social capital. We first set out a general framework of state learning and policy change and then consider the comparative setting of China and India for an empirical comparison of this framework and model. We then consider the implications of this framework for the analysis and implementation of development strategies.

This paper presents a new framework for the study of state learning. We argue that the analysis of policy formation, process and implementation are crucially understudied in the field of development. Sections I and II develop the framework of the research agenda: Section I presents the 3 components of State Learning: The generation of new information, the transmission of that knowledge upwards and horizontally across the system, and acting upon that information ("implementation"). Section II illustrates how the ability of the state to "learn" (generate, transmit, and implement information) interacts with a variety of institutional structures characterizing modern states. We consider features such as separation of powers, centralization and decentralization, monitoring of agents, transparency, and career concerns of bureaucrats. This list is illustrative, not exhaustive. An important point is that generally the degree of centralization, separation of powers, transparency, etc. has developed independently of the implications for learning. Section III applies our framework to a

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case study — a comparison of the relative performance of India and China in the last 30 years — perhaps the most important story in economic development in this time. Subsection A is concerned with a comparative study of information generation. We show, for example, how the career concerns of bureaucrats (within the varying institutional structures) impact the tradeoff between risk-taking (which we define as taking on new projects and thus generating new information) and sticking to the status quo. We illustrate by hinting at how this might be formally modelled and suggest implications for potential reforms in India. In subsection B we turn to a discussion of information transmission. Various topics for analysis arise in this setting, such as how the incentives generated by the competition between bureaucrats (or politicians) affect the transmission or obfuscation of information within the system, given different institutional capabilities for information gathering. SubsectionC concerns information implementation. An example considered concerns how the degree of the incentives generated by the degree of transparency and the competition between bureaucrats (or politicians) affect decision-making when information on potential change is received. Finally in Section IV we sketch some potential directions for the research agenda. While we have described possible theoretical contributions, theory should be informed (and should inform) the collection of new data and empirical analyses.

Since 1978 income per capita in China has grown roughly four and a half times as fast as in India. Such divergence, over almost a third of the world's population, is perhaps the most striking and consequential fact in development. A number of explanations have been advanced for it: greater human capital (Sen 2011); better managed exchange rates (Rodrik 2008); better physical infrastructure (Bardhan 2006); better managerial capabilities (Sutton 2004); cheaper and easier land; more effective industrial policy instruments (Mukand and Rodrik 2005, Bottelier (2007)); and better allocation of capital (Hsieh and Klenow 2009). Such a range of answers, each backed by substantial evidence, should inspire some skepticism that any one of them is likely to be the single determinant, and suggests instead that some more general cause is at work. That more general cause must then lie somewhere in the *capacity of the state*, or of *society*, or of the interaction between them, and it must be some quality that would give rise to generally higher outcomes across multiple areas of policy and over an extended period of time.

This paper posits that one of these general qualities is the superior ability of the Chinese state to learn. Learning is defined here as the relative pace of change in policies and the management of their implementation, as well as the relative quality of change. While pace and quality are distinct, there is tentative evidence that both are higher in China than India across sectors, though in varying degrees.

Examples of the learning gap between China and India abound. In *special economic zones* (SEZs), India made no substantive policy changes from its 2005 Act until 2013, despite early and mounting evidence of failure (Jordan 2012 et al.); in China, within a few years of their 1978 launch the SEZs were being

retooled and adjusted (Vogel 2011), a pace repeated in later technology parks (Heilmann 2007). China conducted reforms to adjust the balance of centralization and decentralization in *education* in 1985, 1993, 1999, and again in the 2000s (Hawkins 2000, Ngok and David 2004). To the authors' knowledge, India has had only one major reform in the last two decades. In *public administration*, China has undertaken reform once every five years since 1978, while India has only attempted it twice in sixty five years, with the last attempt still unimplemented.

This is not to sat that policy learning is the only difference. Other contributing causes might include differences in social capital, in the relative weight of procedure and performance in state legitimacy, or in the structure of political power. Each of these might, in turn, interact with the ability and incentive of the state to conduct policy learning.

However, the persistence of the pattern does imply that learning may be highly significant[1]. Moreover, while social capital and political structure are so difficult to change as to often be considered exogenous to development, learning, as an organizational quality, may be more readily addressed in ordinary times. If that is the case, it would suggest that greater developmental gains can come from improvements in policymaking systems, rather than policies themselves.

This is not a new claim. Qualitative research in several specialist literatures has stressed the importance of policy learning on long-range outcomes, whether for income support policies in developed countries (Heclo 1974) or service delivery in health and education in low income economies (Foresti et al. 2013). The still relatively new field of organizational economics, building on earlier results in the theory of the firm, has recently begun to focus on adaptation in firms (Alonso et al. 2012), although it is yet to pay sustained attention to learning or public administration[2]. Recent developments in growth theory have stressed the importance of learning in firms and within industries for development, in particular the incremental acquisition of superior capabilities across a wide set of actors (Greenwald and Stiglitz 2014, Bloom et al. 2013). Recent developments in political science have opened the way to formal models of political and bureaucratic behaviour, considering, for example, the effects of centralization on experimentation (Cai and Treisman 2009), policy adaptation on growth (Hausmann and Rodrik 2003), and incentives on career paths (Levy 2005).

The purpose of this paper is to draw from this literature to lay a foundation for studying learning in policy systems, in the sense of improving the pace and quality of policy formulation and implementation given the exogenous constraints of political structure, institutional history and social capital. Much of this learning can be expected to take place at the intersection of policy details and implementation actions.[3] A final caveat is that this paper does not aim to

[1] This suspicion is confirmed in conversations with senior policymakers in India, some of whom are acutely aware of the need for the system to become better at learning

[2] The 'beyond firms' Part of the *Handbook of Organizational Economics* (Gibbons and Roberts 2012) comprises two chapters, out of a total of 28.

[3] For example, between the guidelines for production subsidies or capability grants and their specific disbursement and effects when administered in the field.

develop a new theory of bureaucracy. As the classic works in the field warn, this would be at risk of simply adding to "the long list of theories about some aspect of bureaucracy" or saying "over and over what has already been said about organizations" (Wilson). Rather, it aims to provide some motivation for seeking the causes of poor results in the endogenous processes of change and implementation, and to stimulate thinking on ways to improve those processes, or to think about improving them. This is consciously a small initial step.

