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Job Diversity and Political Selection in China

By

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Abstract

Political elites rarely advance by moving up a single, well-defined ladder; instead they accumulate experience across a variety of posts, creating defacto career tracks. Yet we still know surprisingly little about how those tracks pay off and why. We offer a systematic assessment of career pathways in the Chinese Communist Party (CCP) from 1982 to 2012. We assemble an annual panel of every full and alternate Central-Committee member, we map unique jobs into a directed transition network, and apply a SpringRank algorithm to derive a continuous leadership–status scale that spans all bureaucratic domains. This study takes a novel perspective on the selection of leaders in the Chinese Communist Party (CCP). We measure career tracks of full and alternate CCP Central Committee members investigate their role in political selection. We find that the career tracks corresponding to frequent rotations are associated with significantly higher probabilities of obtaining top leadership positions in the CCP despite the influence of patronage networks. By comparing the role of career tracks with that of personal connections, our findings speak to the research on institutional versus personalistic rules in non-democracies.

Keywords: political selection, rotation, connection, personal rule, party institutionalization, Chinese Communist Party, career tracks

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1 Introduction

How do political elites rise to the top of authoritarian regimes? In the case of the Chinese Communist Party (CCP), a vast literature has debated the relative importance of two competing forces: *meritocracy* and *patronage*. The meritocratic view posits that Chinese leaders are promoted on the basis of their professional competence and economic performance, especially during the reform era of the post-Mao period Y. Chen et al. (2005), H. Li and Zhou (2005b), and Maskin et al. (2000). In contrast, the patronage perspective emphasizes the decisive role of personal connections, particularly ties to powerful political patrons, in determining who ascends within the Party hierarchy Jiang (2018), Keller (2016), and V. Shih et al. (2012).

Yet this debate often overlooks a central feature of elite politics in China: the structured, path-dependent nature of bureaucratic careers. Officials rarely jump to the top in a single leap. Instead, they typically ascend through well-defined *career tracks* involving a series of rotations across different administrative domains—such as the central government, local government, Party organs, and the military. While vertical promotion is crucial, horizontal mobility across these domains is widely believed to signal grooming for higher office Huang

(2002), Jia and Xu (2021), and C. Li (2001). These patterns, however, remain underexplored with systematic data and quantitative methods.

This paper investigates the link between *career path diversity*—the breadth of horizontal movement across bureaucratic domains—and political advancement in the CCP. Drawing on newly assembled panel data covering all full and alternate members of the Central Committee from 1992 to 2022, we construct a yearly, job-level measure of *status* based on a graph-theoretic algorithm (SpringRank) that infers the prestige of each position from observed job-to-job transitions. We then quantify each official's cumulative *job diversity* using a normalized entropy measure that captures the distribution of experience across four core domains: Local, Central, Party, and PLA.

Our empirical strategy evaluates whether greater career diversity is associated with higher political status, conditional on individual attributes, factional ties, and past status. We employ three complementary methods: (1) clustered OLS regression to estimate the conditional association between job diversity and leadership status; (2) machine learning models (Random Forest and XGBoost) to assess variable importance in a flexible, non-linear framework.

By moving beyond the narrow dichotomy of performance vs. patronage and introducing a dynamic, data-driven approach to modeling career trajectories, this study contributes to a growing body of research emphasizing institutionalized pathways to power in contemporary authoritarianism Landry et al. (2018b) and Zhang (2018). It also offers new evidence that structured career experiences—rather than sheer loyalty or output metrics—may be key to understanding how political elites rise in China's modern one-party state.

This paper makes both methodological and substantive contributions to the study of political selection in authoritarian regimes. Methodologically, we construct a fine-grained and continuous measure of political status by applying the SpringRank algorithm to a large network of observed job-to-job transitions. This allows us to move beyond formal rank codes and instead derive a data-driven prestige hierarchy that reflects the de facto structure of elite mobility in the Chinese political system. We also introduce a normalized entropy-based measure of career path diversity that captures the horizontal breadth of experience across four core bureaucratic domains. This measure provides a more systematic and interpretable account of officials' rotational careers than previously used binary indicators of domain-switching or rotation status.

Our empirical strategy further complements traditional regression analysis with machine learning tools—namely, Random Forest and XGBoost—to examine the robustness and predictive importance of job diversity relative to other covariates in a flexible, non-parametric framework.

Substantively, this study contributes to the literature on political meritocracy and elite

promotion in China by showing that officials with more diverse career paths tend to reach higher status within the CCP hierarchy, even after accounting for factional affiliation and demographic characteristics. While prior research has largely focused on the role of economic performance H. Li and Zhou (2005a) and Maskin et al. (2000) or patronage networks Jiang (2018) and V. Shih et al. (2012), our results highlight the independent and understudied role of career track structure in shaping elite advancement. These findings also speak to broader debates in political science about institutional versus personalistic promotion criteria in autocratic regimes Cheibub et al. (2010), Geddes et al. (2014), and Svolik (2012).

Finally, this paper contributes to the organizational sociology and economics literature on mobility and career design within hierarchical institutions DiPrete (1987) and Ortega (2001). Our findings suggest that in the Chinese context, career rotations may serve not only to train and evaluate officials but also to facilitate cross-domain knowledge integration and mitigate patronage-based factionalism—though we leave these mechanisms for future investigation.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature. Section 3 provides background information on China's political structure. Section 4 presents the data and methods. Section 5 presents the hypothesis. Section 6 presents and discusses the results. Finally, Section 7 provides concluding remarks

2 Literature Review

The trade-off between loyalty and competence has long shaped political appointments in autocratic regimes. Originally formalized by Egorov and Sonin (2011), the loyalty–efficiency dilemma posits that skilled agents pose a higher threat of defection, making them both valuable and dangerous to rulers. In this framework, strong leaders are more likely to appoint competent officials, as they can deter or survive disloyalty, while weaker leaders prioritize loyalty to mitigate perceived risks. This fundamental tension underpins many personnel decisions in authoritarian systems. In the context of China's Communist Party, this debate has crystallized around two leading explanations of elite promotion: *performance-based selection*, which sees upward mobility as a reward for economic or administrative results, and *patronage-based advancement*, which emphasizes the role of factional loyalty and personal networks.

2.1 Performance Explanations

China stands out among non-democracies in its leadership selection practices, particularly because the country's sustained economic growth suggests that political promotions may follow meritocratic principles. Advocates of the *performance-based* explanation argue that

political advancement in the Chinese Communist Party (CCP) is largely determined by competence, with economic growth serving as a key metric of individual performance (H. Li & Zhou, 2005b; Maskin et al., 2000).

Maskin et al. (2000) were the first to formalize this meritocratic thesis. They developed a theoretical model in which central leaders use yardstick competition to evaluate and promote regional officials. To empirically test their theory, the authors used the per capita number of Central Committee members from each province as a proxy for provincial promotion and compared it to the province's relative GDP growth performance. Their analysis focused on changes in provincial rankings between the 11^{th} Party Congress (1977) and the 13^{th} Congress (1987). They found that provinces with faster relative GDP growth saw an increase in Central Committee representation, suggesting that central leaders rewarded performance. However, their study was limited in two important respects. First, it treated provinces as the unit of analysis rather than individual officials, even though Party documents emphasize cadre-level evaluations. Second, their regressions lacked robust controls for provincial characteristics, such as economic development level, minority status, and bureaucratic rank, potentially confounding their results.

Building on this early work, H. Li and Zhou (2005b) provided a more rigorous test of the meritocratic hypothesis by shifting the unit of analysis from provinces to individual officials. Their study examined the career trajectories of provincial leaders between 1979 and 1995 and defined promotion as a transition into the national elite—such as the Politburo or State Council. They measured performance using both annual and average GDP growth during a leader's tenure and included a rich set of individual-level control variables, such as age, education, tenure, and central government experience. Using ordered probit models, they found that higher economic performance significantly increased the likelihood of promotion, offering strong evidence in support of meritocratic promotion mechanisms under the post-Mao leadership.

A subsequent study by Y. Chen et al. (2005) extended this work to cover the period through 2002. They refined the performance metrics by incorporating comparative benchmarks: leaders were evaluated against both their immediate predecessors and their peers in neighboring provinces. This design better aligned with the yardstick competition framework and the CCP's own 2006 cadre assessment guidelines. Their findings confirmed the importance of economic performance for promotion, reinforcing the idea that local governments are incentivized to pursue growth as a means of political advancement. Although later work, such as R. Tao et al. (2010), raised concerns about endogeneity and measurement, these studies laid the foundation for the performance-centered view of Chinese elite politics.

Over time, the meritocratic perspective has become a dominant theoretical assumption

in political economy models of China. It underpins a growing body of research on how promotion incentives shape bureaucratic behavior, including studies on investment allocation (An et al., 2016; Xu et al., 2013), urban development and land finance (Wang et al., 2020), real estate cycles (B. Liu et al., 2018; Zhu & Xu, 2013), and fiscal manipulation during political cycles (Gong et al., 2017; Mei et al., 2014; Tsai, 2016).

However there are several challenges that this perspective faces. First, regulations outlined in various documents adopted by the Central Committee, which can be found in the left column of Table 1, do not mention that promotion is based on economic performance. Throughout the past forty years, none of these regulations have required cadres to achieve high merit ratings in annual assessments in order for them to qualify for candidacy in promotions. Instead, all promotion candidates must meet some fundamental conditions, such as aligning with socialist ideology, adhering to the Party's foundational guidelines and principles, demonstrating strong revolutionary responsibilities, following the mass line, and upholding democratic centralism.

Despite its widespread appeal, the meritocratic perspective on Chinese political selection faces several important empirical and conceptual challenges.

First, official Party regulations on cadre promotion—documented in successive guidelines issued by the Central Committee—do not explicitly endorse economic performance as a key criterion for advancement. As shown in the left column of Table 1, none of these documents from the past four decades mandate high economic merit ratings or growth targets as prerequisites for promotion. Instead, promotion eligibility is tied to ideological conformity, commitment to socialist values, revolutionary spirit, adherence to the Party line, and upholding principles such as democratic centralism. These conditions, while formally institutionalized, are both vague and highly discretionary—open to varied interpretation and manipulation by superiors. Even where concrete thresholds exist (e.g., minimum tenure at various administrative levels, education credentials, or physical health requirements), they do not directly correspond to measurable performance outcomes like GDP growth. Thus, while the cadre evaluation system has become more bureaucratically formalized, it has not evolved in the direction presumed by proponents of a performance-driven meritocracy.

