

1 Alphabetical Author Order, Intellectual Collaboration,  
2 and High-Skilled Migration

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6 **Abstract**

7 We study the consequences of alphabetical author order in economics for job  
8 placements of economists, based on a context that enables a clean identifica-  
9 tion. Results using two different data sets both show that, relative to Chinese  
10 physicists and statisticians, Chinese economists with surname initials located  
11 later in the alphabet tend not to stay in the US and are more likely to work  
12 in China. Such effects of surname initials on job placements are cleanly iden-  
13 tified and represent a result of alphabetical author order, because in Chinese  
14 culture, names are seldom listed alphabetically in contexts other than joint  
15 publications in international economics journals.

16 *Key words:* Alphabetical author order; Economics; High-educated migration;  
17 Intellectual collaboration

18 *JEL Codes:* A11; F22

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# 1 Introduction

It has been widely recognized that the norm of alphabetical author order for joint publications in economics confers greater benefits on economists with surnames that start earlier in the alphabet (Kadel and Walter, 2015; Levitt and Thelwall, 2013; Van Praag and van Praag, 2008; Weber, 2018). For example, Einav and Yariv (2006) find that faculty with earlier surname initials are more likely to receive tenure at top US economics departments. Many studies have debated whether the author order is optimal, and Ray and Robson (2018) propose a new one: “certified random.”<sup>1</sup> In existing empirical studies on this topic, however, an important concern may arise: Surname initials may be correlated with potential confounders, due to possible ordering effects in contexts other than economics publications (Cauley and Zax, 2017; Deaton, 2009).<sup>2</sup>

This paper examines the consequences of alphabetical author order for job placements of economists, based on a context that enables a cleaner identification: We explore variation in surname initials of Chinese economists, relying on the fact that in Chinese culture, names—in Chinese characters—are seldom listed alphabetically in contexts other than joint publications in international economics journals. Instead, names are typically listed according to the number of strokes in the surname, which is uncorrelated with the surname initial in *Hanyu Pinyin*—a romanization system that expresses Chinese characters in the alphabet. The population census data, as well as data used in this paper, confirm that Chinese surnames are uncorrelated with a variety of individual characteristics.<sup>3</sup>

Patterns in Figure 1 motivate this study. It shows the share of Chinese who have a surname starting in the first, middle, and last part of the alphabet. The three columns in the upper panel correspond to the Chinese population, Chinese PhDs at US economics

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1. Ray and Robson (2018) give four reasons why economists with earlier surname initials may benefit from alphabetical order: (1) Psychologically, names that appear first are most likely to be given “extra credit”; (2) earlier names appear bunched together on a reference list, promoting citations; (3) some economics journals publish papers in alphabetical order; and (4) the “et al.” convention obscures the identity of later authors. For a nice review of empirical evidence on the consequences of alphabetical author order in economics, see Weber (2018).

2. Cauley and Zax (2017) show that people with later surname initials generally experience worse life outcomes, using US data. Cox (1958) and Deaton (2009) call for caution in assigning individuals between treatment and comparison groups based on alphabetical order in experimental designs.

3. The China census data are from the fifth national population census of China, provided by the National Bureau of Statistics. Data used in this paper are described in Section 3.

1 departments, and Chinese faculty members at US economics departments, respectively;  
2 the three columns in the lower panel correspond to the Chinese population, Chinese PhDs  
3 at US physics and statistics departments, and Chinese faculty members at US physics  
4 and statistics departments, respectively.

5 We see from the figure that, for those who obtain economics PhDs from US univer-  
6 sities, the distribution of surname initials is similar to what the population distribution  
7 would suggest. This group of economists is of great importance, as it represents a large  
8 share of economics PhD recipients educated in the US (nearly one in four in 2018) and  
9 makes up the majority of foreign recipients.<sup>4</sup> The distribution for those who work as  
10 faculty members at US economics departments, however, is skewed away from surnames  
11 that start later: 36 percent of them versus 25 percent of the population have a surname  
12 initial in the range A–J, while 30 versus 42 percent in the range U–Z. In comparison,  
13 Chinese PhDs and faculty at physics and statistics departments—two disciplines that  
14 follow a contribution-based author order (Waltman, 2012)—have distributions similar to  
15 the population. (Appendix Table A1 reports more detailed statistics.) These patterns  
16 indicate that the relationship between surname initial and job placement of Chinese  
17 economists—given exogeneity of the former—is a result of alphabetical author order.

18 In addition to alphabetical author order, academic systems in China play an important  
19 role. Unlike in the US, first authorship is vital in assessing the performance of economists  
20 in China.<sup>5</sup> As a result, Chinese economists—including those who are overseas—highly  
21 value first authorship. Given that alphabetical order is the international norm, however,  
22 their chances of being the first author are small when they collaborate with US coauthors.  
23 This is because Chinese surnames generally start later in the alphabet than US surnames  
24 (Figure 2). For example, about 29 percent of Chinese have surnames that begin with  
25 X–Z, while less than one percent of Americans do (Appendix Table A2). Moreover,  
26 any negotiation of order reversal with international coauthors is often not easy, because  
27 an author with an earlier surname initial being placed later would strongly signal a

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4. Source: Institute of International Education (2018).

5. Assessment criteria that do not emphasize first authorship are adopted in the US and most countries other than China. The words “US” and “international” are thus interchangeable in the paper.

1 small contribution to the work. This discourages Chinese economists from intellectual  
2 collaborations with US economists and creates an incentive for them to work in China.<sup>6</sup>  
3 In line with academic assessment criteria that emphasize first authorship, a contribution-  
4 based author order prevails in China, rendering first authorship more attainable. Even  
5 when not deviating from the international norm, first authorship is more attainable than  
6 in the US due to the large number of prospective coauthors with relatively later surname  
7 initials. The strength of the incentive for Chinese economists to leave the US and work  
8 in China is greater for those with later surname initials, for whom alphabetical author  
9 order is more disadvantageous.

10 We provide two lines of empirical evidence for the relationship between surname ini-  
11 tial and job placement. First, we collect a sample of Chinese economists who have newly  
12 received their PhD degrees from US universities. Results show that later surname initials  
13 induce the return of Chinese economists after they obtain PhDs in the US, even after  
14 controlling for a range of potentially confounding factors. The effects appear substantial.  
15 We also collect data on comparable physicists and statisticians. Using them as a compar-  
16 ison group yields similar patterns of results: Estimates suggest that Chinese economists,  
17 compared with physicists and statisticians, have a 16–21 percentage point larger proba-  
18 bility of working in China upon degree completion if their surnames start in the middle  
19 or last third of the alphabet instead of the first third. Alternatively, each letter by which  
20 surname initial is closer to the end of the alphabet increases the probability by about one  
21 percentage point, amounting to a 25 percentage point rise in the probability when the  
22 surname initial moves from “A” to “Z”.

23 Second, we collect a sample of economists who have publications in prestigious eco-  
24 nomics journals. Results using this more extensive data set show that later surname  
25 initials significantly reduce the probability of Chinese economists working at top US  
26 universities. The effects are robust to choosing different sets of economics journals (we  
27 report results based on five, 20, and 50 journals). Compared with the effect of surnames

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6. Single authorship might also be an alternative. But as the share of single-authored papers in economics journals is drastically decreasing in recent decades, we do not consider this. Rosenblat and Mobius (2004) document the prevalence of coauthorship since use of the Internet became widespread.

1 on academic outcomes in economics documented by existing studies, the effect for Chinese  
2 economists we find here is much more substantial. Since using the two different data sets  
3 yields consistent, complementary evidence, we believe that the findings are representative  
4 of the experiences of Chinese economists in general.

