An Economic Analysis of Political Meritocracy

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Abstract

The political system in China is often referred to as political meritocracy. This study develops a simple model of political economy to explore the strengths and weaknesses of a meritocratic system (in which political meritocrats design economic policies) relative to a democratic system (dominated by the median voter). We find that political meritocrats would choose economic policies that are more conducive to economic activities and lead to higher income but less public goods. Whether the meritocratic or democratic equilibrium achieves a higher level of social welfare depends on the distribution of individuals' abilities. If the ability of the median voter is lower than the mean of the population, then the meritocratic equilibrium may achieve a higher level of social welfare than the democratic equilibrium. In this case, there is a threshold degree of political inclusiveness in the meritocratic system above which political meritocracy dominates democracy in terms of social welfare, and this threshold degree of political inclusiveness is increasing in the ability of the median voter.

JEL classification: D72, P16, P26
Keywords: political meritocracy, democracy, median voter, utilitarianism

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> Over the past three decades, China has evolved a political system that can best be described as "political meritocracy". Bell (2015)

1 Introduction

In China, the Politburo (a group of 25 leaders of the Communist Party) oversees the party,[1] which governs the country. The Politburo is nominally elected by the Central Committee, which comprises other leaders of the party and currently has 205 full members. Members of the Central Committee are elected once every five years by the National Congress. The roughly 3000 delegates of the National Congress are in turn elected by provincial congresses. In other words, the Communist Party of China operates a system of elections in which delegates at one level vote for delegates to the next level. The attainment of party membership in turn is based on political screening, educational credentials and professional expertise. This political system in China is often referred to as "*political* meritocracy—the idea that political power should be distributed in accordance with ability and virtue"; see Bell (p. 6, 2015).

This study develops a simple model of political economy to explore the strengths and weaknesses of a meritocratic system in which political meritocrats design economic policies. Comparing such a political system to a democratic system dominated by the median voter, we find that political meritocrats would choose economic policies that are more conducive to economic activities and give rise to a higher level of income,[2] but a lower level of public goods than democracy.[3] Interestingly, it is possible for the meritocratic equilibrium to achieve a higher level of social welfare. Using the utilitarian welfare function to aggregate the utility of individuals, we find that whether the meritocratic or democratic equilibrium achieves a higher level of social welfare depends on the distribution of individuals' abilities. If the ability of the median voter is higher than the mean of the population, then the democratic equilibrium would achieve a higher level of social welfare than the meritocratic equilibrium. However, if the ability of the median voter is lower than the mean, then the democratic equilibrium may achieve a lower level of social welfare than the meritocratic equilibrium.

The intuition of the above results can be explained as follows. Our model features heterogeneous individuals, who have different levels of ability and earn different levels of income. The government levies an income tax to collect tax revenue and pay for public goods. Individuals with higher abilities earn higher income and prefer a lower tax rate. Given that individuals' preferences in the tax rate are single-peaked, the median voter theorem applies in the case of majority voting. Because the high-ability political meritocrats prefer a lower tax rate than the median voter, the levels of employment and output are higher but the level of public goods is lower in the meritocratic equilibrium than in the democratic equilibrium.

Furthermore, the tax rate preferred by the median voter is generally different from the socially optimal tax rate. If the ability of the median voter is lower than the mean of the

[1] Within the Politburo, there is the Standing Committee, which currently has 7 members.

[2] Chen *et al.* (2005) and Li and Zhou (2005) provide empirical evidence that provincial economic performance has a positive and significant effect on the likelihood of promotion of provincial leaders in China.

[3] Lake and Baum (2001) and Deacon (2009) provide empirical evidence for a positive effect of democracy on the level of public good provision.

population, then the median voter's preferred tax rate would be higher than the socially optimal tax rate. In contrast, the tax rate preferred by the high-ability political meritocrats is lower than the tax rate preferred by the median voter. In this case, the meritocratic equilibrium may achieve a higher level of social welfare by offsetting an inefficiency in the democratic equilibrium dominated by the median voter. Furthermore, there is a threshold degree of political inclusiveness in the meritocratic system above which political meritocracy dominates democracy in terms of social welfare, and this threshold degree of political inclusiveness is increasing in the ability of the median voter relative to the mean of the population. Therefore, as the ability of the median voter increases over time, the degree of political inclusiveness in the meritocratic system should also increase.

