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The Singaporean Meritocracy: Theory, Practice and Policy Implications

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Abstract

Singapore has risen from Third to First World living standards in a single generation and has embraced meritocracy. However, over time, its practice of meritocracy has led to stress points common to many developed countries. Singapore's practice of meritocracy in developing human capital traditionally relies on test-based metrics necessarily vulnerable to Goodhart's Law: "any number used in policy decisions soon ceases to be useful for policy decisions." As meritocratically successful parents increasingly allocate resources towards advancing their children's test scores, educations, and futures, a onetime meritocracy can harden the lines of social stratification. Consequently, systematic distortions in measured merit and inefficiencies in the development of human capital arise. This situation represents a stable equilibrium. The Singapore government seeks to counter this with bursaries, more limited streaming, non-discriminatory workplace, and public communications to raise awareness of future needs such as skills upgrading and lifelong learning. However, a continued effective meritocracy requires a measure of merit impervious to these forces or the continued development of new measures as each one measure falls to Goodhart's Law. Sustaining a meritocracy, in the long run, is far harder than establishing one that works for a time.

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“A fully developed bureaucratic mechanism stands in the same relationship to other forms as does the machine to the non-mechanical production of goods.”

Max Weber (1922)

1. Introduction

Max Weber (1922, p. 114) argued that an efficient bureaucracy is a foundational institution necessary for capitalist economies to grow and a meritocratic, hierarchically organized civil service is often called a *Weberian* civil service (Evans and Rauch 1999). Weber reasoned that the effectiveness of laws, regulations, and virtually all other institutions require efficient public sector administration and that a meritocratic rules-based civil service provides a uniquely efficient approach to wielding the state’s monopoly on the legitimate use of force. Weber also saw meritocratic bureaucracy as an important driving force in an ongoing process of “rationalization” in Western society. This rationalization brought modern commerce and the scientific revolution, but also a collective *disenchantment*, with magical narratives falling away to cold calculation. Weber worried that the “disenchantment of the Western World” could trap human individuality in a “soulless iron cage” of bureaucratic, rule-based, rational, optimal control. Krueger (1976) adds the prospect of powerful entrenched special interest groups corrupting the civil service and undermining its impartiality.

Weber never argued that a meritocratic bureaucracy should displace market forces. Arguments applauding industrial policy technocrats for the ascent of Japan (Johnson's 1982), South Korea (Amsden 1989) and Taiwan (Wade 1990) go farther than Weber. Subsequent work revisiting the importance of bureaucratic industrial policy in Japan (e.g. Beason and Weinstein 1996), in South Korea (Lim 2013) and more generally, stress the importance of markets and the supportive, rather than directive, the role of efficient government (La Porta et al. 1999). This

back and forth echoes the tensions Weber (1922) and Krueger (1976) identify.

Singapore is arguably the most successful economy in the world. Its per capita GDP rose from 14% of the US in 1960 to almost at par in 2017. In current US dollars and according to the World Bank, Singapore's per capita GDP was US\$428 in 1960 and US\$57,174 in 2017 while the US's per capita GDP was US\$3,007 in 1960 and US\$59,928 in 2017. Based on PPP adjusted measures, Singapore's per capita GDP has already exceeded that of the US (see Figure 1 below). This paper examines Singapore's famed meritocracy, its persistence, and its role in Singapore's rise, and the tensions its success is creating. A meritocracy requires measures of merit, and Singapore relies heavily on standardized test scores.

But a successful meritocracy, perhaps inevitably, runs afoul of Goodhart's Law: "*any number used in policy decisions soon ceases to be useful for policy decisions.*" For example, this has led to a situation in which families *routinely* engage private tutors and other enrichments to boost their children's test scores, thereby undermining test scores as measures of genuine merit. If the state directs resources towards the cultivation of talent in high-scoring individuals, achieving a high score in earlier tests may cause these individuals to be put on track for gaining higher levels of ability. However, had the resources been allocated to the truly talented but without the resources to boost their scores, the country's stock of human capital would have increased all the more.

Stresses can develop along other avenues too. Selected individuals in the earlier rounds of exam-based talent selection may gain in earnings and advance in their social status; intergenerational transfers can give their children an edge over children whose parents cannot secure them the same edge. High scorers can then legitimize such stratification citing the

ostensibly fair education process (Markovits 2019; Sandel 2020). Meritocracy, intrinsically inegalitarian because it rewards those with high measured merit (Young 1958), can degenerate into a self-reinforcing (endogenous) stratification as measured merit becomes increasingly subject to such distortion and can ultimately amount to little more than a rhetorical justification for inherited privilege.⁴ Furthermore, test scores assess only a few of the multiple dimensions of intelligence (Agarwal 2020 in this volume). As widespread efforts to boost test scores compress them near their upper range limits, their variance falls and meaningful differences in test scores can become swamped by inherent measurement errors. Over time, as test scores become increasingly distorted by this self-reinforcing stratification and the upper-boundary compression it brings about, ill-measured dimensions of intelligence can come to appear increasingly relevant. Reliance on ill-measured dimensions of merit can then provide cover for discrimination, as allegedly occurred at Harvard in recent years to favor athletes and legacy students (Arcidiacono et al. 2019).

These implications and consequences of an advanced system of meritocracy have not been lost on the Singapore government, which at the outset is aware of the imperfect nature of a meritocratic system that relies pivotally on standardized test scores. It has sought above all, to stem its excesses. We, therefore, document Singapore's attempt to steer the meritocracy on a path that continuously identifies the best talents, be they from rich or poor backgrounds, and which offers multiple streams of financial, academic, and social support to the less privileged at early ages. At the same time, the government adjusts the system and is in the process of

⁴ Subramaniam (2020), in this volume, describes high-caste Indians legitimizing their high status as transcending caste with such a meritocratic rhetoric.

developing and recognizing multiple measures of talents. However, changing a successful approach, which over time shows signs of stresses, takes wholistic societal changes. Singapore is a living case demonstrating that meritocracy is not static, but rather a social compact requiring continuous maintenance and adjustments.

2. What meritocracy means in Singapore

Most nations aspire, to some extent at least, to be meritocracies, in which people who make contributions are rewarded appropriately. In general, a purer meritocracy is justified as consistent with greater prosperity.

What a meritocracy *should be* raises philosophical issues, which earlier chapters discuss and which are beyond the scope of this chapter. What follows is a simple (and necessarily incomplete) description of Singapore's key "meritocracy" oriented practices, in effect as it has risen from lower Third World to upper First World status and of the stress points that have developed in its ascendency.

2.1 Meritocracy in theory and practice

When Singapore first laid out its meritocracy, the following assumptions were roughly accurate:

Assumption 1. Random distribution of talent and capital: Talent and capital were randomly distributed across individuals. By talent, we mean all the multiple dimensions: intelligence, cognitive and physical capabilities. By capital, we mean financial wealth.

In this idealized world, assumption 1 means all are equal in a statistical sense. There are differences in talent and resources, but these are largely unrelated to each other and to family background. We shall argue below that this was in the past not far from true, in that Singapore was settled largely by waves of impoverished ethnically Chinese migrants from elsewhere in Asia.

Assumption 2. Equal and open access: Every individual, by exerting effort, can use her talent and resources to produce capability. One's capability, one's genuine merit from employers' perspective, rises with one's innate talent, resources available for honing that talent, and effort; indeed, the very definition of "merit" rests on these inputs. Resources magnify the importance of talent, and effort magnifies both. Each individual's pecuniary and nonpecuniary (i.e. social status) earnings rise with their capability in a non-discriminatory manner.

This posits that Singapore had, from its earliest years, what North et al. (2007, 2009) call open-access institutions, in which the rule of law, all government services, and job opportunities are, to a first approximation, provided openly and equally to all. This contrasts with limited access institutions, in which police protection, courts, and other public services are available only to an elite and others live under a constant threat of violence, while job opportunities are allocated according to social status. We shall argue below that all Singaporeans inherited open access to British common law (Daniels et al. 2011), British civil service administrative practices (Quah 1995), and the labor and capital markets these institutions supported.

Assumption 3. Positive externalities: Institutions, by which we mean legal, regulatory and social constraints on an individual's actions discourage effort that harms others and encourages effort that benefits others.

Drug traffickers use their talent and resources to build capability and amass earnings. Competition between them may well be a perverse form of meritocracy, in which the most talented criminals reap the most earnings. We shall argue below that Singapore's government policy and the legal system directed people's efforts towards enhancing general prosperity. That is, every individual, by using her randomly assigned talent and resources to increase her earnings, advances overall prosperity.

Assumption 4. Reliable sorting: Talent can be measured accurately and inexpensively.

Singapore relies heavily on standardized examinations to rank its students. Students are tested at grade six (age 12), grade ten (aged 16), and again at grade twelve (aged 18) with each national-level examination sorting students into the next track. Their exam performances set them on trajectories towards polytechnics, public universities, foreign universities or directly into the labor force.

Singapore in 1965 was far closer to these assumptions than is Singapore in 2019. Ascertaining what sorts of stresses affect each assumption reveals scope for public policy intervention. Some key real-world developments are:

Reality check 1. Assumption 1 is increasingly unrealistic. As Singapore rose from the Third to the First World, some earlier generation Singaporeans grew far richer than others; leaving neither talent nor capital even roughly randomly distributed across their children. A young Singaporean's pre-birth environment, in-family education, out-of-family environment, formal education, additional enrichment, and on-the-job training are now very unequal. While genetics may always have affected some aspects of talent, these environmental factors are widely regarded as critical

to a young person's development of talent, work ethic, and lifetime success. Individuals with more advantageous family backgrounds thus possess an increasingly important edge in honing their real talent, as well as in scoring high on merit-measuring exams.⁵

Reality check 2. An individual's earnings can depend on many things other than her capability. Labor market failures due to employers' biases (e.g., prejudices and cronyism undermining genuine capability-based selection and advancement), risk-aversion (e.g., under-investing in human potential in favor of results first), governance deficiencies (e.g., poor performance monitoring, measurement, and incentives), and other such problems, can delink employee compensation from true capability, effort, and talent. Assumption 2 may have become shakier over time since 1965 as some businesses became more dominant than others and their private preferences gained weight in such decisions.