I The policy system and information flows

The system in which policies are created, implemented and changed is enormously complex. It involves political parties, operating through the legislature and executive; the state bureaucracy, in its numerous ministries and agencies; private and social interests, formally and informally organized; and individual citizens and leaders. It is difficult to generalize about any of these parts, let alone the whole, without a fatal loss of realism and nuance. To gain analytical traction, though, such generalization must be undertaken, albeit cautiously. In order to do so, this section uses a taxonomy of political system divided by the operational levels and the geographic divisions to understand how the patterns of information flows are affected by political institutions, using "the system" as a short-hand for the whole.

A Taxonomies of Political Systems

A.1 *Operational Levels*

The system has three distinct levels of operation. The first is the formulation of goals, along with the broad assignment of the costs and benefits for achieving them. In an elective democracy, this is typically done in legislation, with political parties and organized interests the primary actors. The second is the writing of more specific policies that define the tasks that will achieve these goals, describing how costs will be levied, benefits distributed, and inputs managed to produce the outputs considered necessary to achieve the goal. This is the domain of the senior reaches of the bureaucracy, heavily influenced by political parties and informal and formal organizations. Third is the execution of those tasks, as resource allocations, disbursements and practical action (or "delivery"). This is typically the domain of the middle and lower bureaucracy, at times in partnership with private firms or civic and social organizations.

A.2 *Geographic Divisions*

The system is also divided geographically. In most cases, the division is between the central or federal; the provincial or state-level; the district or municipal; and the neighborhood or village. These are mapped to operational levels in many different ways. In centralized systems, in almost all spheres of actions both goals and policies will be formulated by the center, and even if the tasks are

undertaken at lower geographic levels, those undertaking them will report to the center. In decentralized systems, all three operational tiers will be the preserve of states or districts in most spheres of action. Between these lie many gradations. For example, the center may describe a goal, the provinces decide the allocation of costs and benefits, and the municipalities define and carry out the tasks. In general, the more centralized the political system, and the more politically consequential the policy area, the more the operational levels will be the preserve of the center.

B Information flows

In this paper, information means a signal about how a new policy fares compare to the status quo. It is classified as 'generated' when it has resulted from some action at some level, that is, from doing something. Information is then 'transmitted' when it passes from where it has been generated, to the level above it, whether geographically or operationally, or from one agent to another at the same level. 'Deciding' on information then means the receiver acting on the contents of the information (thereby generating new information at that level).

These definitions result from a focus on effective learning, so that information is only registered within the policy system when it results from or leads to action. Information that does not, such as outside analysis for an outside audience, will have value for other purposes, but is not related to effective learning within a policy system. In this light, incremental exploration of the policy space is registered only when a change is enacted, at some level. This involves some loss of richness, in that the industry that generates reports and analysis untied to action is treated as exogenous. It compensates by forcing greater specificity in the processes by which information and action interact, which is the heart of learning in practice. This section describes on which channel heterogeneous institutions may generate different information flows, transmit them, and in what circumstances they will then lead to higher level policy change.

The pattern of information flows will be affected by the structure of the political system along the dimensions described above. Ideally, information would flow freely among operational and geographic levels. If, given prevailing constraints, tasks proved unable to be delivered or could be done more efficiently this should inform and trigger a corresponding change in policy, or, at the limit, in goals. Such flows of information and decision-making will be of particular benefit in tackling problems whose solution is a priori difficult to determine, and a bounded policy space must be explored with greater or lesser efficiency.

In reality, such processes rarely happen. Information is not generated; or not transmitted; or not acted upon. These failures can result from the lack of institutional incentives or capabilities: the relevant actors may have no interest in generating or acting upon information, and they may have few capabilities or incentives to transmit it. To understand such breakdowns, it is necessary to first specify these terms.

B.1 Generating information.

Information can be generated in two ways: either the status-quo is explored further, or a new policy is tried**.** The variation may take place at a lower operational level, as a goal is held constant but a policy to achieve it varied, or a policy held constant but the tasks varied. This may be combined with variation at a lower geographic level, as a central goal is held constant but specific policies varied among provinces or cities, or similarly for policies and tasks. Such lower level variation will be described as "policy experimentation".

On the other hand, variation may take place all at once and centrally, as a goal or policy is changed wholesale. Experimentation will require fewer resources, material and political, but may be sub-optimal if the resources are available and there is a high degree of epistemic certainty that the change will be welfare improving.[4]

In a general theory, one might capture these trade-offs for an idealized social planner, interested only in welfare outcomes. The first element of such a model would be a cost function for policy change, generally increasing with the magnitude of change and its operational or geographic level. The second would be the expected welfare gain to the whole society of such a change, rising with geographic level, and adjusted by the probability of the change performing as expected. Last would be the effect of success at the lower level in period N on the cost of change at the higher level in period N+1, i.e., the extent to which demonstrated success in an experiment makes full-scale change more likely or attractive. Then experimenting will be more attractive when certainty is low, the difference in cost between higher and lower level change is steep, or low-level success substantially reduces the later cost of high-level change. In contrast, when certainty is high, lower-level costs are close to higher-level, or initial success has little effect on higher-level change then experimenting will be sub-optimal.

However, as will be described later in this paper, both the price and the ability to capture this return will vary with the specific agent initiating the variation and the institutional structure that surrounds them. In particular, the incentives that different actors face in that structure will substantially modify this trade-off. Simplifying, such actors can be one of three types: decision makers at the level of variation itself, self-initiating change; decision makers at the level above, inducing or ordering variation at the level below; or actors from outside the formal organization successfully exerting pressure or persuasion for variation. Which will be most effective, or may be most effective with some institutional adjustment, will vary substantially, in ways described later in this paper. Once information has been generated through variation in action, the next question is how it flows within the policy system, so as to come to adjust

[4] Certain macroeconomic policies, particularly monetary and trade, are inherently resistant to experimentation. However, this restriction applies primarily to price setting, whether of money or of exports and imports, and not necessarily to operations, as the means by which customs are inspected or liquidity operations conducted can be varied over space or time or both. Even prices can be subject to lower level variation, in policy systems with an exceptional ability to experiment.

higher level outcomes.

B.2 Transmitting information.

Once information is generated it must flow to be able to induce effective learning more broadly. Flow is here counted as consequential only if information reaches decision makers, though this may be at a remove of several steps of transmission. So, for example, once information is generated it may be observed by an organization or individual without decision making power, which might then transmit it to higher level decision makers. Such transmission agents will vary in how integrated they are in the policymaking system, for example varying between state research bureaus and academia.

Information can also be transmitted by the generators themselves. In its weakest form, this may be done indirectly and inertly, through the compilation and distribution of official documentation. It may be done more actively through live discussion, in the form of meetings, workshops, conferences and the like. In its most embodied form, information may be transmitted by promotion or rotation of those involved in its generation. An official involved in the first variation may be moved to a different province, for example, or promoted from a municipality to a province, with authority to spread and adapt the innovation.