This study relates to the literature on majority voting. The median voter theorem was introduced and formalized in the seminal studies by Hotelling (1929), Black (1948) and Downs (1957). Meltzer and Richard (1981) apply the median voter theorem to explore the equilibrium tax rate that would emerge in a general equilibrium model.[4] Following this approach, we examine the welfare difference between the equilibrium tax rates chosen in a democratic majority voting system versus the Chinese-style meritocratic voting system.[5] Therefore, our study relates most closely to the literature on theoretical studies in the Chinese political system. In this literature, Che and Qian (1998) model the advantages of local government ownership of firms (over private ownership and state ownership) in order to explain its importance during the transition of the Chinese economy towards a market economy. Che *et al.* (2017) show that self-serving autocratic leaders may choose a more optimal degree of decentralization than democratic voters and correct an inefficiency in democracy. Che *et al.* (2019) explore how the removal of criminal immunity of leaders may affect government corruption and the economy. In dynamic growth models, Shen (2007) and Chu (2010) explore the different conditions under which a potentially non-benevolent government would choose growth-enhancing policies and derive implications on economic growth in China. The present study complements studies in this literature by showing the strengths and weaknesses of the meritocratic system in China relative to a democratic system and comparing their different effects on the economy and social welfare.

The rest of this paper is organized as follows. Section 2 presents the model. Section 3 compares the two political equilibria. Section 4 concludes. Appendix A contains the proofs.

2 A simple model of political meritocracy

Our model is based on the general-equilibrium model of a labor economy in Meltzer and Richard (1981) except that our model features public goods, instead of income redistribution. In summary, the model features heterogeneous individuals with different levels of ability. They elastically supply labor and consume their after-tax income. The government levies an income tax and uses the tax revenue to pay for public goods.

[4] See also Roberts (1977).

[5] Ledyard (1984) is the first study that connects utilitarianism and majority voting to explore its welfare implications. See Krishna and Morgan (2015) for a recent study, which explores the conditions under which majority voting may yield the optimal outcome, and a review of other studies on this topic.

2.1 Individuals with heterogeneous abilities

There is a unit continuum of individuals $i \in [0, 1]$, whose abilities $A_i > 0$ are heterogeneous. Abilities are randomly distributed with a general distribution whose mean is defined as

$$A \equiv \int_0^1 A_i di > 0. \tag{1}$$

The ability of individual i determines her labor productivity in the production of a homogeneous good. Individual i's production function is given by

$$Y_i = A_i^{\phi} L_i, \tag{2}$$

where L_i is the labor input of individual i and the parameter $\phi > 0$ is elasticity of individual output with respect to individual ability. For simplicity, we set ϕ to 0.5.[6]

Given that we will consider the utilitarian social welfare function, we specify a quasi-linear utility function for individual i:[7]

$$u_i = C_i - \frac{\theta L_i^2}{2} + \beta G, \tag{3}$$

where C_i is the consumption of individual i. The term $\theta L_i^2/2$ captures the quadratic utility cost of labor supply, and the parameter $\theta > 0$ determines the strength of this effect. G is the level of public goods provided by the government, and the parameter $\beta > 1$ determines the importance of public goods to individuals.[8] Individual i pays an income tax τY_i, where $\tau \in (0, 1)$ is the tax rate. Then, she consumes her after-tax income such that

$$C_i = (1 - \tau) Y_i. \tag{4}$$

Substituting (2) and (4) into (3) and maximizing utility yield the level of labor as

$$L_i = \frac{1 - \tau}{\theta} A_i^{0.5}, \tag{5}$$

where we have used $\phi = 0.5$. Substituting (5) into (2) yields individual i's income as

$$Y_i = \frac{1 - \tau}{\theta} A_i, \tag{6}$$

where we have also used $\phi = 0.5$. Both L_i and Y_i are increasing in A_i and decreasing in τ.

[6] Our results are robust to other values of $\phi > 0$; see Appendix B.

[7] Our results are robust to a more general quasi-linear utility function $u_i = C_i - \theta L_i^{\chi}/\chi + \beta v(G)$, where $\chi > 1$, $v'(.) > 0$ and $v''(.) < 0$; see Appendix B.

[8] Here we focus on utility-enhancing public goods that benefit all individuals equally, instead of productivity-enhancing public infrastructure because it is not clear as to whether individuals with high or low ability benefit more from public infrastructure. For example, if we set β to zero and assume $Y_i = G^{1-\phi} A_i^{\phi} L_i$, then all individuals would prefer the same tax rate. However, if ability and infrastructure were complements (substitutes) instead, then high-ability (low-ability) individuals would prefer more public infrastructure.

2.2 Government

The government collects tax revenue to pay for public goods subject to a balanced budget:

$$G = \tau \int_0^1 Y_i di = \frac{\tau(1-\tau)}{\theta} A, \tag{7}$$

which uses (1) and (6). G is an inverted-U function of τ and captures the Laffer curve.