Reality check 3. A country's institutions, both formal and informal, limit blatantly unacceptable activities, such as drug trafficking or extortion, and less overt ways of earning by harming others, such as the artful extraction of subsidies from government, stock market manipulation, and the like. Assumption 3, which posits that such forms of profiting by harming others are limited, can fail due to lapses in the functioning of the courts, education system, government, mass media, or social norms. These lapses can stem from new developments for which societies are slow in forming a judgement. Singapore retains high freedom-from-corruption scores and its strong rule of law is exceptional in the region (Mauro QJE, 1995). But Singapore, like many countries, rapid

⁵ If resource-poor individuals could freely borrow to similarly hone their talents, this might matter less. But such transactions are limited and costly because lenders cannot ascertain an individual's true potential talent.

social and technological changes can blur such institutional constraints. For example, internet technology empowers social media; which expands people's and organizations' communication boundaries, challenging legal and behavioral norms that previously limited negative externalities. Likewise, big data analytics can lead to statistical discrimination and provide strategies to profit from others' errors. Singapore's strong rule of law, and its new anti-fake-news laws, in particular, may or may not effectively counter these tendencies and sustain the rough validity of Assumption 3.

Reality check 4. Measuring talent reliably (effort and resources applied to hone talent) is intrinsically problematic. The world has changed with increasing complexity of societal activities. Take R&D for example: What would count as 'merit' in the eyes of assessors? The slow but critical advancements made to basic science research, at the level of cells, molecules, and atoms? Or the fast and 'successful' translation of basic science research into revenue-generating commercial products? Or both? Singapore has evolved, over the past half-century, from relying on the adoption of existing technology to be at the forefront of innovation and creative management. These challenges talent identification at all levels: school, corporations, and government. Flawed measures of talent and capability aggravate reality check problems 1 and 2. Flawed measures of talent can lead individuals, families, organizations, and governments to misallocate resources. The overtly common intense test preparation strategies (e.g., via private tutoring) above the low-income class can artificially boost an individual's exam score above the scores of more genuinely talented individuals and lead to a misallocation of resources. Family, schools, universities, employers, and governments allocating resources on the basis of test scores end up putting more time and money into the education and training of less genuinely talented people, who end up

in positions for which others would have been more qualified had their talents been better developed. These assumptions and reality checks are both static and dynamic.

Running a meritocracy encounters important real-world problems. Having run a meritocracy leads to still more problems as one generation's meritocratic sorting becomes suboptimal when applied to the next generation, or plainly due to change in time and social-economic structure. Below we shall argue that these dynamic issues acquire increasing importance.

2.2. Singapore's real-world meritocracy

Singapore shows signs of these stresses, as do other high-income countries, and Singapore's government is keenly aware of them. Any real-world meritocracy falls short of the ideal. An imperfect meritocracy is almost surely better than the rampant cronyism, nepotism, or worse would result if there were no effort at all towards a meritocracy. Pragmatically aware of the second-best nature of available approaches, Singapore worked to establish a meritocracy that identifies talent early on, channels resources to those so identified, and encourages their exerting of efforts in ways that benefit Singapore. Earnings and social status reward the talented and hard-working. Institutions deter civil service corruption and promote harmonious diversity.

Prior to its 1965 independence, Singapore was a free-trade port in the British colony of Malaya (now Peninsular Malaysia).⁶ In 1819, Stamford Raffles arrived to found a trading station for the English East India Company. This immediately attracted the Chinese junk trade, previously

⁶ The historical account of Singapore draws from Choy and Sugimoto (2018), Guan et al. (2019).

drawn to Batavia (now Jakarta) in the Dutch East Indies (now Indonesia) and subject to heavy Dutch taxation. Chinese moved to Singapore in increasing numbers and, by 1867, Singapore was 65% Chinese. Chinese indentured workers headed for British Malaya's mines and plantations also moved in through Singapore, and many would return to make their fortunes. The population rose from about 96,000 in 1871 to 558,000 in 1931, with ethnic Chinese always predominant. Until 1921, the natural rate of population increase was negative (deaths exceeded births) because of a steep gender imbalance: in 1901 there were almost four Chinese males for each Chinese female. This righted itself over the next few decades and, after 1931, natural population growth exceeded net immigration. Today, Singapore's population is still predominantly Chinese (70%), with minorities of Malays (15%), Indians (10%) and others.

Singapore's location, just off the southernmost extremity of mainland Southeast Asia, made it a natural entrepôt, where eastbound and westbound ships could unload and load cargos for onward shipment. By 1867, when Singapore became a British Crown Colony, the city was a major trade hub with extensive port infrastructure and a rail link into British Malaya. Singapore imported goods and machinery for transshipment into Malaya and re-exported Malayan tin and rubber to global markets. These were mostly activities where it is easy to measure productivity and outputs based on goods. Increasing economic activity rapidly made Singapore a globally important trading center.

Late 19th and early 20th century Singaporeans found work in rubber processing mills or downstream export-oriented industries such as rubber gloves, shoes, and tires. Engineering services based in Singapore served Malayan mines and plantations. The first Chinese deposit bank opened in 1903, and by 1929 a dozen Singaporean and foreign banks were active. From the

1930s on, Royal Dutch Shell shipped Borneo crude oil to Singapore refineries and refined petroleum products from Singapore to global markets, further reinforcing Singapore's importance as an economic hub.

These historical forces left Singapore a colony of Chinese settlement built on commerce, rather than a colony of plantation agriculture and resource extraction. Acemoglu et al. (2001) distinguish extractive colonies, based on plantation agriculture and mining, from colonies of settlement. The former are ruled by extractive elites, whose continued lock on power after independence slows economic growth; the latter with more diverse economies are based on trade and commerce that supports faster and broader-based economic growth. Singapore's history resembles those of colonies of settlement, such as Australia, Canada, Israel, New Zealand, and the United States, rather than colonies of extraction, such as Angola, the Congo Free State, Haiti, British India or Peru, though Singapore's settlers were predominantly Chinese, rather than European. Singapore's colonial elites, European and Chinese, relied on industry, trade and commerce, not enslaved or indentured plantation workers or miners.

British rule ended in 1957 when Singapore became an independent state. This occurred amid protracted unrest, in which Chinese-backed Communist insurgents sought first to oust the British and then to overthrow the newly formed governments of Singapore and Malaya.

Elections in 1959 brought Lee Kuan Yew's People's Action Party (PAP) to power. The PAP took measures to encourage foreign and local investment, reorganized the education system, and made English the dominant working language. Labor organizations, including those with Communist ties, were merged into a unified National Trades Union Congress (NTUC) under state oversight. A massive affordable housing program was established and institutionalized to make

ordinary Singaporeans stakeholders in the country's rise and counter Communist agitation.⁷

In 1961, Lee Kuan Yew organized a merger of Singapore with Malaya, also then a recently independent state. Racial animosity, fueled by ongoing Chinese-backed Communist violence, led to the union breaking up in 1965, and Singapore was thenceforth an independent city-state. Countering communist sentiment meant that independent Singapore had to advance the welfare of ordinary people and be seen to be doing this. Evolved from a colony of settlement, Singapore did not rely on extractive industries requiring an underclass of low-wage labor. Rather, Singapore prioritized institutions its settler population would accept as fair, regardless of race, language or religion, to build and maintain social cohesion and political harmony as a basis for economic growth.

The colonial government had spent modestly on education and health care, overall less than 1.5% of GDP (Sugimoto 2011). Singapore Chinese had pooled their resources to build schools and even established the Chinese language Nanyang University in 1955. After independence, Lee Kuan Yew stressed education as part of an overarching strategy to help the average Singaporean. The government paid meticulous attention to the school curriculum, teaching quality and management. An emphasis on education also resonated with Chinese's traditional esteem for learning. Universal education also increased the quality of military conscripts and provided a conduit for social mobility. As in Israel and elsewhere, mandatory military service and economic equality may also be mutually reinforcing (Konstantinidis 2020). Over time, the military itself

⁷ The government built inexpensive flats sold at government set prices directly to first time buyers among Singapore citizens or permanent residents. Resale prices are market determined. The Department in charge is called HDB (Housing Development Board). The first set of low-rise flats was built by the Singapore Investment Trust (SIT) in the late 1950s while the first set of high rises was constructed by HDB in 1960.

became a critical source of scholar-soldiers suitable for top positions in the military and, upon retirement from the military, in the civil service in general. Singapore's stock of human capital started rising more sharply than before.

Chinese traditional standards of education were organized around Imperial civil service examinations and British education had also come to be organized around standardized examinations.⁸ Using exams to assess individual talent was a sensible way to root out non-merit-based practices such as cronyism and corruption. Linking career advancement to examination scores broadcast that Singapore was a meritocracy, not the entrenched class-based system that the Communists claimed to be challenging. Singapore's elites had to earn their status by performance in school and on public examinations and higher general levels of education gave ordinary Singaporeans reasons to support the government. Ongoing infrastructure improvements, the prudent management of public finances to keep taxes low, and the expansion of a sovereign wealth fund to make the government's commitments of future support credible all required administration by honest and talented meritocrats.

Primary and secondary education are compulsory and rigorous; with standardized *national* examinations ranking students in grades six, ten, and twelve. This is done cost-effectively, in that Singapore spends only about 3% of GDP on education, well below Malaysia's 5% and Indonesia's 3.6% figures, and below the average for OECD countries.⁹ Yet, Singaporean students shine internationally, often scoring best in the world in mathematics, reading, and

⁸ There is a speculation that China's civil servant exam spread to Britain via India (Têng, Ssu-yü. "Chinese Influence on The Western Examination System: I. Introduction." *Harvard Journal of Asiatic Studies* 7, no. 4 (1943): 267-312. doi:10.2307/2717830.)

⁹ See <http://epp.eurostat.ec.europa.eu/portal/page/portal/education/data/database>

science. The BBC (2016) quotes OECD education director Andreas Schleicher saying "Singapore was 'not only doing well, but getting further ahead'" in the OECD's influential Pisa rankings, based on tests of 15-year-olds in over 70 countries.¹⁰

The system's success depends not just on identifying talented individuals and giving them accelerated paths to career success and incentives to learn well at school; but also on Singaporeans believing that access to opportunities is performance-based, rather than relationship-based or family-based. The 2012 *World Values Survey* indicates that the median Singaporean is as likely as the median American to opine that "we need larger income differences as incentives for individual effort", in contrast to the median PRC citizen who is more likely to agree that "incomes should be made more equal". Singaporeans hold these expectations because they have observed that this is the way things actually work.