Each of these forms will have different costs and benefits. They will more or less reliably transmit information on outcomes, on the content of the policy innovation, and on how it was enacted**.** Each will vary in the transaction costs to extract information, to send it, and for the receiver to digest it. In general, third parties may be considered more reliable than the original generators on outcomes, though less reliable on content and process. The balance between these advantages will depend on how easily claims by generators can be checked, which depends on how clear and observable outcomes are. Conversely, if the generators are not present to observe the full evolution of an innovation, their reliability on content and process will be compromised versus third parties able to observe the full process,[5]

Transaction costs will also vary by the means of transmission. In general, the costs of sending are lowest for written documents, but these often have the highest costs of extraction and digestion. By contrast, sending costs are highest for direct communication, as officials must be taken out of daily work and brought together, but it also comes with lower costs of extraction and digestion. Institutional structures and working norms will affect costs for both methods, as for example a particular style of presentation may reduce the costs of digesting information, or a thick network of research bureaus may reduce the costs of extraction. In all cases, credible incentives will have to outweigh costs for the action to even take place.[6] The form of transmission liable to be

[5]However, since process and content knowledge is more tacit than knowledge of outcomes the variance is asymmetrical, and the richest information will result from officials with clear outcome goals and tenures long enough to enact and observe the course of an innovation.

[6]Hence, for example, unless the incentives to digest information are high, in the absence of norms of reading and effective presentation written documents are likely to induce little

most costly is promotion or rotation, unless institutional structures facilitate it. Except in that case, even if information is extracted, sent, and digested, it is liable to be ineffectual if it does not lead to change by the receiver(s).

B.3 Implementing information.

The decision structure for acting on information will in some cases be almost the same as that of generating information. The archetypal case will be where both higher and lower decision makers are bureaucrats in a hierarchy, and a confidential report or chance meeting has conveyed from the junior to the senior the results of a recent innovation.What factors influence the junior and senior decision will be very similar, even if their relative strength and content differ.

Even in this simple case the information may not be as valid at the higher level as it is at the lower level. A policy innovation that was successful in a province might not be across the country. It may be more difficult to do, and even then a new way of implementing may work in a sector with weakly organized recipients, but be sabotaged or captured when applied across sectors.

The problem is yet more complicated when the higher level agent faces a different set of incentives and capabilities than lower level ones. The obvious case is the distinction between the bureaucrat and the politician. In classical models, the former will be worried about reputation, the latter about re-election (Alesina and Tabellini (2007)). Recent models have added dimensions to these incentives, notably promotion and legacy, but they remain distinct between the two types. Crudely, the politician pays greater attention to factors outside the policymaking system, whether public opinion or an organized lobby; must make greater trade-offs on support across a range of policy issues; and has a relatively shorter time horizon.

Decision making at higher levels may also be more difficult because of a multiplication of de facto veto holders. The wider the sphere of action, the more interests it will contain. The less stable a majority, the more that any single interest will hold a veto**.** An adaptation that required only the authority of a few officials within a sector or region may require legislative and judicial approval to become system-wide learning.

The veto wielders themselves may have different incentives and capabilities. Two decision makers may have incentives to disregard or disagree with information that is welfare-enhancing but will yield benefits for a rival. For example, a legislature concerned about autonomy, or controlled by the opposition, may choose as a general strategy to disregard certain types of information from the executive. If two politicians who seek to distinguish themselves to voters receive two sets of information, with some areas of agreement and some of disagreement, they may choose to disregard the agreeing information and focus on disagreements, preventing consensus (Morelli and Weelden (2011)).

Overall, given the number of impediments to implementing information about welfare-enhancing changes, even once it is generated and transmitted,

learning, even if costless to send.

it would not be surprising to find that some states hardly learn at all. Where they do, it is due to the creation or evolution of institutions, often built for other purposes, that overcome these barriers, and reduce the costs involved in trade-offs.

We now turn to a discussion of some of these institutional structures with more or less direct bearing on the generation, transmission, and implementation of information

II Institutional structures

The decision to generate information will not be made by an idealized social planner. It will be done by individual politicians and bureaucrats in institutional structures comprised of them and other social actors. Such decision makers will face different prices for undertaking the same action at the same level, will have differing abilities to observe and appropriate resulting gains, and differing incentives. This will impact the flows of information described above, and the results that derive from them.

Moreover, just as market failures can make inputs unavailable at any price (even capital (Stiglitz and Weiss 1981)), so institutional failures can make effective information unavailable, regardless of incentives.[7]

Therefore**,** institutional incentives and capabilities will have a decisive influence on the flows of information and the effectiveness of learning**.** They describe to what extent they incentivize the status quo versus the generation of information on potential change; what incentives and capabilities they provide for information to flow among actors; and the costs of acting on information once received. In many cases we might expect the incentives regarding information and learning to be side-effects of solutions to other problems. For example, part of the political settlement in a large state will include an arrangement of the relative power of central and regional politicians and bureaucrats to affect the local bureaucrats' incentives**.**

This section explores some of these institutional settlements and effects, ranging from the macro, such as the degree of centralization, to the micro, namely the evaluation and promotion of bureaucrats. We do not seek to be exhaustive, but to demonstrate the potential uses of the framework above, both to make new use of existing results and to specify pressing gaps in knowledge.

A Separation of powers.

One of the classical results in political science is that the potential for action on a given issue is inversely proportional to the number and combined weight of effective veto wielders (Moulin (1982)). This has an obvious corollary for learning, as experimentation, transmission and implementation require actions. Once information has been generated, information would still have to be transmitted to

[7] In some settings, the more paid for information, the worse quality, hence it is rationed. And nobody wants to tell the emperor he's naked.

each veto wielder. If their mutual competition was such that they had incentives to disagree, or to ignore information from a competitor, implementation would be difficult if not impossible.

The clearest example of this would be the case where information is generated within a province or by a mid-level bureaucrat but the national executive or legislature vetos the adaptation, being unwilling to give credit and hence political capital to a rival institution or party. In another variant, two politicians with an incentive to disagree may choose to focus rhetorical attention on areas of disagreement in two distinct packets of information, resulting in the areas of agreement going unimplemented.[8]

Overall, this discussion indicates that, all things being equal, the doctrine of the balance of powers is detrimental to the pace of state adaptation, as will be the accretion of vested interests. On the other hand, a slower pace of adaptation may not have high costs, if the quality of adaptation is low. A further question is then the effect of additional veto wielders on this quality. Drawing on the theory of decision making, systems with a number of veto wielders are akin to committees requiring unanimity (Sah and Stiglitz 1988). Such structures are more prone to missing advantageous opportunities, and are optimal when the portfolio of potential projects is of low quality: a deviation from the status-quo is more likely to lead to welfare losses when the status-quo is of high quality.