5 This paper contributes to the literature on alphabetical author order in economics  
6 (Einav and Yariv, 2006; Kadel and Walter, 2015; Levitt and Thelwall, 2013; Ray and  
7 Robson, 2018; Van Praag and van Praag, 2008). We study economists' strategic responses  
8 to this norm in their location decisions, while the literature focuses on collaborative be-  
9 haviours or surname manipulations. The effects in our context, which are generated  
10 explicitly by the academic system in China, appear much more substantial compared  
11 with existing studies. This suggests that inconsistency in academic norms may magnify  
12 any unfavorable consequences of alphabetical order. More importantly, the effects in our  
13 context are cleanly identified, as Chinese surnames are uncorrelated with unobserved het-  
14 erogeneity. While this paper considers Chinese economists, it has broader implications.  
15 This is in part because intellectual collaboration is important in economics research (La-  
16 band and Tollison, 2000; Sauer, 1988), and in particular, collaboration between US and  
17 Chinese researchers enhances research quality (Freeman and Huang, 2014).

18 This paper also contributes to the growing literature on high-educated immigration  
19 through admission into PhD programs. High-educated immigrants, and particularly for-  
20 eign PhDs, have remarkable labour market impacts on the US and largely contribute to  
21 its competitiveness (Borjas, 2003, 2005; Freeman, 2010; Hsieh, Hurst, Jones, and Klenow,  
22 2019). While prior work mostly studies the role of earnings (Borjas, 1987), we find that  
23 migration decisions are also affected by nonpecuniary considerations that arise from aca-  
24 demic norms.

25 The next section reviews the institutional background. Section 3 describes the two  
26 data sets in detail. Section 4 empirically studies the relationship between surname initial  
27 and job placement using the two data sets. Section 5 concludes.

## 2 Institutional background

In this section, we first describe alphabetical author order, which is the norm for joint economics publications. We then introduce China’s distinctive author-order norm and academic assessment criteria in economics, as well as surname initial distribution. We also give an example to illustrate Chinese economists’ strategic behaviour in their job-location decisions.

### 2.1 Alphabetical author order in economics

In economics, the international norm is to list authors in alphabetical order on joint publications (Einav and Yariv, 2006; Ray and Robson, 2018). The first three columns of Table 1 show statistics for publications in several prestigious international economics journals.<sup>7</sup>

Column (1) contains the *American Economic Review*, *Econometrica*, the *Journal of Political Economy*, the *Quarterly Journal of Economics*, and the *Review of Economic Studies*, which are widely regarded as the highest-ranked economics journals. We refer to them, for brevity, as the five A+ journals hereafter. Column (2) adds 15 more journals and includes what we call the 20 A journals; column (3) adds 30 more.<sup>8</sup> For these journals, we exclude notes, comments, correspondence, and so on, plus the May “Papers and Proceedings” issues of the *American Economic Review*; publication years are from 2000 to 2015. We observe that in these journals, economists predominantly follow alphabetical order and Chinese economists are no exception.

For example, column (1) shows that of 3,599 joint papers published in the five A+ journals, authors are alphabetically ordered in 91.8 percent (panel B). The analogous

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7. The source of the publications data is EconPapers. See <https://econpapers.repec.org>.

8. The 20 A journals include the top five plus the *Economic Journal*, the *Journal of Economic Growth*, the *Journal of Monetary Economics*, the *Journal of Labor Economics*, the *RAND Journal of Economics*, the *Journal of Economic Theory*, the *Review of Economics and Statistics*, the *International Economic Review*, the *Journal of International Economics*, the *Journal of Public Economics*, the *Journal of Finance*, the *Journal of Econometrics*, the *Journal of Financial Economics*, the *Journal of Human Resources*, and the *Review of Financial Studies*. The 50 journals are detailed in Appendix A. The journals are selected by considering the journal rankings of Barrett, Olin, and Bailey (2000); Engemann and Wall (2009); Kalaitzidakis, Mamuneas, and Stengos (2003, 2011); Laband and Piette (1994).

1 statistic is 90.6 percent for joint publications by a team of international and Chinese  
2 economists (panel C); joint publications by a Chinese team all follow the norm (panel  
3 D). Columns (2) and (3) give similar pictures. In these journals, the probability of  
4 alphabetical author order turns out to be much greater than the probability one would  
5 expect if authors were ordered randomly, which is about 0.35.<sup>9</sup>

6 In comparison, journals in most other disciplines, such as physics, list authors based  
7 on their relative contributions to the work (Waltman, 2012). The last column of Table 1  
8 reports statistics for publications in the *Physical Review Letters* (*PRL*), one of the leading  
9 physics journals.<sup>10</sup> It shows that on only 22.5 percent of joint papers are authors listed  
10 alphabetically (panel B); the share is even smaller for joint papers written by international  
11 and Chinese authors (10.3 percent, panel C). These numbers are roughly in line with the  
12 probability of alphabetical order with random ordering (about 0.2), suggesting that this  
13 journal does not normatively follow alphabetical author order.

## 14 **2.2 Academic institutions and surname initial distribution in** 15 **China**

16 Below we describe the author-order norm and academic assessment criteria in economics  
17 and surname initial distribution in China, focusing on how they differ from the US.

18 **Author-order norm** Economics journals published by Chinese academic societies typ-  
19 ically follow a contribution-based author order rather than alphabetical order. Columns  
20 (4) and (5) of Table 1 report publication statistics for two Chinese economics journals.  
21 One is the *Economic Research Journal* (*ERJ*), which is widely recognized as the best  
22 Chinese-language economics journal; the other is the *China Economic Review* (*CER*),  
23 which is an internationally influential English-language journal focusing on research on

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9. Based on the distribution of surnames in the US population, we compute the probability of alphabetical order with random ordering when the number of authors is two (0.47), three (0.22), four (0.1), five (0.05), and so on. (Using the distribution in the Chinese population, the probabilities are slightly smaller but quite similar.) We then compute the overall probability as a weighted combination, based on the shares of papers with different numbers of authors. The computation is similar for other journals.

10. The *PRL*, established in 1958, is published by the American Physical Society. Focusing on fundamental research on all topics related to all fields of physics, it is considered to be one of the most prestigious journals in the discipline (Bollen, Rodriquez, and Van de Sompel, 2006).

1 the economy of China.<sup>11</sup>

2 In the *ERJ*, authors in 42.2 percent of joint publications are ordered alphabetically  
3 (panel B). In the *CER*, the share is 56 percent (panel B). The probabilities of alphabetical  
4 author order one would expect if authors were ordered randomly in these two journals  
5 are, respectively, 0.36 and 0.32. For the *ERJ*, the probability is roughly comparable to  
6 the observed share of joint publications with alphabetically ordered authors. For the  
7 *CER*, the probability is somewhat larger than the observed share. This may be because  
8 there are quite a few non-Chinese contributors to the *CER*, who are likely to follow  
9 the international convention of alphabetical author order. Importantly, the shares with  
10 alphabetical author order in these two journals are significantly lower than the shares  
11 in international economics journals (as shown in the first three columns of Table 1).  
12 Even for *CER* papers written exclusively by non-Chinese authors, the share is only 73.9  
13 percent (panel E). This suggests that alphabetical order is much less common in Chinese  
14 economics journals than in international economics journals.

15 **Academic assessment criteria** Underlying the author-order norm in Chinese eco-  
16 nomics journals are the criteria used by universities in China to assess economists' aca-  
17 demic performance: Unlike the US criteria, which count all publications, Chinese uni-  
18 versities generally require a certain number of first-author publications for economists'  
19 recruitment, promotion, and tenure.<sup>12</sup> The requirement at South China Normal Univer-  
20 sity, for example, is at least two first-author publications for assistant professor, three for  
21 associate professor, and five for professor. Although some higher-ranked economics de-  
22 partments in China have begun to adopt the US criteria, there are few such departments,  
23 and the adoption is at a very early stage. Therefore, academic assessment criteria that  
24 emphasize first authorship are still prevalent in China (see Appendix B).

