

# Notes on Meritocracy: Insights from Tang's Civil Servant Exam and Poetry

## Defining meritocracy in an ideal world

Let us start visualizing a graph mapping capability to earnings (the vertical axis = earnings, the horizontal axis = capability). In the most simplified and ideal world, where *capability is transparent* and with *no barriers to any jobs*, there is a smooth one to one positive correspondence between capability and earnings.

Capability has to be acquired, a result of investing in human capital. Assume that talent (IQ) is normally distributed. Normally, investment (time, effort, resources) to acquire capability increases in target level of capability and decrease in IQ. *Let access to investment in capability (e.g., education) and investment cost be individual-blind and everyone has identical initial endowment in resources. Assuming still capability is transparent and no barriers to jobs*, we shall have a smooth one to one correspondence between capability and earnings. If all individuals' preferences are identical, there is a similar one to one correspondence between IQ and capability and thus a one to one mapping of IQ and earnings. If individuals do not have identical preferences, a conjecture is that harder working type and higher IQ type will attain higher capability and thus higher earnings.

These perfect worlds have meritocracy: the best person wins, the second is the runners up, and so on.

## II. China's Open Civil Servant Exams as a merit based screening device

The sorting of capability into earnings, or maybe more loosely and generally termed "social-economics status," is challenging in real life. In my opinion, the assumptions made in the ideal world reveal where hurdles lie: identification of capability<sup>1</sup> and mitigation of distortions in acquiring capability based on raw IQ and efforts.

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<sup>1</sup> This includes access to opportunities to be screened and fair screening of capability.

In ancient China, there was a need to recruit talent for government jobs to run the vast country. For thousands of years, this task haunted the dynasties, pressing them to find solutions. For example in 206 BC–220 AD, the Han Dynasty developed a recommendation and referral system, which evolved into a system of entrenchment: recruits were from established families only. This resulted in a pool of limited candidates for important government jobs dysfunction ensued. The Sui Dynasty in 581-671 DC, introduced a formal nation-wide open *Imperial Exam System* to facilitate the talent search. All people, regardless of social class and home locations, were allowed to take the exam.

The Tang Dynasty (618-907 DC) further refined the system. The exam was merit-based as it emphasized examination results and deemphasized family background. The examination covered “physique and manners,” “talk and words” on contemporary policy issues, regular style of “calligraphy and literary theory.” If a person was admissible based on all four dimensions, other selection criteria would be based on (i) ethics, (ii) ability, and (iii) efforts in that order of priority if all other things were equal. The evaluation of ethics was based on a poem a candidate wrote within a specified timeframe.

This system has been heralded as a sound merit-based approach that allowed capable people, even those from the poorest families and lowest social classes, to become highly ranked aristocrats. At the establishment of the Republic of China in 1912, Dr. Sun Yat-sen established the “Examination Yuan” (Ministry of Examination) as one of the five pillars of a modern Chinese government. Its responsibility was to ascertain the quality of civil servants, including holding fair civil servant exams and validating their qualifications. In the Communist regime, many hopeful Chinese people would flock to take civil servant exams to advance their lot in life.

### ***Empirical Investigation***

Allegedly, the *Imperial Exam* system fed able civil servants to the Imperial Court resulting in a “good government” and contributed to the development of a prosperous China during the early and middle Tang

dynasty. Chen *et al* (2016) reported collaborative empirical evidence.<sup>2</sup> The research's main objective was to examine whether *there is a positive association between the artistic quality of poems and their authors' ethics*. It turned out that the empirical work (Table VI, Chen *et al* 2016) also revealed a positive correlation between historical reputation and successful candidacy in the *Imperial Court exam*.

From both the Old and New Tang Histories, a sample of officers were collected. This sample excluded military officials and those who inherited their government positions. Military officers were treated differently because of their role in fighting wars; there were many even during the Tang Dynasty. Descendants of both pioneer generation army generals and the royal family were excluded as they held official positions due to inheritance. During the Tang Dynasty, they were not numerous and they rarely held significant official positions.

We evaluated the officials' reputation by firstly defining positive traits as: *Loyalty, Humaneness and Righteousness, Merits and Virtues, Trustworthiness, Respectfulness and Politeness, Refraining from corruptness, and Pure Heartedness*. Next, the negative traits were specified as: *Craftiness, Corruption and Degeneration, Slandering, Attaching to the Powerful, and Bad Temperament*.<sup>3</sup> Using more broadly defining words that described the traits, we conducted text analyses of the short-listed officials' records in formally recognized history books (*Old Tang History* and *New Tang History*) to register "counts" of

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<sup>2</sup> Chen, Donghua, Oliver Zhen Li, Bernard Yeung, and Junli Yu, 2016, “诗歌、道德, 与 治理 – 基于唐代科举的量化历史实证研究” (Poetry, Ethics, and Governance”)《文学研究》 Vol. 34 2016.

