# Loyalists, Localists, and Legibility: The Calibrated Control of Provincial Leadership Teams in China

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**Abstract**

Selecting provincial leaders is a fraught task for authoritarian regimes. While central authorities more readily trust provincial leaders with close ties to the center, such loyalists may lack the local knowledge and connections necessary to govern adeptly. Using an original dataset on the tenures and backgrounds of China's provincial party standing committee members, we explore how Beijing fine-tunes provincial leadership teams to resolve this dilemma. Our analysis challenges the conventional wisdom that Beijing exerts its tightest personnel control in strategically important provinces. Rather, we show that Beijing tolerates a significant degree of local leadership embeddedness in provinces with complex governance challenges even when these provinces are important. And when the center reasserts control through loyalist personnel appointments during times of crisis, it does so in a balanced manner. These calibrated personnel strategies highlight the extent to which authoritarian systems rely upon local expertise and experience as well as top-down control.

**Keywords**
China, personnel management, central-local relations, authoritarian regimes, legibility

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Governing the provinces is among the most sensitive challenges faced by large authoritarian states like China. The central state depends on political support and economic resources from the provinces in order to function. Regime stability can be threatened when provinces are insubordinate, or when governance failures lead to regional crises. However, central authorities lack the information and organizational capacity to govern the provinces directly, and they must delegate at least some power to subnational actors over whom they have imperfect oversight. Of course, central control over the appointment and removal of provincial leaders remains a potent political tool in China and other authoritarian systems.[1] But provincial leaders' simultaneous roles as agents of the center and stewards of their regions creates serious political conundrums,[2] and choosing regional leaders involves dilemmas in its own right.

A key difficulty in selecting regional leaders is the tradeoff between tightening central control and ensuring responsive regional governance. Appointing individuals with close ties to the central state rather than local politicians to serve as provincial leaders limits the risk that provinces will challenge central authority or flout central policies. However, greater central control may come at the cost of ham-fisted regional governance: provincial leaders who are loyal to the center but lack local knowledge and working relationships may adopt inappropriate policies for their regions or alienate local elites. Indeed, past research has found that "centralists" and "localists" behave differently in provincial leadership posts, with important implications for provincial governance and development outcomes.[3] Central leaders are thus forced to weigh competing concerns, especially in large, regionally diverse countries. As Jae-Ho Chung notes, "the leaders of the People's Republic—whether Mao, Deng, Jiang, or Hu — all agonized over the task of keeping an intricate balance between promoting national goals and safeguarding local interests."[4]

How do central authorities reconcile the need for control with concerns about responsive regional governance when selecting provincial leaders? What explains the decision to appoint more politically loyal centralists to provincial leadership posts in some cases while placing more regionally connected localists in other instances? Past scholarship on authoritarian regimes demonstrates that central authorities appoint top regional leaders in tailored ways, opting for different types of leaders depending on which concerns loom largest.[5] In regions of strategic importance to the country as a whole, autocrats may install centralist leaders to ensure sufficient control. In less strategically important areas, or regions that are culturally distinctive, autocrats may instead appoint localists who are more familiar with the regional political landscape.[6] While targeted selection of top provincial leaders is an important political instrument, however, it is a crude one. Some strategically important regions also pose idiosyncratic governance challenges, requiring a careful balance of central control and regional responsiveness. And individual leaders are unpredictable, so there is always a risk of misbehavior by wayward regional bosses.

Focused on contemporary China, this paper seeks to clarify how central authorities resolve these quandaries of provincial governance. Building on insights from past scholarship, we provide a more nuanced account of how authoritarian regimes use the levers of personnel control to keep provinces both loyal and competently managed. We contend that, beyond strategically choosing provincial chiefs, central authorities assemble larger provincial leadership teams in ways that balance central control and regional governance considerations. The top leaders (*yi ba shou*) of China's provinces are very powerful figures, but second-tier provincial leaders also play key roles in provincial politics and policymaking.[7] We highlight how the central party-state's control over the composition of provincial party standing committees (PPSCs) – key leadership groups of roughly a dozen members that oversee politics and

policymaking in China's regions – enables it to set leadership lineups that mix centralists and localists in different proportions.

Looking at larger provincial leadership teams also changes our view of central authorities' personnel appointment strategies. Previous scholarship on China's personnel strategies, focused almost exclusively on appointments of top provincial leaders,[8] has highlighted a *logic of central control*, arguing that Beijing appoints centralists to run the most politically and economically important provinces, where control is perceived as most essential to maintaining regime stability. However, we argue that a *logic of responsive governance* becomes equally or more important when it comes to larger provincial leadership teams. Personnel decisions are constrained by the need to ensure locally sensitive governance, which is a greater challenge in some places than others. We contend that the degree of personnel centralization Beijing chooses depends to a large extent on regions' relative "legibility"[9] – on how intelligible local affairs are to state actors. Less legible provinces have more localized PPSC teams, which help ensure responsive governance in difficult settings.[10]

After laying out this argument, we present empirical evidence from an original dataset containing career information on all PPSC members for the period 1996-2013. Analysis of almost two decades' worth of data for 31 provincial-level units allows us to observe PPSC composition across multiple leader tenures and provincial leadership reshuffles, and makes possible a more comprehensive assessment of the degree to which provincial leadership lineups are centralized. Using this dataset, we explore how different types of individuals are combined on provincial leadership teams to balance different competencies, and we document wide variation over time and across provinces in the extent of overall personnel centralization on PPSC teams. We find that even as personnel centralization has gradually increased across all provinces, most likely enabled by improvements in central state capacity that increase legibility,

the use of calibrated personnel strategies that combine centralists and localists on PPSCs continues.

We go on to show that the pursuit of responsive governance is just as important as the need for central control in determining the centralization level of provincial leadership teams. Although we do find systematically greater centralization of leadership teams in regions of political importance such as the capital region and China's provincial-level municipalities, we find that provinces with less legible governance landscapes – those that are economically dynamic, geopolitically sensitive, and socio-culturally complex – tend to have more localized rather than more centralized PPSC lineups, even when they are nationally important. For example, China's most conflict-prone ethnic minority regions have had relatively localized leadership teams, which suggests that local knowledge remains crucial even amid the implementation of repressive strategies by the party-state.

Finally, we show that although the logic of responsive governance applies during "normal" times, in times of perceived regional crisis the center appoints more centralists even as it keeps in place a subset of locally knowledgeable officials. This echoes recent findings that corruption scandals can spur provincial leadership reshuffles and outsider appointments.[11] Taken together with evidence that China's most politically sensitive regions have high personnel centralization, this implies that the center follows a logic of responsive governance when it *can*, but reverts to a logic of central control when it *must*. Neither logic holds in all times and places, further indicating flexibility and adaptiveness on the part of central authorities.

A closer look at the Chinese setting, where central leaders have grappled for centuries with the problem of how to reconcile political control with regional dynamism, offers broader insights about central-local relations in authoritarian systems. Even in authoritarian, unitary systems where the center has the political power to dictate regional personnel appointments,

central leaders willingly trade away some degree of control to ensure responsive governance and accommodate local interests. As we emphasize, the terms of this tradeoff vary depending on the characteristics of different regions. In China, central authorities avoid extremes by assembling broader provincial leadership teams that balance loyalty and localism. Our findings raise the possibility that second-tier provincial leaders also play a subtle yet critical balancing role in other authoritarian systems, and our methodology for measuring personnel centralization in a more comprehensive manner could be fruitfully adapted to other settings.

## Reconciling central control and responsive governance in choosing provincial leaders

Existing scholarship from the Chinese context frequently highlights what we call a logic of central control behind the appointment of regional leaders. Such a logic dictates that the officials whom the center trusts most should be appointed to the regions most vital to national political stability and/or economic development. However, other China-based and comparative scholarship places more emphasis on the challenge of territorial governance, and points to what we term a logic of responsive governance shaping personnel choices. Such a logic calls for accommodating regional needs and interests in difficult-to-govern places by appointing officials with local experience or ties. As we discuss below, neither logic on its own is fully satisfactory; the key question is how these contrasting logics are reconciled in practice and which logic prevails when the two are in conflict. Although past work lends helpful insights along these lines, existing scholarship has failed to provide a systematic account of how provincial personnel appointments reconcile central control and responsive regional governance.

### *Strategic importance and the logic of central control*

For the Chinese Communist Party (CCP), like other authoritarian rulers, it is a political imperative of the first order to maintain control over subnational authorities. To guarantee regime stability and national security, central leaders must prevent provincial actors from challenging central authority or behaving in ways that undermine national unity. And to govern effectively at the national scale, central authorities must ensure that subnational units comply with key central policies. This requires subnational leaders who are loyal to the center and who comply with central demands to implement policies even when they conflict with local interests.

Central control depends in large part on the specific individuals appointed as provincial leaders. The authority to assign, supervise, and remove subnational officials gives central leaders at least some leverage over all subordinates.[12] So does the center's ability to selectively dole out economic patronage to subnational governments.[13] But these types of leverage are insufficient to ensure full compliance with central objectives given limited capacity for direct monitoring. Some provincial leaders are more politically reliable than others based on their backgrounds and career trajectories. A range of past scholarship has argued that centralist cadres, those with close ties to the national leadership, are more likely to remain loyal to the center and do its bidding than localist cadres, who have personal roots or lengthy work experience in the regions they serve and may thus exhibit divided loyalties.[14] Indeed, this principle was the basis for China's imperial "law of avoidance" (*huibi zhidu*), whereby regional officials were assigned to non-native jurisdictions and rotated regularly—a norm the CCP has tried to resurrect, with some success.[15]

Maintaining central control is particularly essential in regions of strategic importance to the nation as a whole—regions that make outsize contributions or pose special risks to the larger polity.[16] Different types of regions may count as strategic. First, there are key political hubs such as the national capital region and other leading metropolitan centers that house party and state institutions. Second, there are geopolitically important areas, including those that lie on militarily

sensitive international borders, those that occupy large and variegated expanses of territory, or those that are highly populous and encompass large numbers of local jurisdictions. Third, there are economic engines, areas that are centers of industry, commerce, or innovation that generate economic growth and fiscal revenue for the country as a whole. Fourth, there are regions prone to social tensions or anti-regime sentiment, such as areas with high levels of socio-cultural distinctiveness or diversity. A loss of control over these types of regions could conceivably threaten regime stability or the territorial unity of the nation as a whole.

Past research on China notes that both historically and during the contemporary period central authorities have been careful about whom they appoint to run strategically important regions. Qing imperial authorities reserved their most trusted and experienced officials for highly sensitive posts.[17] In recent decades, China's leaders have preferred outsiders with strong ties to the central party-state to serve as party secretaries of the country's key metropolitan centers, economically prosperous and globalized provinces, and ethnically diverse frontier regions.[18] Yumin Sheng argues that such appointments represent an attempt to "co-opt and control the more economically resourceful but potentially politically restive subnational regions."[19] By keeping these regions under the direct supervision of loyalists, Beijing minimizes the threat that these regions will disobey its orders or attempt to break away, even if they enjoy a relatively high degree of administrative autonomy. In contrast, in regions of lower national importance, there is more scope to appoint localist leaders, as the costs of any deviation from central priorities will be more limited. The *logic of central control* thus leads us to expect that, other things equal, regions with greater strategic importance should have greater personnel centralization.

### *Legibility and the logic of responsive governance*

Notwithstanding the importance of ensuring control over provincial leaders, this is not the center's sole concern; it also needs provincial leaders who can govern adeptly. Central authorities rely on provincial leaders to generate economic growth, deliver fiscal revenue, and preserve order. When provincial leaders adopt inappropriate policies or mismanage relationships with local elites, there can be serious consequences. Economic stagnation, elite conflicts, or social tensions in the provinces come at an economic cost to the central state and spill across jurisdictions to create larger political problems.

To achieve their administrative goals, provincial leaders need detailed knowledge of their territories and the socio-political landscapes within them. As James C. Scott observes, all state actors are constrained by the degree of "legibility" of their realms—by how far and how clearly they can "see" into their domains.[20] Legibility, in Scott's sense, is about the extent to which state actors are able to map out and monitor—and hence manipulate—material resources and social actors in their territories. Legibility is particularly important for provincial leaders, who are directly responsible for large, multi-functional territorial units. As provincial leaders make political decisions and craft public policies, they need to be familiar with their surroundings—the relevant constellation of local actors, the range of local norms and institutional workings, the trends of public opinion, or the geographies and resource endowments of their regions. To ease information-sharing and policy coordination with local elites, and to avoid clashing with them when implementing controversial or locally unpopular policies, provincial leaders must be able to distinguish between potential allies and foes and form working relationships accordingly.[21]

Legibility depends on the vantage point and goals of state actors, and it is difficult to measure directly or on a uniform scale because the specific factors influencing legibility may vary (or may matter in varying proportions) in different contexts. Indeed, previous literature has struggled to identify a single metric to measure legibility, generally instead focusing on relative

improvements or deterioriations in the ability of the state to penetrate society.[22] What is clear, however, is that state actors' ability to see into society and map out and monitor material resources and social actors is a function of both state capacity as well as the underlying complexity of the societal terrain.

On the one hand, legibility is a product of state-building efforts. As Scott notes, modern bureaucratic states take various steps—from population censuses and cadastral surveys to language standardization policies and urban planning programs—to improve legibility throughout their realms. State agencies strive to survey and physically, institutionally, and culturally standardize their territories to facilitate more unified and centralized administration, turning expanses of "exceptionally complex, illegible, and local social practices" into "a standard grid" that can be more readily manipulated.[23] Along similar lines, Michael Mann describes how central states gradually build the information, resources, and organizational links that constitute "infrastructural power"—the capacity to penetrate and orchestrate society.[24] And state informational capacity can make local state actors themselves more legible to central authorities, a phenomenon Jonathan Kinkel and William Hurst call "intra-state legibility."[25]

However, these projects to standardize social practices and develop state infrastructural capacity require decades of effort, and they tend to meet the most resistance in exactly the areas that present the most complex governance challenges. State efforts to penetrate society naturally face resistance: as Neil Diamant shows, even during the height of Mao-era efforts to penetrate society through communization and mass line campaigns, efforts to increase legibility by demanding that citizens register marriages prior to consummation led to widespread evasion and resistance.[26] And these efforts are likely to be least fruitful when governance challenges are most complex.[27] In both the short run and the long run, therefore, societies remain at least partly illegible and impenetrable to state actors, and states must learn to operate with blurry vision.[28]

Given the stubborn challenges of state-building, legibility is determined in large part by the underlying complexity of the landscapes that state actors oversee. We focus in this paper on the deep-seated regional characteristics that make different parts of a country more or less legible to the state. Geographic, economic, as well as socio-cultural factors render certain territories harder than others for state actors to map and penetrate. In terms of geography, regions that lie along international borders present significant territorial governance challenges, as do subnational regions that are physically expansive or that contain many internal jurisdictions.[29] In terms of economic structure, regions with more prosperous and internationalized economies may be difficult to map and manage because they are home to complex, rapidly shifting networks of commercial and industrial activity, cosmopolitan social landscapes, and demanding citizens.[30] In terms of socio-cultural composition, regions with distinctive or internally diverse ethnic makeups are likely to present legibility challenges, and standard administrative approaches may be unsuitable for minority groups with distinct identities, traditions, and cultural sensitivities.[31] Highly urbanized regions can also pose challenges, insofar as the social complexity and dynamism of urban areas makes them hard for agents of the central state to see into and fully map.[32] Other kinds of territories, by contrast, are more legible to state actors. Less geographically forbidding, economically complex, or socio-culturally diverse territories—heartland agricultural regions, for instance—are relatively legible to state actors and simpler to govern under normal circumstances. In such places, it is easier for state actors to get the lay of the land, grasp the concerns of local society, and co-opt (or displace) local elites.

Faced with complex regional landscapes they cannot easily map or standardize, central authorities in settings like China practice "adaptive" regional governance: administration that is tailored to and responsive to diverse local conditions even as it promotes central policy goals.[33] Administrative decentralization helps to reduce the distance between the governing and the

governed, yet decentralization alone is insufficient to close the legibility gap. Although provincial (or sub-provincial) leaders are geographically and socially nearer to local society and elite networks than the central government, they may still be disconnected from and ignorant of grassroots-level dynamics. In most cases, therefore, adaptive regional governance requires officials who are not only based in but also "embedded"[34] in their jurisdictions.