Second, the meritocratic account implicitly assumes the existence of a uniform and nationally coordinated cadre evaluation system. In practice, however, implementation has varied widely across regions and administrative levels. Y. Tao et al. (2020) document these inconsistencies in great detail. For example, during the mid-2000s, Zhejiang and Jiangsu provincial committees did not even apply the cadre assessment system to city-level leaders, whereas Hebei province adopted formal evaluation procedures that linked real achievements to assessment scores. Yet even in Hebei, tasks were not weighted or standardized. Intra-provincial variation further complicates the picture: Wenzhou city implemented quan-

titative evaluations for county-level cadres, while neighboring Hangzhou did not. National attempts to impose consistency—such as the 2009 introduction of standardized evaluation forms during the "scientific development" campaign—came only after the period of China's most rapid economic growth. This timing casts doubt on the notion that standardized performance evaluations were a key driver of earlier economic success.

Third, and perhaps most importantly, empirical evidence underpinning the meritocratic argument has come under increasing scrutiny. R. Tao et al. (2010) and Wiebe (2024) show that many studies linking GDP growth to cadre promotion suffer from serious flaws, including measurement errors and model misspecifications. Once these issues are corrected, the apparent relationship between economic performance and promotion often disappears. Moreover, findings regarding top regional leadership positions—specifically, Party Secretaries and government heads (e.g., governors, mayors, magistrates)—are inconsistent. Although formal rules stipulate that cadre evaluations apply to the leadership team as a whole, empirical studies often find conflicting promotion effects across these roles. This is puzzling because both the Party Secretary and the administrative head are supposed to be evaluated on the region's overall performance, including economic outcomes. If GDP growth were the dominant criterion, it should influence the promotion of both leaders similarly. The inconsistent treatment of these roles in empirical studies raises further doubts about the robustness of performance-based promotion as a general rule in China's cadre management system.

2.2 Patronage Explanations

In contrast to the meritocratic thesis, proponents of the *patronage* perspective emphasize the central role of political networks in shaping promotion outcomes within authoritarian regimes. This view posits that personal ties to top leaders are often the decisive factor in an official's career trajectory (Egorov & Sonin, 2011). Autocrats are frequently confronted with a loyalty–competence trade-off: while competent subordinates may enhance state capacity, they also pose greater threats to the ruler's position. Consequently, especially under conditions of institutional fragility, political loyalty tends to trump technical expertise in the selection of elites (Gandhi & Przeworski, 2006; V. Shih et al., 2012).

A pioneering empirical study in this tradition is that of V. Shih et al. (2012), who compiled an extensive biographical dataset of Central Committee (CC) members from the 12^{th} to the 16^{th} Party Congresses (1982–2007). To assess patronage-based advancement, the authors employed a latent ranking model based on the ordering of officials within the Central Committee—arguably shaped by internal voting outcomes. Although these votes are nominally democratic, they are widely understood to be orchestrated by the top leadership, including the Party General Secretary and members of the Politburo Standing Committee

Table 1: Central Party Documents Regulating Leadership Selection, Appointment, and Assessment

Selection and Appointment	**Year**	**Assessment**	**Year**
Opinions on Implementing a Cadre Assessment System	1979	Notice from the Central Committee of the Communist Party of China on Strictly Selecting and Appointing Cadres in Accordance with Party Principles	1986
Interim Provisions on the Selection and Appointment of Party and Government Leading Cadres	1995	Annual Work Assessment Scheme (Trial) for County (City, District) Party and Government Leading Cadres	1988
Regulations on the Selection and Appointment of Party and Government Leading Cadres	2002	Interim Provisions on the Assessment of Party and Government Leading Cadres	1998
Regulations on the Selection and Appointment of Party and Government Leading Cadres	2014	Comprehensive Assessment and Evaluation Measures for Local Party and Government Leadership Teams and Cadres in Accordance with the Requirements of the Scientific Development Concept	2006
Regulations on the Selection and Appointment of Party and Government Leading Cadres	2019	Local Party and Government Leadership Team and Cadre Comprehensive Assessment and Evaluation Method (Trial)	2009b
—	—	Annual Assessment Method for Party and Government Leadership Teams and Cadres (Trial)	2009a
—	—	Regulations on the Assessment of Party and Government Leading Cadres	2019

Source: Su and Tao (2024).

(PSC), who exercise influence through the Party's organizational apparatus and personnel vetting systems.

Their findings offer substantial support for the patronage hypothesis. For instance, in the 16th Party Congress, officials with workplace, education, or birthplace ties to Deng Xiaoping enjoyed, on average, a 14-percentile boost in their CC rank, despite Deng's death five years earlier. Similarly, officials affiliated with Hu Jintao's *Tuanpai* (CCYL faction) exhibited a 7-percentile advantage, suggesting that Hu had begun shaping personnel outcomes even prior to formally assuming power. By contrast, Jiang Zemin's proteges showed no significant advantage, a result the authors attribute to Jiang's overpromotion of his personal aides, many of whom lacked strong qualifications.

This analysis also reveals substantial variation in the strength of patronage effects across time and leaders. Deng and Hu Yaobang, for example, appear to have exercised considerable influence in promoting their allies, while Zhao Ziyang's network had limited upward mobility. Some of these findings align with conventional wisdom, while others—such as the limited influence of Jiang Zemin's patronage—challenge prevailing narratives, thus underlining the complexity and evolving nature of elite politics in China.

While the Central Committee represents the apex of the CCP hierarchy—where personal loyalty to the core leadership is often emphasized—regional promotions may operate under different logics, potentially allowing greater space for meritocratic considerations. To explore whether patronage also influences subnational promotions, Opper et al. (2015a) shift the focus to the careers of provincial leaders. Although their concept of "homophily" networks aims to distinguish itself from traditional notions of patronage or factionalism, the operationalization closely resembles prior studies: overlap in birthplace, education, or early career experiences with PSC members is used to identify politically connected officials.

Their analysis, which covers 353 provincial leaders between 1979 and 2011, reveals that such connections significantly increase the probability of promotion, even after controlling for a rich set of individual-level covariates and adding fixed effects for year and region. While their outcome variable omits some prominent national-level appointments (e.g., State Councilors or Secretariat members), their findings nonetheless reinforce the conclusion that patronage is not limited to the highest levels of the Party. Rather, it is a systemic feature of political selection throughout the Chinese bureaucracy.

Recent studies have continued to test the patronage and factionalism hypothesis within the upper echelons of the Chinese Communist Party (CCP), though their findings remain far from convergent. On one hand, Francois et al. (2023) affirm the enduring power of factional networks in shaping elite promotions. Drawing on a rich dataset of CCP personnel and employing machine learning techniques to infer factional affiliations, they estimate that patronage ties can increase an official's probability of promotion by roughly 10 percentage

points. Their analysis also suggests a striking concentration of political influence: members of the Politburo Standing Committee (PSC) account for approximately 75% of the total factional influence within the Politburo, overshadowing ordinary Politburo members.

In contrast, Fisman et al. (2020) present a much more skeptical view of the role of personal ties in elite advancement. Using biographical data from 1990 to 2015, they report a surprising "connection penalty": Central Committee members with direct ties to Politburo elites are between 5 and 9 percentage points *less* likely to be promoted to the Politburo. The authors argue that this pattern may reflect an institutional preference for balancing factional power or mitigating perceptions of favoritism, suggesting a more complex political calculus than the standard patronage model assumes.

The stark contrast between these two studies raises important questions about measurement, modeling, and generalizability within the patronage literature. Differences in the operationalization of factional ties—whether through shared province of origin, co-attendance at universities, overlapping work experience, or latent network structures—can lead to substantially different inferences. Moreover, scholars diverge in how they define and code promotions, and in the range and granularity of their datasets. For example, while some studies focus exclusively on transitions within the Central Committee, others consider broader moves across institutional domains, including State Council appointments or positions within Party discipline bodies. The selection of time periods can also shape conclusions, particularly given the evolving institutional norms and factional dynamics from the Deng, Jiang, Hu, and Xi eras.

Beyond these methodological discrepancies, the patronage literature also faces several substantive limitations. First, much of the existing work tends to treat patronage as a binary condition—either present or absent—ignoring variation in the strength or type of connection. Second, few studies adequately address the temporal dynamics of patron-client relationships, including how shifting power balances or leadership transitions may reshape factional leverage. Third, although factional ties are often assumed to be exogenous, in practice they may emerge endogenously from successful careers, making causal inference challenging. Lastly, there is a tendency to under-theorize the interaction between institutional rules and informal networks, leading to a stylized view of either "meritocratic" or "patronage-based" systems, rather than exploring their dynamic coexistence. Taken together, these issues suggest that while patronage remains a crucial explanatory factor in Chinese elite politics, it must be approached with greater methodological rigor and theoretical nuance.

Table 2: Empirical Research on Chinese Official Promotion

Publications	**Locale of the State**	**Time Period**	**Performance Measures**	**Findings (Performance)**	**Patronage Ties**	**Findings (Patronage)**	**Modeling Strategies**
Shih, Adolph, and Liu (2012)	Central Committee	1982–2002	Fiscal revenue growth, GDP growth	Zero	Work, hometown, college with GPS	Positive	Cross-sectional with Bayesian inference
Francois, Trebbi, and Xiao (2023)	Central Committee	1956–2014	"Shanghai gang" and CCYL gang	Positive	—	—	Cross-sectional data with year, hierarchy FEs, and individual controls
Fisman et al. (2020)	Central Committee	1956–2017	Hometown and college with Politburo	Negative	Work, hometown, college FEs	—	Cross-sectional data with controls
Li and Zhou (2005)	Province #1 and 2	1979–1995	GDP growth	Positive	—	—	Panel data with year and province FEs

Publications	Locale of the State	Time Period	Performance Measures	Findings (Performance)	Patronage Ties	Findings (Patronage)	Modeling Strategies	
Tao et al. (2010)	Province #1 and 2	1979–2002	GDP growth	Zero	—	—	Panel data with year and province FEs	
Choi (2012)	Province #1 and 2	1989–2009	GDP growth, Fiscal revenue growth	Positive for #1, Positive for #2	Work tie with GPSs	Positive for #1 (Jiang's era)	Multinomial logit	
Opper, Nee, and Brehm (2015)	Province #1 and 2	1979–2011	GDP growth	Zero	Work, hometown, college with PSC	Positive	Probit with year, office, region FEs	
Jia, Kudamatsu, and Seim (2015)	Province #1 and 2	1993–2009	GDP growth	Positive for connected officials only	Work, home, college with PSC	Zero	Linear probability model (panel) with province and year FEs	
Choi, Givens, and MacDonald (2021)	Province #1 and 2	1989–2018	GDP growth	Zero	Work tie and anecdotal tie with Jiang, Hu, Xi	Positive for Xi only	Panel data (logit) with province FE	
Sheng (2022)	Province #1 and 2	1978–2018	GDP growth	Positive for Jiang's era only	Work tie with Hu Y., Jiang, Hu J., Xi	Positive for Hu Y. only	Panel data with year, province FEs	

