



Incentivizing Exports in Academic Planning: The Rise of South Korea and Lessons for Underdeveloped Nations

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[LINK TO ABSTRACT](#)

Thomson Reuters's Web of Science (WoS) core indices, including the Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), and Science Citation Index (SCI), have become important in academic life. One of the central distinctions between journals is that between inclusion and non-inclusion in WoS. It is not easy for a journal to get itself included in WoS; there is an exclusivity about it. If the journal is included, then the citations *from* that journal are recorded in the WoS citation system (all such citations are recorded, not only those *to* WoS journals). In a service called Journal Citation Reports, Thomson Reuters uses its WoS system to create statistics about WoS journals, such as the journal's "impact factor." A journal that is included in WoS can quickly signal that by publicizing its impact factor. Whether a journal is included in WoS is a strong focal point in categorizing journals and has become a central convention in academic life.

The WoS has become important in several global university rankings. Among these are the Academic Ranking of World Universities (ARWU), published since 2003, the Times Higher Education–Quacquarelli Symonds World University Rankings (Times Higher Education–QS World University Rankings, also known as the THE-QS World University Ranking), published from 2004 to 2009, and

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the Times Higher Education World University Rankings (THE World University Rankings), which have been published since 2010 (THE and QS, which previously published the Times Higher Education–QS World University Rankings, ended their collaboration in 2009). By publishing in a WoS journal, a scholar both improves her individual scholarly performance and raises the global ranking of her institution.

The importance of these world university rankings can even be seen in the distribution of green cards and dual citizenships in some developed countries. For instance, highly skilled foreigners in Denmark or the Netherlands qualify for green cards depending on the recent ranking position of their graduate degree-granting university (Rauhvargers 2013, 23), and these ranking positions are influenced by the WoS publications by faculty. In the case of the Netherlands, only applicants receiving a graduate degree from a university ranked in the top 200 according to acknowledged rankings such as the ARWU or THE World University Rankings can be given a green card (*ibid.*). Nations such as South Korea have even directly made SSCI, A&HCI, and SCI publications by the individual a major qualification criterion for granting to that individual dual citizenship as a highly skilled worker.²

The ranking of universities has become similar to ranking nations by their per-capita GDPs. Not only are academic rankings such as the Times Higher Education–QS World University Rankings or ARWU used as international benchmarks, which was the main reason for their emergence in the mid-2000s, but the WoS is nowadays considered a goalpost by higher-education planners. These rankings were instrumental in enacting higher education reforms in some of the most developed nations such as Germany or South Korea, whose institutes were ranked devastatingly low (Schwekendiek 2015). For instance, in 2004 the inaugural Times Higher Education–QS World University Ranking had the best German university (the University of Heidelberg) ranked only 47th, while the best Korean university (Seoul National University) was ranked 119th. In comparison, other universities in continental Europe and East Asia were ranked much higher, including higher education institutions from Switzerland and Japan positioned in the world's top 15.

These poor rankings did not go without a response. In the case of Germany—of which I am a citizen, by the way, though I live at present in South Korea—political decision makers invested about 1.9 billion euros from 2006 to 2009 into a so-called excellence initiative (Sondermann et al. 2008, 11). The basic idea was to enable its universities to “compete with higher education institutions such as Harvard and Stanford” (*ibid.*, 10). Despite good intentions, German universities have not risen in the rankings, as pointed out by Berkeley economist Barry Eichen-

2. See for example the page “우수인재 추천권자 및 평가기준” on South Korea’s E-government for Foreigners website ([link](#)).

green (2014) in a recent interview with a popular news magazine: “After all, Germany still does not have a university in the top 50 in the world.” On the contrary, despite spending 1.9 billion euros, average rankings of German universities even seem to have declined: The mean ranking of all German institutes consistently included in the THE-QS top 200 in each year from 2004 to 2009 fell from 90 in 2004 to 108 in 2009. Meanwhile Korean universities rose dramatically, from an average ranking of 140 in 2004 to 58 in 2009 (Schwekendiek 2015)!³

How did South Korea jump 82 spots within just a few years in the THE-QS Ranking? And, what lessons can be learned by higher education planners in other nations? Before addressing higher education reforms in South Korea, this paper will address the nation’s economic development in the 1960s, as methods used to pull South Korea out of poverty were strikingly copied to boost universities in the 2000s. The key to both the economic and educational rise of South Korea has been a system of quantified targets. In manufacturing, quantified targets pertained to the exports of goods to overseas markets, and quantitative targets in education pertained to the publication of articles in WoS journals.

To understand why South Korea was in need of such a system—quantitative and externally measured, not a murky peer-review system—one has to understand the culture of corruption prevalent in South Korea, in government and in academia.