Although central authorities would prefer to appoint trusted loyalists, they often find it necessary to install regional leaders with extended local experience or deep local connections. As Scott notes, when central state actors struggle to penetrate local social structures lack "a detailed 'map'" of society, they are prone to mismanaging public affairs. They must therefore rely on intermediaries "who know the society from inside [...] Without this mediation—and often with it—state action is likely to be inept, greatly overshooting or undershooting its objective."[35] Even when central authorities have the political ability to appoint and replace regional leaders at will, the challenge of ensuring effective governance in illegible regions leads them to choose provincial officials who have served for long periods in their regions and forged local connections.[36]

A brief look at the experiences of two Chinese provinces—Guangdong and Hebei—helps to illustrate the importance of state legibility for personnel strategies. Guangdong province is China's largest economic hub, the second largest province in terms of population, and China's gateway to the world—it has unarguable strategic importance. However, Guangdong has long presented legibility challenges for the party-state, and the center's personnel strategy towards Guangdong shows the limits of centralization strategies. Guangdong is located far from Beijing on China's southern coast, and its large population historically has displayed a strong sense of local identity and has spoken Cantonese and other distinctive southern dialects. Further limiting state legibility, the province has a long tradition of international commerce and vibrant societal

organizations (including lineage groups and commercial societies), and it is home to cosmopolitan urban areas.[37] As such, China's central leaders have harbored concerns about political localism and inadequate central control in Guangdong since the early years of the PRC. However, as Yongnian Zheng explains, Beijing discovered through its experience with campaigns against Guangdong localism in the 1950s that an excessively tight grip was counterproductive.[38] In a region with a distinctive identity and complex policy challenges, personnel centralization divided locals and outsiders and hampered administration.[39] As Beijing learned during the 1980s, it was better for development and governance to tolerate the presence of Guangdong locals in the provincial establishment, despite the province's strategic importance.[40] For example, since 1990, two Guangdong party secretaries and four different governors have been provincial natives.[41]

In strategically important provinces with better state legibility, however, central authorities need not compromise control to the same degree to ensure effective governance. Consider China's Hebei province, a marked contrast to illegible Guangdong. Hebei surrounds Beijing geographically, which means its political stability is of vital interest to central authorities but also means that the province shares cultural and linguistic similarities with the capital. Much of Hebei comprises agricultural plains and smaller cities, and Hebei lacks the "complex landowning lineage organizations" found in Guangdong.[42] For centuries, Hebei has experienced the tight grip of central authorities, and its political-administrative institutions have been closely entwined with those of the national capital.[43] Indeed, the province's very boundaries (and names) have been changed frequently over time to suit the needs of national politics. In this more legible setting, it has proven far easier for the contemporary party-state to appoint outsiders as leaders and exert a heavy sway in regional politics. After 1990, for instance, only one Hebei party secretary (Xing Chongzhi) and one governor (Guo Gengmao) have been provincial natives.

As these two cases show, state (il)legibility can place limits on central authorities' impulse to tighten control by influencing the costs and benefits of personnel centralization. While there is always a tradeoff between central control and responsive governance, the terms of this tradeoff vary across provinces depending on the complexity of provincial affairs. Personnel centralization comes at a particularly high cost to governance quality in regions with low legibility. In more legible regions, however, central authorities can tighten control without too greatly harming the quality of regional governance. This logic of responsive governance thus suggests that, other things equal, less-legible regions should have lower personnel centralization.

Before proceeding, it is important to clarify that the decision to retain localist officials in regions of low legibility does not preclude the use of heavy-handed or coercive governance tactics against local society. Responsive governance as we define it here is not democratic or locally accountable governance as such; it is simply governance that is informed by local knowledge, relationships, and experience. Indeed, when central authorities favor the adoption of hardline policies toward elements of local society but the level of state legibility is low, design and implementation of such policies is likely to be entrusted to localist actors who are better positioned than outsiders to target coercion and manage societal backlash.

This can be seen directly in China's management of its ethnic minority regions. In Xinjiang, Tibet, and other ethnic minority regions, China in the reform era shifted towards a policy of co-optation under which local ethnic minority cadres rose to high ranks in provincial leadership bodies.[44] Initially, these cadres were promoted to help implement relatively accommodating policies in the 1980s after decades of repressive governance by outsider Han cadres. However, when these accommodating policies were abandoned in favor of a return to more repressive policies in the following decades, the local ethnic minority cadres remained in place and became key facilitators of more hardline policies.[45]

## Shuffling regional leadership teams to meet different regional challenges

The above discussion gives a preliminary answer to the question of how central authorities reconcile central control and responsive governance in choosing provincial leaders: the center can appoint different types of individuals to lead different types of provinces. Trusted centralists can be appointed to regions of high national importance; more locally embedded or experienced leaders can be chosen for regions with low state legibility. Yet, relying on targeted appointments of top leaders cannot be the whole answer. First, as noted with Guangdong, there is the problem that some of the same factors that may make a region strategically important may also render it illegible for governance. Installing centralists in important but illegible provinces could result in policy mistakes or mismanagement of local political relationships in precisely those provinces where such errors would affect the country as a whole. Second, there is a danger for the center of betting too heavily on any given individual. Even seemingly loyal subordinates may run wild if entrusted with too much power. Errant behavior by regional officials like former Chongqing party secretary Bo Xilai, himself a Communist Party "princeling" and former central minister, underscores such dangers. Choosing between a loyalist or a localist regional leader involves a binary choice, when what central leaders need are more nuanced personnel options.[46]

There is, however, a way out of this bind for central authorities: the center can look beyond top leaders to manipulate the composition of larger provincial leadership lineups. By strategically shuffling provincial leadership teams, it can strike a balance between central control and local sensitivity. Along these lines, previous scholarship has noted the careful matching of provincial leadership duos to ensure both control and responsive governance in imperial China and the contemporary PRC alike. Qing emperors often paired ethnic Manchu (and hence politically reliable) military viceroys with ethnic Han Chinese governors who possessed more

practical knowledge of their regions.[47] A contemporary parallel of this practice is "Beijing's design to utilize Party personnel for local control while taking advantage of native governors for economic development."[48] Similarly, in China's so-called ethnic autonomous regions, it has been common practice to appoint second-ranking leaders of minority background.[49]

This logic presumably extends to the larger leadership teams that preside over provincial units. Yet, while past work notes the importance of second-tier leaders in regional governance, there has been a dearth of literature systematically exploring the composition and reshuffling of provincial leadership teams across time and provinces in contemporary China.[50] Notwithstanding the abundance of existing scholarship on the appointments and behavior of top provincial leaders in China, as well as work on regional leaders in Russia and other settings, we still lack a systematic picture of how autocrats manage larger regional leadership lineups to ensure both central control and responsive governance. To what extent, and in what ways, are centralist and localist officials combined on provincial leadership teams? Does the makeup of leadership lineups vary predictably based on regional characteristcs?

## *China's provincial party standing committees (PPSCs)*

To address these questions, we examine in detail the composition and turnover of China's PPSC lineups. Besides appointing each province's provincial party secretary and governor, Beijing has final authority over the choice of deputy party secretaries and other members of the PPSC.[51] As Cheng Li explains, "a standing committee of the CCP is not only the most powerful decision-making body at the national level, but is also where the seat of power lies at the provincial, municipal, and county levels as well."[52] In recent years, PPSCs have had roughly a dozen members, including the party secretary, governor, two to four deputy party secretaries, one or more deputy governors, and heads of key party departments and military commands.[53]

The provincial party secretary and governor are the highest-ranked officials in a province, but the sheer size and complexity of provinces, and the fact that party secretaries and governors rotate frequently, make their deputies very powerful in practice. Generally, party secretaries take charge of political affairs and set high-level development strategies, while governors oversee day-to-day government work and major initiatives.[54] Other PPSC members play key roles in subnational governance, including economic management, law and order, party discipline, military affairs, mass mobilization, and propaganda. Past scholarship highlights the important role larger PPSCs play in political decision-making and selection of lower-level leaders,[55] and notes that "second-tier" provincial leaders such as deputy party secretaries often hold key policy portfolios and exert considerable sway over provincial governance and development approaches.[56] Empirical studies have demonstrated that PPSC composition can influence the policy priorities and spending patterns of provincial governments[57], and that PPSC turnover affects provinces' economic development.[58] In short, the composition of PPSCs has important implications for governance in China's provinces, and central authorities are likely to be very careful about the cast of officials appointed to these bodies.

## *Empirical predictions*

There are three main components to our argument and corresponding hypotheses. First, we argue that China's central authorities rely not merely on top provincial leaders but just as much on larger provincial teams to balance the imperatives of central control and responsive governance. We therefore expect to see leadership strategies in provincial appointments that blend different competencies and hedge political bets instead of leadership teams that are thoroughly loyalist or localist in makeup. We do not minimize the importance of top leaders, which has been

highlighted by past work. However, we stress that top leaders operate alongside deputies who may balance out their political tendencies and compensate for their shortcomings.

*H1. China's regional leadership teams blend centralists and localists to balance control and governance imperatives.*

Second, we argue that there is a recognizable logic as to where we should find more or less centralized leadership teams, and we expect that the overall degree of centralization of PPSC lineups should be calibrated to the characteristics of particular regions or to changes over time. Provinces' strategic importance is a factor, but we argue that it will be tempered and frequently overridden by state legibility constraints. Whereas previous work has highlighted the tendency for centralist top leaders to be appointed in strategically important provinces, we expect that the larger leadership teams in such provinces will feature officials with local origins or work experience. Indeed, controlling for factors related to legibility, we believe that the tendency for top leaders to be appointed to strategically important provinces will itself be mitigated. And we expect to find relatively localized leadership teams in provinces that present particular challenges in terms of state legibility.

*H2a: Other things equal, regions with greater governance legibility should have greater personnel centralization and regions with greater importance to the nation as a whole should have greater personnel centralization.*

*H2b. Generally, the logic of responsive governance will temper the logic of central control; regions that are nationally important but illegible will have relatively less personnel centralization.*

Third, we contend that these central strategies should be adaptive and responsive. The foregoing predictions are based on static provincial characteristics, but in reality provinces' political and economic affairs are in flux, and we expect Beijing to adjust personnel strategies along with changing provincial circumstances. On the one hand, gradual improvements in state legibility may affect Beijing's personnel strategies. Following the partial breakdown of the party-state that occurred during the Cultural Revolution decade (1966-1976), and particularly since the 1990s, China has worked aggressively to enhance the fiscal, organizational, and informational capacity of the central state and the organizational reach of the party.[59] As central authorities strengthen the state's infrastructural power, they should be able to improve legibility across much of the country, making it easier to increase political centralization without substantially harming regional governance.

However, as discussed earlier, state-building is a costly, long-term solution, requiring many years if not many decades to significantly facilitate more centralized governance. The state's capacity to see into society and the economy is relatively fixed in the short term. And state-building is most difficult and slow-going in precisely the regions where state legibility and central control are lacking—places such as China's Guangdong province.[60] Therefore, even as the baseline has shifted, cross-provinical differences in governance legibility have likely persisted, with some parts of the country remaining less legible to the central state than others.[61] Therefore, we expect that despite a secular trend towards greater centralization across the board,

Beijing is likely to maintain a differentiated approach to provincial personnel management, pursuing more or less personnel centralization in accordance with varying local constraints.

*H3a. State-building efforts have enabled an overall trend towards greater personnel centralization, but large variation still remains across provinces.*

Besides the secular trend toward greater centralization, we also expect that at moments of crisis the logic of central control may reassert itself. In normal times, the center is likely to accept that responsive local governance is better for long-term regime interests than forced alignment with central priorities. In times of crisis, however, the center cannot afford this long-term view, and should instead appoint centralists to "stop the bleeding" and assert control. Theoretically, however, it is not clear whether such reassertion of central control should be greater in different types of provinces. As with the logic of central control more broadly, it is likely that crises in important regions will have the most dire consequences for the nation as a whole. However, crises imply that regional leadership teams have already failed, so the center is likely to install its favored agents (at least temporarily) regardless of province type.

*H3b. During moments of crisis, the logic of central control will reassert itself and the center will appoint loyalists, irrespective of regional characteristics.*

## China's provincial standing committee lineups: variation over time and across provinces

To gain a more comprehensive picture of provincial leadership appointments and test the hypotheses outlined above, we assemble a novel collection of data about the makeup of China's

PPSC and the personal and career backgrounds of PPSC members.[62] The central party-state's control over the composition of full PPSCs, and not simply over provincial party chiefs and governors, gives Beijing varying degrees and types of centralization to choose from and allows Beijing to offset the risks of top leaders veering too far in one direction. Our dataset covers the years 1996 through 2013 and contains detailed information on 1443 unique PPSC members.[63] Relevant biographical data include home province, tenure on the standing committee, and career background, including length of time spent in provincial and central work units. Our unit of analysis is the province, not the individual, so we collapse the biographical data into 557 province-year observations, taking mean values across our variables of interest to generate data for each province-year.

### *Measuring personnel centralization*

The key to our empirical strategy, and one of the novel contributions of this paper, is to measure centralization of PPSC personnel in a comprehensive manner. We are interested both in comparing the overall degree of central control across province-years and in clarifying how the center chooses different types of standing committee members to calibrate the central or local bias of the PPSC as a whole. Therefore, we look not only at top provincial leaders but also at second-tier PPSC members, and we use multiple indicators of centralization to construct a composite centralization index.

The most important aspect of centralization as understood here concerns the work history of standing committee members. Work history offers the most straightforward picture of where leaders have spent their time and with whom they enjoy political connections. Past work has shown that provincial leaders with extensive central work histories are more likely to prioritize central interests, while those with long local work histories are more responsive to local

interests.[64] We operationalize localized work history as 10 (non-consecutive) years of work experience within a province, the equivalent of two standard terms of employment. Due to its relative rarity and greater career significance, central work experience is given a less stringent cutoff: we code PPSC members who have worked in China's central party and state organizations for five or more years – the equivalent of one standard term – as having extended central work history. Central and local work histories are not mutually exclusive; some PPSC members have both central and local work experience, while others have only worked in different provinces and thus have neither central nor local work experience based on these definitions. (In such cases, officials are assumed not to have clear political biases.) Because provincial party secretaries and governors wield more power than other members of PPSCs, we examine their career backgrounds separately from those of rank-and-file members.

In addition to career background, we look at other individual and group characteristics that may affect the loyalties of PPSCs. The home provinces of standing committee members may be important in shaping their political ties; an individual born in a province may have tighter social and psychological links to that province. Again, we consider rank-and-file PPSC members separately from party secretaries and governors. Beyond individual-level biographic variables, the effectiveness of central control over provincial leadership teams may also depend on the length of time PPSC members have worked together in the local environment. Limiting this combined tenure should help prevent the formation of cliques that oppose central goals and forestall "localism" that is acquired on the job. (While the other indicators refer to work experience prior to entry onto the central committee, a long tenure on the standing committee is itself likely to "localize" cadres.) We proxy for this dimension of central control using the average tenure length of all standing committee members.

In our baseline approach, we do not include concurrent appointment of provincial party secretaries to the central Politburo as one of our primary indicators for personnel centralization because of the ambiguous political meaning of concurrent appointments. Although some past work treats concurrent Politburo appointment as an indicator of central control[65], other scholars note that concurrent appointments can also represent a concession to provincial power.[66] Anecdotal evidence from national-level cases like those of Bo Xilai and Chen Liangyu suggests that Beijing's control over so-called concurrent centralists may be quite weak in practice,[67] and research at the local level demonstrates that county-level leaders with concurrent membership on prefecture party standing committees enjoy greater local bargaining power and achieve faster local economic growth.[68] While we do not use a concurrent Politburo appointments indicator in the baseline analysis, we verify in robustness checks that including the measure does not affect our main findings (see Appendix Tables A6 and A7).

## *The varied makeup of China's provincial leadership teams*

Table 1 provides an overview of provincial scores on these different dimensions of personnel centralization. These summary statistics highlight striking differences in the degree of centralization of party secretaries, governors, and rank-and-file PPSC members, and show the extent to which larger PPSC lineups are localized. Compared to party secretaries, governors and rank-and-file members are much more likely to have local experience and much less likely to have central experience. More than half of all province-years in the sample have a local governor and over 60 percent of rank-and-file province-years are filled by members with local work history, while fewer than 20 percent of province-years have a local party secretary. Similarly, 22 percent of party secretaries have central work experience as we define it, compared to 15 percent of governors and only 9 percent of rank-and-file members. Thus, as these summary statistics

make clear, PPSC lineups overall show a considerable degree of local embeddedness, thanks to the presence of many localist rank-and-file members and governors. This helps explain how adaptive governance can be maintained even when provincial party secretaries are centralists; the presence of multiple second-tier leaders with extended local experience ensures that leadership teams are collectively knowledgeable about their local surroundings.