Overall, the state will tend to learn less under the conditions of a balance of powers, or with a large number of organized interests. The welfare costs of foregone learning will be higher when the status-quo is further from the policy frontier. Practically, the learning costs of legislative and judicial independence is likely to be higher at lower income levels since one might posit that lower income countries are furthest from the policy frontier.

B Centralization.

A large and recent literature has examined the relationship between decentralization and experimentation, reexamining the idea that one would lead to the other. On the one hand, by converting hierarchy to polyarchy, decentralization should reduce the number of missed opportunities and hence increase information generation (Sah and Stiglitz 1987). On the other, policy experimentation generates externalities if one province can copy another. A politician with limited prospects of national election, accountable to a local electorate, may then bear all the risks of a policy experiment but capture only a part of the gains. Since nothing stops a centralized government running an experiment in a particular province, and such a government would capture such externalities, in some cases a central government may run more experiments than a decentralized one (Cai and Treisman 2009). A similar result has been shown for firms, namely that centralized firms may be more adaptable than decentralized ones (Alonso et al. 2012).

[8] Conversely, the desire of freshly elected politicians to appear to be taking action that deviates from their predecessors may serve to make change happen for the sake of it. This trade-off will be formally analyzed later.

The discussion above implies that decentralization will tend to increase experimentation when local decision makers can leverage local innovation into their own success in the center**.** The most likely path for such leverage is a national political party, so long as such a party has a tradition of selecting local leaders for national office. National political parties may then optimize politicians' incentives for learning through local branches, versus systems of regional parties on one pole or highly centralized national parties on the other. A similar logic will hold for bureaucrats, so that decentralization would be expected to generate more local adaptation to the extent that local bureaucrats have a promotion path to the center. This will be controlled though by the extent to which the center can observe local bureaucrat performance, and how much this influences promotion, versus obeying orders (a subject treated at greater length below).

The degree of centralization will also have an impact on information transmission. In general, more centralized regimes should be able to transmit information more easily, with their greater ability to rotate local decision makers and demand information from them. However, decentralized states may build capabilities to overcome this barrier, or choose to decentralize in the main but retain residual powers to make occasional rotations. They may also sponsor research units, whether internal or external, whose task is precisely to bridge organizational barriers and find and transmit information, through reports or training or other means. On the other hand, if, as above, local actors have a path to the center that puts them in competition with local actors elsewhere they will have incentives to hoard information. Again, this may be mitigated by having promotion decisions influenced by information sharing.

Overall, one notes again a tension between learning and some models of decentralized accountability. To the extent that these skew local politicians' incentives towards local voters and give those politicians or other local bodies power of appointment for local bureaucrats, they will tend to discourage both local and central learning. This might also be mitigated, for example through institutions with extensive local branches able to observe local adaptations and provide some incremental incentive for those who risk them, whether budgetary, reputational or political.

C Monitoring.

Whether centralized or not, states have varying capabilities for internal monitoring. The strengthening of a specific kind of monitoring, that of performance, has long been a core tenet of what is known as 'new public management'. Information transmission will then be more reliable when this capability is more developed. However, the specific form and processes of such monitoring will affect the impact on learning.

If, under the guise of 'accountability', targets are linked to high-powered incentives, and officials undertaking programs are allowed to set their own targets, the frequent result is gaming. Then targets will be set that one side knows is easily achievable, but the other not. The obvious corollary is that the agents

being measured will have an incentive to hoard information, in order to preserve the ability to game. Agents may likewise have incentives to set goals that they know are achievable under the status quo, thereby reducing incentives to make adaptations.

On the other hand, if targets are unrealistic and bureaucrats are provided with few extra resources to meet them, they may focus on maintaining a defensible record, increasing conservatism and decreasing adaptation. If the monitoring is irregular, reviews are likely to cover too much ground at once, becoming either 'rubber stamps' or 'blame games'. For these reasons some have warned that, unless carefully constructed, 'accountability may drive out learning'. On the other hand, if ambitious but credible targets are set through a process that is legitimate to the agent being monitored but not controlled by them, the monitoring process may, by creating a spur to action, have some effect on encouraging information generation and transmission.

Similarly, the monitoring body's own understanding of its task will substantially alter its effectiveness at facilitating learning. If it considers that task to be principally checking whether others have met their targets, its own officials are unlikely to put much effort into unearthing why performance has differed. If, on the other hand, its officials are held accountable precisely for finding such information, with targets as a means to do so, they are liable to be far more persistent.

The skill of bringing information to the surface is not trivial, and as such is likely to require some time and investment to develop. On the other hand, it need not reside in a single body. It could be distributed in multiple parts of the state, from internal research bureaus to personnel departments to executives themselves.

D Transparency.

At first sight, transparency allied to freedom of expression should provide substantial gains to state learning. Transparency should allow a large number of social actors to observe the workings of the state and their result. With freedom of expression, these actors, individually or in concert, should be able to alert higher level officials and politicians of disappointing results, and articulate ideas for adaptation. Hence these two core institutions of liberal democracy should both quicken the pace of learning and increase its quality.

Two factors, however, reduce the effectiveness of this argument.[9] First, systems that generate more ideas are not necessarily ones which generate better ideas.. Low levels of human capital or relative career incentives may mean that the most capable policy analysts are within rather than outside the government. The portfolio of ideas from the public may itself be pre-screened by institutions, whether the media, academia or privately funded think tanks, whose screening criteria may be only partially related to the quality of ideas. Fundamentally,

[9] See Prat (2005) for an excellent discussion of some of the conditions under which the principal can be made better off through concealing certain kinds of information.

much knowledge of the workings of policy is tacit and complex, and hence ill-suited to discovery by outsiders, even under aggressive transparency regimes.

Second, there is no guarantee that the greater number of ideas will translate into more effective information within the policy system. Politicians and officials may have little to no incentive to listen, or to take action. When transparency and freedom of information coincide with electoral competition, politicians may face incentives to disagree that have to be traded off against incentives to improve welfare outcomes.

For instance, an adaptation proposed by some outside actor may be used to attack an incumbent, who might then see greater losses in accepting the adaptation than denying it, even if he or she in private accepts its validity. In a similar case, if two regional politicians are competing for national attention, one of them may have an incentive to obstruct the implementation of policy change publicly declared a success in the other's jurisdiction. Conversely, however, the publicity of a successful policy elsewhere may lead to citizen demands that make its spread unavoidable.