Corruption and colonialism: A history of pre-divided Korea

In this section and the next I give considerable space to historical description—too much space, some have told me. But the historical descriptions help us understand the cultural, moral, and institutional conditions that shaped the constraints within which South Korea’s export-oriented strategies emerged. The historical description helps us appreciate those strategies as creative, perhaps even praiseworthy, given the constraints of having to actually govern a country. Readers familiar with South Korean history may wish to skip this section and the next.

Korea had been credited as one of the oldest independent nations in the world until losing its independence in 1910, being colonized by Japan from 1910 to 1945. Prior to annexation, Japan defeated rival powers China, in the First Sino-

3. Note that investigating South Korea’s or Germany’s performance after 2009 becomes complicated because the THE-QS Ranking was discontinued as the two companies split and published their own respective rankings afterwards (QS World University Ranking and THE World University Ranking), both of which differ methodologically from the original THE-QS Ranking.

Japanese War (1894–1895), and Russia, in the Russo-Japanese War (1904–1905). It was an era of high imperialism. In 1905, Japan made two secret diplomatic agreements: with the United States acknowledging America's control over the Philippines in exchange for acknowledgment of Japan's control over Korea, and with the United Kingdom acknowledging British hegemony in China in exchange for acknowledgment of Japanese hegemony in Korea (Seth 2010, 32). Korea was conquered in the diplomatic arena, and it lacked a modernized military to fend off imperial powers (Park 2007). Japan easily annexed Korea in 1910 without even having to go to war.

The Japanese used the Korean peninsula as an agricultural hinterland and natural-resource base, serving to feed Japan's population, support Japan's industrialization program, and later support Japan's wars. The Japanese developed heavy industry in the mountainous North of the peninsula, building chemical factories, hydroelectric power plants, and mines. The South, flatter and warmer, had traditionally been the rice belt; there, the Japanese introduced new plant seeds, initiated motorization of the agricultural sector, developed deep-sea fishing, introduced chemical fertilizers, and improved drainage and irrigation. All these measures drastically boosted production and productivity in colonial Korea. In stark contrast, the Joseon dynasty (1392–1910) suffered from a severe economic and political crisis in the nineteenth century (Jun and Lewis 2006; Palais 1991), even before imperial powers began to put pressure on Korea's traditional economy. For instance, irrigation facilities were not maintained, from increased corruption of Joseon bureaucrats (Jun and Lewis 2006, 248). Aristocratic titles were forged or even sold by elites (Hart 2001, 62–64). The Japanese improved the physical infrastructure in Korea, even though it was purposed to exploit the Korean peninsula rather than aid development. Indeed, while the late Joseon dynasty underinvested in vital infrastructure (Jun and Lewis 2006), the Japanese collected stones from all Korean households several times per year, using the stones to build infrastructure such as dams, streets, bridges, and irrigation facilities (H. Kang 2001). Many bureaucrats in the late Joseon dynasty were not interested in improving overall living conditions but instead filled their coffers by overcharging the populace. Some of these public scandals triggered peasant revolts, such as the case of the tyrannical rule of the magistrate of Kobu county in 1894 (Nahm 1993, 159).

On the other hand, technological transfers and economic investments made by the Japanese should not be overestimated. Even if production and productivity improved in Korea, the Japanese exported most of the product. For instance, while rice production improved 1.4-fold in colonial Korea from the early 1910s to the mid-1930s, rice exports from colonial Korea increased eight-fold during that period (Song 1990, 40). Japanese colonizers also extracted wood, gold, and minerals from the Korean peninsula, making Korea a supply base for Japan. Fur-

thermore, many Koreans were coerced to work for the Japanese. Korean women were forced to work as 'comfort women,' coerced and abused by the imperial army. Korean men had to work as soldiers fighting for the Japanese in World War II. The price for Korea's modernization was therefore immensely high.

However, corruption that plagued the late Joseon state declined remarkably during colonial rule. In fact, the Japanese abided by the laws they decreed and were transparent in their imposed measures. For instance, the Japanese police detained Koreans who allegedly protested against Japanese rule. Since the Japanese had a law in which any suspect could be detained for only 29 days following arrest, they simply released him or her only to re-arrest immediately after leaving the building (H. Kang 2001, 47). Japanese inspectors could repeat this procedure again and again, clearly abusing the system while still adhering to the laws they implemented. Rather than breaking the rules through bribery or the forging of documents as in the late Joseon dynasty, Japanese colonizers simply bent the laws they made. These legal changes would then give Japanese entrepreneurs or farmers significant advantages over their Korean competitors. The system was unfair and biased towards the Japanese, but corruption and forgery scandals were hardly heard of during colonization of the Korean peninsula.