The school system **tracks** high performers earlier on, placing those with high grades in primary school in good secondary schools. High secondary school grades bring university scholarships, including opportunities to study abroad, with a bond to return to serve sponsoring organizations, such as government agencies, in exacting capacities (Quah 2010). Examples of rapid social mobility abound. The 2019 NUS Medical School valedictorian, from a poor, single-parent family, won a President's Scholarship, Singapore's most prestigious undergraduate award (*Straits Times*, 15 July 2019). Another student, the son of a taxi driver, was a President's Scholar in 2017 (*Straits Times*, 17 August 2017).

Singaporean employers rely on grades to shortlist job candidates, but acknowledge that

¹⁰ BBC: Dec 6 2016, "Pisa tests: Singapore top in global education rankings, Sean Coughlan Education correspondent.

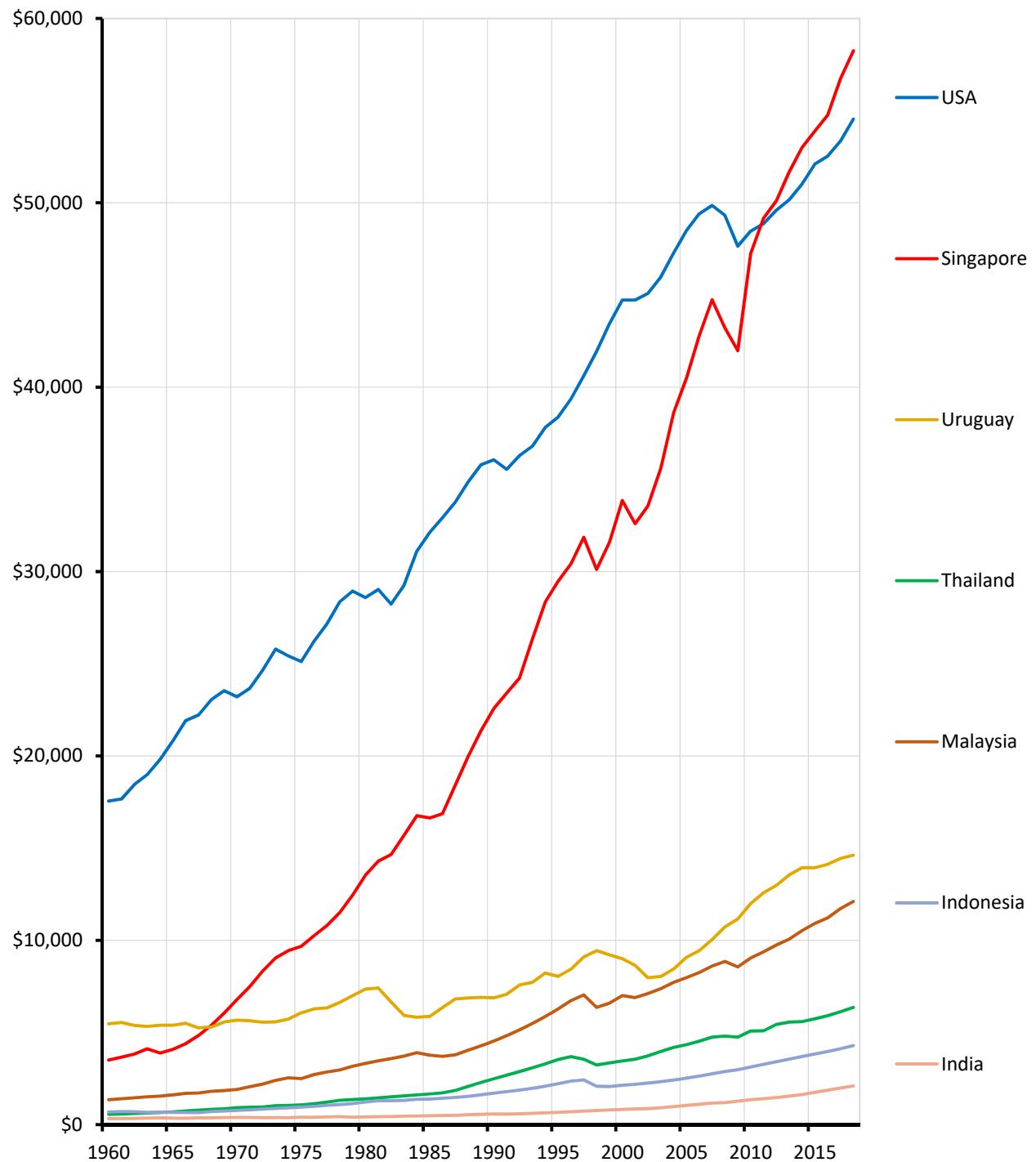
grades can measure talent badly. The system provides the Singapore government a steady supply of talented government officials and a reliable workforce. But, Singapore leaders are aware of the second-best nature of the approach. Economic Development Board (EDB) managing director Chng Kai Fong told a forum on employability organized by the Nanyang Technological University (NTU) Students' Union that "Everyone is trying to shift away from an emphasis on grades but there is no substitute" (*Straits Times*, 30 Jan 2019).

School administrators and teachers take pride in the public exam scores their graduates attained, as do many parents.¹¹ In 1992, the *Straits Times* began publishing secondary schools rankings by academic achievement. This "ST Schools 100" list uses data provided by the Ministry of Education to rank the top 100 secondary schools. But this practice was abolished twenty years later in 2012 to curb excesses of academic competition (National Library Board, accessed on 21 August 2019).

Grade-based meritocracy is perhaps most assiduously applied in the civil service. Job candidates are matched to jobs by educational credentials, with contacts having a negligible role (Chua 2011). This emphasis on observable performance indicators, grades, rather than connections, may well be a key factor in Singapore having developed a largely corruption-free civil service and business environment (Quah 1999).

¹¹ This does not preclude some parents emphasizing grades less than others.

Figure 1. Real per capita GDP in 2010 US dollars for Singapore and selected other economies



Source: World Development Indicators, World Bank.

2.3 Meritocracy and Prosperity

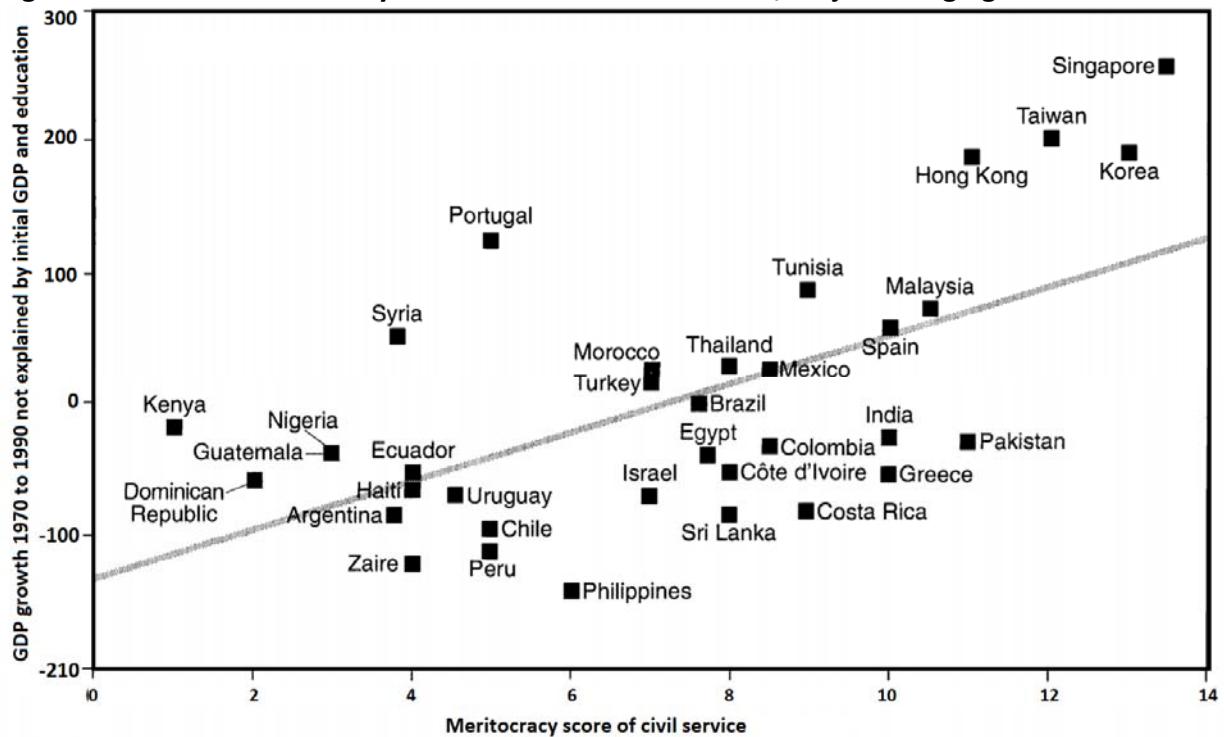
Singapore is a clean and efficient city-state. Figure 1 charts its ascent from the third world to the first world in less than fifty years (Lee 2000). Is meritocracy responsible for its rapid attainment of living standards that rank among the world's highest? And if so, how? As we shall see, the civil service meritocracy has had a substantial role in Singapore's rise to the first league.

Evans and Rauch (1999) and Rauch and Evans (2000) developed civil service meritocracy scores for 35 20th century emerging market economies. The scores are assembled from questionnaire responses about the importance of exams, rules, and hierarchy to civil servants' hiring and career advancement that are designed to gauge how closely each country's civil service approximates a Weberian meritocracy. The sample period (1970-1990) is the heyday of the Four Asian dragons, all of which had an exam culture. Singapore ranks first among these, followed by Taiwan, Hong Kong, and Korea.

Figure 2 plots real per capita GDP growth against bureaucratic meritocracy in the same period. The positive relationship in the figure survives in multiple regressions controlling for years of education, per capita GDP in 1965, and region dummies. A similar set of findings link high national capital accumulation rates to a more meritocratic civil service. A civil service closer to the Weberian meritocratic ideal also correlates with less corruption (Figure 3) and a more efficient government (Figure 4), meaning fewer and shorter delays in dealing with government officials. Finally, Mauro (1995) (Figure 5) shows positive correlation between per capita GDP growth and a composite index capturing the lack of corruption, red-tape and judiciary efficacy in a similar period. Singapore again leads in both growth and in the composite index.