**Table 1: Summary statistics for indicators of central control over standing committees**.

| Variable description | Mean | St. Dev. | Min. | Max. |
|---|---|---|---|---|
| Share of standing committee members with central work experience (excluding Party secretary and governor) | 0.093 | 0.103 | 0 | 0.545 |
| Share of standing committee members with local work experience (excluding Party secretary and governor) | 0.619 | 0.150 | 0.2 | 1 |
| Share of standing committee members working in province of origin (excluding Party secretary and governor) | 0.411 | 0.185 | 0 | 0.923 |
| Party secretary local work experience (0=no, 1=yes) | 0.189 | 0.391 | 0 | 1 |
| Party secretary central work experience (0=no, 1=yes) | 0.224 | 0.418 | 0 | 1 |
| Governor local work experience (0=no, 1=yes) | 0.537 | 0.499 | 0 | 1 |
| Governor central work experience (0=no, 1=yes) | 0.154 | 0.362 | 0 | 1 |
| Party secretary in province of origin (0=no, 1=yes) | 0.108 | 0.310 | 0 | 1 |
| Governor in province of origin (0=no, 1=yes) | 0.363 | 0.481 | 0 | 1 |
| Average standing committee tenure length | 3.567 | 0.994 | 0 | 6.933 |

**Note:** All variables have 557 observations. As noted above, these observations are collapsed province-year means. In some cases, we do not have complete information for all standing committee members. See discussion in online appendix.

***Source:*** Authors' calculations based on PPSC database.

The averages reported in Table 1 conceal important variation over time and across provinces in the degree of personnel centralization. Cross-provincial variation is especially striking. For instance, fewer than 45 percent of rank-and-file members had local experience in Hebei during the time period we examine, while more than 75 percent had local experience in Shandong. In Sichuan, a party secretary with central experience held office over 75 percent of the time, while in Jiangxi, no party secretary in the sample had central work experience. And

although Anhui since 1996 has not had a governor with local experience, all of Guangdong's governors have had local experience.

Additionally, as hypothesized, for PPSC lineups as a whole, there is a trend towards greater personnel centralization between 1996 and 2013.[69] This is driven by changing work histories for party secretaries and rank-and-file standing committee members; governor work histories have not exhibited a distinct trend over time. Although fewer than five percent of rank-and-file members had central work experience in the mid-1990s, by 2013 20 percent did. In terms of local experience, in 1998, nearly three-quarters of rank-and-file members had ten years or more local work experience, but by 2013, fewer than half did.

This trend of growing personnel centralization across the board is consistent with both the logic of central control and the logic of responsive governance. On the one hand, Beijing may be pursuing greater personnel centralization to bolster central political control during an era of rapid economic growth and globalization. On the other hand, tighter personnel control is possible in practice because of growing central state capacity, which makes for improved legibility. Efforts to build a more standardized and professionalized state bureaucracy and to reinvigorate party groups throughout the country have gradually improved the informational and organizational reach of the central party-state.[70] The resulting increase in state legibility across China's regions has shifted the tradeoff between central control and responsive governance, letting Beijing tighten personnel control without undermining governance quality.

Notwithstanding an overall trend of personnel centralization, however, PPSC lineups have continued to show a remarkable degree of local embeddedness. As late as 2013, roughly half of rank-and-file members and almost 40 percent of governors had spent at least ten years in their provinces prior to joining the PPSC. This, along with the trends for governors, shows that there have been clear limits to personnel centralization, and underscores the role rank-and-file

members and governors play in bringing local experience to provincial leadership teams. This is what analyses that focus on top leaders alone miss in their assessment of personnel trends.

### *Towards a comprehensive personnel centralization measure*

Differences in the degree of centralization of party secretaries, governors, and rank-and-file standing committee members raise the question of whether the center follows rigid norms as it assembles various PPSC lineups. Does the center always hedge its personnel bets, pairing central (local) party secretaries with local (central) governors and rank-and-file members? Or, conversely, does it double-down in its provincial appointments, combining central (local) party secretaries with central (local) governors and rank-and-file members?

When we examine the correlation between different components of personnel centralization, we find that they are surprisingly weak, implying that Beijing does *not* have consistent approaches for mixing centralist and localist officials (see Appendix Table A1). No cross-position (party secretary, governor, rank-and-file) correlation coefficient is greater than 0.19 in absolute value. On the whole, there is no clear formula for mixing centralists and localists. In some province-years, top leaders as well as rank-and-file committee members are relatively centralized; this presumably has a reinforcing tendency. In other cases, there is a high degree of localization across the board, reinforcing a local bent. At other times, personnel are very mixed. These correlations confirm that looking at the centralization or localization of top leaders alone offers an incomplete and overly simplified picture of the center's personnel control over PPSCs. They also suggest a high degree of flexibility and nuance in central personnel management rather than strict rules regarding the centralization or localization of different positions.

Because personnel centralization cannot be fully captured by any single indicator, and because different indicators do not co-vary in clear-cut ways, we generate a composite index of personnel centralization. Our aim is to generate a holistic measure that takes into account different indicators and enables us to compare levels of personnel centralization across provinces and over time. Rather than choosing arbitrary weights for different indicators, we let the data speak for themselves, converting raw values on different indicators into standardized z-scores and then aggregating these normalized scores using a weighting strategy based on principal component analysis (PCA). The online appendix describes our methodology, including the weights used to aggregate indicators.[71]

Our composite measure of centralization provides a clearer picture of how central control over provincial leadership lineups varies over time and across provinces. Figure 1 shows both temporal and cross-sectional variation on the centralization measure. The y-axis measures the composite indicator, with values in the sample ranging from a low of -1.4 (a low degree of personnel centralization) to 1.1 (a high degree of centralization) and a standard deviation of 0.45. As shown in Figure 1, there is a time trend of increasing centralization, with particularly dramatic increases during the periods 1999-2002 and 2010-2013.[72] Cross-provincial variation in the degree of personnel centralization also stands out, and indeed is greater than over-time variation. At the extremes, Chongqing has an average score of 0.52, which is over one standard deviation more personnel centralization than average, suggesting a high degree of central control. In 2011, when Chongqing had a score of 1.08, the highest score in the sample, the party secretary and governor both came from outside the province and had no local experience, while 55 percent of rank-and-file members had central work experience and only 36 percent had local experience. At the other extreme, Shandong has a score of -0.48, over one standard deviation less centralization than average. In 1996, Shandong had one of the lowest scores in the sample: both

the party secretary and governor were from the province and had local experience (and no central experience), and over 80 percent of the rank-and-file members also had local experience, while none had central experience.

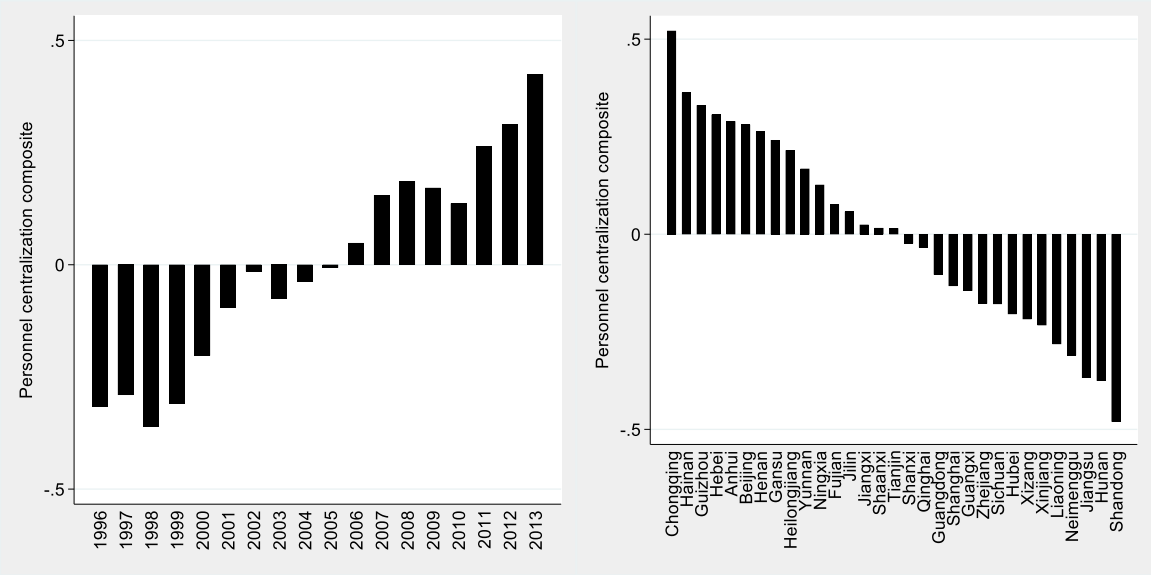


**Figure 1.** Central control composite, across time (left) and province (right).
***Source:*** Authors' calculations based on PPSC database.

## Determinants of personnel centralization: importance versus legibility

Given that Beijing has no one-size-fits-all approach for choosing provincial leadership teams, what explains the varying degree of PPSC centralization across provinces and over time? We test the central control and responsive governance hypotheses outlined above by analyzing the relationship between PPSC centralization and province-level indicators.

For the theoretical reasons discussed earlier, we consider four main characteristics of provincial units that are relevant for both strategic importance and state legibility and may affect personnel strategies—*political salience*, *geopolitical sensitivity*, *economic dynamism*, and *socio-cultural complexity*. By examining the relationship between these regional characteristics and PPSC centralization, we can test our central control and responsive governance hypotheses. And,

because these two logics have contrasting empirical implications, it is possible to test which logic prevails when the two are in conflict.

If a central control logic dominates personnel decisions, we would expect PPSCs to be more centralized overall in strategically important provinces, including areas of political salience, geopolitical sensitivity, and economic dynamism, and possibly also in areas of socio-cultural complexity (to the extent that such areas foster anti-regime sentiment). By contrast, if a responsive governance logic dominates personnel choices, we would expect the degree of personnel centralization to depend more on relative provincial legibility, leading to *lower* personnel centralization in areas of geopolitical difficulty, economic dynamism, and socio-cultural complexity. When it comes to areas of political salience such as the national capital, the responsive governance logic does not offer as clear a prediction. Although large, cosmopolitan cities are inherently somewhat illegible, key urban hubs also have extensive state infrastructures, which may improve legibility. Table 2 summarizes these predictions, showing where the logic of control and logic of responsive governance differ.

**Table 2:** Contrasting empirical predictions of the control logic and governance logic

| Regional characteristic | Prediction—logic of control | Prediction—logic of governance |
|---|---|---|
| Political salience | More centralization | Unclear |
| Geopolitical difficulty | More centralization | Less centralization |
| Economic dynamism | More centralization | Less centralization |
| Socio-cultural complexity | More centralization | Less centralization |

***Source:*** Authors

We operationalize these different regional characteristics as follows. First, we consider provinces to have greater political salience insofar as they are located in China's capital region (dummy variable taking value 1 for Beijing, Tianjin, and Hebei) or are key provincial-level

municipalities (dummy variable taking value 1 for Beijing, Chongqing, Shanghai, and Tianjin).[73] Second, we code provinces as geopolitically sensitive insofar as they are located on international borders, are large in land area, or contain a large number of sub-provincial (prefectural-level) jurisdictions. Third, we consider provinces as having greater economic dynamism insofar as they are wealthy on a per capita GDP basis, generate large shares of national fiscal revenue, or capture large shares of foreign direct investment. Finally, we code provinces as socio-culturally complex based on their non-Han ethnic minority share and level of urbanization. Summary statistics for all of these provincial characteristics are shown in Table 3. Details on data sources appear in the statistical appendix.

**Table 3: Summary statistics for key provincial characteristics**.

| Variable description | Mean | St. Dev. | Min. | Max. |
|---|---|---|---|---|
| *Political salience* | | | | |
| Capital region dummy | 0.097 | 0.296 | 0 | 1 |
| Municipality dummy | 0.127 | 0.334 | 0 | 1 |
| *Geopolitical difficulty* | | | | |
| Border region dummy | 0.290 | 0.454 | 0 | 1 |
| Land area (million sq. km.) | 0.310 | 0.380 | 0.006 | 1.665 |
| Prefecture-level units | 10.750 | 5.760 | 0 | 23 |
| *Economic dynamism* | | | | |
| Per capita GDP (log) | 9.536 | 0.851 | 7.625 | 11.514 |
| National share of revenue (%) | 3.226 | 2.714 | 0.063 | 14.872 |
| National share of FDI (%) | 3.237 | 4.601 | 0.000 | 29.190 |
| *Socio-cultural complexity* | | | | |
| Ethnic minority population share (%) | 15.056 | 21.331 | 0.310 | 93.940 |
| Urban population share (%) | 44.309 | 16.599 | 12.578 | 89.600 |

**Note:** All variables have 557 observations. The capital region dummy variable takes value 1 for Beijing, Tianjin, and Hebei. The municipality dummy variable takes value 1 for Beijing, Chongqing, Shanghai, and Tianjin; B1). The border region takes value 1 for all provinces with international land borders, including Gansu, Guangxi, Heilongjiang, Jilin, Liaoning, Neimenggu, Xinjiang, Xizang, and Yunnan.

***Source:*** See data appendix.

We first regress the composite centralization indicator on these different regional characteristics measures. All regressions include year fixed effects to control for the time trends discussed earlier.[74] We use a standard error estimator developed by Driscoll and Kraay, which considers heteroscedasticity and serial correlation factors as well as cross-sectional correlation (useful in analyzing China's provinces, which exhibit strong regional effects) to yield robust estimation results.[75]

Table 4 presents the regression coefficients. Column 1 presents the baseline results including all ten indicators of provincial characteristics across the four specified categories. Several of the provincial characteristics are highly correlated, potentially increasing standard errors and making regression coefficients harder to interpret. Given these concerns about multicollinearity, columns 2-4 use limited subsets of the provincial characteristic predictors to gain a clearer picture of the individual coefficients.[76] Variance inflation factor (VIF) diagnostic tests show that the variance of log per capita GDP is particularly inflated due to linear dependence on the other predictors, so column 2 excludes log per capita GDP. VIF tests also inform columns 3 and 4, which additionally exclude revenue share (column 3) and the number of prefecture level units (column 4).[77] These additional regressions support the baseline results and provide greater confidence in the remaining coefficients. Further robustness checks can be found in Appendix Tables A6 and A7.