2.3 Optimal tax rate for an individual

We first derive the welfare function of individual i from (3) as follows:

$$u_i = \frac{(1-\tau)^2}{\theta} A_i - \frac{(1-\tau)^2}{2\theta} A_i + \beta G = \frac{(1-\tau)^2}{2\theta} A_i + \beta \frac{\tau(1-\tau)}{\theta} A, \tag{8}$$

which uses (4)-(7). The first-order condition with respect to τ is

$$\frac{\partial u_i}{\partial \tau} = -\frac{(1-\tau)}{\theta} A_i + \beta \frac{(1-2\tau)}{\theta} A = 0, \tag{9}$$

where the marginal cost of a higher tax rate is increasing in individual i's ability A_i due to the greater loss in after-tax income but the marginal benefit from public goods depends on aggregate ability A instead of individual ability A_i. Equation (9) can be re-expressed as

$$\frac{1-\tau_i}{1-2\tau_i} = \frac{\beta A}{A_i}. \tag{10}$$

As shown in Figure 1, (10) determines the utility maximizing tax rate for individual i as

$$\tau_i = \max\left\{0, \frac{\beta A/A_i - 1}{2\beta A/A_i - 1}\right\} \in [0, 0.5), \tag{11}$$

which is increasing in β and decreasing in A_i/A. In other words, an individual with a higher ability A_i (relative to the mean A) prefers a lower tax rate.

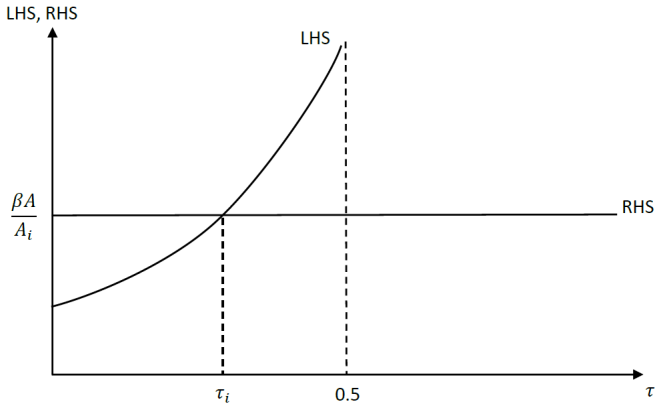

Figure 1: Utility maximizing tax rate

2.4 Optimal tax rate for the society

We construct the utilitarian social welfare function as the aggregate of individuals' utility:

$$U \equiv \int_0^1 u_i di = \frac{(1-\tau)^2}{2\theta} A + \beta \frac{\tau(1-\tau)}{\theta} A, \tag{12}$$

where the social marginal cost of a higher tax rate depends on aggregate ability A. Also, it is useful to note that social welfare U is an inverted-U function of the tax rate τ. Taking the first-order condition with respect to τ yields the socially optimal tax rate as

$$\frac{1-\tau^*}{1-2\tau^*} = \beta \Leftrightarrow \tau^* = \frac{\beta - 1}{2\beta - 1} \in (0, 0.5), \tag{13}$$

which is strictly positive (given $\beta > 1$) and increasing in β.

3 Meritocracy versus democracy

In this section, we compare the different implications of the following two political equilibria on the economy and the welfare of the society: a meritocratic equilibrium (in which political meritocrats set the tax rate) and a democratic equilibrium (in which the median voter determines the tax rate).

3.1 Political equilibrium tax rate under democracy

Given that individuals' preferences on the tax rate are single-peaked, the median voter theorem applies in the case of majority voting. Suppose the ability of the median voter is denoted as A_m. Then, the utility maximizing tax rate for the median voter is

$$\tau_m = \max\left\{0, \frac{\beta A/A_m - 1}{2\beta A/A_m - 1}\right\} \in [0, 0.5). \tag{14}$$

Here we assume $A_m < \beta A$ to ensure that $\tau_m > 0$. The median voter theorem implies that whenever voters are choosing between τ_m and any other tax rate, the majority would vote for τ_m.[9] However, τ_m is generally different from τ^* (unless the median ability A_m happens to coincide with the mean ability A in which case the social marginal cost of a higher tax rate coincides with the private marginal cost of the median voter). If the ability of the median voter is higher than the mean of the population, then the democratic equilibrium tax rate τ_m would be lower than the optimal tax rate τ^*, and vice versa.

[9] See Meltzer and Richard (1981) for a more detailed discussion.