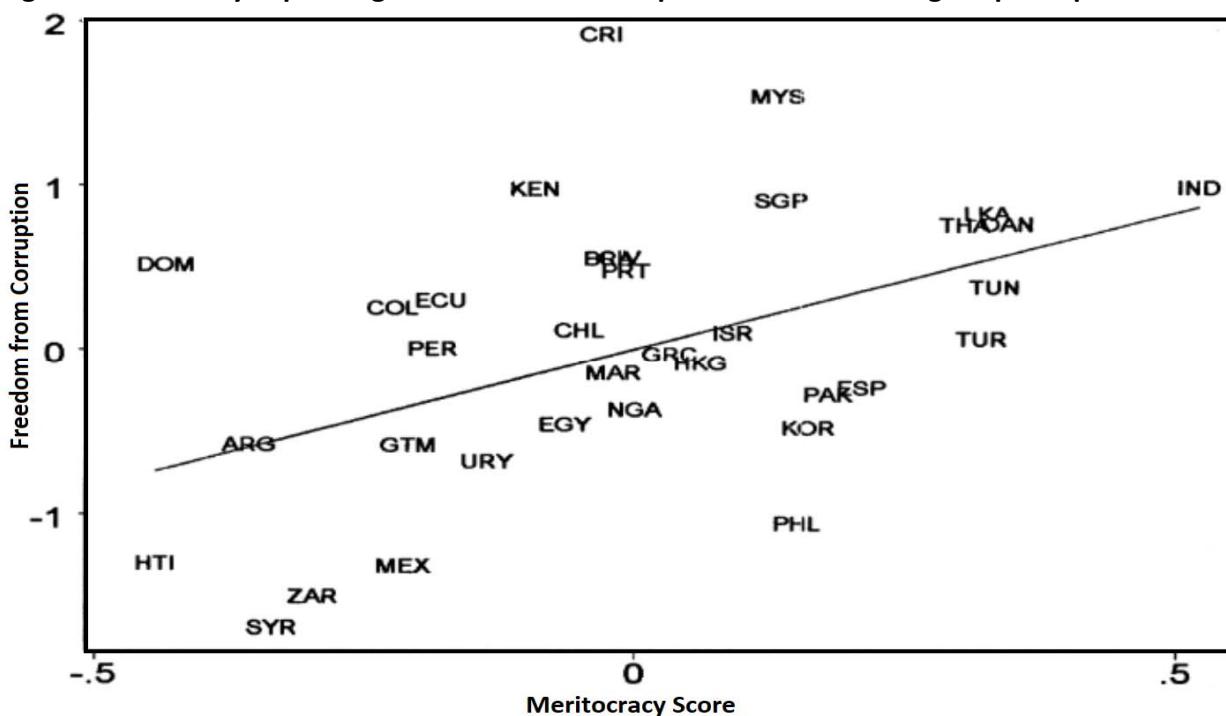
These findings affirm a strong association between meritocracy and rapid development, but are not tests of causation. Some other ‘third’ factor might cause both rapid development and a propensity towards meritocracy. Nonetheless, they suggest that acceptance of meritocracy may well be a factor of first-order importance in initiating and sustaining a rapid increase in living standards. Singapore stands out as a preeminent case study.

Fig 2. Civil Service Meritocracy Scores and Economic Growth, Major Emerging Markets



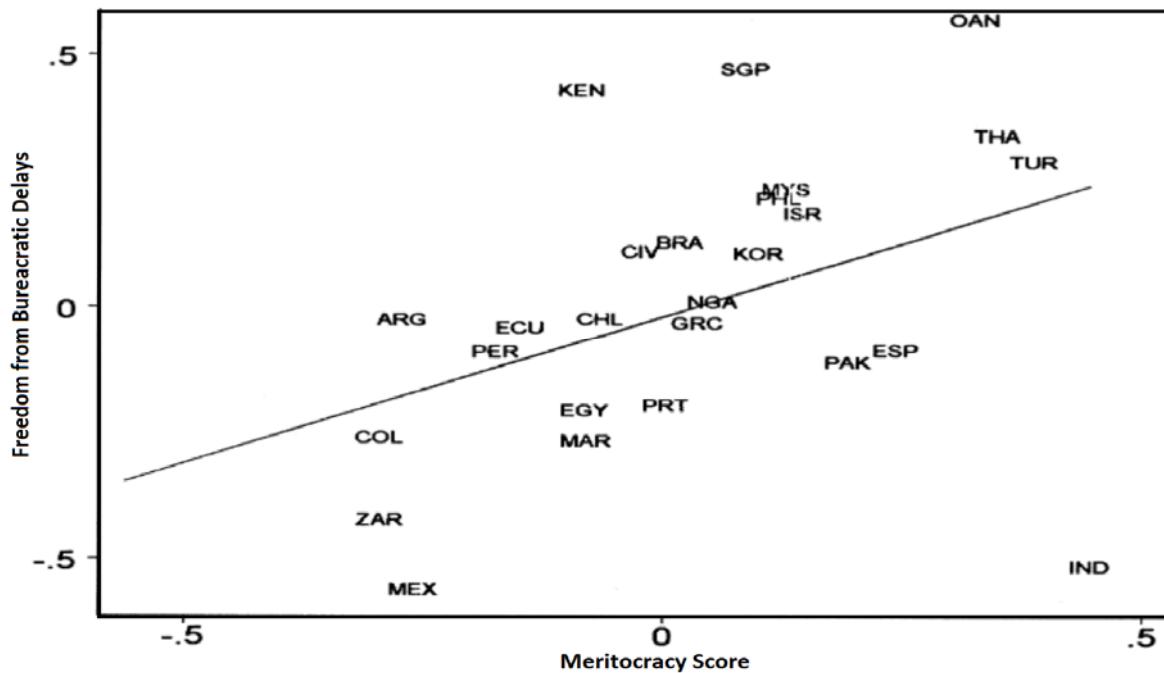
Source: Evans and Rauch (1999)

Fig. 3. Meritocracy Explaining Freedom from Corruption after controlling for per capita GDP



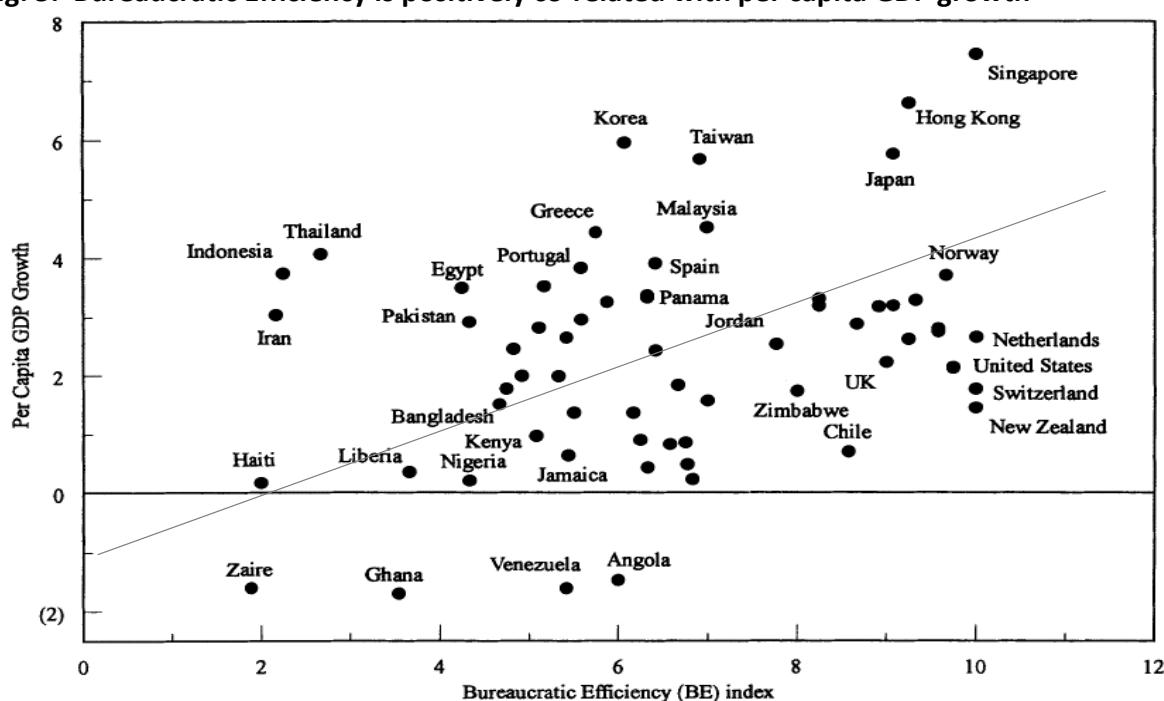
Source: Rauch and Evans (2000)

Fig. 4. Meritocracy Explaining Freedom from Bureaucratic Efficiency (freedom from delays) after controlling for per capita GDP



Source: Rauch and Evans (2000)

Fig. 5. Bureaucratic Efficiency is positively co-related with per capita GDP growth



Source: Mauro 1995, Figure III mean GPD per capita growth in 1960-1985 [Summers & Heston 1988], 67 countries, R=0.32

3. The stresses on a static meritocracy

Evidence of Singapore's meritocracy abounds. Educational attainment remains a reliable predictor of earnings (Chua 2011). Singapore's intergenerational earnings elasticity, the correlation of a child's earnings with their parents' earnings, is substantially lower than in the US, UK, and China (Corak 2016; Jackson 2019). The *Ministry of Education (MOE)* plans yet more government bursaries to benefit some 55,000 Singaporean undergraduates and diploma students, mostly from low-income families (*Today*, 22 August 2019). But this may not be the full story. A few empirical findings raise questions about Singapore's meritocracy:

- Individual social capital, alongside her education, is a major factor in attaining high-level jobs. Chua (2014) links having more connections to other university graduates to higher earnings, even controlling for factors such as being a university graduate. While it may seem only natural for talented individuals to mix socially, and to work together in production teams, this does raise concerns about old 'boys/girls' clubs hoarding opportunity, intentionally or not.
- Ethnic Malays, especially Malay men, have persistently lower levels of academic achievement and are under-represented in higher-level jobs. National data from the 2010 Census show only 5% of Malay men in the professions, compared to 14% of Chinese men, 14% of Chinese women, 8% of Malay women, 22% of Indian men, 18% of Indian women, 33% of other men, and 21% of other women (Department of Statistics 2010). Moreover, only 5% of Malay men are university graduates, as compared to 28% of Chinese men, 30% of Chinese women, 9% of Malay women, 39% of Indian men, 35% of Indian women, 67%

of other men, and 64% of other women. Finally, Malay men also have the least amount of social capital among the combinations of race and gender (Chua, Mathews and Loh 2016). Although *Mendaki*, the state-endorsed self-help association for Malays, does provide substantial educational and financial assistance to disadvantaged Malays, other communities (Chinese, Indians, and Others) have similar associations (CDAC for the Chinese, SINDA for the Indians, and EA for the Eurasians). The government matches every dollar raised by each such association, so the state accords each group equal status. Despite great gains in absolute terms, the Malay community still lags behind the others.