**Table 4:** Regional characteristics and personnel centralization

| | | (1) | (2) | (3) | (4) |
|---|---|---|---|---|---|
| | | **Personnel centralizaiton composite** | **Personnel centralizaiton composite** | **Personnel centralizaiton composite** | **Personnel centralizaiton composite** |
| *Politic al* | Capital region dummy | 0.278*** | 0.140* | 0.142* | 0.141* |
| | | (3.43) | (1.83) | (1.91) | (1.91) |

| | | | | | |
|---|---|---|---|---|---|
| | Municipality dummy | 0.0610 | 0.172* | 0.159** | 0.272*** |
| | | (0.80) | (2.03) | (2.23) | (3.24) |
| *Geopolitical difficulty* | Border region dummy | 0.0935 | 0.0806 | 0.0871* | 0.0486 |
| | | (1.55) | (1.34) | (1.85) | (1.09) |
| | Land area (million sq. km.) | -0.0324 | -0.214* | -0.208* | -0.281*** |
| | | (-0.31) | (-1.86) | (-1.94) | (-3.11) |
| | Prefecture-level units | -0.0284*** | -0.0129 | -0.0148*** | |
| | | (-3.39) | (-1.61) | (-3.81) | |
| *Economic dynamism* | Per capita GDP (log) | -0.602*** | | | |
| | | (-5.13) | | | |
| | National share of revenue | 0.0318 | -0.00768 | | |
| | | (1.30) | (-0.37) | | |
| | National share of FDI | -0.00323 | -0.00974 | -0.0123** | -0.0189*** |
| | | (-0.38) | (-1.25) | (-2.38) | (-4.21) |
| *Socio-cultural complexity* | Ethnic minority population share | -0.00483** | -0.00275 | -0.00287 | -0.000666 |
| | | (-2.33) | (-1.40) | (-1.69) | (-0.40) |
| | Urban population share | 0.00304 | -0.00822** | -0.00874*** | -0.00645*** |
| | | (0.78) | (-2.29) | (-3.70) | (-2.95) |
| | Constant | 6.9112*** | 1.103*** | 1.135*** | 0.858*** |
| | | -5.88 | (5.10) | (8.28) | (6.79) |
| | Observations | 555 | 555 | 555 | 555 |

**Note:** All regressions include year fixed effects. Standard errors are calculated based on Driscoll and Kraay (1998) and are robust to heteroscedasticity, serial correlation, and cross-sectional correlation. "R&F" refers to rank and file members and "PS" refers to Party secretaries. t statistics are presented in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

***Source:*** Authors' calculations. See online data appendix for underlying data sources.

Figure 2 shows the results graphically. The left panel corresponds to column 1 of Table 4 and the right panel corresponds to column 3, which we believe is the most complete specification that still addresses concerns of multicollinearity (see online appendix). For ease of

interpretation, we plot 95 percent confidence intervals for coefficients from regressions that use normalized z-scores for each independent variable, rather than the raw data.[78]

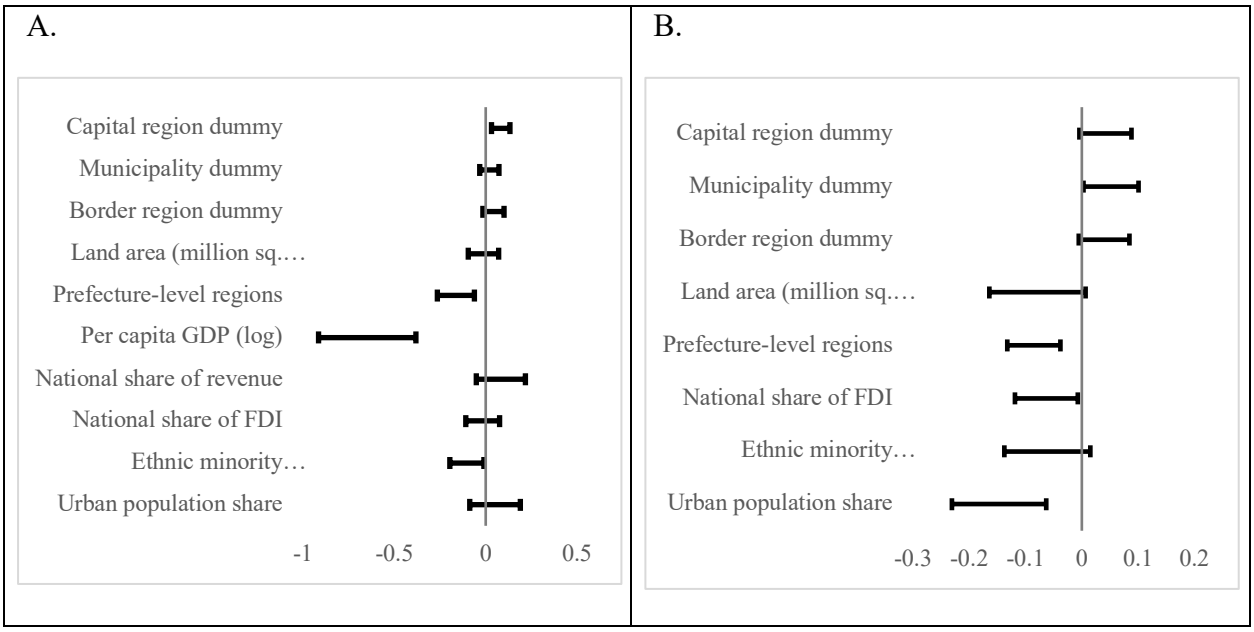


**Figure 2:** Coefficient plots for regional characteristics and personnel centralization.
**Note:** Panel A includes the full set of regressors corresponding to column 1 in Table 2; panel B includes a limited set of regressors corresponding to column 3 in Table 2.
***Source:*** Author calculations based on regressions results in Table 2.

The results presented in Table 4 and Figure 2 fit more closely with the logic of responsive governance than with the logic of central control. We do find that the two indicators of political salience, the capital region and municipality dummies, are positively correlated with the composite centralization indicator. However, indicators for geopolitical difficulty, economic dynamism, and socio-cultural complexity either have no consistent relationship with or are negatively correlated with centralization across most specifications. Controlling for other factors, then, strategic importance of a political nature is associated with greater personnel centralization, but strategic importance of an *economic*, *geopolitical, and socio-cultural* nature is not associated with higher personnel centralization. While these results challenge the idea that strategic

importance is the main determinant of personnel centralization, they are consistent with the logic of responsive governance. Beijing tolerates more localized leadership teams in cases where there are more complex geopolitical, economic, and socio-cultural landscapes to navigate. In the baseline regression, ethnic minority share, per capita GDP, and number of prefecture-level regions all display a negative and statistically significant relationship with the personnel centralization composite measure.[79] These basic results, which are robust to several different methodological approaches and specifications,[80] suggest that Beijing calibrates personnel strategies to allow a considerable degree of local embeddedness in governing its more idiosyncratic provinces.

To further unpack Beijing's personnel management strategy, Appendix Tables A8, A9, and A10 repeat the exercise using the sub-indicators of personnel centralization as dependent variables.[81] Our results for most sub-components of the personnel centralization index are also more consistent with the logic of responsive governance than with the logic of central control, though the sub-component relationships are generally weaker, as expected. In addition, this disaggregated analysis suggests that Beijing is more comfortable with some forms of personnel localization than others. For instance, provinces of high political salience are significantly more likely to have PPSC members who were born outside of the province, potentially reflecting a particular emphasis on avoiding localism in these provinces. Although PPSC members are more likely to have local experience and working ties in socio-culturally complex provinces, they are less likely to have personal origins in these places. This may indicate that, even as the center appoints locally knowledgeable leaders to illegible provinces, it fears that excessively strong personal linkages could backfire by increasing opportunities for collusion and corruption.

Although localization in provinces with legibility challenges is largely driven by localist governors and rank-and-file standing committee members, the disaggregated results also show

that, after including measures of both importance and legibility, party secretary appointments themselves no longer clearly follow the logic of control as identified in previous literature. Broadly, as the baseline data indicated above, party secretaries are more likely to have central experience and to come from outside the province than other members of the PPSC. However, party secretaries vary in their central/local work experience and outsider status, and this variation is not clearly correlated with provinces' strategic importance. Although outsider party secretaries without local experience are significantly more likely to be appointed to the capital region, outsider party secretaries are not always appointed to other types of strategically important areas. Interestingly, regions with higher per capita GDP and higher FDI share—that is, regions that are important but also relatively illegible—tend to have *less* centralized party secretaries. In such cases, then, it appears that a responsive governance logic in some cases prevails over a control logic, even where top provincial leaders are concerned. This finding qualifies the assertion of past work that the selection of top leaders in key provinces is geared toward political control.

Taken as a whole, these findings further underscore the importance of looking at the composition of PPSCs beyond just top leaders to understand Beijing's approach to provincial management. Our findings clearly support previous literature that identifies a balance between centralists and localists – though most past scholarship has looked only at the balancing of party secretaries and governors—while our data and analysis go much deeper. And although past work acknowledges this balancing strategy, we have gone much further in demonstrating how such balancing works in practice and in explaining variation across province-years in the makeup of provincial leadership teams.

## Reshuffling provincial leaders: changing circumstances and dynamic central control

The indicators we have used above to capture different aspects of importance and legibility are relatively static. Indeed, several of the indicators do not change during the time period examined, including border regions, capital region, municipality, and ethnic share, while others change relatively slowly, including shares of national revenue and FDI, urban population shares, GDP per capita, and number of prefecture-level units. However, the center's personnel strategies are necessarily dynamic, responding to changing provincial circumstances.

Examining individual provinces' time trends shows variation in personnel centralization that is not fully explained by broad secular trends. While there is an overall pattern of increasing centralization across China's provinces, we find wide variation in timing and degree. Consider, for instance, how the temporal paths of personnel centralization in Shanghai and Xinjiang differ from the overall provincial average, as shown in Figure 3. In both provinces, the late 1990s and early 2000s saw a growing (and relatively high) degree of localization, despite national trends over this time towards considerably more personnel centralization. In 2007, personnel centralization jumped in Shanghai, exceeding the national average. This centralization persisted for four years, after which Shanghai again became more localized than the national average in 2012 and 2013. In Xinjiang, personnel centralization jumped in 2010 and then stayed at slightly above average levels through 2013.

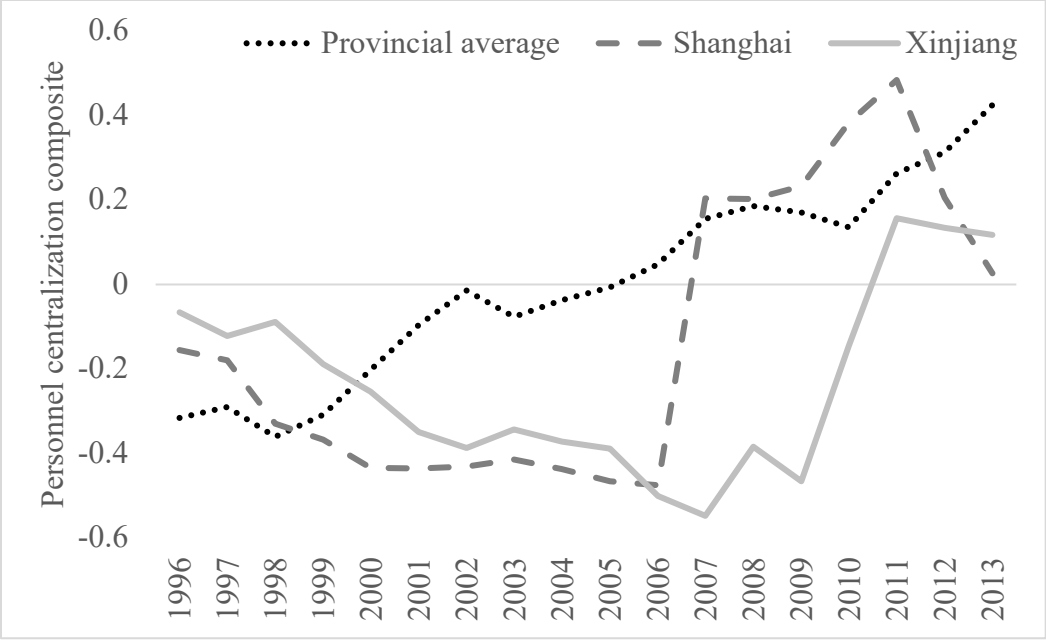


**Figure 3:** Changes in personnel centralization in Shanghai
***Source:*** PPSC database

We hypothesize that political shocks should alter the center's preferred tradeoff between central control and responsive regional governance. In particular, political crises and scandals that spark concerns of broader instability are likely to lead to greater central control, as the center is willing to sacrifice growth and local dynamism in exchange for greater near-term national stability. For example, the rapid increase in personnel centralization in Shanghai in 2007 was due to a reshuffling of Shanghai's leaders following a high-profile scandal involving misuse of the local social security fund by Shanghai party secretary Chen Liangyu. After the scandal erupted, the center not only appointed a centralist party secretary to replace Chen, but also replaced seven of 15 total PPSC members, all of whom had had lengthy local experience. The predicted centralization of provincial leadership bodies following corruption scandals has been previously identified, but we believe this centralizing trend is a response to crisis more broadly.[82] For instance, in Xinjiang, violent ethnic unrest in 2009 led to similar PPSC replacements in favor of centralists. Along these lines, it is instructive to look briefly at the province-years in our sample

with the greatest single-year increases in our central control composite. Several of these rapid increases in centralization came in the wake of major political crises or incidents of mass instability, such as the reshuffle of Shanghai's leaders in 2007. Other province-years in the top ten include Jiangxi in 2001, which followed massive rural protests in Yuandu, and Sichuan in 2000, which followed the Nanchong and Panzhihua protests.[83]

To test whether there is indeed a broader pattern of reactive centralization of PPSCs in response to provincial crises, we proxy political crises in Chinese provinces using surging media coverage in major United States newspapers. Media reports on China in major United States newspapers tend to respond to negative news rather than positive news, especially when compared to state-controlled domestic media in China, a phenomenon that is useful for our purposes.[84] Based on aggregate annual Lexis Nexis search results for "China and [province name]" across the New York Times and Washington Post, we can identify trends in foreign coverage of different provinces.[85] To identify surges in foreign coverage of a given province that may indicate political crises, we look at changes in the provincial share of national media mentions in the foreign press. A look at the outliers identified by this approach helps to validate our assumption that foreign media coverage tracks relevant crisis scenarios. The top five "crises" identified using this approach include Guangdong in 2003, Tibet in 2008, Hainan in 2001, Beijing in 2008, and Chongqing in 2012. Hainan in 2001 was the site of the US spy plane incident; Chongqing in 2012 witnessed the Bo Xilai incident; Tibet in 2008 experienced ethnic violence; Guangdong in 2003 was the original site of SARS; and Beijing in 2008 held the Beijing Olympics.

To determine whether the crises we identify in this fashion are associated with spikes in personnel centralization, we regress the one-year change in our personnel centralization composite measure on lagged changes in the provincial share of foreign media coverage. We

include lagged changes in provincial GDP growth (to control for short-term provincial economic trends that may instead drive results) as well as the indicators for political salience, geopolitical difficulty, economic dynamism, and socio-economic complexity. Table 5 presents regression results. Column 1 corresponds to a baseline regression that includes only a control for change in lagged GDP growth in addition to year and province fixed effects. Column 2 adds the provincial characteristics controls that vary over time. Column 3 includes the full set of provincial characteristics (including those that do not vary over time) and excludes provincial fixed effects, instead reporting robust standard errors clustered by province.

**Table 5:** Personnel centralization as a crisis response

| | (1) | (2) | (3) |
|---|---|---|---|
| | **Change in personnel centralization** | **Change in personnel centralization** | **Change in personnel centralization** |
| *Lagged change in U.S. media share* | 0.737* | 0.709* | 0.717* |
| | (1.78) | (1.75) | (1.74) |
| *Lagged change in GDP growth* | -0.00583** | -0.00583** | -0.00596** |
| | (-2.31) | (-2.25) | (-2.36) |
| *Constant* | 0.0593 | 0.274 | 0.0194 |
| | (1.11) | (0.28) | (0.29) |
| *Observations* | 526 | 526 | 526 |
| *Year fixed effects* | Yes | Yes | Yes |
| *Province fixed effects* | Yes | Yes | No |
| *Provincial characteristics controls* | No | Yes | Yes |

Notes: The dependent variable in all regressions is the one year change in the personnel centralization index. Lagged change in U.S. media share refers to the difference in the provincial share of national media mentions in the New York Times and Washington Post between the previous year and the year before. Lagged change in GDP growth refers to the difference in GDP growth between the previous year and the year before that in a given province. Column (1) includes year and province fixed effects but no additional province-level controls. Column (2) includes the set of provincial characteristic variables used in Table 4 as well as year and province fixed effects. Column (3) uses the set of provincial characteristic variables and year fixed effects, and clusters robust standard errors by province. t statistics in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

***Source:*** Authors' calculations. See online data appendix for underlying data sources.

The key result is consistent across specifications: as expected, provinces experiencing crises do tend to experience surges in personnel centralization in the following year. Additional results using interaction effects as well as limited sub-samples, not reported here, demonstrate that this effect is similar across provincial types (i.e., those that are high and low in terms of political salience, geopolitical difficulty, economic dynamism, and socio-cultural complexity). In sum, then, it appears that Beijing reasserts personnel control in response to crisis across all province types. This further highlights that although the logic of responsive governance may dominate the logic of central control during normal times, during crisis times the short-term imperative of control dominates other considerations. Interestingly, however, this centralization may be short-lived. For example, in the Shanghai case discussed earlier, the center appointed loyalists in response to the local scandal, but just four years after this centralization Shanghai again had localist appointments that made its PPSC considerably less centralized than the average province, likely due to Shanghai's complex governance challenges.