Publications	**Locale of the State**	**Time Period**	**Performance Measures**	**Findings (Performance)**	**Patronage Ties**	**Findings (Patronage)**	**Modeling Strategies**	
Landry, Lü, and Duan (2018)	Province, city, and county #1 and 2	1999–2007	Fiscal revenue growth, GDP growth	Positive for county #1 and 2, negative for province #1	Work tie with #1 one level above	Positive for province #1 and county #1	Cross-sectional model with region and year FEs	
Chen and Kung (2019)	Province and city #1 and 2	2004–2016	GDP growth	Positive for #2 only	Work, hometown, college ties with PSC	Zero	Panel data with year and region FEs	
Yao and Zhang (2015)	City #1 and 2	1998–2010	Individual residual effects in GDP regression	Positive for older leaders only	Provincial work experience	Positive	Panel data with year, province FEs	
Zeng and Wong (2021)	City and county #1 and 2	1997–2016	GDP growth	Positive	—	—	Cross-sectional data with region FEs	
Chen and Kung (2016)	County #1	1999–2008	GDP growth	Positive	Work, hometown tie with prefecture #1 and #2, CCYL, Shanghai gang	Positive	Panel data with county and year FEs	

Note: #1 = Party secretary; #2 = Governor/mayor/magistrate. FEs = fixed effects; GPSs = General Party Secretaries; PSC = Politburo Standing Committee.

In summary, the meritocratic account of China's cadre management system appears to rest on a stylized and often inaccurate portrayal of how political promotions actually occur. The assumption that economic performance alone drives upward mobility neglects both institutional practices and regulatory frameworks that emphasize political reliability and ideological alignment. At the same time, explanations rooted in patronage, while empirically compelling, also face significant methodological hurdles—particularly in the consistent measurement of informal ties, the causal identification of their effects, and the challenge of disentangling loyalty from competence. These limitations highlight the complexity of elite mobility in authoritarian regimes and the need for more nuanced analytical approaches. Table 2 summarizes several prominent contributions and their respective assumptions.

This study offers an alternative perspective by emphasizing the role of career trajectories across different segments of the polity. We argue that horizontal mobility—movement across bureaucratic domains such as the Party, the state, and the military—serves as an important indicator of political potential. Departing from conventional approaches, we introduce a network-based methodology to derive a continuous measure of leadership rank using observed job transitions. This allows us to more precisely assess whether diverse career paths enhance an official's likelihood of attaining higher office, independent of patronage ties. In doing so, our approach not only contributes new empirical tools to the study of political selection but also advances a broader understanding of how institutional structures and career patterns interact in shaping elite advancement in China.

3 Background

To understand how rank and career trajectories interact in the Chinese political system, it is first necessary to examine its institutional architecture—particularly the vertical and horizontal dimensions that structure elite mobility within the Party-state hierarchy.

3.1 Vertical Dimension

To understand how rank and career tracks interact in the Chinese political system, it is essential to consider the institutional structure governing elite mobility. As in other Leninist regimes such as the former Soviet Union and Eastern Bloc states, the Chinese Communist Party (CCP) fully embeds itself in the state apparatus through a centralized cadre management system known as the *nomenklatura*. Under this system, the appointment and promotion of political elites are controlled exclusively by officials at the next highest level in the administrative hierarchy (**burn1987**).

China's government operates across four administrative tiers: the central (national) government, provincial governments, prefectural governments, and county governments.

The *nomenklatura* system is implemented in a hierarchical, top-down manner: national-level leaders appoint provincial heads, provincial authorities appoint prefectural leaders, and prefectural leaders oversee county-level appointments. The country includes 33 province-level administrative units—comprising provinces, centrally administered municipalities, and ethnic minority autonomous regions. A typical mid-sized province encompasses 10 to 12 prefecture-level cities and governs a population of approximately 45 million people.

At each administrative level, Party and government structures run in parallel. While government officials such as governors, mayors, and magistrates are formally in charge of administrative tasks, the corresponding CCP Party secretaries hold the real decision-making authority. These Party secretaries usually have the final say on all major political and policy decisions (**jia2018**).

This dominance of the Party over the state is formally institutionalized in the principle of *Party control of cadres* (*dangguan ganbu*), a doctrine that has been at the core of CCP personnel management since at least the 1983 official handbook on cadre management. According to this principle, no official's promotion, transfer, or removal can take effect without the approval of the relevant Party committee (Manion, 1985). While administrative assessments and bureaucratic procedures exist, only the CCP's internal structures—particularly the Central Committee at the national level and local Party committees at subnational levels—can authorize leadership transitions.

In short, vertical career advancement in China is governed by a deeply institutionalized Party-led system, where political promotion is tightly controlled from above. This hierarchical structure plays a crucial role in shaping both the formal and informal rules of elite political mobility.

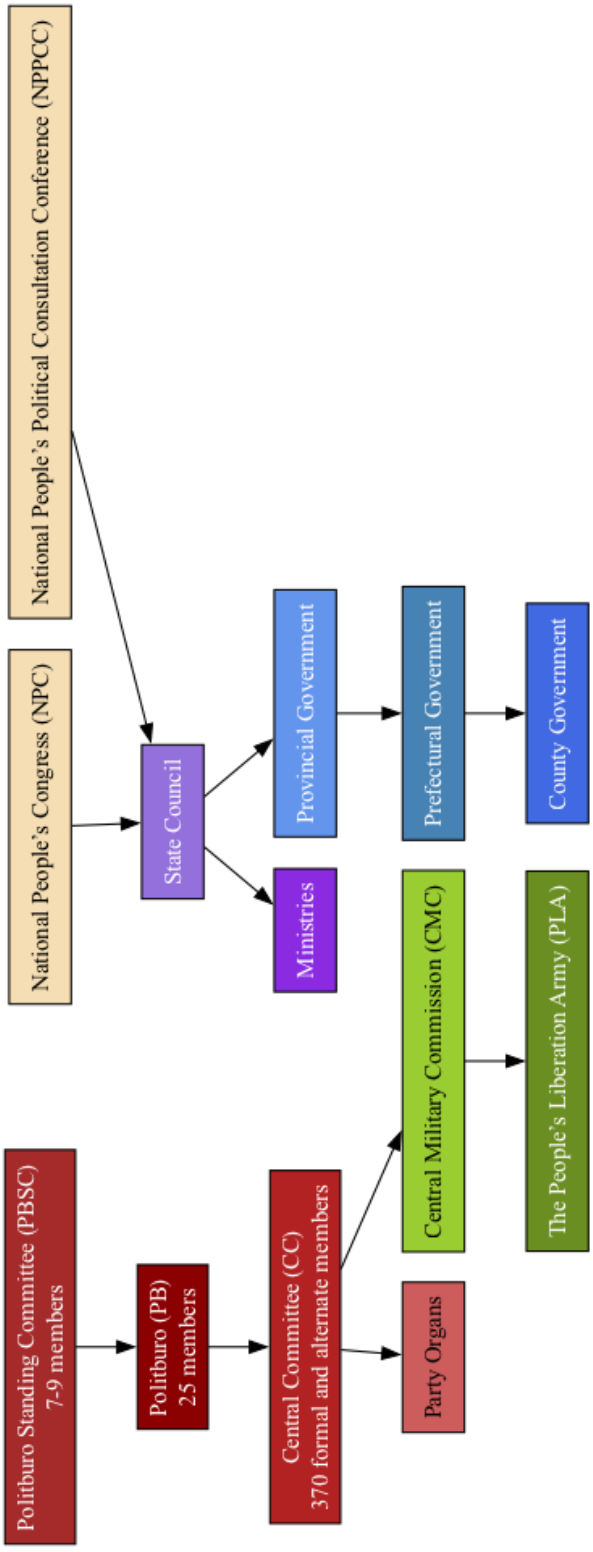

Figure 1: Structure of the Chinese Bureaucracy

3.2 Horizontal Dimension

Beyond its vertical organization, the Chinese party-state also encompasses a set of horizontally differentiated yet interlocking institutional domains. These include the Chinese Communist Party (CCP), the state administration (or central government), the People's Liberation Army (PLA), and the local governments. Each of these domains operates under the leadership of the CCP but maintains its own functional specialization and bureaucratic structure. Because many officials begin their careers in local governments before advancing to national-level positions—and because local governments in China enjoy a degree of autonomy in policy implementation (Qian & Weingast, 1997)—we analytically distinguish between the local and central governments. Figure 1 presents an overview of these four domains and their relationships. Solid arrows indicate de facto principal-agent relations, while dashed arrows denote formal (de jure) ones.

The Chinese Communist Party (CCP). The CCP forms the core of political authority in China. At the apex of the Party hierarchy are three nested bodies: the Central Committee, the Politburo, and the Politburo Standing Committee (PBSC), each representing a progressively narrower and more powerful elite. Members of the Politburo are drawn from the Central Committee, and members of the PBSC are selected from among the Politburo. The PBSC, typically composed of 5 to 9 members, constitutes the power nucleus of the regime and includes the top leadership figures—such as the General Secretary (also President of the PRC), the Premier, and the Chair of the National People's Congress.

The Central Committee includes leaders from across the party-state: provincial and local governments, ministries, state-owned enterprises (SOEs), the PLA, and the party bureaucracy. It is reconstituted every five years by a vote of approximately 2,000 delegates to the Party Congress. While the CCP Constitution nominally grants the Central Committee the authority to elect top leaders, in practice, appointments are orchestrated top-down. In addition to full members, the Central Committee includes alternate members, who lack voting rights but may be elevated if vacancies arise due to death or political purge.

The People's Liberation Army (PLA). The PLA is formally under the command of the Central Military Commission (CMC), yet the line between civilian and military authority is blurred. Although most CMC members are senior generals, the Chair of the CMC has always been the top Party leader. Currently, General Secretary Xi Jinping holds this post. This institutional arrangement reinforces the principle of absolute Party control over the military.

The Central Government. The State Council is China's highest executive authority, headed by the Premier. It includes ministers and agency heads across more than 20 administrative departments. The State Council oversees the operations of provincial People's Governments and is deeply intertwined with the Party hierarchy—many of its top officials are also members of the Central Committee and Politburo.