25 With the aim of promoting consistent academic standards among economists, such  
26 criteria appear rigid, in the sense that first authorship in lower-ranked journals can be

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11. The *ERJ* is a monthly journal published by the Chinese Academy of Social Sciences since 1955. The *CER* is a quarterly journal published by the Chinese Economist Society since 1980.

12. Historically following the academic convention in the former Soviet Union, social sciences and natural sciences research is under similar regulations in China.



1 given more credit than non-first authorship in journals of much higher reputation. In  
2 particular, though they are not internationally ranked high, journals published by Chi-  
3 nese academic societies—such as the *ERJ* and *CER*—are popular in China, and first  
4 authorship therein is usually greatly valued.

5 Such criteria lead to Chinese economists’ perception that being the first author is  
6 highly consequential. On their homepages, Chinese economists tend to post only first-  
7 author publications, or more commonly, mark their first authorships on joint publications  
8 (see Appendix B). Even outside of China, Chinese economists cannot avoid being influ-  
9 enced by such criteria. This is partly due to their concern about future career prospects  
10 in China, as they usually plan to move back to a Chinese university at a later stage in  
11 their career. Domestic recognition and academic prestige are also important concerns.  
12 When China’s mass media report important research, the first author receives almost all  
13 credit, even in cases in which she is ordered first solely because of alphabetics.

14 **Surname initial distribution** Using census data, Figure 2 plots the cumulative distri-  
15 bution of surname initials for the Chinese population, as well as that for the US popu-  
16 lation.<sup>13</sup> It shows that while the initials of US surnames are roughly evenly distributed  
17 across the alphabet, the initials of Chinese surnames skew to the end. Therefore, in  
18 general, fewer Chinese than Americans have earlier surname initials, and more have later  
19 initials. For example, a negligible fraction of Chinese have surnames that begin with “A”  
20 or “B”, compared to 11.5 percent of Americans; about 42 percent of Chinese have sur-  
21 names that begin with W–Z, compared to 9 percent of Americans (see Appendix Table  
22 A2). Moreover, Chinese surnames tend to cluster at some popular ones that start at the  
23 end of the alphabet: Among the ten most common Chinese surnames are Wang, Zhang,  
24 Yang, Zhao, Zhou, and Wu, which in total represent 23 percent of the population (see  
25 Appendix Table A3).

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13. The US census data are from the twenty-second US census, conducted by the Census Bureau. Both the US census and China census are for the year 2000.

## 3 Data

To study the effects of surname initials on job placements, we collect two data sets. The first contains Chinese PhDs who are US-educated, and the second contains economists who have publications in selected journals. The two data sets—with different coverage—complement each other.

### 3.1 US-educated Chinese PhDs

We collect data on Chinese PhDs who graduated from the top 50 economics, physics, and statistics departments in the US over the period 2000–2014.<sup>14</sup> This period has witnessed a large increase in the number of Chinese graduate students who study at US universities (Institute of International Education, 2018). Data are mainly collected from PhD past placements that departments publish online. For departments without a website containing such information, we contact the placement office to obtain information about past job market candidates. We also obtain information from faculty homepages, social profiles on major media platforms (mainly Facebook and LinkedIn), and personal networks.

For PhDs with nationality information, we can easily determine Chinese identity. For those without the information, we check whether their surnames are among the 300 most common Chinese surnames based on the population census. Chinese with these surnames account for more than 90 percent of the population; for Han Chinese (the largest ethnic group in China), they account for 99 percent. We exclude PhDs who obtained a bachelor’s degree outside China (about five percent of the sample), to minimize the chance of unintentionally including those who are of Chinese origin but not from China.

In total, the sample has 751 observations; 382 are economics PhDs and 369 are physics

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14. The economics departments are selected by considering the rankings of Thursby (2000), Amir and Knauff (2008), Grijalva and Nowell (2008), McPherson (2012), and US News and World Report rankings (2014). The physics departments are selected based on US News and World Report rankings (2014) and National Academies of Sciences, Engineering, and Medicine Rankings (2010). The statistics departments are selected based on US News and World Report rankings (2014). See details in Appendix A. Results are robust to some variations in the selection of departments in each discipline (for example, either include 40 or 60 departments or a set that is slightly different).

1 or statistics PhDs. For each of these, we record the name, gender, PhD field, ranking of  
2 the PhD-granting university, year of PhD completion, job placement upon graduation,  
3 and type of institution. Table 2 presents the summary statistics. We see that in the  
4 sample there are slightly more males (58.3 percent) than females; 27.3 percent return to  
5 China after being awarded a PhD; 54.9 percent work in academic institutions; 28 percent  
6 are from the top 15 universities; and 90.8 percent receive their degrees after 2005, which  
7 is consistent with a significantly increasing trend in the number of Chinese graduate  
8 students in the US.

9 Importantly, there is no large difference in surname initials between PhDs in economics  
10 and PhDs in the other two disciplines, as statistics in Table 2 suggest. This is further  
11 confirmed by the upper panel of Figure 3, which plots the distributions of surname initials  
12 for the two groups of PhDs. Moreover, the PhDs follow a distribution similar to that  
13 of the population (Figure 1), indicating the absence of sample selection bias in our data  
14 collection.

## 15 **3.2 Economists with publications**

16 In addition to the PhD sample, we collect a data set of economists who have any pub-  
17 lications in the 50 economics journals over the period 2000–2015. (The selection and  
18 classification of journals are described in Section 2.1.) Chinese identity is determined in  
19 a similar way as before. We match the data set with the sample of faculty members at the  
20 top 50 US economics departments, which is collected from department websites, to check  
21 whether the economist works at one of these institutions. (The selection of departments  
22 is described in Section 3.1.)

23 This data set is more extensive than the PhD data set. It contains 2,812 Chinese  
24 (33,291 non-Chinese) economists in total, of whom 1,300 (15,639) have publications in  
25 the A journals and 197 (4,575) in the A+ journals.

26 Given the patterns in Figure 1 (i.e., that Chinese economists who work in the US  
27 have earlier surname initials), the representativeness of the sample drawn from publi-  
28 cation records may be a concern if one believes that economists who work in the US,

1 relative to those who do not, are more likely to publish in the highest-ranked journals.  
2 We do find that economists with publications in the A+ journals—both Chinese and  
3 non-Chinese—have earlier surname initials than the respective census distribution, and  
4 Chinese even more so. This suggests that some selection bias may arise in using this  
5 sample. However, when more journals—the 20 A journals and the 50 journal—are in-  
6 cluded, the distributions become very similar to the census (see Appendix Figure A1).  
7 This reduces the concern about selection bias in using the samples drawn from the 20 A  
8 journals and the 50 journals.

## 9 **4 The relationship between surname initial and job** 10 **placement**

11 This section empirically tests whether Chinese economists' surnames have any noticeable  
12 effect on their job placements, first using data on US-educated Chinese PhDs and then  
13 using data on economists drawn from publication records.

### 14 **4.1 Migration decisions: Evidence from US-educated Chinese** 15 **PhDs**

16 Below, we present evidence on the relationship between surname initial and migration  
17 decisions from US-educated Chinese PhDs. Data are described in Section 3.1. Figure  
18 3 presents a graphical illustration, showing that while PhDs in economics and PhDs  
19 in the other two disciplines (physics and statistics) who study at US universities have  
20 similar surname initial distributions, of those who return home upon degree completion,  
21 economics PhDs tend to have surnames that start later in the alphabet.