Furthermore, even this post-crisis centralization process itself highlights the center's personnel balancing strategies and thus the importance of looking at PPSC composition as a whole. For instance, in Xinjiang, personnel centralization following the 2009 violence only occurred across certain metrics. Specifically, after 2009 four ethnic Han localists were removed and replaced by Han outsiders. However, the number of native ethnic minority representatives remained constant, implying that the center was more willing to remove cadres with local work

experience than those with deep local ties and cultural knowledge. The fact that Xinjiang's level of personnel centralization during this period of post-unrest repression only reached the cross-provincial average (see Figure 3) further supports our baseline conclusion that illegible regions are more resistant to personnel centralization. And, as seen during the post-2009 crackdown, local and ethnic representaton does not necessarily make these areas more accommodating. In the case of Xinjiang, native Uyghur co-optation may indeed have facilitated harsher repression.[86]

## Conclusion

To gain a clearer picture of how authoritarian regimes reconcile central control with responsive regional governance, this paper has analyzed a novel dataset on China's provincial leadership teams. Whereas previous scholarship has examined central authorities' strategies for choosing provincial governors and party secretaries, we stress that selection of top leaders is by itself a blunt instrument and argue that regimes use more nuanced strategies of personnel control to manage their provinces. This paper makes one of the first efforts to look beyond top leaders and analyze patterns in the composition of China's larger subnational leadership teams. Exploiting an original dataset of appointment and biographical data for all of China's PPSC members during the period from 1996-2013, we show how China's central leaders are able to balance the demands of political control and responsive governance by assembling provincial leadership teams that carefully blend centralist and localist tendencies. And we highlight substantial cross-province and inter-temporal variation in the degree of PPSC centralization or localization—the extent to which party secretaries, governors, and other PPSC members have career ties to the central government or to localities.

We argue that this variation is driven not only by provinces' relative importance but also by how legible their political landscapes are to those appointed to govern them. Past research

focused on top leaders finds that Beijing appoints centralists to run China's most strategically important or politically sensitive provinces. We, too, see limited evidence that outsider provincial party secretaries are used as a mechanism of central control, particularly in the most politically salient provinces. However, we also call attention to the larger personnel context in which these outsider party secretaries operate, and to the ways in which central control is tempered by legibility constraints. We highlight the localist slant of second-tier provincial leaders, and we show that there is no straightforward relationship between the importance of provinces and the personnel centralization of larger leadership teams. While we do find greater centralization of PPSC lineups in provinces with high political salience, this is not the case for geopolitically, economically, and socio-culturally sensitive provinces, where illegibility is also a challenge. Significantly, however, we do find evidence that Beijing tolerates greater localization of PPSCs in regions where legibility challenges loom large. In particular, we show that indicators of geopolitical sensitivity, economic dynamism, and socio-cultural complexity are associated with lower levels of personnel centralization. Of course, there is an exception to this broad general pattern: although in normal times Beijing appears willing to trade some degree of central control for more locally responsive governance, we demonstrate that in times of crisis or scandal, the logic of control dominates as Beijing quickly appoints loyalist cadres to replace localists.

To be sure, the personnel tactics we have highlighted here exist alongside other mechanisms of political control and regional governance, and it is important to consider how our arguments relate to alternative accounts of central-provincial relations in authoritarian settings. First, it is important to reiterate that we regard the strategic shuffling of PPSCs as a response to the imperfection of central authorities' institutional controls and the incompleteness of state-building. If the center's capacity to monitor and sanction provincial leaders were perfect, it would not need to worry about inserting loyalists into provinicial leadership posts. Similarly, if

state-building progressed to such an extent as to render all territories in a country highly legible, there would be less need for localists. In most contexts, even strong one-party states like China, institutions are imperfect and state-building is a work in progress, which makes more informal mechanisms like personnel tactics essential for managing central-provincial relations.

Along these lines, it is also important to consider how the strategic shuffling of PPSCs intersects with factional politics, which past research has shown to be a key determinant of leadership appointments and career mobility in settings like China.[87] Our theoretical approach and factional politics explanations need not be mutually exclusive. Leadership factions can include both centralists and localists, as we define them, and regardless of which factions are dominant in national politics, central leaders may be compelled by practical necessities to assign more or less centralized leadership lineups to different provinces. However, some factions may include more centralists or localists than others, and central leaders may thus weigh factional considerations when adjusting the central-local balance in different provinces.

A further question is how the personnel tactics we highlight compare with central-provincial patronage dynamics. As scholars of China, Russia, and large authoritarian systems note, the central government's control over the allocation of substantial economic largesse gives central leaders at least some leverage over provincial authorities, insofar as material patronage can be made conditional on regional leaders' loyalty to the center.[88] While patronage dynamics of this sort may overlap with and reinforce provincial personnel shuffling, however, patronage bargains by themselves do less than personnel shuffling to assuage central leaders' concerns about balancing control with responsive regional governance. Though patronage bargains that function as repeated games may build a degree of central-provincial trust, such bargains are geared more toward ensuring the political loyalty of provinces than toward improving the quality of governance within them.

Although certain features of the Chinese political system may facilitate the strategic shuffling of provincial leadership teams, there is no reason to think that the patterns we have highlighted are unique to China. It is true that China has a powerful party apparatus that has adhered to Soviet-style nomenklatura practices and collective leadership norms, and these conditions should make the center's calibration of provincial leadership teams easier. However, China is hardly alone among authoritarian systems in having a politically powerful center and entrenched ruling party. The careful structuring of provincial leadership teams may be a key tactic for reconciling control and governance in several other centralized authoritarian systems as well, although further empirical research is needed.

There are similar opportunities for research on Vietnam, Russia (and the former USSR), 20th century Mexico, and other contemporary and historical cases to clarify who fills second-tier provincial leadership posts and how larger leadership teams either reinforce or offset the characteristics of top officials. In such settings, central authorities have grappled with similar kinds of dilemmas in selecting regional leaders. In recent decades, for example, Moscow has often found it challenging to find leaders for Russia's regions "who are both loyal to the center and effective in the management of their territories."[89] Non-native governors appointed to ethnic minority areas have had particular difficulty "penetrating the closely knit ranks of the local elite."[90] Similarly, Mexico's Partido Revolucionario Institucional (PRI) faced challenges in choosing regional leaders, even at the height of its political hegemony during the mid-20th century. In states such as Yucatán, centralist governors were "seen as outsiders imposed from Mexico City who were 'out of touch' with the local political realities, lacking a team with ties to the local political apparatus."[91] And, historically, colonial authorities in many parts of the world confronted analogous challenges when determining how much authority to yield to local chiefs versus ruling directly.[92] Our theoretical distinction between regions' strategic importance and

state legibility as determinants of personnel choice, and our empirical methodology for measuring personnel centralization in a comprehensive way, may be useful for understanding provincial appointments in such settings.

At a broader level, our findings contribute to a larger turn in the literature on central-local politics and state-building that traces out the governance implications of Mann's distinction between despotic and infrastructural power. The despotic power to dictate political outcomes is not enough to secure lasting social order; states also require the ability to work with and through local society. Even powerful political centers may strike federal bargains so as to take advantage of regional elites' existing governance capacity.[93] Central authorities in unitary authoritarian systems like China make fewer concessions to regional elites than their federalist counterparts, yet even they willingly trade away some political control in exchange for tailored governance.

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## Notes

[1] In reform-era China, the (Chinese Communist Party) CCP increasingly has depended on the nomenklatura system of top-down cadre management to ensure political dominance over the regions. Similarly, in Russia, renewed appointment of governors by Moscow has been integral to Putin-era political recentralization. For China, see Yasheng Huang, *Inflation and Investment Controls in China : The Political Economy of Central-Local Relations during the Reform Era* (Cambridge, UK: Cambridge University Press, 1996); Yumin Sheng, "Global Market Integration and Central Political Control: Foreign Trade and Intergovernmental Relations in China," *Comparative Political Studies* 40, no. 4 (2007): 405–34; Pierre F. Landry, *Decentralized Authoritarianism in China : The Communist Party's Control of Local Elites in the Post-Mao Era* (New York, N.Y.: Cambridge University Press, 2008); Tao-chiu Lam, "Central-Provincial Relations amid Greater Centralization in China," *China Information*, no. 24 (2010): 339-363. For Russia, see Helge Blakkisrud, "Medvedev's New Governors," *Europe-Asia Studies* 63, no. 3 (2011): 367-395.

[2] David S.G. Goodman, "The Provincial First Party Secretary in the People's Republic of China, 1949-78: A Profile," *British Journal of Political Science* 10, no. 1 (1980): 39–74, 43.

[3] See Huang, *Inflation and Investment Controls*; John A. Donaldson, *Small Works: Poverty and Economic Development in Southwestern China*. (Ithaca: Cornell University Press, 2011); Petra Persson and Ekaterina Zhuravskaya, "The Limits of Career Concerns in Federalism: Evidence from China," *Journal of the European Economic Association* 14, no. 2 (2015): 338-374.

[4] Jae Ho Chung, "China's Local Governance in Perspective: Instruments of Central Control," *The China Journal*, no. 75 (2016): 38–60, 40.

[5] See Landry, *Decentralized Authoritarianism*; Sheng, "Global Market Integration and Central Political Control"; Gulnaz Sharafutdinova, "Subnational Governance in Russia: How Putin Changed the Contract with His Agents and the Problems It Created for Medvedev," *Publius: The Journal of Federalism* 40, no. 4 (2010): 672–96.

[6] Blakkisrud, "Medvedev's New Governors,"; Sheng "Global Market Integration and Central Political Control".

[7] Previous scholarship has noted the important role that second-tier leaders (such as deputy party secretaries and deputy governors) play in provincial politics and policymaking. See, for example, Li Cheng. "Think National, Blame Local: Central-Provincial Dynamics in the Hu Era." *China Leadership Monitor*, no. 17 (January 2006). https://www.hoover.org/publications/china-leadership-monitor; and Donaldson, *Small Works*.

[8] One recent exception to previous scholarship's narrow focus on provincial party secretaries and governors is Qingjie Zeng, "Control, Discretion and Bargaining: the Politics of Provincial Leader Rotation in China." *Chinese Political Science Review* 1 (2016): 623-644.

[9] As discussed below, we borrow this term from James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, Conn.: Yale University Press, 1998).

[10] Our argument about the importance of legibility constraints in shaping provincial personnel appointments parallels in part but also differs in key respects from that of Qingjie Zeng, who authored the only other recent paper we are aware of that systematically analyzes appointment logics for larger provincial leadership teams. Zeng notes that China's central leadership recognizes the importance of locally embedded provincial leaders for promoting economic growth, but Zeng explains variation in the number of outsiders appointed to different provinces' leadership teams largely in terms of central-local bargaining processes. By contrast, we emphasize the way that state legibility constraints in different regional settings induce the party center to allow higher levels of personnel localization even when the center has the power to install centralists. Because Zeng's work came to our attention during final stages of manuscript revision, we have not been able to engage with it in depth here. See Zeng, "Control, Discretion and Bargaining."

[11] Ibid.

[12] Landry, *Decentralized Authoritarianism*.

[13] For discussion of resource allocation as a tool of central control in the Chinese context, see Chung, "China's Local Governance in Perspective." Scholars like Breslauer and Rigby and Harasymiw have discussed patronage as part of a central-local bargain in the USSR. See George W. Breslauer, "Regional Party Leaders, Demand Articulation, and the Nature of Centre-Periphery Relations in the USSR," *Slavic Review* 4 (1986): 52-77.; T.H. Rigby and Bohdan Harasymiw, eds. *Leadership Selection and Patron-Client Relations in the USSR and Yugoslavia* (Winchester, MA: George Allen & Unwin, 1983).

[14] See Huang 1996, *Inflation and Investment Controls*; Sharafutdinova, "Subnational Governance in Russia"; Yumin Sheng, "Authoritarian Co-Optation, the Territorial Dimension: Provincial Political Representation in Post-Mao China," *Studies in Comparative International Development* 44, no. 1 (2009): 71-93; Persson and Zhuravskaya, "The Limits of Career Concerns."

[15] Miranda Brown and Yu Xie, "Between Heaven and Earth: Dual Accountability in Han China," *Chinese Journal of Sociology* 1, no. 1 (2015): 56–87.

[16] Sheng, "Authoritarian Co-Optation", 71.

[17] See R. Kent Guy, *Qing Governors and Their Provinces : The Evolution of Territorial Administration in China, 1644-1796* (Seattle, Wash.: University of Washington Press, 2010); Daniel Koss, "Political Geography of Empire: Chinese Varieties of Local Government," *Journal of Asian Studies* 76, no. 1 (2017): 159-184..

[18] In particular, Yumin Sheng argues that Beijing strategically appoints centralist provincial party secretaries to key provinces—globally oriented economic centers like Guangdong, provincial-level municipalities such as Shanghai, and militarily strategic frontier regions like Xinjiang. See Sheng, "Global Market Integration and Central Political Control"; Sheng, "Authoritarian Co-Optation".

[19] Sheng "Authoritarian Co-Optation", 71.

[20] Scott, *Seeing Like a State*.

[21] See Brown and Xie 2015; Rogelio Hernandez-Rodriguez, "The Renovation of Old Institutions: State Governors and the Political Transition in Mexico," *Latin American Politics and Society* 45, no. 4 (2003): 97–127.

[22] In one attempt to generate a cross-national indicator of legibility, Melissa Lee and Nan Zhang measure and operationalize legibility based on age data accuracy in national population

censuses; countries with more age-heaping are considered less legible. But age-heaping analysis may say as much about respondent education and development levels as it does about legibility itself. This is indeed an important metric—but it also reminds one of the economist looking for his keys under the lamppost. At heart, legibility is a more difficult concept to measure because it does not solely correlate with education, development levels, and state capacity. See Melissa M. Lee and Nan Zhang. Legibility and the Informational Foundations of State Capacity. *The Journal of Politics* 79:1 (2017), 118-132.

[23] Scott, *Seeing Like a State*, 2.

[24] Michael Mann, "The Autonomous Power of the State: Its Origins, Mechanisms and Results," *European Journal of Sociology* 25, no. 2 (1984): 185–213.

[25] Kinkel and Hurst find that China's highly visible and politicized system of judicial performance evaluations enhances central state supervision of local judicial agents, calling this a form of "intra-state legibility." See Kinkel, Jonathan J. and William J. Hurst. "The Judicial Cadre Evaluation System in China: From Quantification to Intra-state Legibility." *The China Quarterly*, 224 (2015), 933-954.

[26] See Neil J. Diamant. "Making Love "Legible" in China: Politics and Society during the Enforcement of Civil Marriage Registration, 1950-66." *Politics & Society*, 29:3 (2001), 447–480.

[27] For instance, state-building efforts in the new Turkish Republic in the 1920s backfired in Kurdish regions with deep kinship networks that "subvert[ed] state practices to make citizens legible." See Ceren Belge. "State Building and the Limits of Legibility: Kinship Networks and Kurdish Resistance in Turkey." *International Journal of Middle East Studies*, 43:1 (2011), 95-114. Similarly, in Vietnam, the state's failure to "comprehend

and account for local social order, customs and diversity" led standardization and scientific management efforts to backfire and lead to greater *illeg*ibility. See MacLean, K. *The Government of Mistrust: Illegibility and Bureaucratic Power in Socialist Vietnam*. (Madison: University of Wisconsin Press, 2013) and Sarah Turner, Thomas Kettig, Đinh Thị Diệu & Phạm Văn Cự. "State Livelihood Planning and Legibility in Vietnam's Northern Borderlands: The "Rightful Criticisms" of Local Officials", *Journal of Contemporary Asia*, 46:1 (2016), 42-70.

[28] A lack of centralized infrastructural power can lead politically strong national governments to voluntarily cede governance authority to subnational agents. See Daniel Ziblatt, "Rethinking the Origins of Federalism: Puzzle, Theory, and Evidence from Nineteenth Century Europe," *World Politics* 57, no. 1 (2004): 70–98. .

[29] See Joseph B.R. Whitney, *China: Area Administration and Nation-Building.* (Chicago: Department of Geography, University of Chicago, 1970), 38-41; 80-86.

[30] Sheng, "Global Market Integration and Central Political Control". Sheng highlights the particular challenges of dealing with local economic elites in prosperous regions.

[31] Scott, for instance, sees linguistic diversity as a paramount legibility challenge (72). Scott, *Seeing Like a State*.