The Local Government. China's local administrative system consists of three tiers: provincial, prefectural, and county governments. At each level, the local government operates under the parallel leadership of a Party Committee. Within this dual structure, the Party Secretary holds greater authority than the government executive—whether governor, mayor, or magistrate—and exercises ultimate decision-making power (**jia2018**). Although local leaders technically hold the same rank as their Party counterparts, in practice, the Party hierarchy dominates.

Other Institutions. Two other national bodies play peripheral yet symbolic roles in Chinese politics: the National People's Congress (NPC) and the Chinese People's Political Consultative Conference (CPPCC). The NPC serves as China's unicameral legislature and formally approves the leadership roster and state policies. However, it operates under strict Party control and has limited substantive autonomy. The CPPCC is an advisory body that includes members from the CCP, eight minor democratic parties, and unaffiliated figures. Despite their nominal importance, both the NPC and CPPCC function primarily as ceremonial institutions. Their top positions—such as the Chairs of the NPC and CPPCC Standing Committees—are often reserved for senior leaders approaching retirement, and are generally considered sinecures with limited influence (C. Li, 2014).

4 Hypotheses

To empirically assess the mechanisms driving elite mobility in China, it is useful to contrast two competing perspectives: the *career-track view* and the *patronage view*.

According to the career-track perspective, an official's likelihood of promotion depends largely on the institutionalized features of their professional trajectory. This view implies a structured and predictable selection environment: both the official and outside observers can infer promotion prospects based on past experiences across domains and positions. While senior leaders may have preferences over personnel, they are constrained by norms that limit arbitrary advancement. For example, skipping ranks or bypassing standard rotations would be seen as violations of bureaucratic protocol and are presumed to be rare. In this view, the promotion process exhibits a degree of rule-based meritocracy, and career tracks

serve as observable signals of political potential.

By contrast, the personalistic or patronage-based view emphasizes the discretionary power of top leaders. Promotions are driven not by formal career patterns but by personal relationships, loyalty, and political alignment. Under this system, even promising officials on conventional career tracks may be sidelined, while favored clients of powerful patrons are fast-tracked despite limited experience or irregular job histories. Consequently, career trajectories become unreliable predictors of advancement, and political selection is fundamentally arbitrary and opaque.

These contrasting perspectives yield two testable hypotheses:

Hypothesis 1 (Career-Track View]): Certain career tracks are systematically associated with a higher likelihood of promotion. This relationship remains robust even after controlling for personal and political background variables, including connections to powerful leaders.

Hypothesis 2 (Personalistic View): While career tracks may initially appear correlated with political success, these associations disappear once personal connections and factional affiliations are taken into account. Promotions are driven primarily by elite patronage, not career patterns.

The empirical analysis that follows evaluates which of these views is more consistent with observed patterns in elite Chinese politics. If career trajectories retain predictive power after accounting for individual background and factional alignment, this would suggest that institutional constraints meaningfully shape political advancement. Conversely, if career patterns become insignificant once patronage ties are introduced, the evidence would support a personalistic system dominated by elite discretion.

5 Data and Methods

5.1 Data

Our analysis is based on a comprehensive biographical database of Chinese Communist Party (CCP) elites. The core of the data comes from the Central Committee dataset compiled by shih2008 and updated by lu2018, which we further extend through automated web scraping of *China Vitae*, a digital archive of over 5,000 elite political biographies since the 1950s. After harmonizing names, job codes, and temporal information, we construct a panel of all full and alternate Central Committee members from the 12^{th} to the 18^{th} Party Congress (1982–2012). The final dataset consists of $N = 2{,}044$ officials and 84,640 person–year observations.

Demographic and educational characteristics are extracted directly from biographies. We define `college_dum` = 1 if the official holds a bachelor's degree, and `gschool_dum` = 1

for graduate degrees (master's or doctorate). `abroad_dum` = 1 indicates at least one year of study or work experience abroad. `gender` = 1 if male, and `ethnic_dum` = 1 if the official belongs to a minority ethnic group, with Han Chinese as the reference category.

Figure 6 presents the distribution of job diversity across all observed careers, while Figure 7 plots job diversity by age cohort. These plots illustrate the considerable heterogeneity in bureaucratic mobility within the CCP, as well as lifecycle patterns in career diversification. Notably, officials with high diversity scores often attain these only at later career stages, suggesting that horizontal movement across domains is a cumulative and strategic process.

Factional and Patronage Networks. Because promotion in the CCP is widely believed to rely not only on performance but also on informal political connections, we construct a set of time-varying indicators to capture patronage networks and factional affiliations. Five widely recognized political factions are identified in the literature:

- **Communist Youth League** (`CYLC`)
- **Shanghai Clique**
- **Tsinghua Clique**
- **Military** (PLA)
- **Princelings** (descendants of revolutionary veterans, following Zhang)

An official enters a faction once their résumé satisfies at least one of the conditions in Table **??**—for example, at least two years of CYLC experience at the prefectural level or higher, or a bachelor's degree from Tsinghua University. Because such attributes accumulate throughout the career, factional dummies are updated *year-by-year*, making them dynamic.

We further capture network ties to top leaders using the approach proposed by Francois. For each year t, we identify the Party General Secretary (PGS) and generate a dummy `Faction_secretary_F1` = 1 if both the official and the PGS belong to the same faction at that time. These *forward-looking* connections are time-varying and capture prospective favoritism that may precede the patron's rise to national leadership.

A more direct form of patronage is also recorded: `mishu_dum` = 1 if the official's biography reports having served as a personal secretary (*mìshū*) to a national-level leader at any point. Because such service is typically an early-career role that results in long-lasting ties, this variable is treated as time-invariant.

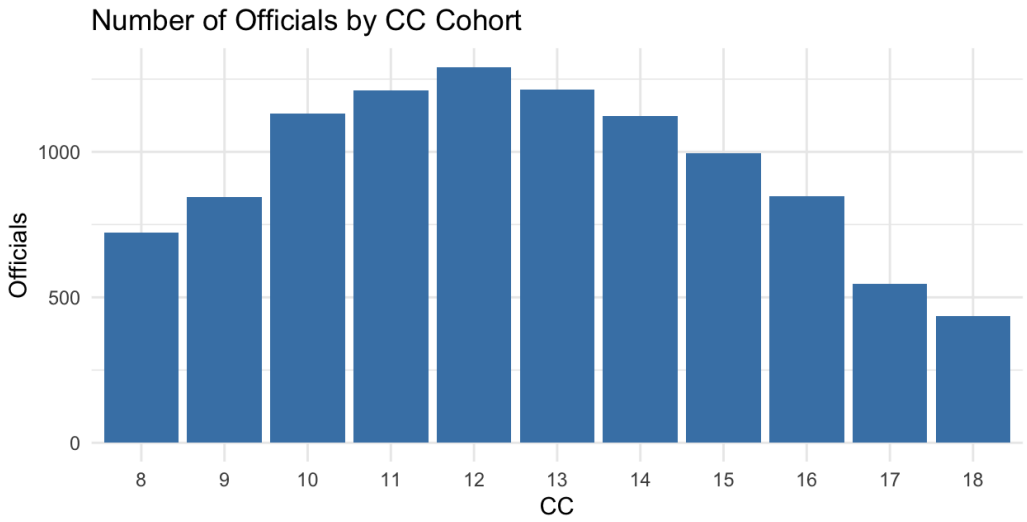

Figure 2: Distribution of Job Diversity across Officials

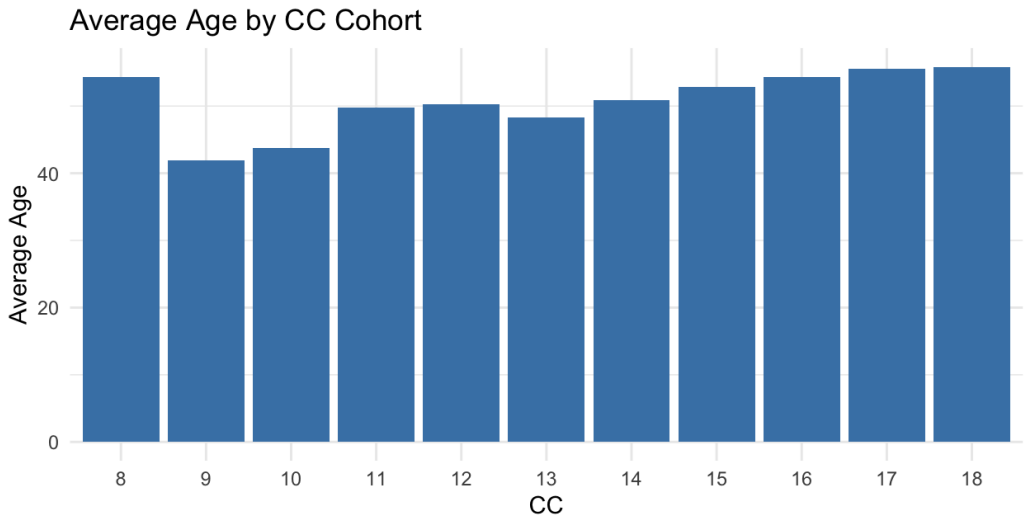

Figure 3: Job Diversity by Age

Variables used to proxy patronage:

Variable Name	Interpretation
`CYLC`, ..., `Princelings`	Membership in one of five major factions
`CYLC_secretary_F1`, ... `Princelings_secretary_F1`	Shared-faction tie with the PGS (forward-looking) (Updated annually)
`mishu_dum`	Ever served as national leader's personal aide

Further more, we translate the official job codes into the discrete ladder variable used by the Organisation Department: PBSC (ladder = 1), Politburo (2), full CC (3), alternate CC (4), and all lower posts (5). The congress counter `CC_no` runs from 12 to 18. When officials hold multiple concurrent posts we keep the functionally highest one in a given year.

This construction allows us to account for multiple layers of patronage and personal ties, helping us distinguish the effects of institutional career paths from informal political networks in the analysis of elite promotions. Table 3 presents summary statistics for key covariates across five leadership tiers, from alternate members of the Central Committee (AC) to top leaders in the Politburo Standing Committee (SC). As expected, elite strata show significantly higher levels of educational attainment, international exposure, and personal secretary experience. For example, while only 34.6% of alternate members have graduate education, this figure reaches 93.5% among Standing Committee members. Similarly, 41.7% of top leaders have studied abroad, compared to only 12.8% of alternate members. Factional alignment also varies across ranks, with CYLC and Shanghai affiliations being most prevalent among high-level elites. Gender and ethnic diversity, however, remains low across all levels—over 94% of Central Committee members are male and ethnic minorities account for fewer than 14% even at the AC level.