Similar barriers to the translation of outside ideas into effective information are liable to exist within the bureaucracy. Officials may simply have little to no incentive to respond to outside information. If the idea is generated by those who would benefit from it, the bureaucrat may fear this would be discovered, and he or she accused of changing policy for the sake of a few. This will be particularly risky in the presence of a generalized suspicion of corruption and an aggressive but market-dependent press.

Of course, this does not affect ideas from those not directly touched by the policy. Such sources will vary in their levels of access to and reputation with the bureaucracy. If seen as outsiders or as hostile, they are likely to be ignored. Anecdotally, this reflects the case for most social-issue civil society groups in the developing world. Even in the limit, when an idea for an adaptation is received from a disinterested source considered as an ally, an official will face a trade-off between trying a new idea and sticking to the status quo.

E Career Concerns.

In theory, the most likely source of information generation should be the mid-tier bureaucracy. It is these officials who turn policy into detailed tasks and oversee the execution of those tasks. They possess tacit, complex knowledge about the implementation of policy, and through changes in the details of their tasks are able to generate information on potential policy change. They are also not too distant from senior decision makers to be able to transmit information to them. In all, one might expect such bureaucrats to be among the most significant agents of learning in the policy system, as middle and upper-middle managers often are in corporations.

Yet for this to occur, mid- and upper-middle bureaucrats must take actions deviating from the status quo. In the classical Weberian formula bureaucrats are rule-bound by design. A wealth of literature in recent decades has moderated this picture, exploring the tension between discipline and autonomy in public

bureaucracies. In general, except in scattered instances of extreme cases such as armies in battle or cutting edge research agencies, the bias is towards discipline (Wilson 1989). As that literature has documented, this is for good reason. With the outcomes of public tasks so much harder to observe than the financial returns of a firm, the difference between discretion and shirking or corruption will be difficult to discern. Even in bureaucracies with a strong enough ethos that honesty is common, if not universal, the quality of bureaucrats may vary. Providing mid-level bureaucrats more discretion may result in more adaptations, but not necessarily better ones.

This sets up a tension between providing incentives to bureaucrats to maintain the status quo, and allowing space for them to pursue adaptations they clearly perceive to be welfare-enhancing. The formal incentives of importance here are unlikely to be monetary. Empirical studies have long cast doubt on the idea that these can effectively motivate bureaucrat performance (Wilson 1989, Rasul and Rogger 2013). Of greater importance are likely to be reputation effects and, in particular, promotion, with its consequent effect on prestige.

A number of factors then govern the relationship between promotion and risk-taking, which will motivate our turn to a formal model. First, bureaucrats are liable to vary in their appetite for risk, though no more so than the rest of society, the myth of bureaucratic conservatism aside (Mazzucato 2013, Wilson 1989). Second, the effect of policy adaptations may take several years to bear fruit. If this period is substantially longer than the period an official stays in a post, and hence can claim credit or blame, or is substantially shorter than the promotion cycle, so successful modification is forgotten by the time it should matter, then officials will be unlikely to take necessary risks.

Third, those who are promoted today will be the superiors of tomorrow, and hence will both set the boundaries for and exert some influence on the promotion of the next period's entrants. So the greater the influence of superiors over their immediate juniors' promotion prospects, and the closer their supervision, the more the system will be liable to converge to herd behavior. That is, if the initial promotion function overly promotes conservatism, then conservative bureaucrats will be promoted in larger shares than risk-tolerant ones, and in the next period will adjust the promotion function to favor the status quo more, and so on, until the system is dominated by conservatism. The same may of course happen in reverse, with herd-behavior converging on risk-taking, though this effect seems less prevalent in bureaucracies than, for example, financial services.

In all, there will be a complex trade-off between motivating bureaucrats to do what they're told, and providing incentives for them to take risks if they have private information that doing so will lead to a policy improvement. This trade-off will be made through deeply entrenched features of the bureaucracy. If tilted overly to one side, instead of information generation the result may be state collapse or widespread policy failure. Unbalanced in the other direction, and the result may be a permanent status quo, with a vital source of potential learning absent. Given such complexity and importance, more precision seems justified. In what follows, we sketch a model of bureaucratic incentives given career concerns to illustrate the sort of formalism we have in mind. We aim to

extend this in later research.

III A paired comparison: China and India

This section returns to the paper's original motivation, comparing China and India through the analytical framework and results described above. We discuss various potential ideas to investigate the theoretical impact of institutions on the three information channels we identified in section B, and discuss their implication in the understanding of the differential development in China and India.

A Policy exploration (generating information).

The discussion of the previous two sections suggest multiple ways in which institutions can shape experimentation. We develop here an example the ultimate aim of which is to explain how the incentives generated by differing institutions in India and China matter for the extent and shape of policy experimentation.

As has been described in an extensive recent literature, the Chinese state is characterized by "regionally decentralized authoritarianism", but one subject to a central spine of career incentives (as summarized by Xu 2011). Moreover, the center has highly developed mechanisms to induce experiments in province, what is called its "point to surface" means of policy development (Heilmann 2008). As a federal democracy India is even more decentralized politically than China. It provides some means for local success to translate to national promotion, but these are relatively weak. Some Prime Ministers had previously been successful Chief Ministers in India's States (hereafter 'provinces' to avoid confusion), but none of the five longest-serving, and none for the last fifteen years. Cabinet Ministers include some prior provincial politicians, though, anecdotally, often with short and undistinguished tenures. In contrast, in China a full five-year term leading a province with a successful record has become almost a pre-condition for elevation. One notes here that this might provide an initial explanation for the increased pace of learning after 1978, as Mao's departure, Deng's advanced age and his reorientation of Party goals signaled to provincial politicians that successful experiments in local reform could be a path to central power after Deng.

In both China and India the local bureaucracy is under the substantial control of local politicians.[10] In China bureaucrat promotions are largely controlled by the Party's Organization Department, which has provincial divisions appointed by the provincial Party Secretary. Formally, it is independent, and makes evaluations on the basis of performance in meeting targets that cascade down through geographic levels and departments from centrally set but deliberately vague goals (Edin 2003; Burns and Zhiren 2010). In reality, several recent

[10]The boundary between 'politician' and 'bureaucrat' in the modern Chinese state is somewhat blurred. Here 'politician' is used for someone on a career track towards the Central Committee of the CCP, and 'bureaucrat' all others.

studies have shown that promotion is strongly influenced by local factionalism and personal connections. However, these do not efface performance, and local control over the Organization Department is not absolute. The latter maintains a central system of files, and is anecdotally reported to have units that actively seek through local records for promising bureaucrats of the future. Bureaucrat tenures tend to be coincident with all-government personnel changes, roughly five years or so.