The first of these findings need not imply a lack of meritocracy. High-scoring people may be better positioned to forge and sustain social connections. If so, this adds to the forces a test-based meritocracy widens the divide between those who are deemed of high merit and all the others. Also, the lagging academic achievement and career success of Malay men may reflect discrimination, but the counterfactual is unobservable. Perhaps, without Singapore's meritocratic efforts, the educational attainment and career trajectories of minorities would be *even lower*.

Nonetheless, these two empirical findings might be early signs of stress in Singapore's meritocratic system. Indeed, in recent years, local newspapers in both Chinese and English carry many pieces, including statements from ministers, about the need to improve Singapore's education, the cornerstone of Singapore's meritocratic system, to better prepare Singaporeans for the future economy.

Highlighting these possible stress points, we call for further investigation, not immediate reactions. Like medicine, education reform should be evidence-based. An overly enthusiastic

embrace of each new fad at its education schools may underlie chronic problems in America's public schools.¹²

Singapore's meritocracy oriented education system is built on testing and tracking. It administers the Tracking Primary School Leaving Exam (PSLE) in grade six to place students in tracks, programs of education tailored to the range of talent presumably associated with each range of test scores. More academic tracks prepare students for university, lower tracks prepare for polytechnic schools, the trades, or unskilled work. Tracks are thought to better prepare academically gifted students for university and to benefit students with low test scores by ending continual demoralizing comparisons with academically gifted students. Many countries use such tracked education systems, and many others sort students in other ways, for example, by routing talented students in elite public or private schools and universities. Obvious notes of caution arise.

3.1 How good are test scores in measuring talent?

Test scores might be poor measures of talent. IQ tests reveal a general intelligence factor that appears assessable and stable through life, especially after early childhood (Deary 2014).¹³ School grades may not capture this. Moreover, much evidence supports Gardner's (1993) *multiple intelligences* theory, which posits that intelligence is multidimensional.¹⁴ Grades and

¹² Paul, Richard, and Linda Elder. *A critical thinker's guide to educational fads: How to get beyond educational glitz and glitter*. Rowman & Littlefield, 2019.

¹³ Deary, Ian J. "The stability of intelligence from childhood to old age." *Current Directions in Psychological Science* 23.4 (2014): 239-245.

¹⁴ Gardner, Howard. 1983 *Frames of Mind: The Theory of Multiple Intelligences*.

standardized examinations may reliably capture academic talent, but entirely miss talent in managing emotions in oneself and others, talent in organizing people towards a common objective, physical and psychological stamina and so on. Emotional quotient, EQ, a measure of these qualities, is closely linked to numerous measures of career success.¹⁵ Success in life depends on emotional stability, social skills, and other non-academic components of talent, perhaps more than it depends on trigonometry or mastery of the nuances of the grammar of one or multiple languages.

Yet, test scores, unlike IE or EQ, reflect academic excellence that needs to be achieved with effort. Relying on a composite score that depends on internal effort, rather than exogenously given IQ or a nurtured indicator, like EQ, may have a defensible advantage.

Still, while academic excellence is obviously important, it is only *a part of* a broader set of attributes that contribute to individual success and that makes an individual valuable to society. Other demonstrably important attributes include personality, motivation, the ability to work in teams, good citizenship such as helping co-workers or considering how one's work may affect others, and situational judgment effectiveness, the ability to make effective judgments in practical situations. Chan (2006) shows these non-academic attributes are often *uncorrelated* with academic ones.

3.2 Would tracking miss late bloomers?

If talent is accurately measured at an early age, tracking or placement into elite schools is

¹⁵ Stein, Steven J., and Howard E. Book. 2011. *The EQ edge: Emotional intelligence and your success*. Wiley.

consistent with meritocracy. This might be the case if intelligence is inherited (or determined by early life experiences) and persistent. Singapore's gifted education program (GEP) and streaming from an early age are based on these presumptions. Tracking generally allocates more resources to students with higher test scores. But if test scores measure talent poorly, resources flow to build the capabilities of students with the highest test scores, not the most genuinely talented.

However, late-bloomers, whose true talent emerges at a later age, are not evident in early test scores. Environmental factors' importance in explaining intelligence test scores decline as a person ages (Bouchard 2013). The earlier the tracking, the greater the influence of family background on placement: When Sweden raised the age at which students were assigned to tracks, the importance of their family backgrounds declined significantly.¹⁶ Figure 6 shows the achievement gap between low and high socioeconomic status students to be much greater (59.4 – 0 = 59.4 points) when tracking is conducted early at age 10 than when tracking is conducted later at age 15 (57.6 – 21.7 = 35.7 points). In other words, low socioeconomic status children are more disadvantaged when tracking is done earlier.

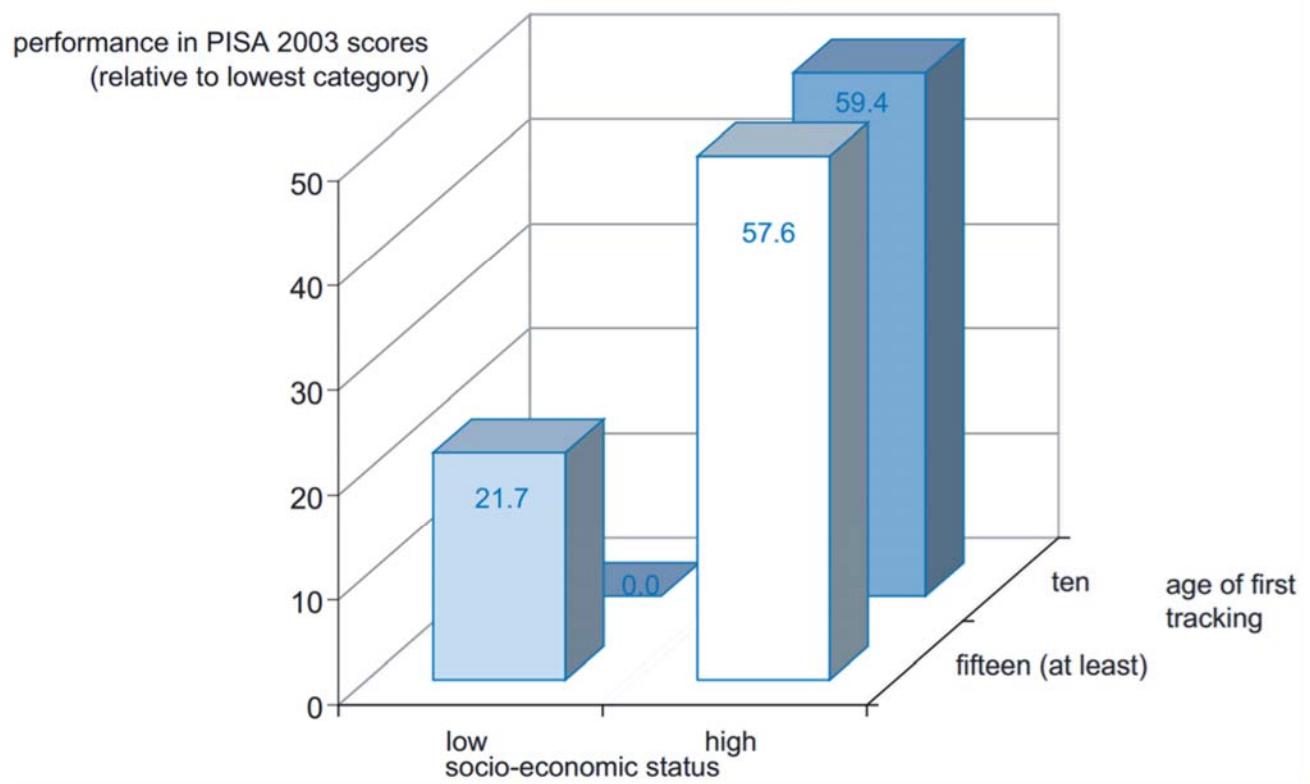
To correct erroneous test scores and to accommodate "late bloomers", Singapore reassigns some students after O-level (grade 10) or A-level (grade 12) exams. But these students must work especially hard to catch up. Many complete one track and then switch to another. Some 30% of university students are polytechnic graduates (*Straits Times*, 2 May 2016), and are essentially re-tracking themselves. But these course corrections impose costs on misclassified students and delay their entry into the economy as productive employees. Both are very real

¹⁶ Meghir, Costas, and Mårten Palme. "Educational reform, ability, and family background." *American Economic Review* 95.1 (2005): 414-424.

costs.

Singapore's multiple tiered tracking thus gives such students more opportunities if they exert extra effort. There are success stories, e.g., a former President of NUS was a graduate of the Singapore Polytechnic before going on to Harvard to further his studies. Still, these considerations argue for delaying track assignments to age 15 (Woessmann 2009).

Fig 6. Academic performance versus age of first tracking for high- and low-socioeconomic status students



Source: Woessmann (2009)

These two issues highlight Turner's (1960) distinction between *sponsored mobility*, which identifies talented students early and devotes resources to honing their talent, and *contest*

mobility, which waits for winners to reveal themselves. Following the United Kingdom, Singapore sorts students by academic ability early on and then officially sponsors the upward mobility of high scorers. In contrast, American public schools delay or avoid tracks and winners emerge after vying for employment, promotion, or financial backing as entrepreneurs. Turner (p. 857) argues that “applied to mobility, the contest norm means that victory by a person of moderate intelligence accomplished through the use of common sense, craft, enterprise, daring, and successful risk-taking are more appreciated than victory by the most intelligent or educated.” That is, contest mobility allows a longer period of experimentation in which non-academic dimensions of talents can come into play. The definition of success is broadened in comparison to the sponsored mobility system of early sorting.