22 Next, we conduct regression analyses, which allow us to account for a range of poten-  
23 tially confounding factors. Specifically, we estimate the following regression equation:

$$Return_i = \alpha_0 + \alpha_1 Initial_i + X_i\Gamma + \epsilon_i, \quad (1)$$

1 where the dependent variable  $Return_i$  is a dummy equal to one if PhD  $i$  leaves the US  
2 upon graduation and takes a job in China and zero otherwise. We are interested in  
3 the coefficient on surname initial,  $\alpha_1$ . Surname initials are measured using two dummy  
4 variables, one indicating an initial in the range K–T and the other indicating the range  
5 U–Z (the omitted baseline group is A–J).<sup>15</sup> As a robustness check, we lexicographically  
6 code surname initials into numbers between one and 26 (“A” corresponds to one, “B”  
7 to two, and so on), as in Einav and Yariv (2006). A vector of additional covariates,  
8  $X_i$ , include a male dummy, a dummy indicating the PhD-granting university is among  
9 the top 15, a dummy indicating academic institution (one if the PhD works in a purely  
10 academic institution after graduation), and a dummy indicating graduation after 2005.<sup>16</sup>  
11 The error term is  $\epsilon_i$ .

12 The estimates of  $\alpha_1$  in equation (1) might be biased if surname initials are correlated  
13 with the error term. But such concerns can be lessened, since we use variation in Chinese  
14 surname initials.

15 As noted earlier, in China, name order in most contexts depends on the number of  
16 strokes in the surname written in Chinese characters, which has no significant relation-  
17 ship with the initial in Hanyu Pinyin (Appendix Figure A2 provides graphical evidence).  
18 Hence, there seems no easy way to rationalize how the initial of a Chinese surname  
19 is correlated with individual characteristics. Analyses using the census data support  
20 that important socioeconomic outcomes of Chinese are uncorrelated with surnames (Ap-  
21 pendix Table A4). In addition, the surname initial distributions for economics PhDs  
22 and physics/statistics PhDs in our sample are similar and resemble the population dis-  
23 tribution, although pursuing a PhD requires academic skills that may vary greatly across  
24 disciplines. This also supports that Chinese surnames are extremely unlikely to be cor-  
25 related with unobserved heterogeneities.

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15. Due to the lack of evenness in the distribution of Chinese surnames, we classify surname initials into groups and use the dummies as explanatory variables. The classification is based on the two noticeable sharp changes in the plot of the cumulative distribution function in Figure 2. Specifically, compared with the distribution for US surnames, that for Chinese surnames has two clear cutoffs: Fewer Chinese than Americans have a surname initial before “K” (25.0 versus 46.2 percent), and more Chinese than Americans have an initial after “T” (42.0 versus 10.2 percent). See also Appendix Table A2.

16. We do not control for age due to the lack of age information.

1 Regression results using linear probability models (LPMs) based on the sample of  
2 economics PhDs are reported in panel A, Table 3. Standard errors are robust to het-  
3 eroskedasticity. Columns (1) and (2) are estimated without and with additional covariates  
4 included, respectively.<sup>17</sup> Both indicate that Chinese economists are significantly more  
5 likely to return to China after graduation if their surnames start with a letter in the mid-  
6 dle (K–T) or last third (U–Z) of the alphabet rather than the first third (A–J). Columns  
7 (3) and (4) use surname initials converted to a numerical scale, with the latter controlling  
8 for additional covariates. These regressions yield consistent results, indicating that the  
9 later the surname initial of Chinese economists, the more likely they are to return home.  
10 In all columns, the coefficient estimates for surname initial are economically substantial  
11 and statistically significant.

12 To explicitly use Chinese physicists and statisticians as a control group in the analysis,  
13 we estimate the following regression equation:

$$Return_i = \beta_0 + \beta_1 Econ_i + \beta_2 Initial_i + \beta_3 Econ_i * Initial_i + X_i \Gamma + \epsilon_i, \quad (2)$$

14 where  $Econ_i$  is a dummy equal to one if PhD  $i$  studies economics and zero if she studies  
15 physics or statistics. Other variables are similarly defined as in equation (1). Here the  
16 interaction-term coefficient  $\beta_3$  is of particular interest.

17 Panel B, Table 3 reports the results. Based on the coefficient estimates for the in-  
18 teraction terms in column (2), Chinese economists, compared with Chinese physicists  
19 and statisticians, have a 16–21 percentage point larger probability of working in China  
20 upon PhD graduation if their surnames start in the middle or last third of the alphabet  
21 instead of the first third, all else being equal. Converting surname initials to 1–26 yields  
22 qualitatively similar patterns of results: Column (4) suggests that relative to comparable  
23 physicists and statisticians, each letter by which the surname initial is closer to the end  
24 of the alphabet increases the probability of Chinese economists returning to China by  
25 about one percentage point. That is, as the surname initial moves from “A” to “Z,” the

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17. Estimates of coefficients on additional covariates have the expected sign and magnitude.

1 probability increases by about 25 percentage points, or from 0.225 to 0.475 (given an  
2 average probability of 0.35, as in Table 2).

3 Reassuringly, direct regression results and difference-in-differences results both suggest  
4 that later surname initials induce the return of Chinese economists after they obtain PhDs  
5 at US universities.<sup>18</sup> Moreover, the estimates of  $\alpha_1$  undergo few changes after controlling  
6 for a range of covariates, as shown above, which further mitigates the concern about  
7 endogeneity of surname initials.

8 As an extension, we also check whether surnames affect their job type (a purely  
9 academic institution or not). Our general interpretation implies that those with later  
10 surname initials are less likely to work in academia; if they did so, they would experience  
11 more hardship due to the author-order norm. We find results in line with this expectation,  
12 using the same empirical strategy (see Appendix Table A6).

## 13 **4.2 Employment at top US universities: Evidence from economists** 14 **with publications**

15 Below, we consider employment at top US economics departments and present evidence  
16 from economists who have publications in prestigious economics journals. The motivation  
17 of this analysis is to complement the above analysis of the relationship between surname  
18 initial and job placement using data on US-educated Chinese PhDs. Data used here  
19 are described in Section 3.2. Analysis using this more extensive data set can provide  
20 further insights about the effect of later surname initials on job placement for Chinese  
21 economists.

22 As a graphical illustration, Figure 4 shows that for Chinese economists with pub-  
23 lications in the five A+ journals, those who work at one of the top 50 US economics  
24 departments have surnames that start earlier in the alphabet than those who do not; as  
25 more journals—the 20 A journals and the 50 journal—are included, the gap is still clear,  
26 although smaller, between those who work at the top US economics departments and  
27 those who do not.

---

18. Results are similar when using Probit models (see Appendix Table A5).

1 In comparison, for non-Chinese economists, the gap in surname initial distributions  
 2 between the two groups is not clearly visible. This pattern is in line with the finding of  
 3 Einav and Yariv (2006) that, while economists with later surname initials are less likely  
 4 to be tenured at top US universities, such effects gradually fade as more universities  
 5 are included in the sample, and disappear when the top 35 economics departments are  
 6 considered. This implies that for non-Chinese economists, the effects of surname initials  
 7 on job placement, if any, are much less prominent compared with Chinese economists.<sup>19</sup>

8 We then estimate the following regression equation:

$$USTop50_j = \theta_0 + \theta_1 Initial_j + \varepsilon_j, \quad (3)$$

9 where the dependent variable  $USTop50_i$  is a dummy equal to one if economist  $j$  works  
 10 at one of the top 50 US economics departments and zero otherwise. The variable  $Initial_i$   
 11 is similarly defined as before, and its coefficient  $\theta_1$  is our interest.

12 Equation (3) does not control for additional covariates, because it appears to be  
 13 prohibitively difficult—given the large sample size—to collect information on individual  
 14 characteristics for our sample of economists, which is drawn from publication records in  
 15 selected economics journals. It is also difficult to find comparable researchers in other  
 16 disciplines to use as a control group. For instance, a sample of physicists drawn from  
 17 publication records in physics journals does not seem to be comparable for our purpose:  
 18 During a given period, there are many more publications in physics journals and, on  
 19 average, many more coauthors on a physics publication, compared with economics.<sup>20</sup>  
 20 However, given the suggestive evidence reported in Section 4.1, we expect the correlation  
 21 between Chinese surnames and the error term  $\varepsilon_i$  in equation (3) to be insignificant and,  
 22 therefore, the estimates of  $\theta_1$  to be unbiased. Also, the finding in Section 4.1 that results  
 23 on the effect of surname initials are robust to controlling for additional covariates and to

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19. The less prominent effects for non-Chinese economists might be because of the potential correlation between non-Chinese surnames and unobserved heterogeneities.