During World War II, Japan joined the Axis powers Germany and Italy. The opposed Allies held several conferences, at the peak and particularly at the end of World War II, in which they discussed how to deal with the Axis powers after the war. In 1943, the U.S., UK, the Republic of China, and the Soviet Union agreed that Korea should become independent "in due course" (J. Lee 2006, 5ff.). The Allies also agreed that Korea should be placed under a multilateral trusteeship.

The Axis powers were defeated in Europe by May 1945, but the Japanese continued fighting in the Pacific theater. In August, the Soviet Union launched an invasion in the Far East to engage the Japanese troops stationed in Manchuria and Korea. The Soviets did not meet much resistance from the Japanese and began to advance rapidly from the northern toward the southern half of the Korean peninsula. The American military was off in the Philippines at that time, and thus could not play a role in the liberation of Korea. Fearing that the Soviets might seize control of the entire Korean peninsula in a few days, the Americans spontaneously suggested to Stalin that his troops halt at the 38th parallel, a cartographic line roughly dividing the Korean peninsula into two equal halves (J. Lee 2006). Stalin accepted America's suggestion, and this way only northern Korea was occupied by the Soviets. Korea was placed under a temporal trusteeship, with the Soviet Union occupying the North and the United States the South. The occupation was set for a period of up to five years.

After World War II, the Soviet Union started effectively to annex territories it occupied during and after the war by leaving its troops there and manipulating

elections at gunpoint. The emergent Cold War necessitated a solution to the Korean peninsula issue. The United Nations (UN) decided to make Korea independent earlier than expected by conducting free elections on the peninsula. The regime in northern Korea boycotted the elections and declined to acknowledge the newly founded Republic of Korea (ROK), widely known as South Korea. In the meantime, the North held its own elections and established the Democratic People's Republic of Korea (DPRK), commonly known as North Korea, just a few days after the foundation of the ROK. In this manner, the two Korean states emerged in 1948, and they continue to exist today, even despite the collapse of the Soviet Union in the early 1990s.

The sudden and unexpected rupture of the peninsula along the 38th parallel combined with the retreat of the Japanese left both Koreas in chaos. Korea was geared as a supply base for Japan, so the colonizers had not set up any machine tool industry there and had refrained from training Korean engineers and technicians. Without the Japanese, most factories and machines were left idle and unrepaired. Since the North inherited Japan's heavy industry, South Korea was practically cut off from energy, raw materials, and vital inputs for its agricultural sector such as chemical fertilizers. Worse yet, the retreating Japanese sabotaged and deliberately destroyed much of the infrastructure built in Korea, including mines, factories, and even small- and medium-sized enterprises, in order to prevent seizure by the Allies. And further: Upon arriving on the Korean peninsula, the Soviet army dismantled many remaining factories—which were then state-of-the-art technology—and transported them to Russia. These measures completely halted the production of chemical fertilizers, in turn hampering agricultural production. The Japanese also took most vehicles, including motorized boats, back to Japan or simply left them unrepaired in Korea. In-shore fishing grounds were completely depleted while offshore fishing grounds were fully stocked but inaccessible without equipment (McCune 1950).

Agriculture and the economy generally collapsed, triggering a food crisis. Only one in three Koreans were living in the North, as opposed to two in three in the South, which meant that the North had fewer mouths to feed. Moreover, millions of Koreans who had been forced into Japanese projects in China, Japan, Sakhalin Island (now Russia), and elsewhere now returned to South Korea or fled from North Korea to the South, dramatically increasing food demand there. North Korea was able to address its crisis by establishing a strict and centralized food rationing system. On the brink of mass starvation, the South was relieved by massive food and fertilizer donations by the United States and the United Nations.

During the post-colonial chaos there was a surge in corruption and mafia groups. Previously only Japanese held advanced positions. In a human-capital vacuum, any Korean with special abilities including English was highly valued.

Koreans hated the Japanese for their brutal colonial rule. They also hated their former Korean collaborators, many of whom (or their children) were rewarded by the Japanese by being allowed to attend higher education institutes under colonization. As South Korea lacked qualified let alone politically 'clean' personnel, capable advisers and leaders were scarce. The U.S. was not prepared to govern the South since there were only a handful of Americans, mostly missionaries, who spoke Korean. The first governments ruling from 1948 to 1961 were considered to be corrupt, despite being elected democratically (E. M. Kim 1997, 99). Corruption and personal favors became rampant at all administrative levels (Lie 1998, 112).