[32] As Wallace notes, cities' "complex web of social interconnections" and highly dynamic character makes governing them a particular challenge. See Jeremy Wallace, *Cities and Stability: Urbanization, Redistribution, and Regime Survival in China* (Oxford, UK: Oxford University Press, 2014).

[33] Sebastian Heilmann and Elizabeth J. Perry, "Embracing Uncertainty: Guerrilla Policy Style and Adaptive Governance in China." In Sebastian Heilmann and Elizabeth J. Perry, eds.,

*Mao's Invisible Hand: The Political Foundations of Adaptive Governance in China* (Cambridge, Mass: Harvard University Asia Center, 2011).

[34] We borrow this term from Peter Evans, applying to the regional governance realm his emphasis on the importance of societal embeddedness for effective governance. See Peter Evans, "The State as Problem and Solution: Predation, Embedded Autonomy, and Structural Change." In *The Politics of Economic Adjustment: International Constraints, Distributive Conflicts, and the State* (Princeton, N.J.: Princeton University Press, 1992).

[35] Scott, *Seeing Like a State*, 2, 78.

[36] For instance, even following political recentralization in Russia, Vladimir Putin and Dmitry Medvedev have chosen leaders with local ties to govern ethnic minority enclaves. See Blakkisrud, "Medvedev's New Governors".

[37] Elizabeth J. Remick, *Building Local States: China during the Republican and post-Mao eras* (Cambridge, MA: Harvard University Press, 2004), 21

[38] Yongnian Zheng, *De Facto Federalism: Reforms and Dynamics of Central–Local Relations* (Singapore and London: World Scientific, 2007), 268-275.

[39] Ibid.

[40] Ibid.

[41] These include party secretaries Lin Ruo and Xie Fei as well as governors Ye Xuanping, Lu Ruihua, and Huang Huahua, and Zhu Xiaodan.

[42] Remick, *Building Local States*, 21.

[43] Ibid.

[44] The number of ethnic minority cadres at all leadership levels grew from about 10,000 in 1950 to almost 3 million in 2007, and in China's 2002 revision of the Law of Ethnic Minority Autonomous Areas of the People's Republic of China specifies that the top local

government post in all ethnic minority autonomous areas be held by an ethnic minority leader. See Cheng Li, "Ethnic Minority Elites in China's Party-State Leadership: An Empirical Assessment," *China Leadership Monitor* 25 (2008): 1-13.

[45] Our own data, as discussed later, demonstrates that as repressive policies spread in Xinjiang and Tibet after 2008 and 2009, the number of ethnic minority provincial leadership representatives stayed constant.

[46] Of course, individuals may not be pure centralists or pure localists—they may have attributes of both. However, in practice this is rare: in our dataset, fewer than one percent of PPSC members over 1996-2013 had both central and local work experience.

[47] Guy, *Qing Governors*.

[48] Chung, "China's Local Governance in Perspective," 50.

[49] Hongyi Lai, "Ethnic Autonomous Regions: A Formula for a Unitary Multiethnic State." In Jae Ho Chung and Tao-chiu Lam, eds., *China's Local Administration : Traditions and Changes in the Sub-National Hierarchy* (London, UK: Routledge, 2010), 76.

[50] The only existing paper we are aware of looking at full provincial leadership body composition is Zeng, "Control, Discretion and Bargaining." Some research on central-local relations in late imperial China has gone further in this direction than research with a contemporary focus. See Brown and Xie, "Between Heaven and Earth"; and Koss, "The Political Geography of Empire." When it comes to scholarship on contemporary China, authors such as Cheng Li have examined the composition of larger provincial leadership teams for particular years or regions. See, for example, Li, "Think National, Blame Local."

[51] See Zheng, *De Facto Federalism*; Landry, *Decentralized Authoritarianism*. Members of PPSCs are subject to intra-party election at five-year intervals, and nomination processes

have become more consultative since the 1990s following the promotion of "intra-party democracy." Nevertheless, as Qingjie Zeng finds, the party center protects its final authority over PPSC appointments by stage-managing nominations and elections and by making regular use of "recess appointments." See Qingjie Zeng, "Democratic Procedures in the CCP's Cadre Selection Process: Implementation and Consequences," *The China Quarterly* 225 (2016): 73-99.

[52] Cheng Li, "The Leadership of China's Four Major Cities: A Study of Municipal Party Standing Committees," *China Leadership Monitor* 31 (2007). At www.hoover.org/publications/china-leadership-monitor, accessed May 10, 2018.

[53] Ibid.; Haoliang Ma, "Shengwei banzi jiegou cheng xin liangdian," *Da gong bao*. July 4 (2012). At http:// http://paper.takungpao.com/html/2012-07/04/content_4_2.htm, accessed January 7, 2019. There is slight variation from province to province in the specific composition of PPSCs, but the makeup has grown more standardized over time

[54] Qingshan Tan, "China's Provincial Party Secretaries," *Background Brief ,* No. 195-196. East Asian Institute, National University of Singapore, 2004.

[55] Zheng, *De Facto Federalism*, 103.

[56] See Donaldson, *Small Works*.

[57] Yuhua Wang, "Empowering the Police: How the Chinese Communist Party Manages Its Coercive Leaders," *The China Quarterly* 219 (2014): 625–48.

[58] Nan Gao, Cheryl Xiaoning Long, and Lixin Colin Xu, "Collective Leadership, Career Concern, and the Housing Market in China: The Role of Standing Committees," *Review of Development Economics* 20, no. 1 (2016): 1–13.

[59] Dali L. Yang, *Remaking the Chinese Leviathan: Market Transition and the Politics of Governance in China* (Stanford, Calif.: Stanford University Press, 2004).

[60] As Koss shows, for example, it has taken decades for the penetration of the Communist Party organization in China to rebalance its initially uneven regional membership rates. In places where the party started out weakest, such as Guangdong, the party remained less present as late as 2010 (23, 232-238). See Daniel Koss. *Where the Party Rules: The Rank and File of China's Communist State*. (Cambridge; New York: Cambridge University Press, 2018).

[61] See Wallace, *Cities and Stability*.

[62] See the online appendix for more details on data collection.

[63] Note that some PPSC members serve in multiple provinces.

[64] Huang, *Inflation and Investment Controls*; Persson and Zhuravskaya, "The Limits of Career Concerns".

[65] See, for example, Huang, *Inflation and Investment Controls*; Sheng 2009, "Authoritarian Co-Optation."

[66] See Lam, "Central-Provincial Relations"; Cheng Li, *Chinese Leadership in the Xi Jinping Era: Reassessing Collective Leadership* (Washington, D.C.: Brookings Institution Press, 2016).

[67] Despite their status as Politburo members, both Bo Xilai and Chen Liangyu famously challenged the authority of the party center. While Bo and Chen would be coded as "centralists" using the scheme of Huang (1996), they would not be coded as centralists using our approach.

[68] David Bulman, *Incentivized Development in China: Leaders, Governance, and Growth in China's Counties* (New York, N.Y.: Cambridge University Press, 2016).

[69] This is consistent with previous findings of a tendency toward greater centralization of provincial leaders over time. See, for example, Landry, *Decentralized Authoritarianism*; Lam, "Central-Provincial Relations."

[70] See Yang, *Remaking the Chinese Leviathan*.

[71] Appendix Table A6 in the online appendix also repeats our baseline results using a simple unweighted average of the ten sub-indicator z-scores instead of weighting based on PCA. These results do not substantively differ. Given the co-movement of several sub-indicators, however, we believe that the PCA-based weighting provides a better reflection of overall centralization.

[72] These two periods include the final years of the Jiang Zemin and Hu Jintao eras, respectively, and we speculate that these retiring leaders may have attempted to stack the decks with central appointees before they retired to maximize the odds that they would retain influence post-retirement. The ability of Xi to further centralize during his first year in power lends support to popular perceptions that Xi is an unusually strong leader. It is also interesting to note that appointments take place on an annual basis – not just during five year party congress years – resulting in annual changes in degrees of relative centralization.

[73] Li, for instance, notes the role of provincial-level cities as key bases for national politics. Li, "The Leadership of China's Four Major Cities."

[74] In these regressions, the centralization indicators and regional characteristics measures are contemporaneous. We choose not to use lagged independent variables as we believe the center tries to respond to expected current conditions, and the slow-moving or static nature of the independent variables limits the potential for reverse causality. Repeating the analysis with lagged variables does not change the results. See Appendix Table A6.

[75] John C. Driscoll and Aart C. Kraay, "Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data," *Review of Economics and Statistics* 80, no. 4 (1998): 549–60.

[76] Appendix Table A4 shows the high correlations between several provincial characteristics.

[77] See the discussion in the online appendix and Appendix Table A5 for the VIF tests.

[78] Consequently, the charts correspond to expected changes in standard deviations of the independent variables, corresponding to the similar construction of the personnel centralization dependent variable.

[79] When per capita GDP is excluded from the regression, the coefficient on urbanization share is also negative at 95 percent confidence.

[80] Appendix Tables A6 and A7 show results from several different robustness checks, including using a simple weighting strategy to generate the central control composite rather than PCA; clustering standard errors by province; using only cross-sectional data for each province, calculated as the mean of each variable over the entire sample; using lagged independent variables; including party secretary central Politburo membership in the centralization index; excluding four western provinces that are large in land area and have large ethnic minority populations; and adding additional control variables, including provincial population, a dummy variable for coastal region provinces, and a dummy variable for autonomous provinces. None of these alternative approaches significantly changes the baseline results.

[81] In the appendix tables, we use both the sub-indicators themselves as well as simple composites of each of the concepts of interest related to provincial characteristics to facilitate interpretation.

[82] Zeng, "Control, Discretion and Bargaining."

[83] For more data on the size of these peasant and worker protests, see Yongshun Cai, *Collective Resistance in China: Why Popular Protests Succeed or Fail* (Stanford, Calif.: Stanford University Press, 2010), 207. The other seven top-ten one-year increases in central control took place in Hubei (2011), Jiangsu (2000), Shanxi (1999), Fujian (2001), Jilin (2007), Liaoning (2005), and Hunan (2006).

[84] This is not necessarily an indication of a Western media bias towards China. Chinese state-run media is more likely to highlight positive stories than Western media more broadly, even in non-China coverage. For differences with regard to coverage and content valence between Chinese and U.S. media across different issue areas, see Christopher E. Beaudoin, "SARS News Coverage and Its Determinants in China and the US," *International Communication Gazette* 69, no. 6 (2007): 509-524; Ran Duan and Bruno Takahashi, "The Two-way Flow of News: A Comparative Study of American and Chinese Newspaper Coverage of Beijing's Air Pollution," *International Communication Gazette* 79, no. 1 (2017): 83-107; Miao Feng, Paul R. Brewer, and Barbara L. Ley, "Framing the Chinese Baby Formula Scandal: A Comparative Analysis of US and Chinese News Coverage," *Asian Journal of Communication* 22, no. 3 (2012): 253–269.

[85] This is a relatively weak proxy with large measurement error. However, we do not believe that a better publicly available proxy exists.

[86] For a discussion of the central and local political actors involved in the continuing escalation of repressive policies in Xinjiang, see Jessica Batke, "Central and Regional Leadership for Xinjiang Policy in Xi's Second Term," *China Leadership Monitor*, no. 56 (2018).

[87] Victor Shih, Christopher Adolph, and Mingxing Liu, "Getting Ahead in the Communist Party: Explaining the Advancement of Central Committee Members in China," *American Political Science Review* 106, no. 1 (2012): 166–87.

[88] See Chung, "China's Local Governance in Perspective"; Breslauer, "Regional Party Leaders"; Rigby and Harasymiw, *Leadership Selection*.

[89] Gulnaz Sharafutdinova, "Subnational Governance in Russia".

[90] Blakkisrud, "Medvedev's New Governors".

[91] Steven Barracca, "Gubernatorial Politics and the Evolution Toward Democratic Federalism in Mexico," *Regional & Federal Studies* 17, no. 2 (2007): 173–93.

[92] John Gerring, Daniel Ziblatt, Johan Van Gorp, and Julián Arévalo, "An Institutional Theory of Direct and Indirect Rule," *World Politics* 63, no. 3 (2011): 377-433.

[93] Ziblatt, "Rethinking the Origins of Federalism."

## Author Biographies

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**Statistical Appendix (for online publication)**



*1. Data description*

Our analysis relies on a novel collection of data about the makeup of China's provincial party standing committee and the personal and career backgrounds of standing committee members. The dataset spans the years from 1996 to 2013, and contains detailed information on 1443 unique provincial party standing committee members.[1] Information on the composition of provincial standing committees was obtained from annual editions of the *China Directory* series published by Radiopress, Inc. This series provides names of all standing committee members as well as their positions on the standing committee (i.e., Party Secretary, Deputy Party Secretary, and Standing Committee member). To supplement these name lists, biographical and career data were gathered from Baidu Online Encyclopedia (百度百科), available at baidu.baike.com. Where information was unavailable on Baidu Online Encyclopedia, additional searches were conducted using (1) Xinhua Net (news.xinhuanet.com), (2) *China Vitae (www.chinavitae.com)*, and/or (3) China Political Elite Database (http://cped.nccu.edu.tw/).

The data for the analysis in the paper are all collapsed province-year means of the relevant variables, resulting in 557 observations. In some cases, we do not have complete information for all standing committee members, meaning that means are computed based only on available information. Of the ten central control variables used in the analysis, we have full data with no missing observations for seven variables: all six associated with Party secretaries and governors, as well as the variable for average tenure. For the three "rank and file" variables, we are missing a small subset of observations (3.0% of central work experience observations, 2.5% of local work experience observations, and 0.9% of home province observations). In the cases of central and local work experience, we assume by default that in the missing cases, the standing committee member does *not* have the relevant work experience. In most cases, we believe that if the member *had* had work experience, this would have shown up in his/her biographical information, but due to gaps in the online record, we cannot say for sure. Due to this, we believe this assumption is more valid than simply excluding the observations from the aggregation to province-mean observations. However, the assumption is relatively unimportant: if we instead calculate only on observed data, the mean central work experience for rank and file is 9.4% (versus 9.3%) and the mean non-local work experience for rank and file is 36.9% (versus 38.1%).

The data for provincial characteristics come from the following sources. Data for revenue and FDI are obtained from China Data Online. As there is no reliable annual data, ethnicity by

[1] Note that some PPSC members serve in multiple provinces.

province comes from the 2000 Census, relying on the assumption that ethnic make-up does not differ significantly by year. Data on GDP per capita are obtained from China Data Online. Data for urbanization and administrative units come from annual editions of the Chinese statistical yearbook. Urbanization rates based on official data may undercount the migrant population, but we do not believe this systematically biases the results. Although the number of prefecture-level units remains fairly static across years, there is some variation, so we look at annual data.

*2. Principal components analysis*

A key contribution of our analysis is the generation of a composite variable comprising multiple dimensions of centralization. As noted in the text, this composite variable is based on 10 sub-indicators: three indicators each for Party secretaries, governors, and rank and file members (central work experience, local work experience, and nativist/outsider dummy), and one indicator for the average tenure length of committee members. To convert these sub-indicators into a composite centralization variable, we convert the sub-indicator raw values into standardized z-scores and then aggregate these scores using a weighting strategy based on principal component analysis (PCA). By converting our correlated sub-indicators into a new set of uncorrelated variables, PCA helps indicate how our sub-indicators are associated and how they change in relation to each other, and also provides a rule to use in weighting our sub-indicators into a single composite. The eigenvalues associated with these new factor loadings provide a rule to use in weighting the sub-indicators.

As a first step prior to the PCA analysis, we show the correlation table for the ten relevant variables, all re-calculated so that larger values indicate greater degrees of personnel centralization (Appendix Table A1).

