

# CPC Futures

*The New Era of  
Socialism with  
Chinese Characteristics*

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## **A Data-driven Assessment of the CPC Leadership**

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Xi Jinping occupies the three highest positions of the Party, state and military organs in China, namely president of the People's Republic of China (PRC), general party secretary of the Communist Party of China (CPC) and chairman of the Central Military Commission (CMC). These titles enable him to run the country in his own manner. However, Xi himself cannot rule the country alone. He needs a team of subordinates who are competent and loyal to him. To Xi, the selection of subordinates for maintaining regime legitimacy is therefore a high-stakes affair.

In order to predict who will become the new top leaders in China, there have been many studies that attempt to describe Xi Jinping's selection methods (Li 2014a, 2014b; Miller 2013). However, these studies focus only on the supreme leaders in the Politburo and its Standing Committee, neglecting the selection of the lower ranks, especially the approximately 200 members of the Central Committee. This is mainly due to the methodology (i.e. the use of qualitative and case study analysis) to evaluate a cadre's political strength. Such work tends to predict cadre selection by using only a small number of observations of top-level selection or by examining the top leader's career profile. Moreover, qualitative evidence may differentiate officials with political connections from those without, but cannot predict the likelihood of promotion among politically-connected officials. If there are many possible candidates for high-ranking positions, who among them are most likely to be promoted? In other words, given the likelihood that promotion is associated with the level of Xi's preference for a particular official, who will ultimately be selected for Politburo membership?

In this chapter, I use machine-learning predictions to measure quantitatively and systematically the promotion prospects of the Chinese high-ranking officials. For the machine-learning analysis, I used the database Victor Shih and I constructed in 2020. We first constructed a CPC elite database containing extensive biographical and career information on over 20,000 positions for 4,700 individual cadres, including all the Central Committee members and Provincial CPC Standing Committee members from 1982. The database includes thousands of affiliations with administrative organisations, including 645 of the CPC, 550 of the government, 394 of the military and 77 of social organisations, in addition to other administrative units and 1,040 universities. Overall, the database tracks over 13,500 individual jobs per year.

Using this extensive database, I derived a predicted probability of political advancement (i.e. prior likelihood of promotion) as a proxy to measure promotion prospects. In order to maximise the accuracy of the predicted probabilities, I built an ensemble model that combines a variety of parametric and non-parametric machine-learning techniques, including generalised linear models, penalised regression models, tree-based classifications, gradient boosting machines, discriminant analysis and support vector machines. The ensemble model was trained with over 250 variables of individual features, including biographical information (e.g. age, gender, education level and minority status), career (e.g. seniority-years, tenure-years, administrative experience and job diversity), context (e.g., geopolitical characteristics of working experience), faction (e.g. competing affiliations in Chinese top politics), and network (e.g. centrality measures and political connections).

In each iteration round, the machine-learning algorithms chose important variables, removed irrelevant ones and decided on a sufficient subset for predictions. The final ensemble model retroactively correctly identifies a promotion at the vice-ministerial level 88 per cent of the time. By ranking the predicted probabilities of promotion, I can compare officials' relative promotion prospects with their contemporaneous rivals at any given point in time. By using the above ensemble machine-learning model, I calculated the rankings of predicted probabilities of promotion for the incumbent Central Committee members to predict who will become members of the Politburo at the coming 20th CPC Party Congress (PC) in the fall of 2022. The ensemble results represent an official's relative political strength by measuring how likely the official is to be promoted to the next level compared to his or her rivals.

When applying the machine-learning estimations, we need to consider several norms and conventions that limit appointment decisions. First, there is a nomination age restriction. The "seven up and eight down" rule prevents cadres

aged over 67 from being considered candidates for the Politburo. Second, cadres currently working in “second-line” positions, such as the People’s Congress and the People’s Political Consultative Conference, can no longer move back to party or government positions. Third, there are a few positions in the Politburo that are reserved for female cadres and military leaders (see below). Overall, at least eight slots will become vacant according to the “seven up and eight down” rule. Wang Chen, Liu He, Xu Qiliang (military), Sun Chunlan (female), Yang Jiechi, Yang Xiaodu, Zhang Youxia (military) and Chen Xi are supposed to retire at the coming Party Congress.

Since the 15th Party Congress, there has been one designated slot for a woman (held by Wu Yi, Liu Yandong, and currently Sun Chunlan) on the Politburo. After incumbent Sun Chunlan’s retirement at the upcoming Party Congress, the strongest candidate for the female slot is Shen Yiqin (62, ranked 38th among the current Central Committee members in terms of the predicted promotion probability), party secretary of Guizhou. Along with Xian Hui (63, ranked 94th), the chairperson (governor) of the Ningxia government, Shen is one of the two women to hold a provincial leadership position in China. Moreover, both Shen and Xian are members of an ethnic minority. Occasionally (for example, at the 16th and 17th Party Congresses), the CPC appointed one minority member in the Politburo. Thus, either Shen or Xian would help Xi maintain diversity in the leadership.

Even without machine-learning predictions, it is clear that the female slot will most likely be granted to Shen Yiqin as she is the highest-ranked female leader in China. Shen has spent most of her career in Guizhou, which should have helped her build political connections with many high-ranking leaders like Li Zhanshu, Chen Min’er and Zhao Kezhi.