3.2 Political equilibrium tax rate under meritocracy

Without loss of generality, we order the individuals $i \in [0,1]$ in a reverse order of abilities; i.e., $A_i \geq A_j$ for any $i \leq j$. Meritocrats are defined as individuals $i \in [0,e]$, where $e < 1$ denotes the mass of political elites in the society. In other words, meritocrats exclude individuals with relatively low abilities. The inclusiveness of the meritocrats is measured by and increasing in e. In the case of China, the set of political meritocrats may refer to (a subset of) the members of the Politburo, the Central Committee, the National Congress, or more generally the Communist Party, who have *de facto* voting power on the specific government policies being considered. Our setup is general enough to capture the most extreme case, in which the set of power-holding meritocrats includes only the individuals with the highest level of ability (i.e., a very small e). Government policies are determined by majority voting among the meritocrats $i \in [0,e]$.[10] Once again, the median voter theorem applies, and the tax rate is determined by the median meritocrat. We denote the meritocratic equilibrium tax rate as

$$\tau_e = \max\left\{0, \frac{\beta A/A_e - 1}{2\beta A/A_e - 1}\right\} \in [0, 0.5), \tag{15}$$

where A_e is the ability level of the median elite. The meritocratic equilibrium tax rate τ_e is increasing in the degree of political inclusiveness e via a decrease in A_e. However, given $e < 1$, it must be the case that the meritocratic equilibrium tax rate τ_e is lower than the democratic equilibrium tax rate τ_m because the median elite has a higher level of ability than the median voter (i.e., $A_e \geq A_m$).

3.3 Meritocracy versus democracy

Given that the meritocratic equilibrium tax rate τ_e is lower than the democratic equilibrium tax rate τ_m, (5) and (6) then imply that the aggregate levels of employment and output are higher in the meritocratic equilibrium than in the democratic equilibrium, whereas (7) implies that the level of public goods is lower in the meritocratic equilibrium than in the democratic equilibrium.[11] Therefore, government policies chosen by political meritocrats are more conducive to economic activities and give rise to a higher level of income but a lower level of public goods.[12] We summarize this result in Proposition 1.

Proposition 1 *The aggregate levels of employment and output are higher in the meritocratic equilibrium than in the democratic equilibrium, whereas the level of public goods is lower in the meritocratic equilibrium than in the democratic equilibrium.*

Proof. See Appendix A. ■

[10] Here we assume that the meritocrats are not benevolent. If they were benevolent, it would be even more likely for the meritocratic equilibrium to yield a higher level of social welfare.

[11] These theoretical results are consistent with the empirical evidence in Lake and Baum (2001), Chen *et al.* (2005), Li and Zhou (2005) and Deacon (2009) as discussed in the introduction.

[12] The higher tax rate and the higher level of public goods under democracy also imply lower inequality in individuals' utility; see Appendix C. Acemoglu *et al.* (2015) provide evidence on a positive (negative) effect of democracy on taxes (income inequality); however, they find that the effect on inequality is not very robust. We find that democracy reduces utility inequality even when income inequality is unchanged.

As for the welfare comparison between the two political equilibria, it depends on the distribution of individuals' abilities. If the ability of the median voter is higher than the mean of the population, then we would have the following outcome: $\tau_e \leq \tau_m < \tau^*$. Given that the democratic equilibrium tax rate τ_m is suboptimally low, the meritocratic equilibrium tax rate τ_e (being even lower than τ_m) must yield a lower level of social welfare; see Figure 2. We summarize this result in Proposition 2.

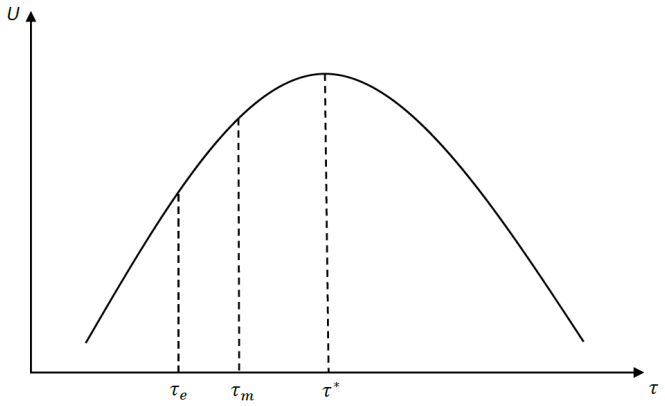

Figure 2: Welfare comparision 1

Proposition 2 *If the ability of the median voter is higher than the mean of the population, then the democratic equilibrium would achieve a higher level of social welfare than the meritocratic equilibrium.*

Proof. See Appendix A. ■

The more realistic scenario arises when the ability of the median voter is lower than the mean of the population,[13] in which case the democratic equilibrium tax rate τ_m would be higher than the optimal tax rate τ^*. Then, we have two possible outcomes: (a) $\tau^* \leq \tau_e \leq \tau_m$ and (b) $\tau_e < \tau^* < \tau_m$. Case (a) occurs when the political meritocrats are relatively inclusive (i.e., a relatively large e). In this case, the meritocratic equilibrium tax rate τ_e is closer to the optimal tax rate and achieves a higher level of social welfare than the democratic equilibrium tax rate τ_m; see Figure 3.