**Appendix Table A1. Correlation between dimensions of central control**

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| Party secretary central work experience (A) | 1 | | | | | | | | |
| Party secretary without local work experience (B) | 0.248 | 1 | | | | | | | |
| Party secretary born outside of province (C) | 0.09 | 0.44 | 1 | | | | | | |
| Governor central work experience (D) | -0.004 | 0.003 | -0.028 | 1 | | | | | |
| Governor without local work experience (E) | 0.061 | -0.003 | -0.049 | 0.44 | 1 | | | | |
| Governor born outside of province (F) | -0.042 | -0.173 | 0.027 | 0.209 | 0.566 | 1 | | | |
| Rank and file central work experience (G) | 0.091 | 0.161 | 0.145 | -0.116 | -0.107 | -0.119 | 1 | | |
| Rank and file without local work experience (H) | 0.012 | 0.207 | 0.186 | 0.038 | 0 | 0.03 | 0.486 | 1 | |
| Rank and file born outside of province (I) | -0.137 | -0.026 | 0.311 | -0.042 | -0.19 | 0.073 | 0.294 | 0.351 | 1 |
| Average tenure length (subtracted from max) | 0.067 | 0.073 | 0.101 | 0.153 | 0.151 | 0.155 | 0.06 | 0.116 | 0.076 |

Appendix Table A2 shows the eigenvectors and eigenvalues from the unrotated principal components analysis. The eigenvectors are returned in orthonormal form (i.e., orthogonal/uncorrelated and normalized with unit length).

**Appendix Table A2. Eigenvectors and eigenvalues from principal components analysis (unrotated)**

| | *Principal Components* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Rank and file central work experience | 0.46 | 0.10 | -0.15 | 0.50 | -0.09 | 0.04 | -0.13 | 0.68 | 0.04 | 0.16 |
| Rank and file without local work experience | 0.42 | 0.27 | -0.22 | 0.34 | -0.15 | -0.14 | -0.16 | -0.63 | -0.33 | -0.06 |
| Rank and file born outside of province | 0.38 | 0.13 | -0.47 | -0.27 | 0.03 | 0.12 | 0.49 | -0.06 | 0.49 | -0.23 |
| Party secretary central work experience | 0.09 | 0.10 | 0.56 | 0.36 | 0.05 | 0.47 | 0.55 | -0.12 | -0.04 | -0.02 |
| Party secretary without local work experience | 0.34 | 0.15 | 0.55 | -0.17 | -0.15 | -0.22 | -0.32 | -0.14 | 0.56 | 0.17 |
| Party secretary born outside of province | 0.38 | 0.22 | 0.20 | -0.61 | -0.09 | 0.08 | 0.04 | 0.24 | -0.55 | -0.08 |
| Governor central work experience | -0.21 | 0.43 | 0.04 | 0.05 | -0.09 | -0.66 | 0.49 | 0.11 | -0.07 | 0.28 |
| Governor without local work experience | -0.31 | 0.53 | 0.07 | 0.10 | -0.24 | 0.07 | -0.19 | 0.15 | 0.11 | -0.68 |
| Governor born outside of province | -0.24 | 0.48 | -0.21 | -0.14 | -0.15 | 0.50 | -0.15 | -0.08 | 0.07 | 0.58 |
| Average tenure length (subtracted from max) | 0.05 | 0.35 | 0.03 | 0.01 | 0.92 | -0.04 | -0.16 | 0.01 | 0.00 | -0.02 |
| Eigenvalue | 2.15 | 1.88 | 1.38 | 1.00 | 0.88 | 0.83 | 0.68 | 0.49 | 0.39 | 0.31 |
| % of variance | 21.5% | 18.8% | 13.8% | 10.0% | 8.8% | 8.3% | 6.8% | 4.9% | 3.9% | 3.1% |
| Cumulative % of variance | 21.5% | 40.3% | 54.2% | 64.2% | 73.0% | 81.3% | 88.1% | 93.0% | 96.9% | 100.0% |

In determining the number of components to use in the PCA analysis, we follow standard practice and select factors that (1) have associated eigenvalues greater than one; (2) explain overall variance by over 10%; and (3) cumulatively explain over 60% of the total variance. As seen in Appendix Table A2, this results in four components for central control. We use varimax rotation to obtain a simpler structure of factors. These factor loadings and the variance of the four rotated components are shown in Appendix Table A3. The maximum factor loading for each variable is squared and multiplied by the share of variance from that component to arrive at a relative weight for each sub-indicator. The resulting weights are then multiplied by the normalized (z-score) sub-indicators and summed up to arrive at the final central control composite.

**Appendix Table A3. Rotated components with factor loadings and resulting weights**

| | *Principal components* | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | Weight |
| Rank and file central work experience | -0.09 | **0.68** | -0.10 | 0.07 | 0.12 |
| Rank and file without local work experience | 0.08 | **0.64** | 0.01 | -0.05 | 0.11 |
| Rank and file born outside of province | -0.02 | 0.28 | 0.26 | **-0.55** | 0.06 |
| Party secretary central work experience | 0.02 | 0.15 | 0.05 | **0.66** | 0.09 |
| Party secretary without local work experience | -0.05 | 0.04 | **0.55** | 0.39 | 0.07 |
| Party secretary born outside of province | 0.01 | -0.08 | **0.77** | -0.12 | 0.14 |
| Governor central work experience | **0.47** | 0.01 | -0.01 | 0.08 | 0.07 |
| Governor without local work experience | **0.61** | -0.01 | -0.05 | 0.14 | 0.11 |
| Governor born outside of province | **0.55** | -0.04 | 0.02 | -0.23 | 0.09 |
| Average tenure length (subtracted from max) | **0.29** | 0.14 | 0.14 | 0.04 | 0.03 |
| Variance | 1.93 | 1.68 | 1.50 | 1.30 | |

Note: Maximum factor loadings for each variable are in bold. Weights are calculated as the square of the factor loading multiplied by the share of overall variance explained by that component.

To ensure robustness, we have experimented with several different normalization and weighting strategies, including simple (-1, 0, 1) normalization strategies based on divergence from the mean and equal weighting. None of these robustness checks made a considerable difference, so we only present results for our preferred strategy (i.e. z-score normalizations weighted by PCA factor loadings). Additionally, in the text we include all results using the sub-indicators themselves; as these all move in the expected direction, we believe they provide a stronger test of robustness than different aggregation methodologies.

*3. Testing for multicollinearity*

In the baseline specification in Table 4, many of the independent variables have high correlations that may inflate standard errors and make coefficients difficult to interpret. These correlations are presented in Appendix Table A4. Several bivariate correlations are quite high. For instance,

Pearson correlation coefficients between national share of revenue and national share of FDI, and between log per capita GDP and urbanization, are 0.87 and 0.80, respectively.

**Appendix Table A4. Correlation coefficients of importance and legibility independent variables**

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| Municipality dummy (A) | 1 | | | | | | | | |
| Capital region dummy (B) | 0.534 | 1 | | | | | | | |
| National share of revenue (C) | 0.171 | 0.069 | 1 | | | | | | |
| National share of FDI (D) | 0.109 | 0.026 | 0.871 | 1 | | | | | |
| Border region dummy (E) | -0.244 | -0.210 | -0.298 | -0.270 | 1 | | | | |
| Land area (million sq. km.) (F) | -0.283 | -0.206 | -0.345 | -0.299 | 0.584 | 1 | | | |
| Ethnic minority population share (G) | -0.207 | -0.173 | -0.479 | -0.366 | 0.501 | 0.707 | 1 | | |
| Per capita GDP (log) (H) | 0.354 | 0.245 | 0.366 | 0.336 | -0.130 | -0.162 | -0.235 | 1 | |
| Urban population share (I) | 0.646 | 0.374 | 0.463 | 0.394 | -0.163 | -0.316 | -0.389 | 0.796 | 1 |
| Prefecture-level regions (J) | -0.711 | -0.405 | 0.259 | 0.171 | 0.206 | 0.218 | -0.082 | -0.215 | -0.437 |

Given concerns of multicollinearity, in Appendix Table A5 we conduct collinearity diagnostic tests to look at variance inflation factors (VIF). We do this using the -collin- command in Stata. The first column includes all variables and shows that log GDP per capita is largely a linear transormation of other variables. Excluding both log GDP per capita and national revenue share brings all VIF below 5, lowering concerns of multicollinearity (column 3).

**Appendix Table A5. Collinearity diagnostics (VIF)**

| | VIF | VIF | VIF | VIF |
|---|---|---|---|---|
| Municipality dummy | 3.88 | 3.73 | 3.41 | 2.71 |
| Capital region dummy | 1.63 | 1.44 | 1.44 | 1.44 |
| National share of revenue | 9.65 | 8.24 | | |
| National share of FDI | 4.74 | 4.63 | 1.92 | 1.49 |
| Border region dummy | 2.03 | 2.03 | 1.88 | 1.73 |
| Land area (million sq. km.) | 3.40 | 2.87 | 2.77 | 2.38 |
| Ethnic minority population share | 3.84 | 3.60 | 3.50 | 2.41 |
| Per capita GDP (log) | 31.24 | | | |
| Urban population share | 9.54 | 5.76 | 4.44 | 3.76 |
| Prefecture-level regions | 6.87 | 5.87 | 3.58 | |

Note: VIF refers to variance inflation factors. These are calculated including year dummy variables, which are excluded from the table.

*4. Robustness checks for Table 4*

The following tables present robustness checks for the baseline results shown in Table 4. Although results change at the margins, these checks generally confirm the baseline results and provide additional support for the conclusions in the paper.

Appendix Table A6 includes several robustness checks for the baseline results in Table 4, column 1. Appendix Table A7 repeats these robustness checks for Table 2, column 2. The robustness checks in both tables are the same. In column 1, the central control dependent variable is constructed as a simple unweighted average of the normalized z-scores of all 10 underlying central control sub-indicators, rather than using weights based on principal component analysis. Column 2 conducts an OLS regression, clustering standard errors by province, rather than using Driscoll-Kraay standard errors. Column 3 performs a cross-section regression using provincial mean values over the entire sample for all variables. This limits us to 31 observations per regression. Column 4 lags all independent variables by one year. Column 5 excludes four large western provinces that may have been driving earlier results, as they are large in land area and have very large ethnic minority populations. These provinces are Inner Mongolia, Qinghai, Tibet, and Xinjiang. Columns 6, 7, and 8 include additional controls that might be driving results. Column 6 includes a dummy variable for autonomous provinces (Guangxi, Inner Mongolia, Ningxia, Tibet, and Xinjiang); column 7 includes a dummy variable for coastal region provinces (Beijing, Fujian, Guangdong, Jiangsu, Shandong, Shanghai, Tianjin, and Zhejiang); and column 8 includes provincial population. Column 9 includes party secretary central Politburo membership in the centralization index.

The results in both Table A6 and Table A7 are consistently robust, even when vastly limiting the sample by using provincial means (column 3).

## Appendix Table A6. Robustness checks for baseline (column 1) results in Table 4

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | Equally-weighted central control composite | Standard errors clustered by province | Cross-section with provincial means | Lagged independent variables | Excluding large western provinces | Adding autonomous province control | Adding coastal region control | Adding provincial population control | Including central Politburo membership in centralization index |
| | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** |
| Capital region dummy | 0.273*** | 0.278*** | 0.285** | 0.278*** | 0.275*** | 0.263*** | 0.273*** | 0.283*** | 0.336*** |
| | (3.67) | (3.35) | (2.66) | (3.27) | (3.29) | (3.55) | (3.69) | (3.64) | (3.63) |
| Municipality dummy | 0.0404 | 0.0610 | 0.0913 | 0.0638 | 0.0391 | 0.0329 | 0.0429 | 0.0686 | 0.130 |
| | (0.47) | (0.40) | (0.45) | (0.42) | (0.53) | (0.38) | (0.49) | (0.75) | (1.35) |
| Border region dummy | 0.102 | 0.0935 | 0.124 | 0.0960 | 0.137* | 0.112 | 0.0971 | 0.0885 | 0.0409 |
| | (1.46) | (1.23) | (1.36) | (1.23) | (1.86) | (1.58) | (1.53) | (1.43) | (0.69) |
| Land area (million sq. km.) | -0.0413 | -0.0324 | -0.0172 | -0.0466 | 0.0543 | -0.0201 | -0.0452 | -0.0621 | 0.0121 |
| | (-0.48) | (-0.27) | (-0.10) | (-0.37) | (0.23) | (-0.23) | (-0.51) | (-0.74) | (0.15) |
| Prefecture-level units | -0.0280*** | -0.0284** | -0.0320 | -0.0270* | -0.0355*** | -0.0280*** | -0.0279*** | -0.0224*** | -0.0253** |
| | (-3.33) | (-2.16) | (-1.72) | (-2.03) | (-3.15) | (-3.21) | (-3.38) | (-3.42) | (-2.86) |
| Per capita GDP (log) | -0.556*** | -0.602*** | -0.644** | -0.570*** | -0.548*** | -0.521*** | -0.536*** | -0.539*** | -0.548*** |
| | (-5.13) | (-3.22) | (-2.26) | (-3.19) | (-3.56) | (-5.22) | (-3.94) | (-4.94) | (-4.54) |
| National share of revenue | 0.0327 | 0.0318 | 0.0266 | 0.0285 | 0.0413 | 0.0310 | 0.0335 | 0.0397 | 0.0542** |
| | (1.30) | (0.96) | (0.52) | (0.82) | (1.50) | (1.22) | (1.29) | (1.37) | (2.38) |
| National share of FDI | -0.00882 | -0.00323 | 0.00731 | -0.00229 | -0.00414 | -0.00943 | -0.00837 | -0.0103 | -0.00634 |
| | (-1.24) | (-0.24) | (0.36) | (-0.17) | (-0.48) | (-1.40) | (-1.35) | (-1.25) | (-1.13) |
| Ethnic minority population share | -0.00537** | -0.00483** | -0.00527* | -0.00464** | -0.00549* | -0.00432** | -0.00526** | -0.00568** | -0.00456** |
| | (-2.69) | (-2.34) | (-1.98) | (-2.18) | (-1.94) | (-2.12) | (-2.61) | (-2.71) | (-2.48) |
| Urban population share | 0.00299 | 0.00304 | 0.00192 | 0.00268 | -0.000290 | 0.00257 | 0.00284 | 0.00158 | 0.00181 |
| | (0.83) | (0.53) | (0.23) | (0.49) | (-0.06) | (0.75) | (0.74) | (0.35) | (0.40) |
| Autonomous province dummy | | | | | | -0.115*** | | | |
| | | | | | | (-3.11) | | | |
| Coastal region dummy | | | | | | | -0.0304 | | |
| | | | | | | | (-0.32) | | |
| Population (10,000 people) | | | | | | | | -0.0000166 | |
| | | | | | | | | (-1.18) | |
| Constant | 6.408*** | 6.911*** | 6.035** | 6.549*** | 6.569*** | 6.059*** | 6.204*** | 6.313*** | 6.237*** |
| | (5.62) | (3.89) | (2.62) | (3.87) | (4.40) | (5.61) | (4.51) | (5.62) | (5.47) |
| Observations | 555 | 555 | 31 | 556 | 483 | 555 | 555 | 555 | 555 |

Note: In column 1, the central control dependent variable is constructed as a simple unweighted average of the normalized z-scores of all 10 underlying personnel centralization sub-indicators. Column 2 uses OLS, clustering standard errors by province. Column 3 performs a cross-section regression using provincial mean values over the entire sample for all variables. Column 4 lags all independent variables by one year. Column 5 excludes four large western provinces (Inner Mongolia, Qinghai, Tibet, and Xinjiang). Column 6 includes a dummy variable for autonomous provinces (Guangxi, Inner Mongolia, Ningxia, Tibet, and Xinjiang). Column 7 includes a dummy variable for coastal region provinces (Beijing, Fujian, Guangdong, Jiangsu, Shandong, Shanghai, Tianjin, and Zhejiang). Column 8 includes provincial population. Column 9 uses as a dependent variable a centralization index that also includes central Politburo membership, with the centralization index still calculated using weights based on principal components analysis. "R&F" refers to rank and file members and "PS" refers to Party secretaries. t statistics are presented in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