20. For instance, the number of publications in the *PRL* is close to the total number of publications in the 50 economics journals; the share of publications with five or more authors in the *PRL* far exceeds the share in economics journals (see Table 1).



1 a difference-in-differences approach bolsters our confidence in using equation (3).<sup>21</sup>

2 Regression results using LPMs for Chinese economists are reported in Table 4.<sup>22</sup> Stan-  
3 dard errors are clustered by publication. Column (1) shows that for those with papers  
4 in the A+ journals, a surname that starts with a letter in the middle or last third of the  
5 alphabet, instead of the first third, reduces the probability of working at one of the top  
6 50 US universities by ten and 19 percentage points, respectively; alternatively, a surname  
7 initial closer to the end by one letter reduces the probability by 0.9 percentage point,  
8 as in column (2). These effects—estimated from a sample of Chinese economists who  
9 typically obtain PhDs in the US—are broadly consistent with panel A, Table 3, which is  
10 estimated from a sample of US-educated Chinese economics PhDs. The effects reported  
11 in columns (3)–(4) and (5)–(6), which are estimated using the 20 A journals and the 50  
12 journals respectively, turn out to be gradually smaller. In particular, column (3) shows  
13 that a surname that starts in the middle or last third of the alphabet significantly reduces  
14 the probability of working at one of the top 50 US universities by about three percentage  
15 points; column (5) shows that a surname that starts in the middle or last third of the  
16 alphabet significantly reduces the probability by 1.7 percentage points.

17 These results, however, have to be interpreted with important caveats. Whether the  
18 Chinese economist works at one of the top 50 US economics department captures two  
19 (possibly related) aspects of the decision. The first concerns whether they stay in the US  
20 or return to China; to this end, the analysis is closely related to the previous analysis of  
21 migration. The second aspect of decision concerns whether they work at one of the top  
22 50 US economics departments or at another US institution. Specifically, in the first part,  
23 our general interpretation implies that Chinese economists with later surname initials are  
24 less likely to work in the US (i.e., more likely to return to China). In the second part,  
25 economists with later surname initials are less likely to work at top US universities (more

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21. The graphical patterns in Figure 4 provide evidence from a local comparison in a difference-in-differences style. Specifically, as the cumulative distributions of surnames at “L” are quite similar in the Chinese and US populations (as in Figure 2), we compare the probability of working in the US for Chinese-born and US-born economists whose surname initial is near this letter. The figure suggests that relative to US economists, Chinese economists with surnames that start with H–K are more likely to work in the US than those with surnames that start with L–M.

22. Results are again similar when using Probit models (see Appendix Table A7).

1 likely to work at lower-ranked US universities), as implied by prior studies such as that  
2 of Einav and Yariv (2006).

3 As we have discussed, many Chinese economists who have publications in the A+  
4 journals are US-based, and using this sample may introduce some selection bias. For this  
5 sample of Chinese economists, the effect of their surnames on job placement at the top 50  
6 US universities captures the two effects illustrated above, which are in the same direction  
7 and together produce a larger effect. This may explain why estimates in columns (1)  
8 and (2) of Table 4 appear larger than estimates in other columns of the table. In other  
9 columns, the fraction of Chinese economists in the sample who are US-based is smaller.  
10 Therefore, these estimates mainly capture the first effect illustrated above: whether the  
11 Chinese economist works in the US or in China. Although the concern about selection  
12 bias may not have been eliminated, we have shown evidence that reduces the concern for  
13 using the samples drawn from the 20 A journals and the 50 journals, which correspond  
14 to columns (3) and (4) and (5) and (6) of Table 4, respectively.

15 To summarize, results in Sections 4.1 and 4.2 are broadly consistent: Both indicate  
16 that the surname of Chinese economists plays an important role in their job placement,  
17 and in particular, those with surnames that start later in the alphabet have a larger  
18 probability of leaving the US and working in China.

## 19 **5 Conclusion**

20 We document substantial consequences of alphabetical author order for job placement  
21 of Chinese-born economists. We find that solely because of an alphabetically disadvan-  
22 tageous surname, which is uncorrelated with individual characteristics, those with later  
23 surname initials are more likely to return to China after earning PhDs in the US and are  
24 less likely to work at (top) US universities. This may impede their long-run academic  
25 career development,<sup>23</sup> collaboration perspectives, and, more important, overall economic  
26 research. Instead of considering which author order is optimal, we show that asymmetry

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23. Oreopoulos, Von Wachter, and Heisz (2012) show that circumstances at the time of labor-market entry impact long-run employment and earnings for high-skilled labor.

1 in such norms across countries leads to international misallocation of economists and  
2 poses a loss to the profession. Academic convention harmony is therefore called for to  
3 encourage intellectual collaboration among economists and, consequently, enhance eco-  
4 nomics research outcomes.

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**Table 1** Statistics for publications in economics and physics journals

	Economics journals					Physics
	International			Chinese		journals
	5 A+ journals (1)	20 A journals (2)	50 journals (3)	<i>ERJ</i> (4)	<i>CER</i> (5)	<i>PRL</i> (6)
<i>A: Single-authored publications</i>						
Observations	1,305	6,127	19,666	767	198	3,184
<i>B: Joint publications</i>						
Observations	3,599	16,045	39,543	1,573	514	51,376
Number of authors: 2	2,190	9,801	24,589	954	239	10,958
3	1,107	5,056	12,163	475	203	11,769
4	253	1,026	2,383	116	49	8,618
$\geq 5$	49	162	408	28	23	20,031
Alphabetical order (%)	91.8	91.1	87.4	42.2	56.0	22.5
<i>C: Joint publications by Chinese and international economists</i>						
Observations	223	1,577	3,786		245	9,566
Alphabetical order (%)	90.6	88.9	85.1		49.4	10.3
<i>D: Joint publications by Chinese economists</i>						
Observations	21	316	849		181	1,284
Alphabetical order (%)	100	86.4	81.5		56.4	20.6
<i>E: Joint publications by international economists</i>						
Observations	3,355	14,152	34,908		88	40,526
Alphabetical order (%)	91.8	91.4	87.8		73.9	25.4

*Notes:* The five A+ economics journals are the *American Economic Review*, *Econometrica*, the *Journal of Political Economy*, the *Quarterly Journal of Economics*, and the *Review of Economic Studies*. The 20 A economics journals include the top five plus the *Economic Journal*, the *Journal of Economic Growth*, the *Journal of Monetary Economics*, the *Journal of Labor Economics*, the *RAND Journal of Economics*, the *Journal of Economic Theory*, the *Review of Economics and Statistics*, the *International Economic Review*, the *Journal of International Economics*, the *Journal of Public Economics*, the *Journal of Finance*, the *Journal of Econometrics*, the *Journal of Financial Economics*, the *Journal of Human Resources*, and the *Review of Financial Studies*. The 50 economics journals are detailed in Appendix A, which also describes the inclusion criteria. For these international economics journals, we exclude notes, comments, correspondence, and so on, plus the May “Papers and Proceedings” issues of the *American Economic Review*; publication years are from 2000 to 2015. The *Economic Research Journal (ERJ)* is a monthly journal published by the Chinese Academy of Social Sciences since 1955. It is widely recognized as the best Chinese-language economics journal. Few publications in this journal involve international economists. The *China Economic Review (CER)* is a quarterly journal published by the Chinese Economist Society since 1980. It is an internationally influential English-language journal focusing on research on the economy of China. The *Physical Review Letters (PRL)* is published by the American Physical Society since 1958. It is considered to be one of the leading physics journals. For these journals, publication years are from 2000 to 2014.