[13]If we use income as a proxy for ability, then the median income is lower than the mean income in China. The median/mean ratio of urban residents' disposable income increases from 0.88 in 2010 to 0.93 in 2019. The median/mean ratio of rural residents' disposable income increases from 0.88 in 2010 to 0.90 in 2019.

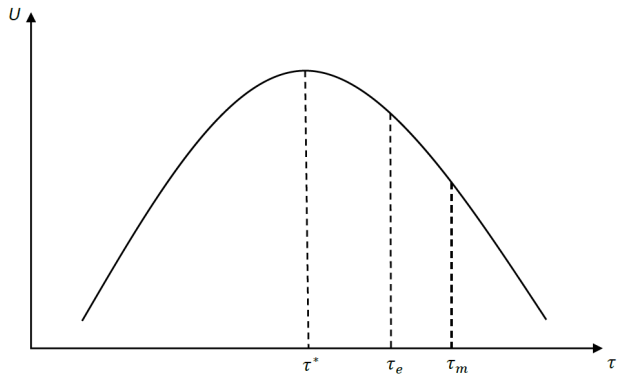

Figure 3: Welfare comparison 2

Case (b) occurs when the political meritocrats are not very inclusive (i.e., a relatively small e). In this case, the meritocratic equilibrium tax rate τ_e is below the optimal tax rate, whereas the democratic equilibrium tax rate τ_m is above the optimal tax rate. In this case, it would still be possible for the meritocratic equilibrium to achieve a higher level of social welfare than the democratic equilibrium if τ_e is close to τ^* whereas τ_m is far away from τ^*; see Figure 4. However, if e is excessively small such that τ_e is far away from τ^*, then the meritocratic equilibrium would achieve a lower level of social welfare than the democratic equilibrium; see Figure 5. Proposition 3 summarizes this result.

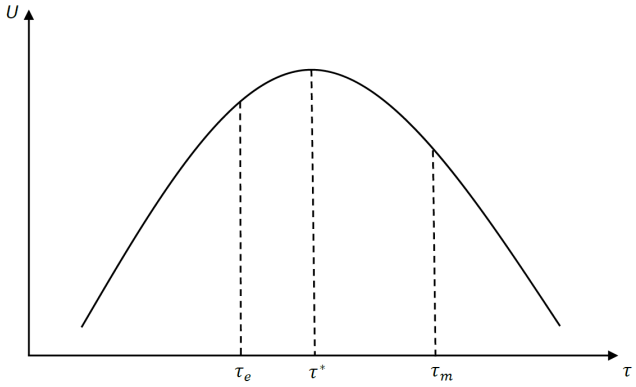

Figure 4: Welfare comparison 3

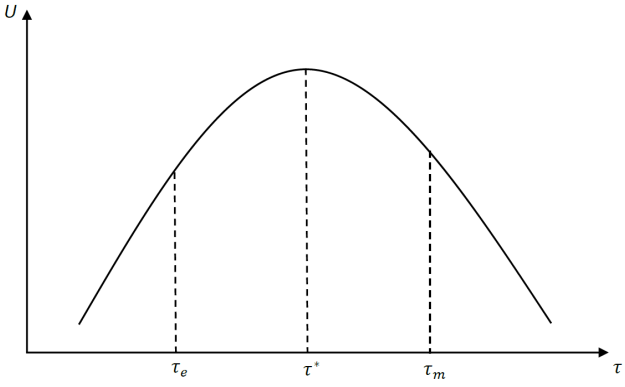

Figure 5: Welfare comparision 4

Proposition 3 *If the ability of the median voter is lower than the mean of the population, then the meritocratic equilibrium may (but not always) achieve a higher level of social welfare than the democratic equilibrium.*

Proof. See Appendix A. ■

Finally, if the ability of the median voter is lower than the mean of the population, there is a threshold degree of political inclusiveness $\overline{e} \in (0, 1)$ in the meritocratic system above

which political meritocracy dominates democracy in terms of social welfare; see Figure 6.[14] Suppose the political meritocrats prefer a meritocratic system with a minimal degree of political inclusiveness but need to ensure that the meritocratic system achieves at least as high a level of social welfare as democracy in order to justify its legitimacy.[15] Then, they will set e to $\overline{e}$. As the ability of the median voter increases relative to the mean (i.e., A_m/A increases), the democratic equilibrium tax rate τ_m decreases towards the optimal tax rate τ^*. Given that the meritocratic equilibrium tax rate τ_e is increasing in the degree of political inclusiveness, the threshold degree $\overline{e}$ must increase in order for the meritocratic equilibrium tax rate τ_e to increase towards the optimal tax rate τ^* and restore the equality $U(\tau_e) = U(\tau_m)$. Therefore, the threshold degree of political inclusiveness $\overline{e}$ is increasing in the ability of the median voter relative to the mean of the population (i.e., $\overline{e}(A_m/A)$ is an increasing function in A_m/A). As the ability of the median voter converges to the mean of the population, the threshold degree $\overline{e}$ converges to unity. In this case, the meritocratic system must become fully inclusive in order to achieve the same level of social welfare as the democratic system. Proposition 4 summarizes this result.