In India the bureaucracy is split between the All India Services and the State Services. The former cover the higher levels of several key functions, such as forestry, police, foreign diplomacy, and, most pertinently, domestic administration. The Indian Administrative Service is recruited through a centrally administered exam which is famously selective, admitting a few hundred each year out of hundreds of thousands of applicants. IAS officers then fill most middle and all upper-tier posts in provincial bureaucracies. Once posted to a province, however, the center loses almost all influence over their careers. As generalists, they are transferred between departments at will by local politicians. Promotion is determined first of all by panels of superiors within the province. Anecdotally, this is principally determined by seniority and "not making a mistake": if an officer has a certain length of tenure without having made a mistake, he or she is usually advanced a level. The one central incentive is that an officer may be 'empanelled', that is elevated to a central post, and the seniormost officers are generally those of high quality (Iyer and Mani 2012). However, this may or may not be in their area of prior experience, and is done exclusively on the basis of provincial-level personnel reports compiled by direct superiors (IAS 2013). Transfers are extremely frequent, with the average tenure in a post being 16 months (Iyer and Mani 2012).

In the formal model below, it seems clear that the *cost of deviation* is substantially higher in India than in China, given the far greater weight of superiors in evaluation, and the *influence of eventual outcomes* is lower, given the noise from frequent transfers, generalist career paths and the greater reliance on pure seniority in promotions. We show that therefore one would expect a much stronger bias against trying new ideas in the Indian bureaucracy, particularly ideas not legitimated by explicit senior approval.[11]

A.1 A model of bureaucratic career concerns

Assume there are two states of the world $\theta \in \{G; B\}$ (Good, Bad) and that each state is equally likely: $p = \frac{1}{2}$. Assume that there are two policies, $pol \in \{s, d\}$. The status-quo s returns $\pi = \bar{\pi}$ in all states, and the risky policy d which returns $\pi = \pi_G$ if the state is G and $\pi = \pi_B$ if the state is B. A bureaucrat receives a signal $t \in \{g, b\}$ about θ. A bureaucrat is then of quality $q \in \left[\frac{1}{2}, 1\right] \Leftrightarrow P(t = \theta) = q$.

The posterior probabilities on each state after signal t for a politician of quality q are given by $P(\theta = G|t = g) = q$, $P(\theta = G|t = b) = 1 - q$. Therefore,

[11] The model below is simply an illustrative sketch for how one might model the comparative bureaucracies. We will develop this in future research.

the expected outcomes from the point of view of an agent of quality q are given by

$$\begin{aligned} EU(\pi|t=g) &= q\pi_g + (1-q)\pi_b \\ EU(\pi|t=b) &= (1-q)\pi_g + q\pi_b \end{aligned}$$

The bureaucrat is evaluated by an informed evaluator (let's call him 'Vin Diesel' after the all-powerful actor[12]), who has control over the bureaucrat's payoff. In particular, he can demote, promote, or maintain the bureaucrat. Eventually, we would like the "promotion" function to depend on three quantities: reputation (perception of the bureaucrat's quality), performance (outcome of the project) and 'craziness' (undertaking the safe or risky project). The promotion function should be an increasing function of the posterior expected quality, the outcome value, and the fact that the project which was undertaken was the safe project. Denote this promotion function $f(q^e, \pi, pol)$.

For now, let us look at a very simple case. Assume that a bureaucrat gets promoted if $f(q^e, \pi, pol) \geq \alpha$ and gets demoted if $f(q^e, \pi, pol) \leq \beta \leq \alpha$. Assume further that f does not depend on reputation (q^e), and the policy outcome always determines promotion or demotion: a successful risky project leads to promotion, an unsuccesful risky project leads to demotion, doing the safe project leads to being maintained[13]. The payoff of promotion, demotion, and the current positions are R^H, R^L, R^M.

Let us then denote $m(x,t)$ the bureaucrat's expected payoff from undertaking decision x after receiving signal t. Then, $m(s,t) = R^M$ for all $t \in \{g,b\}$, and

$$\begin{aligned} m(d,g) &= q \cdot R^H + (1-q) \cdot R^L \\ m(d,b) &= (1-q) \cdot R^H + q \cdot R^L \end{aligned}$$

Let us make the assumption that $R^M \geq \frac{R^H + R^L}{2}$ so that no bureaucrat makes a risky decision when $t = b$.

We then have that only the bureaucrat of quality $q \geq \frac{R^M - R^L}{R^H - R^L} = \bar{q}$ takes the risky decision.

A.2 Adding competence.

Let us try to complicate the model slightly (or see if there are ways to complicate the model). Assume now that f depends on q^e. To make things even simpler, let us assume that the only place where it matters is when a successful, risky project is observed, where a low expectation might not get you promoted contrary to the previous section. So, we have that $\forall q, (1) f(q, \pi_b, d) \leq \beta; (2) \beta \leq f(q, \bar{\pi}, s) \leq \alpha$ and $(3) f(q, \pi_g, d) \geq \beta$ while $\exists q_\alpha \geq \frac{1}{2} | f(q_\alpha, \pi_g, d) = \alpha$. In words (I think!), a failure of the risky project always yields R^L, the safe project always yield R^M,

[12] Star of such minor classics as "Fast and the Furious", and "Fast and the Furious 6".

[13] Namely we assume that $f(q^e, \pi, pol) = f(\pi, pol), f(\pi_b, d) \leq \beta \leq f(\bar{\pi}, s) \leq \alpha \leq f(\pi_g, d)$

and the success of the risky project yields either R^M or R^H depending on the posterior expectation on quality.

Assume that there exists an equilibrium where only types above $\tilde{q}$ undertake the risky project. As we had in my initial note, one can then find the expected quality conditional on the successful accomplishment of the risky project:

$$\bar{Q}(\tilde{q}) = \frac{2(1-\tilde{q}^3)}{3(1-\tilde{q}^2)}$$

We can do something similar when the risky project has failed:

$$\underline{Q} = \frac{1-\tilde{q}^2-\frac{2}{3}(1-\tilde{q}^3)}{(1-\tilde{q})^2}$$

(the latter does not really matter since we assumed that anytime the low quality project was observed, the bureaucrat got demoted – likewise, it does not really matter what the posterior expectation conditional on observing the safe project is since it will always yield R^M irrespectively of the posterior expectation).