**Table 2** Summary statistics of main variables for US-educated Chinese PhDs

	Mean (SD)			Difference	SE
	All	Economics	Physics/ statistics		
	(1)	(2)	(3)	(4)	(5)
PhD field (economics=1)	0.509 (0.500)				
Surname initial (A-J)	0.266 (0.442)	0.267 (0.443)	0.266 (0.442)	0.001	0.032
Surname initial (K-T)	0.333 (0.472)	0.343 (0.475)	0.322 (0.468)	0.021	0.034
Surname initial (U-Z)	0.401 (0.490)	0.390 (0.488)	0.412 (0.493)	-0.022	0.036
Surname initial (A-Z: 1-26)	16.31 (7.999)	16.21 (7.972)	16.41 (8.035)	-0.200	0.584
Gender (male=1)	0.583 (0.493)	0.524 (0.500)	0.645 (0.479)	-0.121***	0.036
Ranking of PhD-granting university (top 15=1)	0.280 (0.449)	0.236 (0.425)	0.325 (0.469)	-0.089***	0.033
Year of PhD completion (before 2005=1)	0.092 (0.289)	0.060 (0.238)	0.125 (0.331)	-0.065***	0.021
Job placement upon graduation (China=1)	0.273 (0.446)	0.348 (0.477)	0.195 (0.397)	0.153***	0.032
Type of institution (academic=1)	0.549 (0.498)	0.657 (0.475)	0.436 (0.497)	0.221***	0.035
Observations	751	382	369		

*Notes:* Data are collected for new Chinese PhD graduates from the top 50 economics, physics, and statistics departments in the US over the period 2000–2014. Selected departments and the criteria are described in Section 3.1. In columns (1)–(3), standard deviations are in parentheses.

\*\*\*Significant at the 1% level.

\*\*Significant at the 5% level.

\*Significant at the 10% level.

**Table 3** Surname initial and job placement: Evidence from US-educated Chinese PhDs

Explanatory variable	Job placement (China=1)			
	(1)	(2)	(3)	(4)
<i>A: Economics PhDs</i>				
Surname initial ( $\alpha_1$ )	0.152**	0.170***		
K-T vs. A-J: K-T=1	(0.061)	(0.057)		
Surname initial ( $\alpha_1$ )	0.131**	0.154***		
U-Z vs. A-J: U-Z=1	(0.058)	(0.054)		
Surname initial ( $\alpha_1$ )			0.006**	0.007**
A-Z: 1-26			(0.003)	(0.003)
Observations	382	382	382	382
R-squared	0.017	0.136	0.010	0.127
Dependent variable mean	0.348	0.348	0.348	0.348
<i>B: Economics PhDs versus physics/statistics PhDs</i>				
Economics ( $\beta_1$ )	0.031	-0.031	0.012	-0.050
	(0.060)	(0.058)	(0.071)	(0.070)
Surname initial ( $\beta_2$ )	0.013	0.005		
K-T vs. A-J: K-T=1	(0.057)	(0.057)		
Surname initial ( $\beta_2$ )	-0.056	-0.068		
U-Z vs. A-J: U-Z=1	(0.051)	(0.051)		
Economics * Surname initial ( $\beta_3$ )	0.139*	0.157*		
K-T vs. A-J: K-T=1	(0.083)	(0.081)		
Economics * Surname initial ( $\beta_3$ )	0.187**	0.212***		
U-Z vs. A-J: U-Z=1	(0.078)	(0.075)		
Surname initial ( $\beta_2$ )			-0.003	-0.003
A-Z: 1-26			(0.002)	(0.002)
Economics * Surname initial ( $\beta_3$ )			0.009**	0.010**
A-Z: 1-26			(0.004)	(0.004)
Observations	751	751	751	751
R-squared	0.042	0.090	0.037	0.084
Dependent variable mean	0.273	0.273	0.273	0.273
Model	LPM	LPM	LPM	LPM
Additional covariates	No	Yes	No	Yes

*Notes:* Estimations in panel A are based on equation (1). Estimations in panel B are based on equation (2). We use data on new Chinese PhD graduates from the top 50 economics, physics, and statistics departments in the US over the period 2000–2014. Selected departments and the criteria are described in Section 3.1. The dependent variable is a dummy equal to one if the PhD leaves the US upon graduation and takes a job in China and zero otherwise. Columns (1)–(2) classify surname initials into three groups, giving two dummy variables: One indicates surname initial in the range K–T and the other in the range U–Z, with the omitted baseline group being the range A–J. Columns (3)–(4) code surname initials into numbers between one and 26, with “A” corresponding to one, “B” to two, and so on. In panel B, “Economics” is a dummy equal to one if the PhD studies economics and zero if she studies physics or statistics. Additional covariates include a male dummy, a dummy indicating the PhD-granting university is among the top 15, a dummy indicating academic institution, and a dummy indicating graduation after 2005. Robust standard errors are in parentheses.

\*\*\*Significant at the 1% level.

\*\*Significant at the 5% level.

\*Significant at the 10% level.



**Table 4** Surname initial and job placement: Evidence from economists with publications

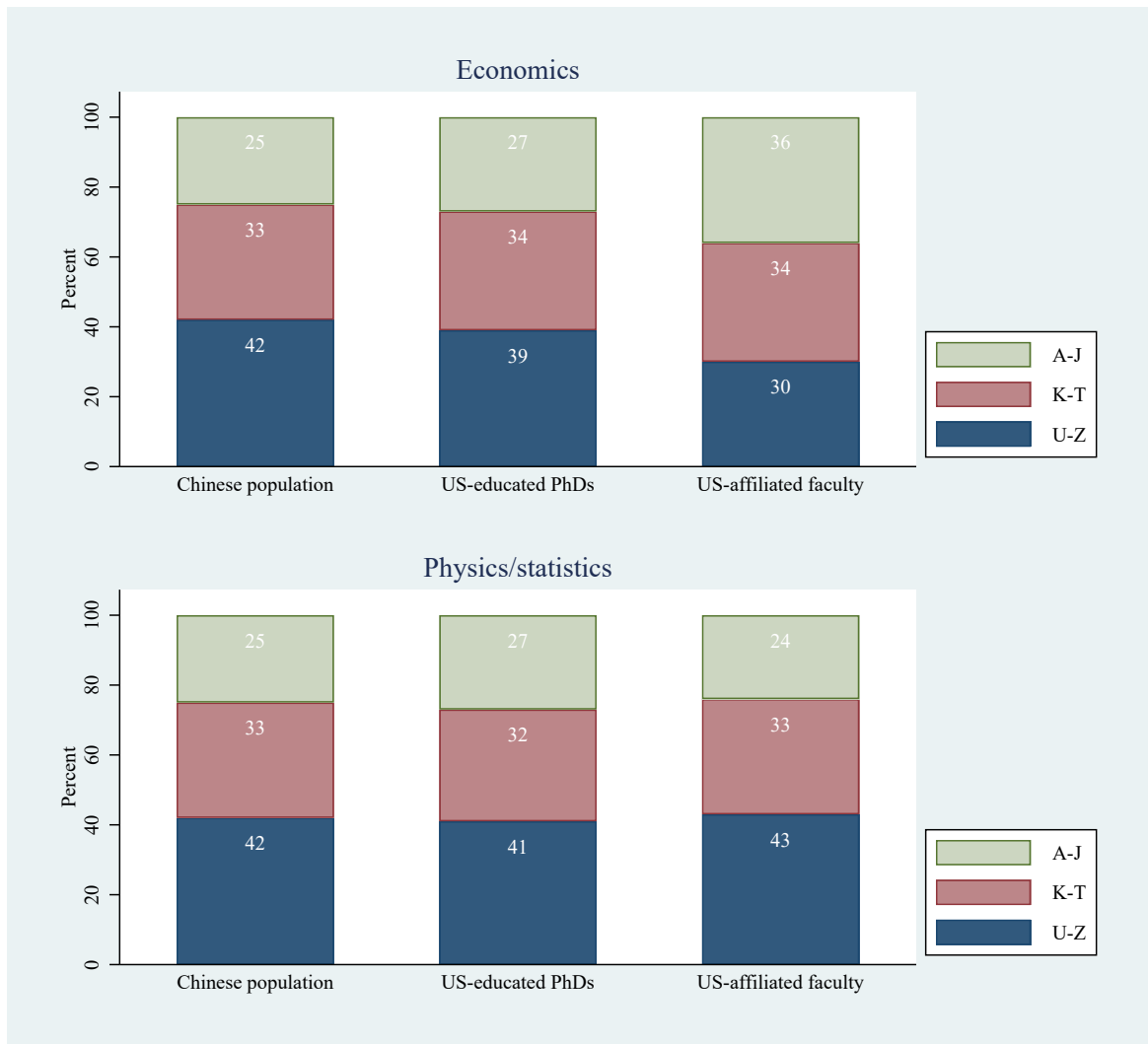
Explanatory variable	Job placement (US top 50=1)					
	5 A+ journals		20 A journals		50 journals	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Chinese economists</i>						
Surname initial ( $\theta_1$ )	-0.099		-0.028*		-0.017**	
K-T vs. A-J: K-T=1	(0.078)		(0.016)		(0.008)	
Surname initial ( $\theta_1$ )	-0.186***		-0.035**		-0.017**	
U-Z vs. A-J: U-Z=1	(0.068)		(0.015)		(0.008)	
Surname initial ( $\theta_1$ )		-0.009***		-0.002**		-0.001**
A-Z: 1-26		(0.003)		(0.001)		(0.000)
Observations	197	197	1,300	1,300	2,812	2,812
R-squared	0.039	0.038	0.005	0.005	0.002	0.002
Dependent variable mean	0.193	0.193	0.043	0.043	0.023	0.023
Model	LPM	LPM	LPM	LPM	LPM	LPM