<sup>3</sup> Positive traits include: *Loyalty*: loyalty to the emperor, loyalty to the Tang Dynasty, willingness to give candid advices to superiors or the emperor, faithfulness. *Humaneness and Righteousness*: forgiveness, adopting benevolent policies, leniency on taxes, grace, helping people in famines, providing comfort to bereaved families, advocating for the people. *Merits and Virtues*: merits, virtues, capability, benevolent administration, good prestige, using capable people. *Trustworthiness, Respectfulness and Politeness*: modesty, respectfulness, uprightness, intelligence. *Refraining from corruptness*: Purity, integrity, purity and strictness. *Pure Heartedness*: Courage to speak one's minds, abhorring evil and strictness with laws. Negative traits include: *Craftiness*: disloyalty, treason, oppressive official, filthiness, false accusation, flowery and deceitful talk, oppressiveness, wanton action and dirtiness. *Corruption and Degeneration*: greed for power, money thirstiness, bribery, buying government positions, taking spoils, sumptuousness and wastefulness. *Slandering*: craftiness and cunningness, falseness, false flattering, craftiness, slyness, flattering, propensity to sarcasm. *Attaching to the Powerful*: love of the powerful, entrusting to the powerful. *Bad Temperament*: hatefulness and bitterness, enjoying killing, killing captives, perversity, viciousness, cruelty, violence and maliciousness

positive and negative traits.<sup>4</sup> We grouped those with positive trait counts as “ethical” (high reputation) and those with negative trait counts as “unethical” (poor reputation). We excluded those that had mixed counts because their records in history were debatable.

The final sample had 133 who became government officials via the Imperial Exam, while 427 obtained their positions via other routes; 74% of the former and 67% of the latter were deemed ethical. The difference is statistically significant. Conducting logit regression analyses controlling for time, ranks, age and location of government positions, we continued to find that government officials selected via the Imperial Exam had statically significantly higher reputation than others.<sup>5</sup>

### **III. Spreading the practice:**

Our empirical results are consistent with that the Imperial Exam system could be an effective merit-based means to recruit good talent. The practice spread to Vietnam, Japan and Korea. Allegedly, it also spread to British India, the United Kingdom and other Western nations. I have to read up more on that.

As passing the exams led to upward social mobility, Chinese people became devoted to education, a trend that continues today. In modern times, countries after countries have founded their merit-based system on universal access to education, as well as fair and barrier-free screening. In recent years, emerging Asian economies that broke into the first world, such as Japan, Korea, Hong Kong, and Singapore, adopted this formula and succeeded. China’s revitalization is likely related to the renewed devotion to education and quest for opportunities.

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<sup>4</sup> In China, history books are classified into two: government sanctioned and not sanctioned. Both Old Tang History and New Tang History belong to the former type.

<sup>5</sup> The age one entered the government is a reverse proxy for talent. “Time” fixed effects were used to absorb the country wide factors that caused the rise, growth, and fall of the Tang dynasty – beginning, prosperous, middle, and ending. Controlling for official ranks were necessary because history might have biases in recording the reputation correlated with ranks.

#### **IV. There are challenges:**

However, a sound approach can overtime fall prey to distortionary developments such as (i) institutionalized biases or blatant entrenchment, (ii) corruption and cheating, and (iii) the curse of instruments.

The advancement of parents via meritocratic means brings social capital and wealth to their children, hence none are born equal. Overtime, top universities could be filled with children from previously accomplished parents, or grandparents, or both. In some locations, China and perhaps even Singapore for example, the ruling classes are possibly mostly from connected families. That is not necessarily non-meritocratic but it could be.

Over time, exam candidates may learn to cheat and their parents might resort to bribery to help them. There have been many reports on cheating scandals in public exams, including the US administered SAT and GMAT. While these problems are well known, they could not discredit the usefulness of the education-exam model as a driver for meritocracy.

There are more subtle distortions over time. The Chinese Imperial Exam system earned a disastrous reputation during in the Ming and Qin dynasties. For convenience, those governments imposed very restrictive examination formats, limiting even essay writing styles and the type of books candidates were supposedly to be familiar with. These practices turned candidates into exam robots and curbed creativity, resourcefulness and generally problem-solving abilities. China developed nasty terms for nerds who excelled in public exams but were otherwise inept: “literate idiots”.

Nowadays, in many locations such as Singapore, Japan and Korea, we worry about how a culture that promotes “excelling in exams” will create a society of docile exam-takers with little ability to ask good questions.

Yet, with all these issues, we are not aware of alternatives.

## **V. Into the 21<sup>st</sup> Century**

The need is to counter distortionary developments. Historically, we have many approaches. We ought to have faith on reducing the barriers to effective education<sup>6</sup> and jobs (should have results on how these affect social mobility).

In the current era, two developments are worthy of attention.

The first positive development is that our information process capability has made quantum leaps, thanks to high-speed data processing, data storage, machine learning, including deep learning, and computer vision. All these critically raise our ability to identify and evaluate an individual's capability and potential. It also substantially intensifies the two-way search between potential employers and employees. This should have profound positive impact on meritocracy, which essentially matches talents to tasks.

The second development is the expansion of machine-labor substitution towards machine-human-capital substitution resulting in a rise in earnings of very high capability group and decline for the rest. This makes the Becker curve (earnings on the vertical axis and capability on the horizontal axis) more convex than ever. This challenges even robust education and barrier-free systems as the investment needed to upgrade one's capability has increased tremendously. In the past, a high school diploma is a ticket to the middle class. The price has increased from a high school diploma to a college degree, and now to post-graduate degrees and beyond. Fundamentally, these should have implications on the needs to raise the effectiveness of education, to produce life-long education, and to control the cost of education.

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<sup>6</sup> Effective education includes mitigating any singular reliance on examination scores.

The issue is larger than meritocracy. It includes countering increasingly skewed distribution of income and increasing costs in attaining market valued capability. Paradoxically, it is the progress in science that has created this is a broken social compact.

Bernard Yeung, May 1<sup>st</sup> 2018