If $\bar{Q} \geq q_\alpha$, then we have that $m(d,g) = q \cdot R^H + (1-q) \cdot R^L$ since the posterior expected quality of the bureaucrat who undertook the successful risky project is high enough so that she gets promoted. We end up with the same condition as above: only bureaucrats with quality above $\bar{q}$ undertake the risky project. Hence, given the assumptions we made, there exists an equilibrium where only high ability bureaucrats undertake the risky project if and only if $\bar{Q}(\bar{q}) \geq q_\alpha$.

A.3 Implications.

The exploratory discussion above suggests that focusing on the modelling of bureaucratic incentives is an appropriate place to start. With evaluations of Indian bureaucrats written almost exclusively by their reporting officers, who are the ones to formulate their tasks, the cost of deviation will be high. With frequent transfers, the ability to attribute success from a risky project will be low. As a result, private information that is conveyed to the bureaucrat is unlikely to lead to risky action, unless the bureaucrat is of exceptional quality.

This provides some explanation for why stories of developmental success in India are so often traced to "champions" in the bureaucracy of unusual quality. In contrast, though in China direct supervisors still have substantial influence on evaluation, this is mitigated by the influence of the Organization Department and other reviewers, lowering but certainly not eliminating the cost of deviation, and with longer terms success is more easily attributed. The result is likely to be a much greater propensity for ideas from outside or other sources to turn into action by a larger number of merely above average officials.

This may also explain the limited benefits of India's far greater freedom of expression for effective information generation. The bureaucrat promotion function means that only a very few officials are liable to translate outside ideas into policy adaptations. This is supported by widespread evidence, albeit

anecdotal, from private sector organizations that see policy ideas disappear on the frown of a senior officer to the seeming lack of effect of instruments such as conferences and study tours. In comparison, conferences and studies by the World Bank in China in the 1980s and 1990s had a breadth and depth of impact on mid-level bureaucrats and detailed policy formulation that were and are largely unthinkable in India (Bottelier 2007). The natural implication is that any increase in the volume of such activities is liable to be largely ineffectual.

Of most direct implication, this suggests that some of the highest pay-off institutional reforms in India in the long-term are likely to be these processes of evaluation. Given current structures, it is unlikely that the common "folk wisdom" in this regard, the cliche of introducing mid-career officers from outside the IAS, would be very effective. Such imports would face the same incentive structures and institutional capabilities, and would soon find themselves hewing to the status quo, or being passed over for promotion, quickly becoming ineffectual.

B Information flows (transmitting information).

A country's institutional structure can not only affect the pattern of experimentation, but also the pattern of information transmission from the lower level to the higher level of the political system. An example of a potential mechanism this research agenda should explore is the ways in which competition between lower level politicians or bureaucrats can affect the relationship between *actual* and *transmitted* information: as we suggested above, rivalry can create obstruction, and imperfect monitoring at the higher level might create incentives for a local politician with different preferences to hide or manipulate information.

This would have strong implications for the viability of extensive monitoring, and the trade-offs in the degree to which local actors are informally permitted to co-opt information transmission mechanisms. For this to be meaningful, however, there must in the first place be capabilities to conduct any transmission. In this subsection we consider the differential capabilities to do so in China and India.

The Chinese state has a dense network of institutions that intermediate information flow among the provinces. The most notable perhaps is the system of Party Schools. Thousands of these cover China, with the Central Party School at their apex in Beijing. While district-level schools tend to be underfunded and mostly involved in ideological propaganda, the higher level schools can be lavishly funded and are reported to be areas of intense policy examination and debate. Promising officials are regularly sent for courses at the higher tier institutions, where they are trained in new policy innovations and expected to openly discuss adaptations and variations in their jurisdiction. Such schools systematically unearth information, and, as importantly, form and regularly reinforce networks among officials themselves.

Next to these are a range of official think tanks with cascading local chapters, most notably the Chinese Academy of Social Sciences. Founded in 1977, and directly affiliated to the State Council, it has 90 research centers and is affili-

ated to Academies in every province (that in Shanghai alone has 700 members). Within the state itself there is a further multiplication of research bodies, from the Development Research Center of the State Council to the research institutes and bureaus of the various Ministries. At the other end are the university social science bureaus, whose members actively seek out and examine policy experiments in the provinces (Leonard 2012). Altogether, this plethora of institutions greatly reduces the cost of finding, codifying and transmitting information on local policy innovation, whether through indirect documentation or direct connection.

It is difficult to find much that is analogous in India. There is a National Academy of Administration, but it has limited links to a few provincial schools, and conducts only initial and "mid-career" training. Likewise, there is an Indian Institute of Public Administration, with only an office in Delhi. There are Indian Institutes of Management which sometimes train IAS officers, but these too tend to be autonomous and to privilege theory over disseminating current practice. In think tanks, the National Council of Applied Economic Research is perhaps the most prestigious, and often commissioned for policy studies. But the list of NCAER partner organization contains only two at provincial level in India, and one of those is in Delhi itself. The rest, several dozen, are either central or foreign. Its website lists a contact address in Delhi only. The same holds for ICRIER, a similar body. While some provinces, particularly the more advanced ones, have research institutions in their capitals, there is, to the authors' knowledge, no deep connection among them or between them and institutes in Delhi.

A similar contrast holds in politicians and bureaucrats. The Chinese state is able, at senior levels, to rotate heads of province, an ability it uses at regular periods of five- to ten-years. When this occurs information is transferred directly at the level at which decisions are made. This is clearly only possible within the ambit of the one-party state, so is a learning tool unavailable to India.

In both of the bureaucracies, officials tend to remain in the provinces where they begin their careers, unless promoted to the center. Here again, the residual is important, in that there is some in China, but none in India. In the latter an IAS officer never serves in a province other than their initial assignment, even up to Chief Secretary level (the seniormost position in a province). In China, rotations are known to be possible at such levels, for example the mayoral post in the large municipalities. Bureaucrats may be transferred from poor and remote to more prestigious provinces, as rewards, or vice versa, as punishment, or to transfer information (or both).

The cumulative result of these contrasts is that information flows at vastly greater speeds in China than it does in India. One of the authors recalls making a presentation to a small group of Chinese mayors, and being warned that its content would "be known by half the cities in China within a few months". In contrast, one of the most common requests from IAS officers in States in India to visitors is, "can you tell us what those other two provinces are doing?".

C Decision-making (implementing information).

Finally, a state's institutional structure will also impact the quality and pattern of policy implementation. One question would be to formally analyze the interaction between transparency and political competition on the incentives of politicians to facilitate the implementation of a rival's policy. In particular, with low transparency and high competition, a local politician has a strong incentive to not implement a policy associated with a rival, while in the opposite case, obstructing implementation might be too costly politically. In advance of such analysis, we discuss below how the Chinese and Indian institutions affect implementation more broadly, applying the initial reasoning in Section II.