5.2 Measuring Rank and Job Diversity

The Chinese bureaucracy formally adheres to a well-defined rank hierarchy that determines administrative authority and resource access across both Party and government structures. Table 4 summarizes this official ranking schema, where level 9 denotes the apex of the system—reserved for Politburo Standing Committee members and the Premier of the State Council—and level 1 includes local township and county officials.

However, while this rank structure provides a necessary starting point for analyzing elite political mobility, it does not fully capture the relative influence of positions across diverse institutional domains. For instance, although both are formally classified as level 7, the Party Secretary of Beijing wields considerably more de facto power than the Party Secretary of a remote inland province. Similarly, identical formal ranks may mask vast

Table 3: Summary Statistics of Central Committee Members (8th to 18th CC, 1956–2017)

	Top leader	**SC**	**PB**	**CC**	**AC**
CYLC	0.292	0.097	0.109	0.054	0.040
	(0.464)	(0.301)	(0.312)	(0.226)	(0.196)
Shanghai	0.250	0.161	0.130	0.046	0.034
	(0.442)	(0.374)	(0.338)	(0.210)	(0.181)
Military	0.250	0.129	0.283	0.282	0.180
	(0.442)	(0.341)	(0.452)	(0.450)	(0.385)
Princelings	0.208	0.097	0.109	0.044	0.029
	(0.415)	(0.301)	(0.312)	(0.205)	(0.167)
Gender	1.000	1.000	0.942	0.949	0.875
	(0.000)	(0.000)	(0.235)	(0.220)	(0.331)
Age	64.750	64.935	62.920	59.276	52.839
	(9.143)	(4.082)	(7.061)	(5.907)	(6.530)
College	0.750	0.935	0.804	0.755	0.828
	(0.442)	(0.250)	(0.398)	(0.430)	(0.378)
GradSchool	0.167	0.097	0.152	0.191	0.346
	(0.381)	(0.301)	(0.360)	(0.393)	(0.476)
Abroad	0.417	0.129	0.181	0.088	0.128
	(0.504)	(0.341)	(0.387)	(0.283)	(0.335)
Mishu	0.000	0.097	0.101	0.066	0.040
	(0.000)	(0.301)	(0.303)	(0.249)	(0.196)
Ethnicity	0.000	0.000	0.051	0.077	0.139
	(0.000)	(0.000)	(0.303)	(0.267)	(0.346)

Note: This table reports means, with standard deviations in parentheses.

differences in prestige between military, central, and local government appointments. These inconsistencies are especially problematic when studying elite promotions, where subtle shifts in status often transcend formal rank labels.

To overcome these limitations, we implement a graph-based ranking algorithm inspired by social network analysis. The key insight is that Chinese officials typically ascend the career ladder via a series of job transitions, and these transitions can be treated as directed comparisons. Specifically, we construct a directed graph where each node represents a unique position and a directed edge $A \to B$ indicates that an official was observed moving from position A to position B. Given that upward mobility dominates CCP careers (with few exceptions such as purges or forced retirements), we treat these transitions as evidence that position B is more prestigious than position A.

This results in what we call the *position network*, a partial ordering over thousands of unique job codes observed in our dataset. We then apply the SpringRank algorithm to

estimate a continuous prestige score for each job. This data-driven score captures the latent importance of positions, refining the blunt instrument of formal rank codes and allowing us to make cross-domain comparisons that cannot be answered using Table 4 alone.

By combining Table 4 with our network-based SpringRank score, we construct a richer and more flexible measurement of political status that accounts for both formal and informal hierarchies. This allows us to more precisely model elite promotion outcomes and test whether specific career trajectories—our core explanatory variable—systematically correlate with upward mobility.

5.3 Rank and Government Roles

Although China's cadre management system assigns formal administrative grades to each post, these codes frequently fail to reflect the de facto influence of positions. For instance, provincial leaders in coastal or political centers often wield more power than their counterparts in inland or less developed regions, despite holding the same formal rank. To address this discrepancy, we construct a continuous, empirical *leadership–status* scale that enables pairwise comparison of any two jobs on a single latent dimension of authority.

Our approach begins with a comprehensive compilation of year-to-year job transitions observed in our panel of 2,004 officials, spanning 4,183 unique job titles from 1950 to 2022. Each directed edge $A \to B$ indicates that an official moved from position A in year t to position B in year $t+1$. The weight of each edge is defined as

$$w_{AB} = n_{A,t} \times n_{B,t+1},$$

where $n_{A,t}$ and $n_{B,t+1}$ denote the number of concurrent positions the official held in each respective year. This adjustment ensures that multi-post cadres contribute proportionally less to any individual transition, preserving the relative importance of clean, singular promotions.

We aggregate these weighted transitions into a sparse adjacency matrix $W = (w_{ij})$ and estimate latent status scores using the SpringRank algorithm introduced by De Bacco et al. (2018). Conceptually, SpringRank interprets each observed transition as a spring pulling the lower-ranked node i one unit below the higher-ranked node j. The estimator solves:

$$\min_{\mathbf{s}} \ \frac{1}{2} \sum_{i,j} w_{ij}(s_i - s_j - 1)^2 + \lambda \sum_i (s_i - \mu_i)^2, \tag{1}$$

where s_i denotes the latent rank of job i, μ_i is a prior mean informed by formal administrative ranks (Politburo Standing Committee < Politburo < Central Committee < Alternate CC < other), and $\lambda = 5$ controls the strength of this ridge penalty. The resulting scores are

Cadre Rank Level	Party Positions	Government Positions
9: Central/National Leader	Secretary-General of Central Committee, Politburo Standing Committee Members	Premier of State Council, Secretary-General of National People's Congress, etc.
8: Deputy Central/National Leader	Politburo members, Secretary of General Office, etc.	Vice Premiers, Head of the Supreme Court, Procurator-General
7: Provincial/Ministerial Head	Deputy secretaries, Heads of departments and commissions, Secretaries of provincial committees	Heads of ministries, Governors of provincial governments
6: Deputy Provincial/Ministerial Head	Deputy secretaries of provincial committees, secretary of discipline inspect commission and other provincial standing committee members	Vice governors of provincial governments, Head of the People's Court, Chief Procurator
5: Bureau Director / Prefectural Head	Secretaries of prefectural committees, Heads of provincial departments and commissions, other members of provincial committees	Mayors (Heads) of prefecture/city/municipality governments, Heads of provincial-level bureaus, chairs of prefectural people's congresses
4: Deputy Bureau Director / Prefectural Deputy Head	Deputy heads of provincial departments and commissions, members of prefectural standing committees	Vice mayors of prefecture/city/municipality governments, Vice heads of provincial-level bureaus
3: Division/County Head	Heads of prefectural departments and commissions, other members of prefectural committees	Heads of county and city district governments, heads of prefectural government divisions, chairs of county people's congresses
2: Deputy Division Head	Deputy heads of prefectural departments and commissions, members of county standing committees	Vice heads of county and city district governments, Vice heads of prefectural government divisions
1: Below Deputy Division Head	County party committee members, etc.	Township heads, etc.

Table 4: Cadre Rank Levels and Their Corresponding Party and Government Positions

centered so that $\bar{s} = 0$, and by construction, lower values of s_i indicate higher real-world status.

Prior to estimation, we make three preprocessing adjustments to improve the structure of the position graph:

1. We exclude purely ceremonial roles often held during retirement (e.g., NPC, CPPCC, united front organizations).

2. We merge sub-provincial positions across provinces to enhance connectivity, while retaining separate identifiers for province-level executive positions.

3. We "cap" each official's career trajectory by appending a notional, one-step-higher position. For example, if an official ends their career as a Central Committee member without entering the Politburo, we append a final transition to a Politburo post. This ensures better resolution at the top of the hierarchy, where sparse transitions would otherwise reduce comparability.

   Figure 5.3 presents a three-dimensional visualization of the ranked positions in our sample. Each dot represents a job held by an official, plotted by domain and hierarchical level. The four quadrants on the xy-plane correspond to the local government (blue), central government (purple), party apparatus (red), and the PLA (green), respectively. The y-axis captures the SpringRank score.

The estimated SpringRank scores span a range from approximately -0.44 (e.g., Party General Secretary, Chairman of the Central Military Commission, State President) to $+1.35$ (e.g., deputy-level county officials). For use in the regression analyses, we define:

$$Status_{i,t} = -s_{\text{job}(i,t)},$$

so that higher values represent more senior leadership posts.

This latent, data-driven ranking—anchored in observed career transitions and regularized by minimal prior structure—provides a fine-grained, replicable measure of de facto political status. It enables comparison across every bureaucratic domain in the Chinese polity, including the Party, state, military, and local governments.

Table 5 presents the rank of top job positions across different sectors of the Chinese political system, including the local government, central government, the Communist Party, and the People's Liberation Army. As we can see, the assigned ranks generally correspond to our intuitive understanding of the relative status and influence of these roles within the political hierarchy. For example, positions such as President, General Party Secretary, and Chairman of the Central Military Commission appear at the top, reflecting their paramount authority in the state, party, and military apparatuses.