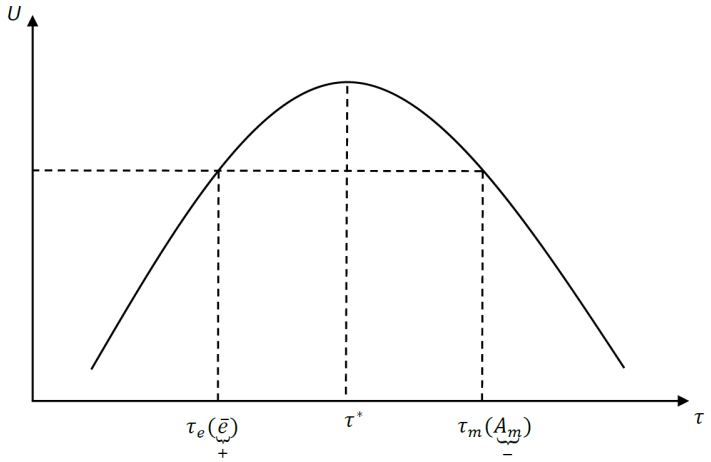

Figure 6: Threshold degree $\overline{e}$

Proposition 4 *If the ability of the median voter is lower than the mean of the population, there is a threshold degree of political inclusiveness* $\overline{e} \in (0,1)$ *in the meritocratic system above which political meritocracy (weakly) dominates democracy in terms of social welfare. This threshold degree* $\overline{e}$ *is (weakly) increasing in the ability of the median voter relative to the mean of the population.*

Proof. See Appendix A. ■

[14] Figure 6 assumes that an interior $\overline{e} \in (0,1)$ exists; see the proof of Proposition 4 for other cases.

[15] There are different ways to formalize this mechanism. For example, Justman and Gradstein (1999) model the dissatisfaction of individuals without voting rights as a cost to the society. Acemoglu and Robinson (2001) model the threat of revolution initiated by individuals without voting rights. These studies apply their models to explore the process of democratization in Britain and other European countries; see Lizzeri and Persico (2004) for a more recent study and a discussion of other studies on this topic.

4 Conclusion

In this study, we have developed a simple model of political economy to explore the strengths and weaknesses of a meritocratic system relative to a democratic system. In summary, we find that political meritocracy is conducive to economic activities and may also lead to a higher level of social welfare than democracy, depending on the distribution of individuals' abilities. For a developing country in which mass schooling is not widespread, the ability of the median voter is likely to be below the mean of the population, in which case there is a threshold degree of political inclusiveness above which political meritocracy dominates democracy in terms of social welfare. As the country becomes more developed and mass schooling becomes more widespread, the ability of the median voter increases, and the degree of political inclusiveness should also increase. In other words, as a country becomes more developed and voters become more educated, even a meritocratic system should become more politically inclusive.[16]

Finally, it is useful to note that our simple model certainly does not capture all the realistic features of the Chinese political system. What our model captures is the essence of political meritocracy, which is the idea of distributing political power in accordance with ability, as described in Bell (2015). Our analysis implies that this seemingly inequitable political system can be more efficient than an equitable democratic system by improving the welfare of the society. Therefore, the comparison between democracy and political meritocracy can be viewed as an equity-efficiency tradeoff.

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Appendix A: Proofs

Proof of Proposition 1. Given $A_e \geq A_m$, (10) implies that $\tau_e \leq \tau_m < 0.5$; see Figure 1. Then, use (5) and (6) to show that $L(\tau_e) \geq L(\tau_m)$ and $Y(\tau_e) \geq Y(\tau_m)$, where $L \equiv \int_0^1 L_i di$ and $Y \equiv \int_0^1 Y_i di$. Finally, use (7) to show that $G(\tau_e) \leq G(\tau_m)$.[17] ■

Proof of Proposition 2. Given $A_e \geq A_m > A$, (10) implies that $\tau_e \leq \tau_m < \tau^*$. Then, the inverted-U relationship between U and τ implies that $U(\tau_e) \leq U(\tau_m) < U(\tau^*)$; see Figure 2. ■