*Notes:* Estimations are based on equation (3), using data on economists who have publications in international economics journals over the period 2000–2015. See notes to Table 1 for the journal information. The dependent variable is a dummy equal to one if the economist is affiliated with the top 50 US economics departments and zero otherwise. Selected departments and the criteria are described in Section 3.1. Columns (1), (3), and (5) classify surname initials into three groups, giving two dummy variables: One indicates surname initial in the range K–T and the other in the range U–Z, with the omitted baseline group being the range A–J. Columns (2), (4), and (6) code surname initials into numbers between one and 26, with “A” corresponding to one, “B” to two, and so on. Robust standard errors clustered by publication are in parentheses.

\*\*\*Significant at the 1% level.

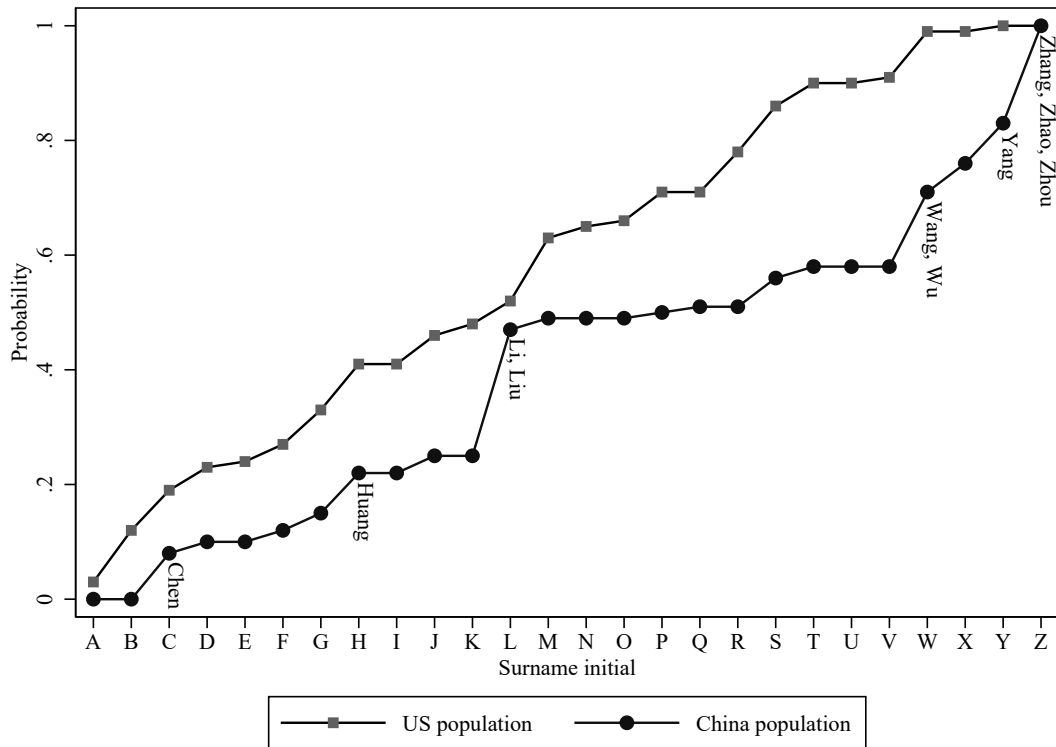
\*\*Significant at the 5% level.

\*Significant at the 10% level.



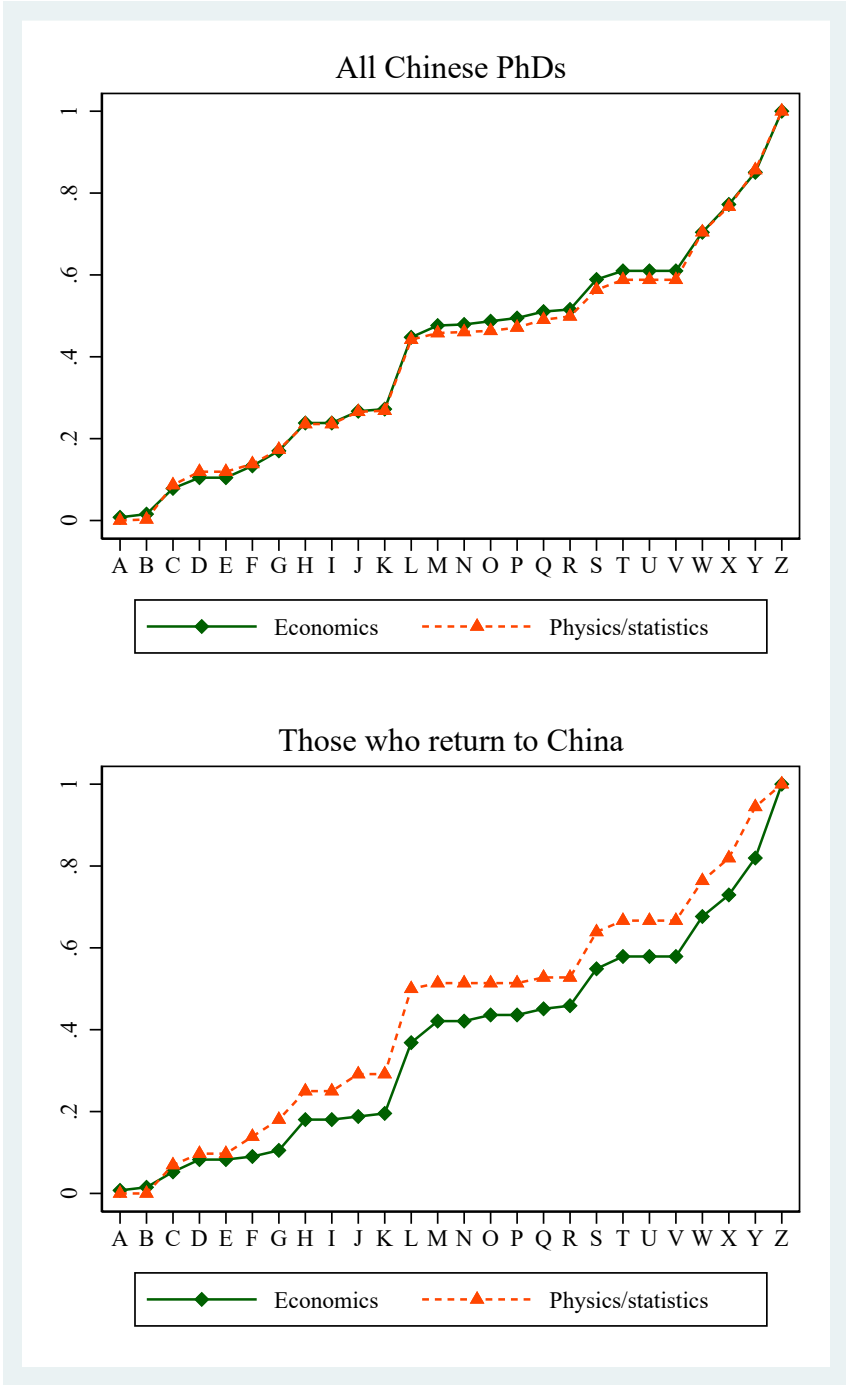
**Figure 1** Distributions of surname initials for Chinese population, PhDs, and faculty