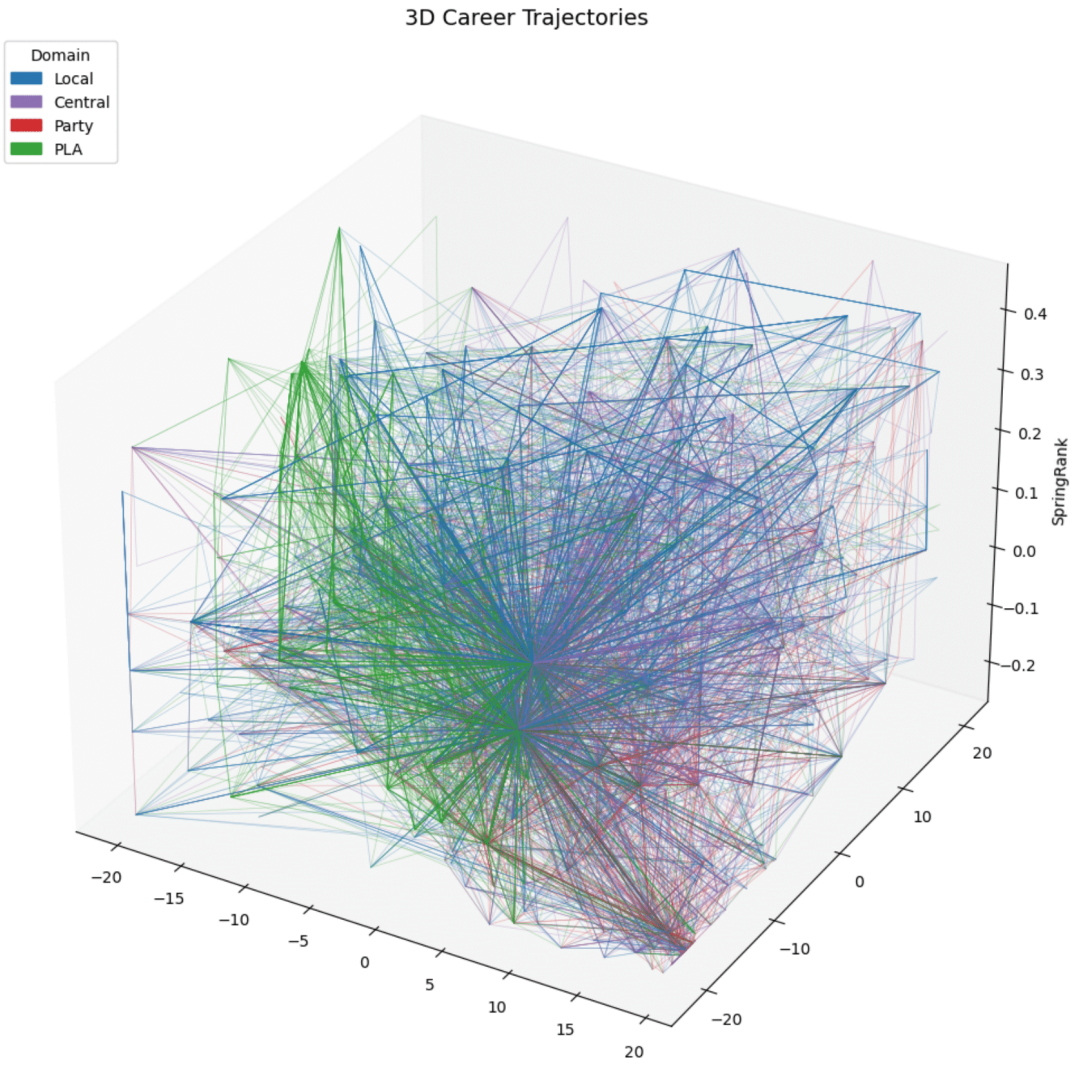

Figure 4: 3D Visualization of Positions in the Chinese Bureaucracy.
Each dot represents a position held by an official in our sample. The four quadrants on the xy-plane correspond to the local government (blue), central government (purple), party organs (red), and the PLA (green), respectively. The y-axis reflects each job's SpringRank score. Each edge denotes a career transition between two positions.

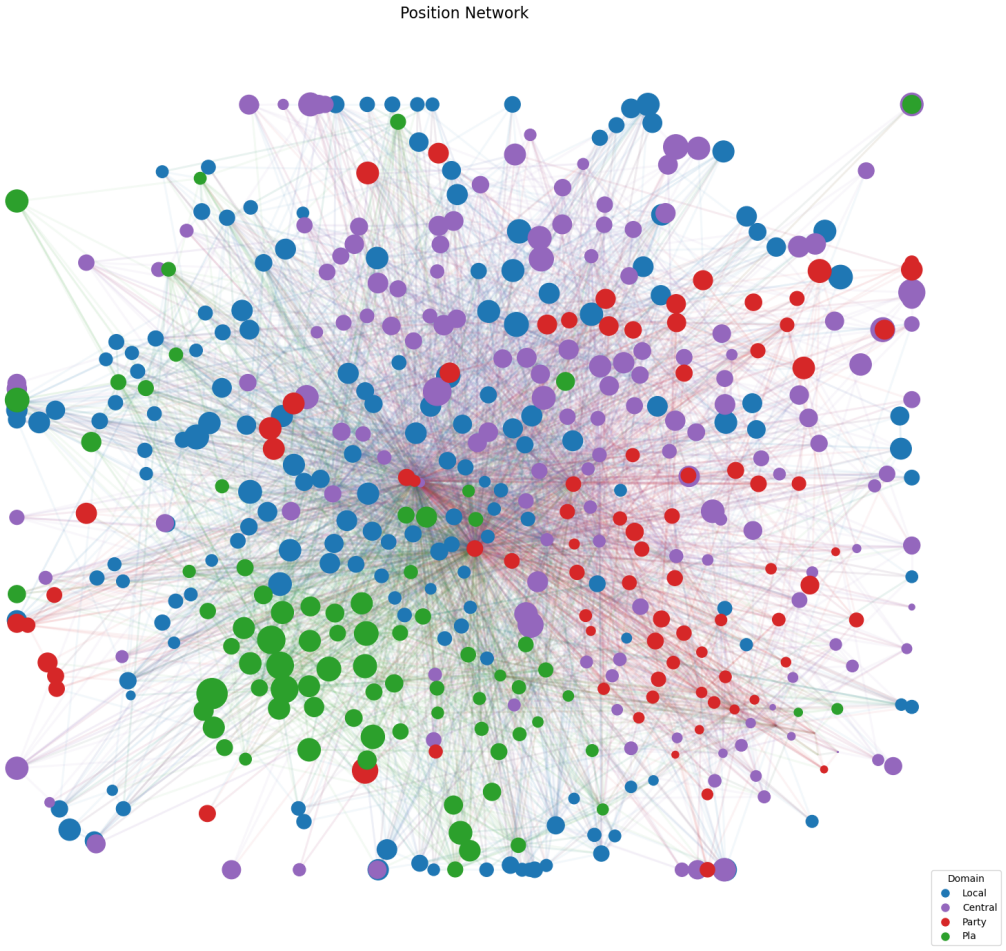

Figure 5: Position Network of Career trajectories in the Chinese Party-State. **E**ach node corresponds to a distinct position held by at least one official in our dataset. Edges indicate sequential transitions between positions in actual careers. Edge color inherits the domain of the source node.

Table 5: Ranking of Positions

Rank score	**Local Government**	**Central Government**	**The Communist Party**	**The PLA**
-0.44 to -0.33		President	General Party Secretary	Chairman of the CMC
		Premier, Chairman of the NPC		
-0.33 to -0.25		Vice Premier	Director of the Central Discipline Inspection Committee	Vice Chairman of the CMC
-0.25 to -0.20	Beijing Party Secretary	Minister of Defense, Minister of Public Security	Director of the Central Politics & Law Committee, Director of the Central Propaganda Department	
-0.20 to -0.16	Party Secretaries of Guangdong, Hunan, Liaoning, Xinjiang, Mayor of Beijing	State Councilor, Ministers of Industries & Information Technology, Environmental Protection, Health, Supervision, Director of SASAC, Auditor General, Governor of the PBOC, President of the Supreme People's Court, Procurator General	Secretary of the Central Secretariat Department, Director of Central Organization Department, Director of the United Fronts Department, Central Taiwan Work Office Director, Central State Organs Work Committee, Deputy Director of the Central Politics & Law Committee	Chief of Staff, Director of the General Political Department, Commander/Political Commissar of Lanzhou Military Region

5.4 Job–Diversity Index

In addition to measuring vertical career advancement, we construct a metric for the *horizontal breadth* of an official's experience across the four principal bureaucratic domains of the Chinese state: *Local government* (L), *Central government* (C), the *Party apparatus* (P), and the *Military* (M, i.e., the PLA). This measure captures whether an official has rotated across different institutional arenas, a feature widely believed to be associated with elite grooming and promotion potential.

Let $\exp_{ij,t}$ denote the cumulative number of years official i has spent in domain $j \in \{L, C, P, M\}$ by year t. We first compute the share of experience in each domain:

$$p_{ij,t} = \frac{\exp_{ij,t}}{\sum_{j \in \{L,C,P,M\}} \exp_{ij,t}},$$

which represents the fraction of career time spent in each respective domain.

To quantify how evenly this experience is distributed, we compute the (Shannon) entropy of these shares:

$$H_{i,t} = -\sum_{j \in \{L,C,P,M\}} p_{ij,t} \log p_{ij,t}.$$

This entropy measure reaches its maximum value when the official has spent an equal amount of time in each of the four domains. We then normalize by the theoretical maximum ($\log 4$) to ensure comparability across individuals:

$$JobDiv_{i,t} = \frac{H_{i,t}}{\log 4} = -\frac{1}{\log 4} \sum_{j \in \{L,C,P,M\}} p_{ij,t} \log p_{ij,t}. \tag{2}$$

This yields a continuous index ranging from 0 (pure specialization in one domain) to 1 (perfectly even distribution across all four domains). The resulting variable, denoted `entropy_norm` in our dataset, serves as our measure of horizontal career diversity and is a central independent variable in our empirical models (Section 5.5).

To minimize endogeneity concerns—particularly the possibility that career rotations might themselves be influenced by proximity to promotion—we freeze the experience counters at the end of the year when the official turns 65. This ensures that $JobDiv_{i,t}$ is fully predetermined with respect to future leadership status outcomes.

5.5 Empirical Strategy

Our primary objective is to estimate the relationship between horizontal career diversity and leadership status. We begin with an Ordinary Least Squares (OLS) model, the workhorse of empirical analysis. OLS provides an interpretable framework and a clear benchmark

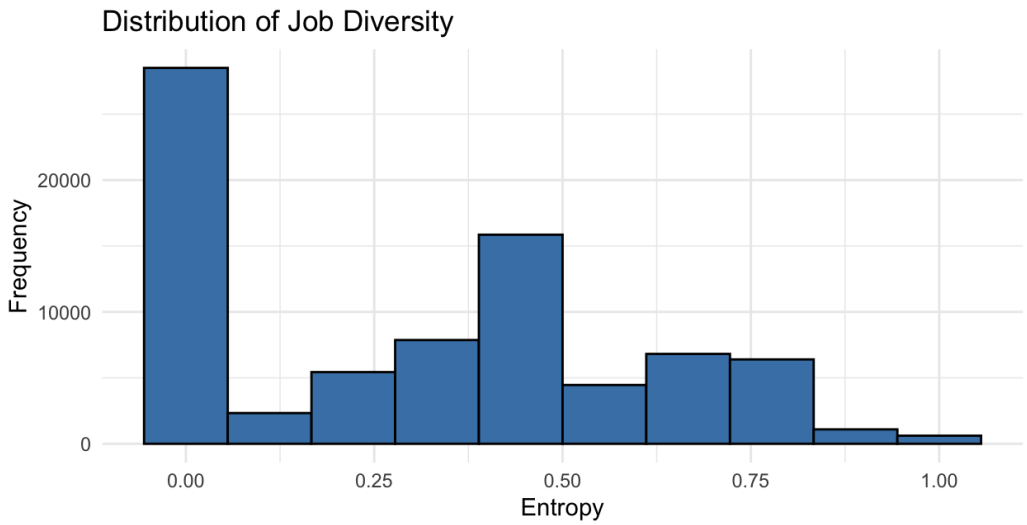

Figure 6: Distribution of Job–Diversity Index across all official–years. Most officials exhibit limited domain mobility, but a notable share accumulates experience across two or more bureaucratic arenas.