Proof of Proposition 3. If $A_m < A$, then (10) implies that $\tau_m > \tau^*$, and $U(\tau_m) < U(\tau^*)$ by the definition of τ^*. Given the inverted-U relationship between U and τ, there exists a value of τ denoted as $\overline{\tau} < \tau_m$ such that $U(\overline{\tau}) = U(\tau_m)$. From (12), we can derive $\overline{\tau}$ explicitly as

$$\overline{\tau}(\underset{-}{\tau_m}) = \frac{\beta - 1 - \sqrt{(\beta-1)^2 - (2\beta-1)\left[\frac{2\theta}{A}\underset{-}{U}(\tau_m) - 1\right]}}{2\beta - 1}, \tag{A1}$$

where $U(\tau_m)$ is decreasing in τ_m because $\tau_m > \tau^*$. If $\tau_e \geq \overline{\tau}$, then $U(\tau_e) \geq U(\overline{\tau}) = U(\tau_m)$; see Figure 3 and 4. If $\tau_e < \overline{\tau}$, then $U(\tau_e) < U(\overline{\tau}) = U(\tau_m)$; see Figure 5. ■

Proof of Proposition 4. Recall that A_e is (weakly) decreasing in e and that τ_e is decreasing in A_e. Therefore, τ_e is (weakly) increasing in e. If $\lim_{e\to 0} \tau_e < \overline{\tau}$, then there exists a threshold $\overline{e} \in (0,1)$ above which $U(\tau_e) \geq U(\overline{\tau}) = U(\tau_m)$, where $\tau_e \geq \overline{\tau}$ that is derived in (A1). If $\lim_{e\to 0} \tau_e > \overline{\tau}$, then $U(\tau_e) \geq U(\overline{\tau}) = U(\tau_m)$ for all $e \in (0,1)$. In this case, a rise in A_m/A decreases τ_m and increases $U(\tau_m)$, which in turn makes an interior threshold $\overline{e} \in (0,1)$ more likely to exist. When a binding interior threshold $\overline{e} \in (0,1)$ exists as in Figure 6,[18] a rise in A_m/A that decreases τ_m leads to an increase in $\overline{\tau}$ as (A1) shows. Then, $\overline{\tau} = \tau_e(\overline{e})$ implies an increase in $\overline{e}$. Therefore, a rise in A_m/A either does not affect $\overline{e}$ or causes $\overline{e}$ to increase. ■

[17] Recall that $\tau_i < 0.5$ for all $i \in [0,1]$. Therefore, G must be increasing in τ_i.

[18] An interior threshold $\overline{e}$ may not be binding (i.e., $\tau_e(\overline{e}) > \overline{\tau}$) due to potential gaps in the general distribution of A_i, in which case $\overline{e}$ is independent of A_m/A until it becomes binding (i.e., $\tau_e(\overline{e}) = \overline{\tau}$).

Appendix B: Generalized utility and production functions

In this appendix, we examine the robustness of our results by considering a more general quasi-linear utility function given by

$$u_i = C_i - \frac{\theta L_i^{\chi}}{\chi} + \beta v\left(G\right), \tag{B1}$$

where $\chi > 1$, $v'(.) > 0$ and $v''(.) < 0$. The production function is given by (2), where $\phi > 0$. Substituting (2) and (4) into (B1) and maximizing utility yield the level of labor as

$$L_i = \left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} A_i^{\frac{\phi}{\chi-1}}. \tag{B2}$$

Substituting (B2) into (2) yields individual i's income as

$$Y_i = \left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} A_i^{\frac{\chi\phi}{\chi-1}}. \tag{B3}$$

(B2) and (B3) show that L_i and Y_i are decreasing in τ (so long as $\chi > 1$) and increasing in A_i (so long as $\chi > 1$ and $\phi > 0$). In the government sector, the balanced-budget condition is given by

$$G = \tau \int_0^1 Y_i di = \tau \left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} A^{\frac{\chi\phi}{\chi-1}}, \tag{B4}$$

where A is now defined as a CES aggregate of individuals' ability:

$$A \equiv \left(\int_0^1 A_i^{\frac{\chi\phi}{\chi-1}} di\right)^{\frac{\chi-1}{\chi\phi}}. \tag{B5}$$

Substituting (4) and (B2)-(B4) into (B1) yields the welfare function of individual i:

$$u_i = \frac{(1-\tau)^{\frac{\chi}{\chi-1}}}{\theta^{\frac{1}{\chi-1}}} \frac{\chi-1}{\chi} A_i^{\frac{\chi\phi}{\chi-1}} + \beta v\left[\tau\left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} A^{\frac{\chi\phi}{\chi-1}}\right]. \tag{B6}$$