Of course, the United States is not a pure contest mobility system. Schools offer Advanced Placement (AP) instruction to students deemed academically gifted. Magnet public high schools collect students with high grades, elite private schools provide scholarships to students with high grades, and sharply differentiated classes of universities broaden or limit their alumni’s future career options. Intergenerational mobility is far lower in the United States than in Canada, where students are assigned to tracks (Corak 2013). Regardless, the distinction highlights real issues in sorting students by exam scores.

3.3 Does the system over-encourage the tracked and discourage the non-tracked?

Early sorting may discourage students with low scores. Reduced aspirations may lead to lesser achievements, which further reduce aspirations. Similarly, high test scores may not just inflate a

student's self-confidence and bolster her aspirations, but genuinely increase her capability. If the additional resources her high test score brings genuinely enhances her natural talent, however meager, this boosts her capabilities and future achievements. This upward feedback loop is essentially the inverse of the downward feedback loop that may afflict discouraged students.

We do not have an answer on the significance of these concerns although we may come across fitting anecdotes. These concerns, however, could be particularly important in Singapore, which is a small city-state, without multi-dimensional developmental paths. Any misallocation due to inefficient tracking could have high opportunity costs. Aspiration ceiling due to misfired tracking will deny Singaporeans, and thus Singapore, opportunities. Similarly, over-inflated self-confidence does not make a caring and people-oriented civil servant. Careful empirical investigations would be very fruitful, particularly in identifying mitigating factors against over-encouragement and discouraging aspirational ceiling.

3.4 Will the system produce social stratification?

Elite schools, degree programs, and universities all provide stamps of quality that can affect admission to subsequent education programs, hiring and salary decisions.¹⁷ Some elite schools in Singapore, for example, the SAP schools (Special Assistance Plan schools), cater specifically to the Chinese ethnic group by virtue of their emphasis on Chinese culture. As well, some elite schools pride themselves in producing "scholars" put on a special track that increases their likelihood of attaining high leadership position (Quah 2010). If admission to the elite path at an

¹⁷ Spence, Michael. "Job market signaling." *Uncertainty in economics*. Academic Press, 1978. 281-306.

early age depends on family wealth and social status, and if these institutions and programs genuinely do put more resources into developing the talents of their students, the sorts of self-reinforcing feedback loops described above can further ensue. In a sense, the lesser talents of the well-to-do are magnified to exceed the greater talents of the poor left uncultivated. Elite education credentials remain valid stamps of quality, but the results are not our ideal meritocracy model. Prior stratification directs resources to augment talent inefficiently and the overall talent available to society is compromised. To be clear, we are *not* saying that all well-to-do students are less talented, rather that less talented well-to-do students have a greater chance of being rescued from falling.

These sorts of feedback loops induce a perverse form of reverse causality. Rather than revealing innate talent, high test scores can, in many instances, direct resources that magnify modest talent. High test scores do also reveal the truly talented as well, but the odds are diminished if and when the truly talented are stymied by difficult family circumstances. With this in mind, rational parents sensibly try to set their children on course for success. American parents try to get their children into elite kindergartens to enhance their odds of being accepted at Harvard. Singaporean parents strive to place their children in better schools to prevent their falling under the perceived bad influence of weaker students (*Straits Times*, 10 March 2019). Employers may be biased toward graduates of elite schools (*Straits Times*, 17 April 2016). Certain high-level jobs may even prefer candidates from specific brand name schools given the old boy/old girl network (Sullivan, Parsons, Green, Wiggins and Ploubidis 2018). In Singapore, people rightly take pride in being President's Scholars, valedictorians, and recipients of scholarships. But an artificial line dividing elite from non-elite can become a marker of "class" (Koh 2014).

In other contexts, meritocracies can be captured by elites, who define merit to accommodate themselves and their descendants. Ultimately, coming from a good family (including having the right surname) can become a criterion of merit (Clark 2014). But defining merit using tests whose scores can be affected by intensive tutoring or life experiences unavailable to students of lower socioeconomic status may be equally effective in keeping the rabble down. These problems are especially important where meritocracy involves winner-take-all contests, in which a large percentage of resources end up flowing to a small percentage of exceptionally highly rated meritocrats (Young 1958; Frank and Cook 1995; Bloodworth 2016; Brown and Tannock 2009). Criticisms of American meritocracy highlight these problems and argue that an overdue populist backlash against a flawed meritocracy is underway (e.g. McNamee and Miller 2009; Frank 2016; Young 2017).

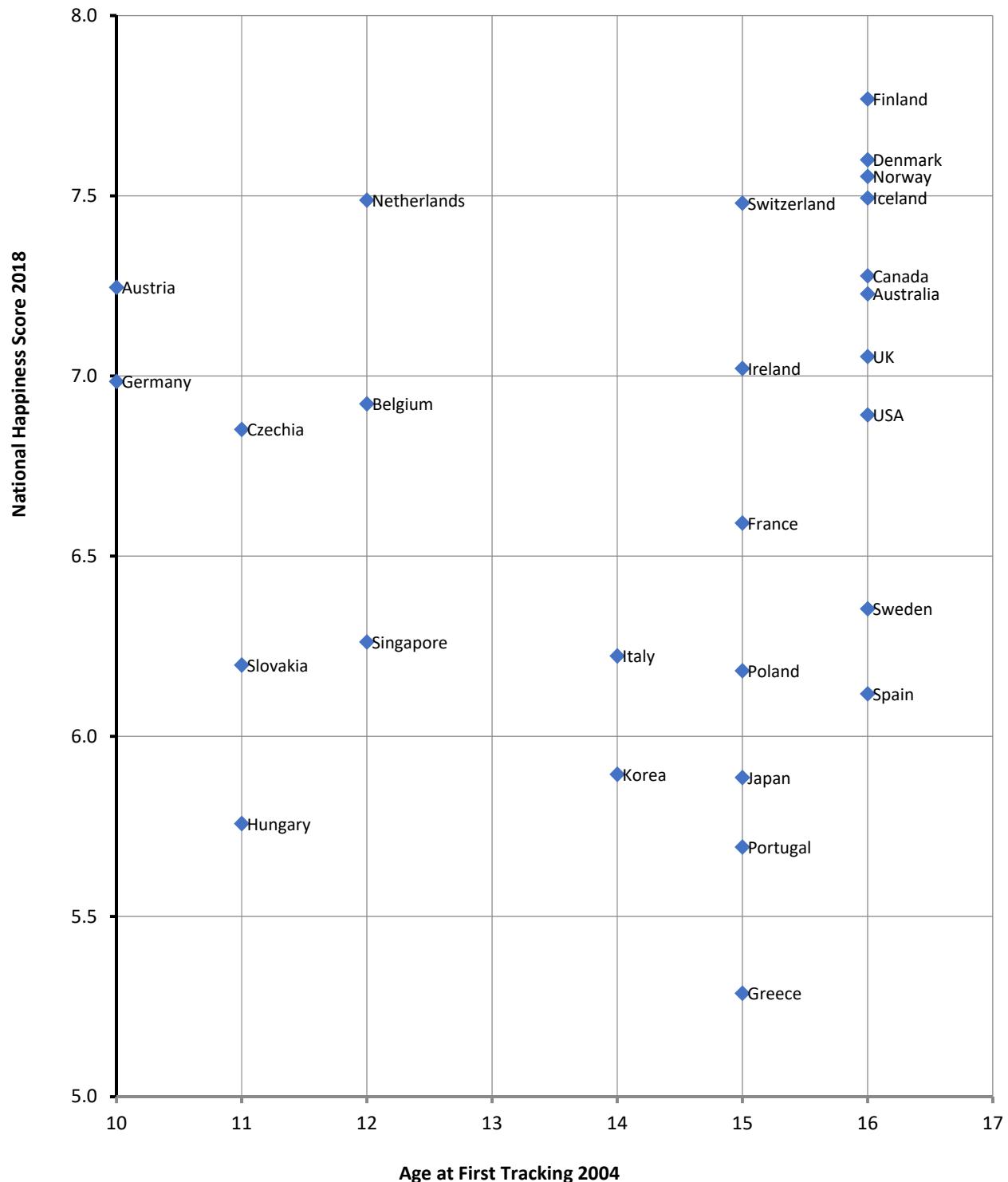
3.5 Does tracking enhance happiness?

The answer is negative. Helliwell (2019) finds that happiness appears to be negatively related to early tracking as Figure 6 shows. Individuals designated highly talented might experience psychological stress from continually being stretched beyond their real capabilities. Those designated untalented might experience stress from a continual underdog status (Mijs 2016).

A meritocracy may also be inimical to social solidarity. Kuppens et al. (2018) find that a meritocracy leads high-status individuals to hold negative views of low-status individuals. “More highly educated high-status groups can use references to education to justify and legitimize their position. If educational outcomes are seen as largely deserved, then their consequences are, too”

(Kuppens et al., 2018:445). (See also Subramaniam 2020, this volume) Social stratification by ancient family pedigree, race, or any other criterion that can be regarded as unfair, even if only secretly, may oblige the nobility to protect their serfs, the feudal virtue of *noblesse oblige* in medieval Europe.

Fig. 7. Early tracking and happiness scores



Source: Tracking data are from Learning for Tomorrow's World: First Results from PISA 2003, OECD: Paris. Happiness data are from Helliwell et al. (2019)

Figure 7 shows that Singapore's unflattering happiness index may be related to its tracking approach. Moreover, practicing meritocracy is a balancing act: while exalting achievement provides incentives and makes hard work a virtue, it may result in stratification, even some degree of discrimination and class-based resentment. Singapore government seems to be always mindful of the needed balance. As described in Section 2.2, Singapore's local newspapers, owned by Singapore Press Holdings, has often showcased stories that people with limited means can succeed. As well, its mass media and government continuously advocate social harmony and inclusive growth.

The approach may be working; relative to other Asian regions such as HK and Taiwan, Singapore's meritocracy and social harmony are both exemplary in the regions. In all meritocratic systems, awards go to the accomplished. In our current world, globalization and technological progress widen income inequality; populism and identity politics risk fracturing society (Fukuyama, 2018), and a social tug of war pits economic incentives against social harmony. Singapore's approach, complementing meritocracy with social communication, may be worthy of in-depth study.