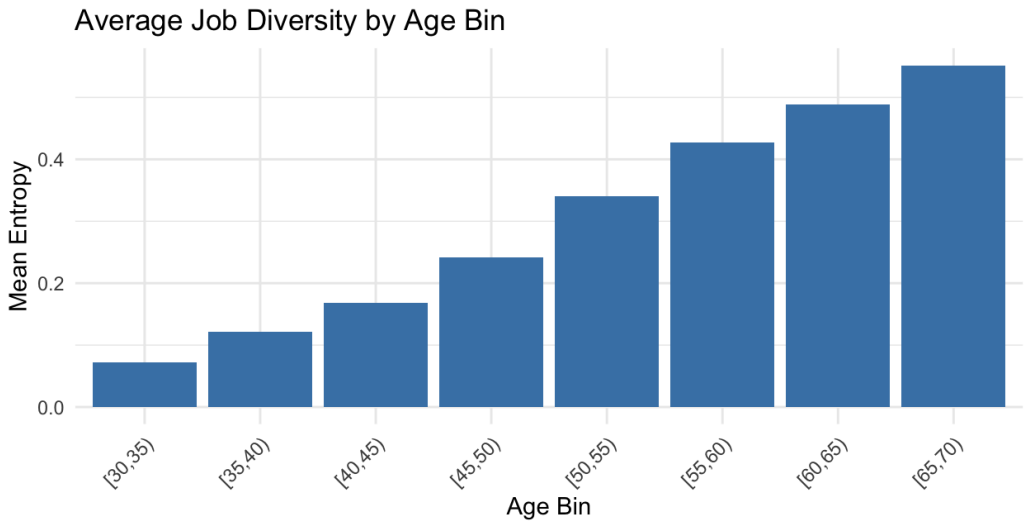

Figure 7: Average Job–Diversity Index by age cohort. Diversity increases steadily during mid-career stages (ages 40–60) before plateauing, consistent with institutional norms governing late-career rotation.

for comparison, but it rests on the strong assumption of a linear and additive relationship between the predictors and the outcome. While this assumption simplifies interpretation, it may fail to capture complex, multi-dimensional dynamics present in elite political mobility.

Our analytical sample includes all Alternate and Full Central Committee (ACC/CC) members from the 14^{th} to the 18^{th} Party Congresses, subject to two conditions: (1) sufficient job history between ages 35 and 50 to construct career-track indicators; and (2) prior membership in the ACC or CC in the immediately preceding Party Congress. These restrictions ensure consistency in exposure to the promotion process and mitigate concerns over data incompleteness or selective entry.

As our outcome variable, we use a continuous leadership–status index:

$$Status_{i,t} = -\,\textsc{SpringRank}_{i,t},$$

where the SpringRank score is computed annually from the observed transitions in the CCP's position network . Rescaling ensures that higher values correspond to more senior positions. Because political reshuffling occurs even outside of Party Congress years, we retain annual frequency in our panel structure. To account for serial correlation within officials, we cluster all standard errors at the individual level.

Our key independent variable is the normalized Shannon entropy of domain experience:

$$JobDiv_{i,t} = \texttt{entropy\_norm}_{i,t},$$

which captures how evenly official i has accumulated service across the four major institutional domains: Local, Central, Party, and PLA. To account for dynamic selection or mean reversion, we also include the lagged value $JobDiv_{i,t-1}$.

To isolate the effect of career-path diversity, we control for five categories of covariates:

1. **Demographics** (time-invariant): gender, minority status, polynomial terms for age (linear, squared, cubic), college and graduate education, studied abroad, and prior service as a national leader's personal secretary;

2. **Factional affiliation** (time-varying): indicator variables for membership in five elite factions—CYLC, Shanghai, Tsinghua, Military, and Princelings—as well as year-specific indicators for shared factional ties with the incumbent Party General Secretary;

3. **Status dynamics**: lagged leadership–status score $Status_{i,t-1}$;

4. **Formal rank**: categorical dummies for hierarchy level within the official elite—PBSC, PB, full CC, alternate CC, or below (baseline);

5. **Fixed effects**: year fixed effects for each Party Congress (`CC_no`) and career–stage dummies (`ladder`) to absorb unobserved cohort trends.

The full model specification is given by:

$$Status_{i,t} = \alpha + \beta_1\, JobDiv_{i,t} + \beta_2\, JobDiv_{i,t-1} + \beta_3\, Status_{i,t-1} + \mathbf{Z}_i^\top \theta + \mathbf{F}_{i,t}^\top \phi + \mathbf{H}_{i,t}^\top \psi + \gamma_{c[i]} + \lambda_{\ell[i]} + \varepsilon_{i,t}, \tag{3}$$

where $\gamma_{c[i]}$ and $\lambda_{\ell[i]}$ denote Party Congress and ladder fixed effects, respectively, and $\varepsilon_{i,t}$ is an idiosyncratic error term.

5.6 Robustness to Non–Linearities: Random Forest and XGBoost

The linear specification in equation (3) provides a useful benchmark but may miss important nonlinearities or interaction effects. To assess the robustness of our findings to model misspecification, we re-estimate the relationship between career-path diversity and leadership status using two tree-based ensemble methods: **Random Forest** and **Extreme Gradient Boosting (XGBoost)**.

These methods are flexible, nonparametric, and allow for arbitrary interactions and nonlinearities among predictors. Both use the same set of covariates as the OLS model: current and lagged job diversity, lagged status, the demographic and factional controls, and the fixed effects (`ladder`, `CC_no`)—with categorical variables one-hot encoded and continuous variables standardized.

To evaluate predictive accuracy, we randomly split the dataset into a training set (80%) and a held-out test set (20%), stratified by Party Congress year.

Random Forest. We use the `ranger` package to train forests with 500 trees, a minimum node size of 5, and $\lfloor \sqrt{p} \rfloor$ covariates sampled at each split (where p is the number of predictors). We use out-of-bag (OOB) error to evaluate predictive fit and calculate variable importance via the mean decrease in impurity.

XGBoost. We tune hyperparameters using 5-fold cross-validation: learning rate $\eta \in \{0.01, 0.05, 0.1\}$, maximum tree depth $\in \{3, 5, 7\}$, subsample ratio $\in \{0.5, 0.8\}$, and L2 regularization $\lambda \in \{0, 1\}$. The final model uses $\eta = 0.05$, depth=5, subsample=0.8, $\lambda = 1$, and 300 boosting rounds with early stopping if performance does not improve within 10 rounds.

Together, these nonparametric methods serve as rigorous robustness checks to verify that the positive relationship between job diversity and leadership rank is not an artifact of linear functional form assumptions.

6 Results

6.1 Interpreting the Baseline OLS Estimates

Table 6 presents the results from estimating equation (3) via OLS, with cluster–robust (CR2) standard errors. The dependent variable is the annual *leadership–status* index constructed using the SpringRank algorithm. A higher value indicates a more senior political position in the CCP hierarchy.

The key finding is the large, positive, and highly significant association between contemporaneous career-path diversity and leadership status. The estimated coefficient on job diversity (`entropy_norm`) is $\hat{\beta} = 0.664$ ($p < 0.001$). This result is both statistically and substantively meaningful: a one–standard–deviation increase in job diversity (approximately 0.14 points on the normalized scale) corresponds to a 0.09 standard deviation increase in leadership rank, holding constant lagged status, lagged diversity, demographic characteristics, factional affiliations, and fixed effects for career stage and cohort.

The lagged value of job diversity enters with a large negative sign, suggesting a dynamic selection process: officials with unusually broad experience in the recent past may have been promoted already, which flattens the marginal returns to diversity in subsequent periods. More importantly, status is highly persistent over time ($\hat{\beta} = 0.691$, $p < 0.001$), reflecting the path-dependent and hierarchical nature of promotions within China's bureaucratic system.

The coefficients on the formal rank ladder (`ladder1`–`ladder4`) confirm the validity of the SpringRank transformation: even after accounting for graph-based ranking and a rich set of controls, formal titles remain predictive of de facto status. This validates our empirical strategy and suggests that SpringRank retains the core structure of the CCP's bureaucratic hierarchy while offering finer resolution.

The regression also sheds light on the role of personal connections. Several factional indicators are significantly associated with higher status. CYLC membership carries a very large and significant effect (0.209, $p < 0.001$), consistent with earlier findings that the League has been a strong career platform under leaders like Hu Jintao. Surprisingly, Shanghai affiliation also shows a sizable positive effect (0.101, $p < 0.01$), suggesting the continued relevance of this network, possibly due to lingering influence from the Jiang Zemin era. Probably because the database goes up to 2012 we do not see the effects of Tsinghua or princeling which are more associated with Xi Jinping. Shared factional ties with the incumbent Party General Secretary (the `_secretary_F1` variables) are mixed in significance and direction. While most are statistically insignificant, a few, like `CYLC_secretary_F1` and `Princelings_secretary_F1`, reach significance and are positive. This suggests that being part of the same faction as the General Secretary can offer some advantage, but it is neither universal nor decisive. Importantly, this evidence aligns with a bounded pa-

tronage model—where personal connections can help but do not overwhelm structural or institutional criteria.

Meanwhile, merit-related covariates—especially college and graduate education—have positive and statistically significant effects, reinforcing a view of the CCP's cadre management system as increasingly valuing formal qualifications. Notably, variables such as study abroad, minority status, or prior service as a personal secretary are not independently predictive of status.

Together, these results speak directly to the competing hypotheses outlined in Section **??**. We find strong evidence in favor of Hypothesis 1: that career tracks matter for political advancement in the Chinese system. The influence of job diversity remains substantial and robust even after adjusting for factional ties, lagged status, and a comprehensive set of covariates. This finding suggests that, despite the role of political connections, there are systematic, trackable pathways to elite mobility, shaped by broad institutional experience. In contrast, Hypothesis 2—that the effect of career tracks is absorbed once patronage is controlled—is not supported by the data.