Differentiating (B6) with respect to τ yields

$$\frac{\partial u_i}{\partial \tau} = -\left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} A_i^{\frac{\chi\phi}{\chi-1}} + \left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} \beta v'\left(G\right) \frac{\chi\left(1-\tau\right)-1}{\left(\chi-1\right)\left(1-\tau\right)} A^{\frac{\chi\phi}{\chi-1}} = 0, \tag{B7}$$

which determines the utility-maximizing tax rate τ_i for individual i as

$$\frac{\left(\chi-1\right)\left(1-\tau_i\right)}{\chi\left(1-\tau_i\right)-1} = \beta v'\left[\tau_i\left(\frac{1-\tau_i}{\theta}\right)^{\frac{1}{\chi-1}} A^{\frac{\chi\phi}{\chi-1}}\right]\left(\frac{A}{A_i}\right)^{\frac{\chi\phi}{\chi-1}}. \tag{B8}$$

The left-hand side (right-hand side) of (B8) is increasing (decreasing) in τ_i for $\tau_i \in [0, (\chi-1)/\chi)$. Also, τ_i is decreasing in A_i so long as $\phi > 0$ and $\chi > 1$. The utilitarian welfare function of the society is given by

$$U \equiv \int_0^1 u_i di = \frac{(1-\tau)^{\frac{\chi}{\chi-1}}}{\theta^{\frac{1}{\chi-1}}} \frac{\chi-1}{\chi} A^{\frac{\chi\phi}{\chi-1}} + \beta v\left[\tau\left(\frac{1-\tau}{\theta}\right)^{\frac{1}{\chi-1}} A^{\frac{\chi\phi}{\chi-1}}\right], \tag{B9}$$

which is an inverted-U function of the tax rate τ given $v'(.) > 0$ and $v''(.) < 0$.[19] Differentiating (B9) with respect to τ yields the socially optimal tax rate τ^* as

$$\frac{(\chi-1)(1-\tau^*)}{\chi(1-\tau^*)-1} = \beta v' \left[\tau^* \left(\frac{1-\tau^*}{\theta} \right)^{\frac{1}{\chi-1}} A^{\frac{\chi\phi}{\chi-1}} \right], \tag{B10}$$

where the left-hand side (right-hand side) is increasing (decreasing) in τ^* for $\tau^* \in [0, (\chi-1)/\chi)$.

As in our benchmark model in the text, the median voter's preferred tax rate τ_m is generally different from the socially optimal tax rate τ^* unless the median voter's ability A_m happens to equal the CES aggregate of individuals' ability A. If $A_m > A$, then we have $\tau_e \leq \tau_m < \tau^*$ because $A_e \geq A_m$. In this case, the meritocratic equilibrium is worse than the democratic equilibrium in terms of welfare. If $A_m < A$, then we have either $\tau^* \leq \tau_e \leq \tau_m$ or $\tau_e < \tau^* < \tau_m$. In this case, the meritocratic equilibrium may be better than the democratic equilibrium in terms of welfare, depending on the degree of political inclusiveness e. Therefore, all our results are robust to the generalized utility and production functions.

[19] Here we also require $\beta v'(.) > 1$ as a sufficient condition.

Appendix C: Utility inequality

In this appendix, we compare the degree of inequality in individuals' utility under the two political systems. We measure utility inequality by the coefficient of variation of individuals' utility, which is defined as

$$\sigma_U \equiv \sqrt{\int_0^1 \left(\frac{u_i}{U} - 1\right)^2 di}. \tag{C1}$$

From (8) and (12), we can derive the ratio of individual i's utility u_i to average utility U as

$$\frac{u_i}{U} = \frac{0.5\,(1-\tau)\,(A_i/A) + \beta\tau}{0.5\,(1-\tau) + \beta\tau}. \tag{C2}$$

Substituting (C2) into (C1) yields

$$\sigma_U = \frac{1-\tau}{1+(2\beta-1)\,\tau}\sigma_A, \tag{C3}$$

where $\sigma_A \equiv \sqrt{\int_0^1 (A_i/A - 1)^2\, di}$ is the coefficient of variation of individuals' ability. Equation (C3) shows that utility inequality σ_U is decreasing in τ given $\beta > 1$. Because the tax rate in the meritocratic equilibrium is lower than that in the democratic equilibrium (i.e., $\tau_e \leq \tau_m$), utility inequality in the meritocratic equilibrium is higher than that in the democratic equilibrium (i.e., $\sigma_U(\tau_e) \geq \sigma_U(\tau_m)$). Here we use the simple utility and production functions in the main text. Our result also applies to the generalized utility and production functions in Appendix B.[20]

[20] Derivations are available upon request.