4. Institutionalized biases

However, no system is perfect. Singapore's meritocracy system is experiencing stresses.

4.1 *Built-in rigidity?*

Using exams and tracking to administer meritocracy may have significant undesirable collateral

costs as well. In Singapore, classrooms seem to emphasize that test questions must have one and only one correct answer; but real-life problems tend to be open-ended. Honing one's ability to select the one and only correct answer may undervalue inquisitiveness and creativity. Students studying for the test and getting on the "right track", rather than to amass knowledge emerge ill-prepared for life. Teachers who "teach to the test" because their own evaluations depend on their students' test scores may actually discourage genuine learning (Muller 2018). One response is to broaden the definition of success to embrace a richer range of talents. Civil servants focused on "getting it right" may, as Weber (1922) feared, trap human individuality in a "soulless iron cage" of bureaucratic, rule-based, rational, control. Singapore's meritocracy relies on exams and grades, and so is vulnerable to such a fate. Students focused on "getting it right" (as opposed to simply "getting it") may learn not to ask probing questions.

In recent years in Singapore, both the private sector and the government, show concerns about whether students trained to seek unique correct answers to test questions are prepared for fast-moving changes in the future economy. There are some concerns that Singapore graduates are not inclined to ask open questions, lack innovative ideas and flexibility. However, these remain as impressionistic opinions and we are not aware of systematic investigation, which would be worthwhile. Furthermore, early warnings and discussions ahead of time can stop the building up of hardened systematic rigidity. Perhaps, these discussions are timely given the "era of disruption" that has now come to characterize the new economy and society (*Straits Times* 5 February 2018).

4.2 *Dynamic Biases*

How might the future play out? Amid bright spots, are there shadows? If parents can boost their children's exam scores by investing in enrichment, private tutoring and cram schooling, an exam-based meritocracy induces a form of tournament competition. The more each parent spends, the more the others must spend to outdo their rivals. The bidding war resembles Veblen's (1904) concept of conspicuous consumption, in that one's past spending becomes a sunk cost of no value if others spend more. Ultimately, the wealthiest parents can continue upping the ante the longest and win the tournament (Lareau, Evans and Yee 2016). Exam scores then may come to measure only parental wealth. Moreover, if high exam scores are unrelated to building up expertise useful in real life, the total of all the parents' spending on enrichment, private tutoring, cram schooling, and other exam preparation comes to a deadweight loss, known only after the fact. It brings no real economic benefit to individual or society. Its only effect is to gain the victors a high test score and the advantages this brings include the satisfaction of being able to say they "earned" their test-acquired positions by way of meritocratic means.

Education is a positional good (Bourdieu 1973; Holme 2002; Chua, Swee and Wellman 2019), a marker of cultural capital (Binder and Abel 2019), and a signal to employers (Spence 1992). Rivera (2012) examines how elite employers (e.g., corporate law firms, management consulting firms, and investment banks) recruit, evaluate, and select new hires, and found that the *prestige* of candidates' educational credentials was the single most important criteria in the soliciting and screening of resumes. That is, although a college degree represents an important pathway to economic mobility, the market value of a degree depends critically on the *institution that conferred it* (Gaddis 2014).

A growing trend toward *horizontal stratification*, where the emphasis is shifting from

one's education degree attainment to the *quality* (including the symbolic significance) of one's affiliations (Friedman, Laurison and Miles 2015; Binder and Abel 2019). Thus, in Singapore, private universities are viewed as "second chance options" in comparison to the more prestigious public universities (*Channel News Asia*, 17 September 2017).

In this context, students from poorer families are comparatively disadvantaged. Their exam scores and job performance lag behind those of their richer counterparts. In Singapore, "children from higher socio-economic backgrounds are more likely to attend sought-after Integrated Programme (IP) secondary schools and their affiliated primary schools, as well as those that offer the Gifted Education Programme (GEP)." (*Straits Times*, 1 June 2016). While only 2% of all students in government schools live in private housing, 31% of all students in IP schools live in private housing. It is clear that wealthy children are doing better in attaining quality schooling (*Straits Times*, 1 June 2016). Those who study at university have more ties to people who live in private housing (i.e., wealthy contacts) and have bigger friendship networks than non-university graduates (Chua 2013). Tan (2018) thus asks if the meritocracy has become the "parentocracy" instead?

This trap, once entered, may be hard to escape from and constitutes a stable equilibrium. As long as every parent expects all other parents to keep doing what they have been doing, every parent rationally continues doing what they have been doing. The confluence of actions becomes self-sustaining, self-reinforcing and ultimately, entrenching. As parents pour ever more money into test-score enhancing strategies, and as children spend ever more time memorizing and cramming, both are apt to lead decreasingly happy lives – even those who seemingly "win" (Markovits 2019).

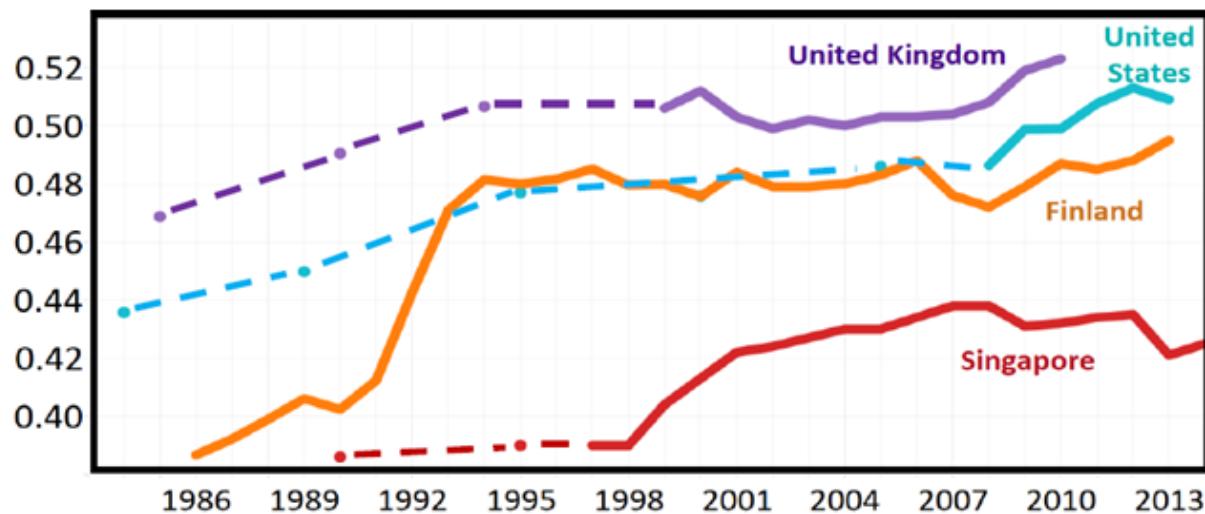
5. An alert and responsible government

All the above issues could be real. However, none of them are severe enough to prompt the elimination of Singapore's tracking and testing system, nor are they even reasons to discount the system's contribution to Singapore's phenomenal developmental success. Each consideration above points to costs and benefits that await further detailed empirical investigation. Moreover, none of these issues are specific to Singapore; they likely are on a smaller scale in Singapore than in other countries. *An interesting research question is whether and why these problems are less severe in Singapore. What the government has done to counter the possible negative consequences associated with its exam and tracking system is worthy of investigation.*

While potentially narrowing inequalities and uplifting the less privileged, a meritocracy could, over time, inadvertently produce a slew of unintended consequences that increasingly are hard to ignore. Economic polarization and reduced intergenerational mobility, in particular, challenge political legitimacy. Singapore's parliamentary democracy has countered such pressures to date, in part with responses to address disparities in family background and narrow achievement gaps. Its imperfections notwithstanding, Singapore's meritocracy may be its greatest national resource. Protecting its integrity would seem a sensible public policy objective. Recent surveys reveal Singapore's most salient social divides to be along class-school lines rather than along race or religious lines (Straits Times, 21 Jan 2018; Channel News Asia, 1 October 2018). These problems are not yet pressing but neither are they absent. According to the Ministry of Finance statistics, Singapore scores well on economic equality and intergenerational mobility. (But, we do not know the extent to which these data are affected by the influx of immigrants.) Nonetheless, the experience of older high-income economies, where stratification has had more

time to set in, justifies preemptive moves. Figure 8 shows that Singapore's Gini Coefficient is relatively low compared to the US, UK, and Finland. Likewise, Table 1 shows that Singapore's intergenerational income mobility is higher than the US, Japan, UK, Denmark and comparable to that in Canada.

Fig 8. Gini coefficients of Singapore relative to other high-income economies



Source: Income growth, inequality and mobility trends in Singapore. Singapore Ministry of Finance Occasional Paper August 2015

Table 1. Intergenerational mobility, gauged by correlation of child's income with parent's income, in Singapore relative to other high-income economies

Country	Correlation	Child's age	Year of data
United States	0.34	29-32	2011-2012
Japan	0.34	30-59	2005
United Kingdom	0.33	34	2004
Denmark	0.27	19-51	2009-2011
Canada	0.20	29-32	1995
Singapore	0.19	26-34	2008-2012

Source: Income growth, inequality and mobility trends in Singapore. Singapore Ministry of Finance Occasional Paper August 2015

Singapore's government is keenly aware of some imperfections in its meritocratic system. It is also aware that the principle in practice can over time lead to issues such as those listed in the two previous sections. In the past decade, both the past Minister for Education Heng Swee Keat and the present Minister for Education Ong Ye Kung have been strong advocates of improving the foundation of meritocracy, the education system. The Ministry has launched multiple measures as follows:

5.1 Socialized Test Preparation

The government is trying to even out inequalities caused by parental wealth. Singapore now has a "Kid Start" pilot program that aims to establish an "ecosystem of support" for low-income and vulnerable children under age seven. Its objective is to counter initial disadvantages. Playgroup programs for children between 1-3 years are also available. The government has also committed to making "every school a good school" (*Straits Times*, 12 October 2015). Variations in family socioeconomic background may be less important if variations in school quality is minimized. Schools might then become more effective loci of social mobility.

Studies in the US show that achievement gaps between students tend to increase during the summer break, when all students are out of school and differences in socioeconomic background are less buffered (Downey, von Hippel and Broh 2004). Summer academic enrichment programs might help even these disparities, though low-income students may be pressed to accept low-paid summer jobs.