## Appendix Table A7. Robustness checks for restricted (column 3) results in Table 4

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | Equally-weighted central control composite | Standard errors clustered by province | Cross-section with provincial means | Lagged independent variables | Excluding large western provinces | Adding autonomous province control | Adding coastal region control | Adding provincial population control | Including central Politburo membership in centralization index |
| | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** | **Personnel centralization** |
| Capital region dummy | 0.147** | 0.142 | 0.148 | 0.145* | 0.153* | 0.144** | 0.168** | 0.167** | 0.208** |
| | (2.62) | (1.69) | (1.70) | (1.76) | (2.00) | (2.54) | (2.73) | (2.84) | (2.47) |
| Municipality dummy | 0.136* | 0.159 | 0.220 | 0.146 | 0.121* | 0.116 | 0.149** | 0.201*** | 0.261** |
| | (2.02) | (1.10) | (1.54) | (1.02) | (1.87) | (1.66) | (2.14) | (3.09) | (2.55) |
| Border region dummy | 0.0935 | 0.0871 | 0.134 | 0.0902 | 0.0599 | 0.109* | 0.0572 | 0.0593 | 0.0137 |
| | (1.68) | (1.02) | (1.38) | (1.03) | (1.14) | (1.92) | (1.09) | (1.10) | (0.27) |
| Land area (million sq. km.) | -0.206** | -0.208* | -0.171 | -0.208* | 0.316 | -0.158* | -0.203** | -0.243** | -0.167* |
| | (-2.44) | (-1.81) | (-1.26) | (-1.78) | (1.60) | (-1.98) | (-2.42) | (-2.85) | (-2.05) |
| Prefecture-level units | -0.0146*** | -0.0148 | -0.0209 | -0.0144 | -0.0259*** | -0.0158*** | -0.0139*** | -0.00236 | -0.00656 |
| | (-5.31) | (-1.26) | (-1.62) | (-1.25) | (-4.95) | (-5.39) | (-4.81) | (-0.76) | (-1.33) |
| National share of FDI | -0.0161*** | -0.0123 | -0.00244 | -0.0122 | -0.00424 | -0.0161*** | -0.00827* | -0.0137*** | -0.00616 |
| | (-4.57) | (-1.14) | (-0.14) | (-1.16) | (-0.71) | (-4.48) | (-1.85) | (-4.53) | (-1.17) |
| Ethnic minority population share | -0.00351** | -0.00287 | -0.00424 | -0.00271 | -0.00160 | -0.00207 | -0.00309* | -0.00392** | -0.00238 |
| | (-2.23) | (-1.14) | (-1.50) | (-1.06) | (-0.85) | (-1.27) | (-1.95) | (-2.50) | (-1.64) |
| Urban population share | -0.00766*** | -0.00874** | -0.0130*** | -0.00829** | -0.00958*** | -0.00722*** | -0.00555** | -0.00860*** | -0.00722*** |
| | (-3.26) | (-2.51) | (-3.51) | (-2.41) | (-4.47) | (-2.94) | (-2.31) | (-3.58) | (-3.27) |
| Autonomous province dummy | | | | | | -0.177*** | | | |
| | | | | | | (-3.78) | | | |
| Coastal region dummy | | | | | | | -0.172** | | |
| | | | | | | | (-2.19) | | |
| Population (10,000 people) | | | | | | | | -0.0000280*** | |
| | | | | | | | | (-5.09) | |
| Constant | 1.057*** | 1.135*** | 0.835*** | 1.108*** | 1.201*** | 1.039*** | 0.952*** | 1.111*** | 0.871*** |
| | (7.45) | (4.47) | (3.70) | (4.47) | (9.49) | (7.04) | (6.61) | (7.51) | (6.53) |
| Observations | 555 | 555 | 31 | 556 | 483 | 555 | 555 | 555 | 555 |

Note: In column 1, the central control dependent variable is constructed as a simple unweighted average of the normalized z-scores of all 10 underlying central control sub-indicators. Column 2 uses OLS, clustering standard errors by province. Column 3 performs a cross-section regression using provincial mean values over the entire sample for all variables. Column 4 lags all independent variables by one year. Column 5 excludes four large western provinces (Inner Mongolia, Qinghai, Tibet, and Xinjiang). Column 6 includes a dummy variable for autonomous provinces (Guangxi, Inner Mongolia, Ningxia, Tibet, and Xinjiang). Column 7 includes a dummy variable for coastal region provinces (Beijing, Fujian, Guangdong, Jiangsu, Shandong, Shanghai, Tianjin, and Zhejiang). Column 8 includes provincial population. Column 9 uses as a dependent variable a centralization index that also includes central Politburo membership, with the centralization index still calculated using weights based on principal components analysis. "R&F" refers to rank and file members and "PS" refers to Party secretaries. t statistics are presented in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

*5. Sub-indicator analysis and robustness checks*

In order to unpack Beijing's personnel management strategy, Appendix Table A8 repeats the exercise using the sub-indicators of personnel centralization as dependent variables. To simplify the table and facilitate discussion of the results, we create simple composite indexes of each of the concepts of interest related to provincial characteristics – political importance, economic importance, geopolitical importance, and governance legibility – by normalizing and averaging the underlying variables. Given that the underlying variables for each concept reflect different dimensions that should reinforce one another, we believe these composite indexes are empirically valid representations of the concepts.

**Appendix Table A8. Sub-indicator analysis using broad provincial types**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Personnel centralization composite** | **R&F central experience** | **R&F no local experience** | **R&F born outside** | **PS central experience** | **PS no local experience** | **PS born outside province** | **Governor central experience** | **Governor no local experience** | **Gov. born outside province** | **Avg. tenure (subtracted from max)** |
| *Political salience* | 0.0898*** | 0.00514 | 0.00251 | 0.0752*** | -0.0389 | -0.0235 | 0.0702*** | 0.0337 | -0.00630 | 0.110*** | 0.0847 |
| | (3.59) | (0.63) | (0.30) | (11.23) | (-0.97) | (-1.03) | (5.23) | (0.87) | (-0.19) | (5.10) | (1.27) |
| *Geopolitical difficulty* | -0.0321 | 0.00863 | 0.0343** | -0.0577*** | -0.0373* | -0.0588 | -0.0319 | 0.00965 | -0.0288 | -0.0331 | 0.0135 |
| | (-0.86) | (1.44) | (2.48) | (-5.86) | (-1.80) | (-1.10) | (-1.37) | (0.25) | (-0.53) | (-0.71) | (0.16) |
| *Economic dynamism* | 0.0135 | 0.00198 | 0.0456*** | 0.00371 | -0.104 | -0.00353 | 0.0557** | 0.0118 | -0.0724 | -0.0654 | 0.0243 |
| | (0.30) | (0.28) | (3.45) | (0.37) | (-1.65) | (-0.06) | (2.84) | (0.36) | (-1.71) | (-1.57) | (0.28) |
| *Socio-cultural complexity* | -0.487*** | -0.0546** | -0.280*** | 0.108** | 0.126 | -0.00546 | 0.0195 | -0.156 | -0.452** | -0.453*** | -0.912*** |
| | (-3.50) | (-2.70) | (-4.08) | (2.24) | (0.69) | (-0.03) | (0.26) | (-0.94) | (-2.34) | (-3.55) | (-3.08) |
| Constant | 0.665*** | 0.224*** | 0.653*** | 0.590*** | 0.278** | 0.731*** | 0.955*** | 0.393*** | 0.830*** | 0.999*** | 4.145*** |
| | (8.93) | (20.88) | (17.73) | (23.01) | (2.87) | (6.45) | (23.48) | (4.43) | (8.04) | (14.72) | (26.22) |
| Observations | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 |

Note: All independent variables correspond to the simple averages of the underlying variables after normalization. Political salience includes the municipality dummy and the capital region dummy. Geopolitical difficulty includes land area, the border region dummy, and the number of prefecture-level units. Economic dynamism includes log per capita GDP, national revenue share, and national FDI share. Socio-cultural complexity includes ethnic minority share of the population and urbanization rate. All regressions include year fixed effects. Standard errors are calculated based on Driscoll and Kraay (1998) and are robust to heteroscedasticity, serial correlation, and cross-sectional correlation. "R&F" refers to rank and file members and "PS" refers to Party secretaries. t statistics are presented in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Appendix Table A8 uses indexes for the independent variable provincial characteristics. We believe these indexes are easier to interpret. Appendix Table A9 and Appendix Table A10 instead regress all of the central control sub-indicators on the provincial characteristics themselves. Appendix Table A9 includes all provincial characteristics. Appendix Table A10 excludes log GDP per capita and national revenue share to reduce concerns of multicollinearity.

## Appendix Table A9. Sub-indicator analysis using all provincial characteristics

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **R&F central experience** | **R&F no local experience** | **R&F born outside** | **PS central experience** | **PS no local experience** | **PS born outside province** | **Governor central experience** | **Governor no local experience** | **Gov. born outside province** | **Avg. tenure (subtracted from max)** |
| Capital region dummy | -0.0308 | 0.0718*** | 0.0200 | -0.0539 | 0.149*** | 0.168*** | 0.111 | 0.234* | 0.287*** | 0.279 |
| | (-1.27) | (3.35) | (0.49) | (-0.50) | (3.07) | (7.05) | (1.07) | (1.83) | (3.22) | (1.48) |
| Municipality dummy | 0.108*** | -0.0928*** | 0.0319 | 0.140 | -0.0669 | -0.00504 | -0.0543 | -0.0990 | -0.0119 | 0.0298 |
| | (4.17) | (-3.74) | (0.51) | (1.39) | (-0.72) | (-0.45) | (-0.61) | (-0.70) | (-0.18) | (0.08) |
| Border region dummy | -0.00881 | 0.0873*** | -0.00482 | -0.152 | -0.0878** | 0.0731 | 0.182*** | 0.0790 | -0.0654 | 0.376*** |
| | (-1.33) | (5.86) | (-0.38) | (-1.48) | (-2.13) | (1.71) | (2.99) | (0.91) | (-0.93) | (3.16) |
| Land area (million sq. km.) | -0.0129 | -0.0246 | 0.0733** | -0.0442 | 0.0546 | 0.115 | -0.170* | -0.245* | 0.102 | -0.173 |
| | (-0.49) | (-0.95) | (2.11) | (-0.64) | (0.39) | (1.61) | (-1.77) | (-2.03) | (0.85) | (-0.97) |
| Prefecture-level units | 0.00150 | -0.0170*** | -0.01000** | 0.0169** | -0.00673 | -0.0129* | -0.00745 | -0.00978 | -0.0203*** | -0.0260** |
| | (1.09) | (-5.13) | (-2.51) | (2.49) | (-0.52) | (-2.06) | (-0.95) | (-1.01) | (-4.42) | (-2.17) |
| Per capita GDP (log) | -0.0748*** | -0.0287 | -0.262*** | 0.0894 | -0.0283 | -0.372*** | 0.0441 | -0.313** | -0.584*** | -0.442* |
| | (-4.54) | (-0.40) | (-3.62) | (0.99) | (-0.32) | (-5.50) | (0.32) | (-2.27) | (-6.36) | (-2.10) |
| National share of revenue | -0.00744** | 0.0115* | -0.0148 | 0.0396 | 0.0495** | 0.0256 | 0.0222 | 0.0150 | -0.0205* | 0.0500 |
| | (-2.16) | (1.81) | (-1.60) | (1.64) | (2.20) | (1.18) | (0.94) | (0.70) | (-2.01) | (1.19) |
| National share of FDI | 0.00656*** | 0.00482 | 0.00993* | -0.0354** | -0.0228** | -0.000237 | -0.0149** | -0.0148 | 0.00829 | -0.0401* |
| | (3.25) | (1.56) | (2.06) | (-2.85) | (-2.12) | (-0.02) | (-2.46) | (-1.33) | (1.29) | (-1.77) |
| Ethnic minority population share | 0.0000171 | -0.00200** | 0.00159*** | -0.000331 | 0.00214 | 0.00101 | -0.00251 | -0.00668*** | -0.00948*** | -0.0169*** |
| | (0.05) | (-2.38) | (3.28) | (-0.21) | (0.87) | (0.74) | (-1.29) | (-3.25) | (-4.16) | (-4.51) |
| Urban population share | 0.000733 | -0.00608*** | 0.0104*** | -0.00293 | -0.00690* | 0.00808*** | -0.00377 | -0.00125 | 0.0105*** | -0.00336 |
| | (1.31) | (-4.49) | (7.38) | (-0.70) | (-2.00) | (3.26) | (-0.67) | (-0.41) | (6.75) | (-0.42) |
| Constant | 0.937*** | 1.292 | 2.957*** | -0.596 | 1.365 | 4.470*** | 0.138 | 4.254*** | 6.793*** | 8.992*** |
| | (5.57) | (1.68) | (4.11) | (-0.75) | (1.26) | (6.57) | (0.10) | (2.93) | (7.20) | (4.32) |
| Observations | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 |

Note: Standard errors are calculated based on Driscoll and Kraay (1998) and are robust to heteroscedasticity, serial correlation, and cross-sectional correlation. "R&F" refers to rank and file members and "PS" refers to Party secretaries. t statistics are presented in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

**Appendix Table A10. Sub-indicator analysis using all provincial characteristics (excluding per capita GDP and revenue share)**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **R&F central experience** | **R&F no local experience** | **R&F born outside** | **PS central experience** | **PS no local experience** | **PS born outside province** | **Governor central experience** | **Governor no local experience** | **Gov. born outside province** | **Avg. tenure (subtracted from max)** |
| Capital region dummy | -0.0456* | 0.0635*** | -0.0342 | -0.0417 | 0.134** | 0.0827*** | 0.117 | 0.163 | 0.164** | 0.175 |
| | (-1.85) | (4.36) | (-0.91) | (-0.34) | (2.46) | (3.50) | (1.43) | (1.23) | (2.16) | (0.90) |
| Municipality dummy | 0.101*** | -0.0718*** | 0.0277 | 0.198* | 0.0162 | 0.0653** | -0.0214 | -0.0506 | -0.000712 | 0.145 |
| | (3.51) | (-4.81) | (0.55) | (2.06) | (0.27) | (2.28) | (-0.18) | (-0.27) | (-0.01) | (0.36) |
| Border region dummy | 0.0000436 | 0.0786*** | 0.0167 | -0.188 | -0.129*** | 0.0641 | 0.161** | 0.0770 | -0.0281 | 0.349*** |
| | (0.01) | (6.07) | (1.65) | (-1.60) | (-3.63) | (1.39) | (2.63) | (0.93) | (-0.37) | (3.56) |
| Land area (million sq. km.) | -0.0260 | -0.0406 | 0.0189* | -0.0522 | 0.00941 | 0.00182 | -0.176 | -0.335*** | -0.0283 | -0.322 |
| | (-0.88) | (-1.39) | (1.94) | (-0.63) | (0.09) | (0.03) | (-1.69) | (-3.49) | (-0.26) | (-1.50) |
| Prefecture-level units | 0.000316 | -0.0138*** | -0.0113*** | 0.0260*** | 0.00600 | -0.00306 | -0.00227 | -0.00311 | -0.0201*** | -0.00930 |
| | (0.24) | (-8.09) | (-3.96) | (2.94) | (0.78) | (-1.17) | (-0.78) | (-0.29) | (-5.11) | (-0.68) |
| National share of FDI | 0.00164 | 0.00771*** | -0.00359** | -0.0193*** | -0.00718 | -0.00384 | -0.00608 | -0.0200** | -0.0176*** | -0.0379** |
| | (1.35) | (3.83) | (-2.36) | (-3.21) | (-0.85) | (-0.74) | (-1.25) | (-2.61) | (-3.10) | (-2.30) |
| Ethnic minority population share | 0.0000832 | -0.00176** | 0.00200*** | 0.0000679 | 0.00299 | 0.00232* | -0.00227 | -0.00569*** | -0.00838*** | -0.0151*** |
| | (0.26) | (-2.87) | (4.42) | (0.03) | (1.54) | (1.85) | (-1.20) | (-3.43) | (-3.54) | (-4.29) |
| Urban population share | -0.00149** | -0.00597*** | 0.00335*** | 0.00180 | -0.00423 | 0.00120 | -0.00126 | -0.00747* | -0.00440** | -0.0102 |
| | (-2.82) | (-4.18) | (5.77) | (0.44) | (-1.13) | (0.85) | (-0.31) | (-1.86) | (-2.12) | (-1.58) |
| Constant | 0.267*** | 0.975*** | 0.556*** | 0.0776 | 0.893*** | 0.875*** | 0.459* | 1.258*** | 1.400*** | 4.637*** |
| | (6.53) | (10.36) | (9.46) | (0.28) | (3.74) | (9.43) | (2.06) | (4.97) | (11.66) | (12.35) |
| Observations | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 | 555 |

Note: Standard errors are calculated based on Driscoll and Kraay (1998) and are robust to heteroscedasticity, serial correlation, and cross-sectional correlation. "R&F" refers to rank and file members and "PS" refers to Party secretaries. t statistics are presented in parentheses. * p<0.10, ** p<0.05, *** p<0.01.