The positive coefficients on the Party Congress indicators (`CC_no15` through `CC_no18`) suggest an upward drift in average status over time. This may reflect bureaucratic expansion, the creation of new top-level positions, or changes in how status is structured across Party Congress cohorts.

Taken together, these findings offer robust support for the view that horizontal career breadth—measured systematically via entropy—is a critical component of elite political success in China. While personal networks and formal rank remain relevant, the CCP appears to reward diverse administrative experience across domains, pointing to a hybrid system where institutional norms constrain, but do not eliminate, the influence of patronage. This conclusion reinforces recent scholarship arguing that political selection in China, while non-democratic, follows recognizable institutional patterns that reward cross-domain competence rather than purely loyalty-based advancement.

6.2 Machine Learning Validation of Career Diversity Effects

Tables 8 and 10 present the variable importance rankings derived from a 500-tree Random Forest and a tuned XGBoost model, respectively. Despite relying on fundamentally different learning algorithms, both models deliver highly consistent results that reinforce—and extend—the findings from our OLS specification. In particular, these ensemble models validate the central role of career diversity in elite selection and clarify the relative contributions of competing hypotheses about political advancement.

Unsurprisingly, both models confirm that path dependence remains the most powerful predictor of elite status. The lagged status score (`status_lag`) emerges as the top variable

Table 6: OLS Regression Results with Cluster-Robust Standard Errors

Table 7:

Variable	Estimate	Std. Error
(Intercept)	0.022	(0.056)
Job Diversity	0.664***	(0.042)
age	0.004***	(0.000)
agez2	-0.002+	(0.001)
agez3	-0.004***	(0.001)
CYLC	0.209***	(0.003)
Shanghai	0.101**	(0.003)
Tsinghua	0.001	(0.003)
Military	-0.014***	(0.002)
Princelings	0.005+	(0.003)
CYLC_secretary_F1	0.022***	(0.020)
Shanghai_secretary_F1	0.034***	(0.055)
Tsinghua_secretary_F1	-0.057	(0.057)
Military_secretary_F1	-0.043	(0.055)
Princelings_secretary_F1	0.047*	(0.058)
college_dum	0.013***	(0.003)
gschool_dum	0.004*	(0.002)
abroad_dum	-0.001	(0.002)
mishu_dum	0.003	(0.002)
ethnic_dum	-0.003	(0.002)
gender	0.005+	(0.003)
Status (t1)	0.691***	(0.011)
Job Diversity (t1)	-0.640***	(0.041)
CC_no15	0.002	(0.001)
CC_no16	0.005*	(0.002)
CC_no17	0.008**	(0.003)
CC_no18	0.019***	(0.004)
ladder1	-0.127***	(0.008)
ladder2	-0.140***	(0.009)
ladder3	-0.208***	(0.010)
ladder4	-0.207***	(0.009)
Num. Obs.	29714	
RMSE	0.09	
Std. Errors	Cluster-robust (CR2)	

* p ¡ 0.05, ** p ¡ 0.01, *** p ¡ 0.001

Table 8: Random-forest variable–importance profile

Table 9: Random-Forest variable importance

Feature	Importance
status_lag	1804.983
Job_diversity	544.325
age	461.740
agez3	442.218
agez	424.365
ladder_f	377.250
CYLC_	347.491 CYLC_secretary_F1
301.521	
Job_diversity_lag	283.794
Shanghai	198.622
Military	148.036
agez2	96.563
CC_no_f	84.860
Military_secretary_F1	21.284
college_dum	20.409
gschool_dum	14.999
Tsinghua_secretary_F1	13.448
abroad_dum	13.414
Shanghai_secretary_F1	13.392
gender	10.655
ethnic_dum	8.570
mishu_dum	7.464
Princelings	5.292
Tsinghua	4.578
Princelings_secretary_F1	2.090

Table 10: XGBoost gain-based importance profile

Table 11: XGBoost variable importance

Feature	Gain
status_lag	0.567
Job_diversity	0.189
age	0.116
CYLC	0.104
ladder_f4	0.028
ladder_f3	0.025
CYLC_secretary_F1	0.025
Shanghai	0.024
Military	0.022
Job_diversity_lag	0.015
ladder_f5	0.012
agez	0.005
agez2	0.002
college_dum	0.002
CC_no_f9	0.002
ladder_f3	0.002
gschool_dum	0.002
gender	0.001
abroad_dum	0.001
CC_no_f12	0.001
Tsinghua_secretary_F1	0.001
Shanghai_secretary_F1	0.001
Military_secretary_F1	0.001
CC_no_f11	0.001
CC_no_f10	0.001
ethnic_dum	0.001
CC_no_f13	0.001
Princelings	0.000
mishu_dum	0.000
CC_no_f14	0.000
agez3	0.000
CC_no_f15	0.000
CC_no_f17	0.000
CC_no_f16	0.000
Tsinghua	0.000
CC_no_f18	0.000
Princelings_secretary_F1	0.000

in both models: it attains an importance score of over 1800 in the Random Forest and captures 56.7% of total gain in XGBoost. This strongly supports the view that promotions within the Chinese Communist Party (CCP) follow a highly structured, incremental logic where prior position continues to serve as the best signal of future leadership potential.

What is more important for our task is the consistent and prominent role of our key variable of interest—career-track diversity (`Job_diversity`). In the Random Forest model, job diversity is the second most important variable, with an importance score of 544. It ranks just below lagged status and well above any other covariate, including formal rank and age. In the XGBoost model, job diversity explains 18.9% of total gain, again placing it second only to path dependence. The lagged value of career diversity (`Job_diversity_lag`) also scores highly in both models. This suggests that not only does cross-domain experience matter, but it also has predictive value for future status even after accounting for an official's previous position.

The ensemble models assign relatively higher importance to certain factional variables. In particular, both `CYLC` affiliation and its interaction with the Party General Secretary (`CYLC_secretary_F1`) appear among the top ten predictors in both models. In Random Forest, `CYLC` and `CYLC_secretary_F1` reach importance scores of 347 and 301 respectively, while in XGBoost they jointly explain roughly 5 percent of model gain. `Shanghai` and `Military` affiliations also carry measurable influence. These results provide more nuanced support for the patronage hypothesis: factional ties—particularly to the incumbent Party leader—are clearly helpful, even if not decisive. Their influence is nontrivial.

Age and its polynomial transformations also rank among the most influential predictors, especially in the Random Forest model where variables like `age`, `agez`, and `agez3` all appear in the top five. This finding underscores a nonlinear relationship between age and leadership status—one that tree-based learners are well-suited to detect. In XGBoost, `age` alone explains over 11 percent of total model gain, a contribution surpassed only by lagged status and job diversity.

Formal hierarchy variables, such as the ladder fixed effects and Party Congress dummies, are important but secondary in predictive power. While they capture institutional constraints on promotion and help differentiate among similarly ranked officials, they contribute less to model performance than job diversity. This supports our claim that the institutional ladder still matters, but that it is insufficient on its own to explain mobility patterns—horizontal experience adds crucial information.

Finally, educational credentials such as `college_dum` and `gschool_dum` show modest importance in both models. Although they carry positive effects in the OLS model, here they are clearly outperformed by variables measuring actual job experience. The same is true for personal secretary status (`mishu_dum`) and ethnic minority status, both of which

appear near the bottom of the importance rankings.

Taken together, these machine learning results bolster our broader interpretation. The Chinese elite promotion system is not determined solely by factional politics or rigid administrative rank. Rather, success appears to hinge on a combination of factors, with career-track diversity serving as a central pillar. The ability to rotate effectively across different bureaucratic domains—and accumulate a breadth of administrative experience—emerges as a strong and consistent signal of leadership potential. This supports a more hybrid account of CCP elite selection: one in which personal connections matter, but where institutional norms and managerial breadth increasingly shape political outcomes in the post-Mao era.

7 Conclusions

This paper investigates the role of career tracks in the political advancement of full and alternate members of the Chinese Communist Party's Central Committee during the post-Mao era. We define career tracks as the structured accumulation of professional experiences across distinct bureaucratic arenas—namely, the local government, central government, party apparatus, and military. Recognizing the limitations of formal administrative rank in capturing the true influence of a position, we introduce a novel, data-driven method for inferring the relative importance of over 4,000 unique political jobs. Our approach uses a network-based SpringRank algorithm applied to observed job transitions among elite officials, producing a continuous, interpretable, and replicable measure of de facto political status.

We find robust evidence that career diversity—measured through a normalized entropy index of job experience across bureaucratic domains—is a significant predictor of future leadership rank. This result holds even after accounting for a wide range of individual-level covariates, including education, age, gender, ethnicity, and patronage affiliations with the top Party leadership. Our findings suggest that cross-domain experience contributes independently to political mobility within the CCP, and that the institutional logic of career development—often overlooked in favor of performance-based or patronage-based accounts—plays a consequential role in elite selection.

That said, we do not claim to have identified a causal relationship between career tracks and promotions. Our evidence is correlational: while we show that career breadth is predictive of higher political status, we cannot rule out the possibility that unobserved variables—such as individual competence, ideological alignment, or unmeasured informal networks—are confounding the association. Establishing causal links would require either exogenous variation in career assignments or richer, domain-specific measures of performance, both of which present substantial challenges in the Chinese political context.

Moreover, our study is limited in scope to officials who reached the Central Committee. The dynamics of career progression for lower-level cadres may differ considerably, as may the salience of cross-domain experience. In addition, our job-diversity measures are time-varying, but they are treated as predetermined relative to status outcomes. Future work could explore how officials' trajectories evolve in response to shocks, reforms, or changing patronage environments. It would also be valuable to analyze how political rotations affect downstream policy outcomes—such as fiscal decisions, public goods provision, or local investment climates—thereby bridging the study of political selection with the literature on bureaucratic performance.

Another promising direction involves experimenting with alternative covariates such as economic indicators or different ways to meassure patronage networks and see if they offer consistent results. Finally, more theoretical development is needed internal logic of the CCP's personnel management system: does it function primarily as a mechanism for talent identification, loyalty cultivation, or elite balancing across factions and regions.

In sum, this paper contributes to the growing literature on elite mobility and political selection in authoritarian regimes. By quantifying career tracks with high granularity and analyzing their predictive power for leadership attainment, we show that institutionalized pathways—rather than personal ties or narrow performance metrics alone—deserve greater attention in understanding how contemporary China grooms its top political leaders.

Data and Code Availability Statement

https://github.com/robertorg/Thesis

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