5.2 Pressure Release Valves

A more diversified approach to assessing talent can also reduce the undue pressure in test score based tracking. The Singapore government is actively advocating multiple tracks of performance measures, including involvement in extracurricular activities, and has also developed Arts Schools and Sports Schools. There will be changes to the grade 6 Primary School Leaving Exam (PSLE) which replace exact scores with broader bands to reduce student stress and competition (*Straits Times*, 25 July 2019). By 2024, most schools will also have *subject-based banding* – meaning that students can take different subjects tailored to their level of competence (*Straits Times*, 6 March 2019). The idea is to allow much inter-stream mobility instead of “freez(ing) students into boxes” (*Channel News Asia*, 12 March 2019). These reforms leave elite Integrated Program (IP) schools distinct from non-integrated program (non-IP) track. One concern is that “worries over mixing with ‘normal’ students may drive parents to invest more time effort and money to get their children into IP schools” (*Straits Times*, 10 March 2019).

A more comprehensive pressure reduction approach is possible if test scores become intrinsically less important. If getting a good test score matters less, parents spend less time, effort and money trying to boost their children’s scores. In older high-income economies, such policies often come in the form of mildly-socialist or anti-elitist voter sentiments that press governments to better the lives of the less talented and less capable. Social safety nets that make early failure less catastrophic and more remediable are popular in Northern Europe and in other high-income Commonwealth countries. Those countries have social welfare systems that go far further though and make an acceptable level of earnings available without regard to talent.

5.3 A formidable task

The pertinent point is that while meritocracy as a principle is unassailable, as a system it can lead to biases over time as described in Sections 3 and 4. Following Goodhart's law, the system can become a stable equilibrium, one that involves matched optimizing behavior and expectations amongst all stakeholders.¹⁸ Changing such a stable equilibrium involves the challenging job of changing all stakeholders' expectations and behaviors simultaneously. The "routinization" that Weber speaks of can become difficult to disrupt especially if these expectations and behaviors become entrenched and unquestioned.

Risking oversimplifying, let us illustrate the challenge assuming that in Singapore, parents, teachers, and employers all use exam results as performance benchmarks and hiring metrics. In general, the fixation on grades in Singapore is "deep-seated" (*Straits Times*, 17 October 2018). Grades are sometimes even tied to moral attributions reflecting virtues such as diligence, perseverance, emotional stability, and the ability to stay on task (Ivanhoe 2000). This well describes the predicament Singapore faces. The following is a list of daunting obstacles to overcome:

- Recruitment: Employers in both public and private sectors are used to treating grades, or honor class of graduates, as signal and sieve, and this reduces screening costs. In government, pay and 'current estimated potential' (CEP) are pegged to one's grades and

¹⁸ In economics, this is called a Nash Equilibrium. (Nash 1951). This equilibrium could be Pareto sub-optimal, a situation in which each player maximizing her self-interest leaves all players worse off than they need be. If each family spent more on cram schools, raising each child's score by an equal amount, all parents are poorer, all children have less play time, and the children's' rankings for admission to the fixed number of places open at elite universities remain unchanged. If the cram schools increased capabilities, this competition might augment national productivity; but if (as hypothesized here) it merely alters test scores, the resources are wasted and everyone is worse off than they might otherwise be.

the honor classification at graduation as well (Quah 2010). Switching means substantial investment and adjustment in recruiting for all. For each, making a wrong adjustment can be risky.

- Legitimacy: Grades and degrees have been accepted as legitimate yardsticks to administer meritocratic fairness by many. The practical matter is what can be used instead to practice ‘meritocracy’? For many employers, adopting other practices may expose them to accusations of being subjective and non-meritocratic. For teachers, they have long accepted that their students’ exam performance is a legitimate performance indicator. They find it challenging to develop new grading approaches that encourage critical thinking and creativity unless their overseers, parents, and university admissions offices, and employment recruiters accept their new approaches.
- Peer competition: Parents are looking to other parents and comparing; they all are looking for good grades and good placements for their children. It is a vicious cycle. The government encourages parents to ease the pedal on private tutoring. However, would parents stop when other parents do not?

Changing the equilibrium involves replacing test scores – the adopted key performance indicator – with acceptable alternatives in a holistic sense. Marginal changes may generate negative dynamics. As long as fine qualitative differences can be discerned in performances, whatever the new measures are, parents will seek out an edge. For example, will “Kid Start” send the unwitting message to parents that the educational arms-race starts basically at 3 years old, and thereby increase academic stress even more? The democratization of educational access can

increase academic competition since everyone is now in the game. This can further advantage the rich, who have more to spend on arms, including on signaling *qualitative* dimensions of merit, such as unpaid service in social justice causes.

5.4 A call to prepare for the future

Meritocracy in Singapore gives its residents open access to its institutions and advocates that people put in their own efforts to advance economically and socially. Singapore's government has made education and test-based meritocratic selection the centerpiece of its development, along with strict enforcement of the law and low tolerance for corruption. Singaporeans' continued acceptance of this system and its outcomes would appear critical to its continued success. The government also promotes social acceptance with non-meritocratic policies, affordable public housing and a range of economic policies prioritizing broadly based economic growth. Such policies could be expanded were Singapore's meritocracy to become unpopular.

Singapore's meritocracy is not uniquely under stress. Challenges to the validity of long-accepted measures of merit are a global phenomenon. If public policymakers wish to alleviate social stresses that accumulate over time in a meritocracy, they may wish to consider how a meritocracy can become a mechanism of social stratification and formulate actions to avoid this. The perceived failure to counter such stresses is implicated in the rise of identity politics and populism (Fukayama 2018).

Public policymakers in Singapore are aware of the problem. Education Minister Ong Ye Kung spoke of stresses in the meritocracy in his 2019 speech at the Raffles Institution's Founder's

Day. Deputy Prime Minister Tharman, in his May 5th, 2015 budget speech, expressed concerns about rapid technological progress leaving Singaporeans brought up in its old system ill-prepared for future fast pace changes. Fast changes can rapidly erode workers' previously accumulated human capital and depress their job earnings, undermining their past success. The fear of this induces economic anxiety across all age brackets, but perhaps most acutely among older workers, for whom re-tooling is all but impossible. Moreover, rapid technological change has created winner-take-all hierarchies in many fields and this widens income inequalities (Filmer and Pritchett, 1999). A winner-take-all situation can even leave rich "winners" bidding up the prices of non-tradeable goods, further depressing the living standards of the left-behind.

Understanding a public policy problem is an essential first step towards a solution. Singapore's responses include urging businesses to boost productivity and offering productivity-boosting incentives (***Economic Strategy Report*** 2010), promoting innovation and lifelong learning and providing performance-based assistance to individuals and organizations to promote innovation and retraining (***Future Economy Council Report*** 2017), and exhorting Singaporeans to take control of their own destinies and be the pioneers of their own generation (Kankanhalli and Yeung, 2018). To a substantial degree, this amounts to asking Singaporeans to double down on the meritocracy through greater effort, more studying, and accepting individual responsibility for failure. Singaporeans accept the integrity of their meritocracy, and may well be inclined to respond as policymakers hope. However, should Singaporeans ever come to doubt their meritocracy, losing after doubling one's bets would hurt proportionately more?

6. Conclusions

In 50 years, Singapore grew from a third world to a first world country. The People's Action Party (PAP) led by the late Mr. Lee Kuan Yew emphasized rule of law, eradicated corruption, and made education-based meritocracy a centerpiece of Singapore's nation-building. Using public test-scores and tracking, the government incentivizes Singapore's people to work hard to build on their potential to advance in earnings and social status. The system encourages human capital formation that, in turn, improves the efficiency of its government and industries. The past success of the system has inculcated a national wide belief in meritocracy.

This system, successful as it has been, nonetheless has created some stresses. Singapore's exam-based tracking is not immune from Goodhart's law, in that wealthier people can increasingly "game" their children's test-scores by overinvesting in private enrichment, private tutors, and the like. As test scores presumed to measure merit increasingly measure parental investment, their value as measures of merit falls away. Running a meritocracy can thus be inherently self-defeating. Unless a measure of merit invulnerable to "gaming" can be found, running a meritocracy becomes the pursuit of a moving target. As each previously workable measure of merit succumbs to "gaming", a new measure of merit must be found, which people with resources then start "gaming".

Most meritocratic systems are thus intrinsically imperfect. As a practical matter, meritocracy cannot be static; it must be a dynamic process that needs continual management and renewal. Otherwise, meritocracy, left to develop on its own, readily becomes an iron cage of rigidities and institutionalized stratification. A responsive government might slow or suspend this regression. In a democracy, elites that lock their progeny into positions of wealth, power and influence incommensurate with their contributions to general prosperity are vulnerable to

attacks by populist political entrepreneurs (Mudde, 2004; Hayes 2013). These forces may well underlie decreasing social cohesion and increasing political polarization, e.g., in the United States, in some European countries, and in Hong Kong. Awareness of the forces threatening to undermine a meritocracy may have so far let Singapore avoid these tensions. However, continually renewing the legitimacy of a meritocracy requires that elite parents subordinate advancing the private interests of their children to the general good of their country (Fukuyama 2014). Strengthening an economy's long-term performance requires making efficient use of the honed talents of *all* individuals, not just the children of elites.

Singapore's stresses are by no means unique, but have not yet led to the populist and identity politics stresses that meritocracy may well have encouraged elsewhere (Markovits 2019). However, the danger that such stresses might make citizens feel disenfranchised, grow cynical, or turn to populism or identity politics is salient. At present, Singaporeans largely maintain their faith in their government's tendency to care for its citizens and to maintain a reasonably well-executed meritocratic system. Singapore has continuously reviewed and adjusted its programs, both for inducing inclusive growth and for preparing for future changes, some of which we described in Section 5. Public policymakers interested in a model of how a meritocracy can nurture both social harmony and rapid economic growth may wish to examine Singapore's historical development.

Finally, Singapore's current situation illustrates tensions that arise intrinsically in a meritocracy. These stresses have built up over time as Goodhart's Law gradually magnified initially small imperfections in the system into a hardening social stratification. Current trends of globalization and rapid technological advances are further intensifying economic inequalities and

deepening economic anxieties, which may well add yet more stresses to meritocracies.

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