Normally, there are two slots for military personnel from the Central Military Commission. At the 20th Party Congress, these two positions will be vacated by Xu Qiliang’s and Zhang Youxia’s retirement. Miao Hua (66, ranked 14th in the machine learning exercise) and Zhang Shengmin (63, ranked 30th) are the two most probable military candidates predicted by the machine-learning model. Miao Hua has worked closely with Xi Jinping since Xi’s years in the province of Fujian where Miao spent most of his career. Zhang Shengmin is also connected with Xi through his birthplace connection (i.e. Shaanxi), and has served in the security apparatus. Both factors are important in my machine-learning predictions.

The remaining 17 in a total of 20 positions on the Politburo are normally given to Han-Chinese, male and civilian cadres. The machine-learning predictions include Hu Heping (59, ranked 1st by the model), Lou Yangsheng (62, ranked

3rd), Wang Dongfeng (63, ranked 5th), Wang Zhimin (64, ranked 9th) and Chen Jining (59, ranked 12th) as the top candidates for one of these slots.

In the model, Hu emerges as the most promising candidate to serve on the next Politburo. Hu has had many connections with Xi Jinping throughout his career at Tsinghua University and Zhejiang and Shaanxi provinces. However, this case also demonstrates one of the weaknesses of the machine-learning model, and why its findings still have to be interpreted in the context of qualitative and other information. Whilst Hu was a rising star in the past when he was the party secretary of Shaanxi, there is some speculation that Xi was disappointed with his performance. Therefore, Hu was transferred to the Ministry of Culture and Tourism in 2020, the post which is usually associated with a low probability to be promoted to the Politburo.

Instead, the current party secretary of Henan, Lou Yangsheng, may have a higher chance to be promoted. After serving as mayor in Jinhua and Lishui prefectures in Zhejiang when Xi was the party secretary of Zhejiang, Lou was quickly promoted to positions in Hainan and Shanxi provinces. Lou was selected in the aftermath of political storms in Shanxi province when many high-ranking officials of the “Shanxi faction” were arrested on corruption charges in 2015. Equally bright are the prospects of Wang Dongfeng, the current party secretary of Hebei province, who is connected with Xi through Shaanxi province. Wang replaced Huang Xingguo to stabilise the city of Tianjin, a token of Xi’s trust. Wang Zhimin, a former director of the Hong Kong liaison office, will be a perfect replacement for Yang Jiechi in foreign affairs. Lastly, Chen Jining is clearly on a very fast career track: he was elevated from president of Tsinghua University to mayor of Beijing in 2017.

Due to the multicollinearity and related inefficiency caused by the numerous inputs, the above machine-learning model is not suitable for identifying causal relationships. Although the marginal effect of each promotion determinant is impossible to calculate, we can still measure the importance of variables by computing the Area Under the Curve (AUC), one of the most widely used indexes for a model’s accuracy. The contribution of each variable to the AUC indicates which variable is relatively more important than others in predicting promotion outcomes. This yields the important finding that when trained only with the dataset of Xi’s period, the model yields quite different results from when data from earlier periods are included as well. While the latter tends to favour officials with strong objective credentials (e.g. age, education level and administrative experience), it is when using only data from the Xi period that the model renders such objective criteria unimportant and focuses on connections with Xi as the most crucial determinant for promotion.

However, holding political network variables constant, age, seniority, tenure year, job experiences and network centralities are consistently selected as crucial variables in machine-learning predictions. This result may serve as evidence that Xi's political dominance should be treated in a more complex and multifaceted way. The current scholarship criticises Xi's attempt to revive a personalistic system by emphasising political connections in leadership selection (Shirk 2018; Baranovitch 2020; Chen 2018). The recent provincial reshuffling highlights this concern. For example, the newly appointed party secretaries of Shanghai, Chongqing and Guangdong (i.e., Li Qiang, Chen Min'er and Li Xi) are known as Xi's close confidants.

A carefully-conducted quantitative model like the one presented here is needed to consider the initial likelihood of being appointed before evaluating the impact of the political connections with Xi. The machine-learning analysis of this study enables us to sift through large amounts of data to uncover the interplay between different considerations. Even though Xi values his personal connections, this does not necessarily mean that he selects candidates connected to him. There are numerous intersections between network factors and other promotion determinants. Even if an official is a trusted ally of Xi, the formal ranking or other qualification of the cadre is not always high enough. Even Xi himself cannot or perhaps also does not always want to be consistent in promoting only his personal favourites.

## References

- Baranovitch, Nimrod. 2020. "A Strong Leader for a Time of Crisis: Xi Jinping's Strongman Politics as a Collective Response to Regime Weakness", *Journal of Contemporary China* 30, 128: 1–17.
- Chen Gang. 2018. "Xi Jinping Starts His Second Term with Prospect of Ruling for Life", *East Asian Policy* 10, 1: 5–14. doi:10.1142/S1793930518000016.
- Li Cheng. 2014a. "Xi Jinping's Inner Circle (Part 1: The Shaanxi Gang)", *China Leadership Monitor* 43: 30–51.
- . 2014b. "Xi Jinping's Inner Circle (Part 2: Friends from Xi's Formative Years)", *China Leadership Monitor* 44:1–22.
- Miller, Alice. 2013. "The Work System of the Xi Jinping Leadership", *China Leadership Monitor* 41: 1–13.
- Shirk, Susan L. 2018. "The Return to Personalistic Rule", *Journal of Democracy* 29, 2: 22–36. doi:10.1353/jod.2018.0022.