Here one of the results of clearest applicability is that on the balance of powers. While India's Prime Minister must have legislative support, the judiciary is independent, and, since the early 1990s, legislative majorities have only been possible through coalitions. The chosen strategy to assemble such coalitions has been to apportion Ministries to coalition partners. In effect, this has resulted in a balance of powers not between legislature and executive, but within each branch. At the same time, an increasingly vocal and organized civil society and press has multipled the number of veto wielders, and the judiciary has become increasingly activist (Guha 2007). China, needless to say, is quite different. It is not free of veto wielders, in particular with the oft-noted growth of factionalism and special interests as the economy has grown. Certainly, though, there are many fewer veto wielders, increasing the possible pace and quality of learning (as both economies were lower income until recently).

At lower levels the difference persists, though with a slight narrowing of the gap. Province-level politics varies widely, from States where coalitions are de rigeur to two-party States with alternate, stable majorities (See Chibber 2003 on party systems in India). On occasion, they have been able to forge developmental coalitions that seem to allow rapid advances. Conversely, China's provincial tier is sometimes considered its weakest level, between a strong center and strong municipal and district governments. But India's Chief Ministers still face an active public, organized special interest groups, and an activist judiciary. The difference may be somewhat moot, though, given the enormous difficulties even Chief Ministers with a free-hand will face in obtaining information on adaptations, and the often tenuous links between welfare outcomes and electoral outcomes (ibid.).

Beyond this structural difference, there is a structural gap, which straddles the line between transmitting information and acting upon it. That is, the Indian state is conspicuously lacking in structures and processes to spread information to all possible veto wielders. The United States, after all, has a balance of powers system as well. A full comparison is beyond the scope of this paper, but one would note that a welter of institutions exists there to take information to all veto wielders. Legislatures have extensive staff cohorts, and executive branches have legislative liaisons who interact with them. A dense network of think tanks, lobbyists, journalists and civil society groups conduct and spread research. It was the interaction of all these actors that initiated and monitored

the Massachusetts experiment in healthcare, and then crafted a national law based upon it. Similar processes have long made California the 'laboratory of the country'. The history of that healthcare law, and of the current carbon trading experiment in California, indicates the limit of those institutions in the face of intense ideological polarization, but for long they were able to repeatedly undergird the process of consensus building and subsequent implementation, despite the presence of veto wielders.

D Some initial implications

The Chinese state does possess substantially greater capacities for learning, in precisely the areas we should expect. On the other hand, this returns to the quandary that motivated this analysis. The outperformance is general, across the factors of learning, which leads us to ask: why has China systematically built incentives and capabilities for policy learning, and India has not?

Several answers present themselves. One might be that the Chinese state's reliance on performance legitimacy, as opposed to process legitimacy, has forced it to become better at learning (Zhao and Yang 2013). Yet the Chinese state developed many of these features long before it became dependent on its performance, while its legitimacy was still ideological. Whatever the effects on welfare, the Chinese state under Mao was immensely effective at learning how to implement vast social programs, whether land redistribution, health and education, or violence against its own citizens. So the underlying difference may be that from its beginning the Chinese Communist Party has had a deep concern for the ability to learn through action.[14]

In contrast, until recently, and even then only among a few leaders, it has been difficult to discern much concern with the ability to learn in the Indian state, or indeed its policy system more generally. If the argument developed here is correct, this is a gap of enormous consequence. India will not be able to use the tools for learning of other countries, let alone China. Its unique structure and diversity will not allow this. So the task is steep: India will have to innovate institutions that will allow it to innovate policy.

This is a dilemma of democracy. Some parts of it are easier to answer than others, since some aspects of learning described above are more constrained by democracy than others. The ability to transmit information is most susceptible to positive change within the ambit of democracy. Practically, the massive geographic expansion of the premier national research institutes, think tanks and policy schools would seem both urgent and feasible. Likewise, initial steps have been made by non-profit institutions to provide information clearing among decision makers, whether by supplying the equivalent of legislative staff (e.g., PRS), or through diffusing the capability to reach agreement among competing interests (e.g., the India Backbone Implementation Network).

[14] The origins of this may be traced, as several scholars point out, to the impact of John Dewey's thought on the May 4 movement in China. The result was the early shaping of tools to conduct such learning in China and their deployment through the Party and then the state (Heilmann 2008).

Some democratic countries are also innovating new ways of monitoring that might be feasible in India with careful customization. These are focused on surfacing information and problem solving, as opposed to discipline. They thus require persistence and ingenuity more than top-down control, though a necessary condition is an ability and willingness to make decisions at the seniormost levels, whether a politician or the senior-most bureaucrat, if they cannot be resolved lower down. Examples have been built by mayors of large cities, governors of states in the US, and the Prime Minister of Malaysia. The latter example has as its ultimate goal the slow, incremental change of the way in which the civil service works, through bottom-up "change by doing". Building these will not be easy, but if approached carefully, without unnecessary invocation of excessive "political will", should be possible in time.

Ultimately, though, the results of Section A.1 suggest the largest gains to India's ability to learn are likely to come from reform to the promotion processes of officers and allowance for their rotation between States. One should not be naive that this will be simple. Provincial politicians will not easily allow changes that diminish their power, as must happen if, for example, central reviews are introduced. Diminishing the influence of direct superiors on performance reviews is liable to be resisted by many mid- to senior-level officers. Nevertheless, if done incrementally, with a great deal of consensus building beforehand, and a willingness to compromise and settle for second-best solutions, this may too be possible in time. However difficult, such reforms will ultimately determine India's future more than any change to a policy or group of policies.

IV Concluding Remarks

This paper has outlined a new framework within which to study state learning, by which we mean the generation, transmission and implementation of new information vertically and horizontally across the system. We have suggested ways in which learning might be mediated by various (inherited) institutional structures such as the degree of separation of powers or the career incentives of bureaucrats. We have also described how this framework might be used to better grasp a central question in development, namely why the comparative performance of India and China has been so different in the last 35 years.

Clearly though, this is just a tentative first step, and much work needs to be done. And while much of our discussion has been theoretical, ultimately to make headway one needs to ground this in detailed knowledge of the policy processes of individual policy systems — of countries, states, and municipalities. One might think, for example, of creating a central database of country by year and topic of policy change and see how this systematically relates to different institutional structures. With sufficient archival research, it may be possible to then test the influence on prior outcomes.

Our general message though is unambiguous — it is likely that the study of policy process is at least as important as the policies themselves. The source of the wealth of nations is learning to learn.

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