*Notes:* In each panel, the first bar is based on the China population census data, provided by the National Bureau of Statistics. The second bar in the upper (lower) panel is based on data on new Chinese PhD graduates from the top 50 economics (physics and statistics) departments in the US over the period 2000–2014. The third bar in the upper (lower) panel is based on data on Chinese faculty affiliated with the top 50 US economics (physics and statistics) departments in 2015; non-tenure-track and adjunct faculty are not included. Selected departments and the criteria are described in Section 3.1.



**Figure 2** Cumulative distributions of US and Chinese surname initials

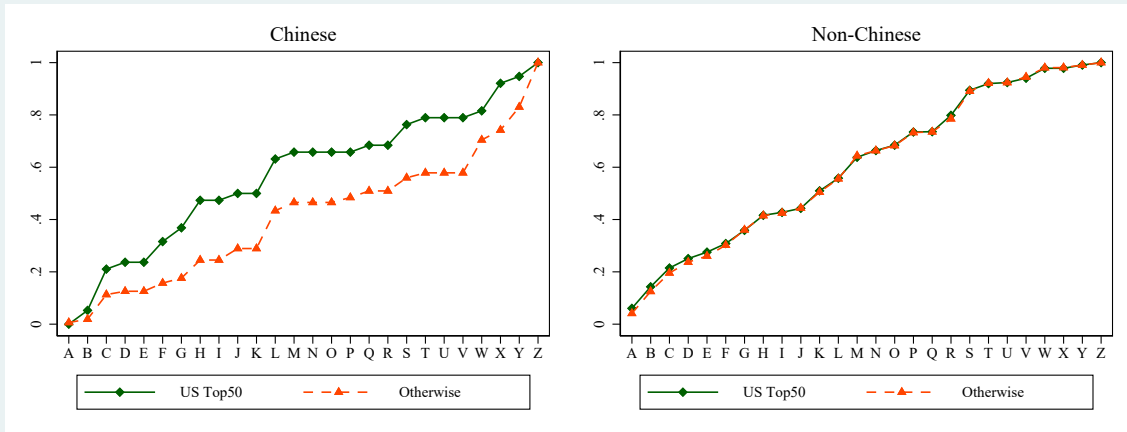
*Notes:* Data are from the US and China population censuses. China population census data are provided by the National Bureau of Statistics. US census data are from the Census Bureau. The ten most common Chinese surnames, which represent 43 percent of the Chinese population, are marked.



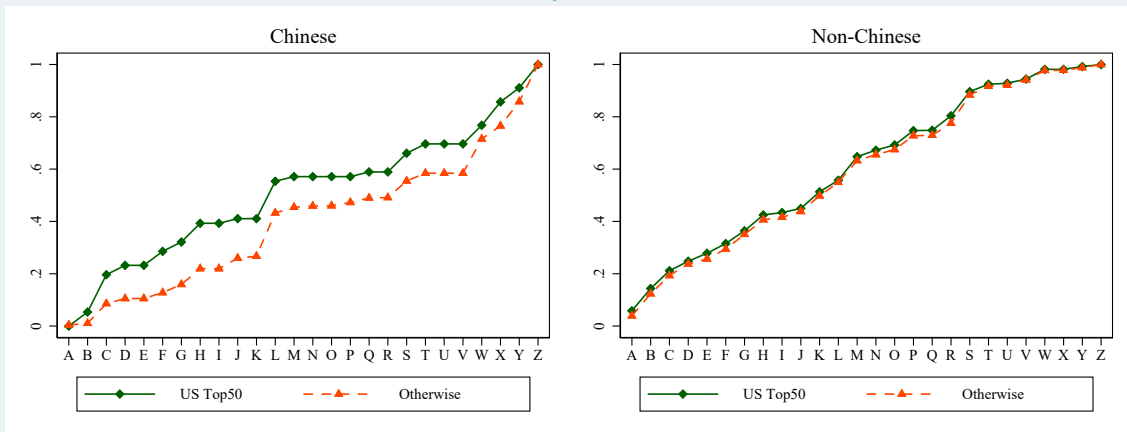
**Figure 3** Cumulative distributions of surname initials for US-educated Chinese PhDs

*Notes:* Data are collected for new Chinese PhD graduates from the top 50 economics, physics, and statistics departments in the US over the period 2000–2014. Selected departments and the criteria are described in Section 3.1.

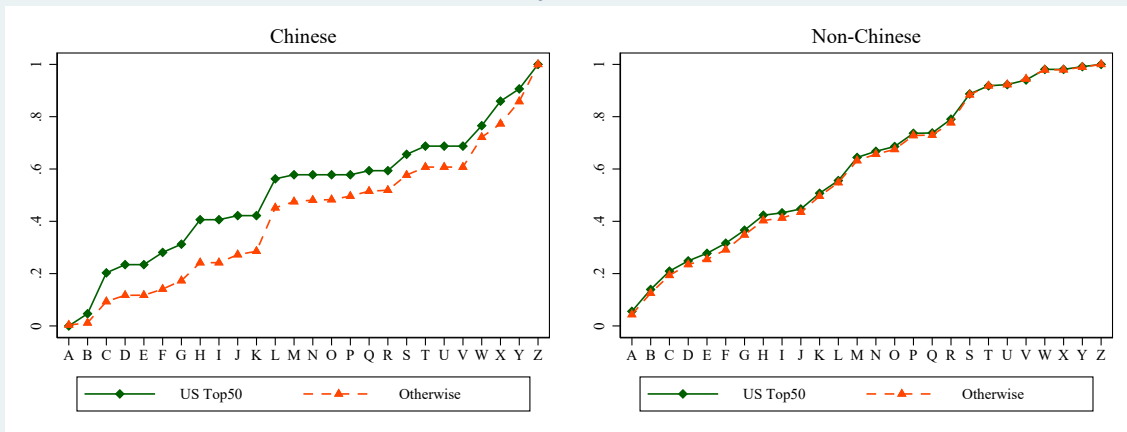
### 5 A+ journals



### 20 A journals



### 50 journals



**Figure 4** Cumulative distributions of surname initials for economists with publications

*Notes:* Data are collected for economists who have publications in international economics journals over the period 2000–2015. See notes to Table 1 for journal information. “US Top50” means being affiliated with one of the top 50 US economics departments. Selected departments and the criteria are described in Section 3.1.