Extreme poverty combined with feckless bureaucrats arguably led to a resurgence in the culture of corruption that had plagued the late Joseon dynasty. "Since independence in 1948," writes David Kang, "Korea has seen a seemingly endless flow of corruption scandals bring down scores of elites. Among those who have served time in jail or been exiled are former presidents..., members of many presidential staffs, and a slew of military officers, politicians, bureaucrats, bankers, businessmen, and tax collectors" (2002, 1–2). Personal favoritism was commonplace at all administrative levels, low and high, and the educational sector was no exception. The following testimony illustrates how an average Korean was treated at school during his childhood: "Students got special awards if their parents handed white envelopes of money to teachers, and my parents didn't do that ... I knew corruption was going on. Teachers would hit me in front of the class for saying things about it. I remember one classmate whose family was very rich. He had a private tutor and was always getting 100 percent on his papers because the teacher gave the tutor all the questions in advance. Once, I got 100 percent and he got only 85 percent on a math test, and the teacher had the whole class retake the test the following day, so that he got 100 percent ... I never saw the kids whose parents brought all the white envelopes getting hit" (E. H. Kim and Yu 1997, 155).

And the story gets worse. In 1950, thanks to technical support from its ideological allies, North Korea invaded the South in what is known as the Korean War. The war further devastated the Korean economy and destroyed all remaining infrastructure. The South Korean capital Seoul was conquered and destroyed four times in the course of the war. The U.S. used carpet bombing and napalm against the North, completely destroying many cities. Poor and hungry refugees, war widows, and orphans were prevalent all over the peninsula. The Korean War ended in a truce in 1953, and the two Koreas technically remain at war today. After the war a demilitarized zone close to the 38th parallel was established.

As a result of the chaotic post-colonial period and the destructive Korean War, both Koreas were among the poorest nations in the world. International experts at that time predicted an agrarian future for South Korea characterized

by low economic growth, while forecasting a bright economic future for many of today's underdeveloped nations such as the Philippines (D. Kang 2002).

But, defying expectations, one of the Koreas rose, by 1996, to status as an OECD nation.

Incentivizing exports in economic planning

In 1961, from dissatisfaction with the chaotic government in South Korea, military general Park Chung-Hee launched a coup. Park witnessed how the Japanese had, in just a few years, developed the Korean peninsula and Manchuria into booming industrial centers (C. S. Lee 2012). More importantly, Park fought in the Korean War and thus had experience in leading a large organization; he was competent in “planning, programming, budgeting, and evaluating” large projects under time pressure (C. H. Lee 1995, 28). Furthermore, all important ministers appointed by Park after his coup were also high-ranking military, such as generals and colonels (S.-J. Kim 1971, 162–163). In this manner, the military system of rigorous planning and evaluation infiltrated the entire Korean government and economy, and that mentality persists today, including in higher education.

In economic planning, one of the main methods used to counteract rampant corruption was a quantitative reward system. As previously mentioned, there was a lack of experts after the Japanese left South Korea. Ideally, appointed ministers and advisers would have been educated or experienced bureaucratic leaders in their fields. However, as the Japanese had held most key positions in the past, Park lacked access to competent personnel to oversee and evaluate projects. As an illustration, in 1943, eight of ten technicians and engineers were Japanese (Sakong 1993, 2), and, during colonization, the few Koreans who actually received training in technical subjects mostly held lower positions. Koreans with doctoral degrees were almost non-existent. The Japanese also held all key educational and administrative positions in Korea. Additionally, Japanese colonizers had prohibited emigration of Koreans to the United States (particularly to Hawaii), and thus there was a lack of overseas expatriates who could have been recruited to return to support the Korean economy. As a result, appointments for many important public institutions were subject to personal networking rather than being based on qualifications and technical competence.

Yet the military government was strongly determined to increase the economic development of South Korea. Already in the 1950s, Park became frustrated with the elite's corruption and incompetence, which, according to him, were to blame for the misery of the Korean people (D. Lee 2015, 42). When Park toppled the government in 1961, it was the first successful coup in Korea since the founding

of the Joseon dynasty in 1392, which according to Chong Sik Lee (2012) clearly demonstrated his strong determination to reform the country. In reaction to Korea's culture of corruption, the military government aimed to develop Korea by utilizing an impersonal, transparent rule-based system, using hard statistical numbers. Since the military government was experienced in "planning, programming, budgeting, and evaluating" large projects under time pressure thanks to important experience gained during the Korean War (C. H. Lee 1995, 28), hard statistical numbers would be a common denominator all military-cum-government leaders could agree upon. In practice, statistical numbers were a substitute for the qualitative experts that South Korea lacked. Using such hard numbers, in the 1960s Korean entrepreneurs were incentivized to manufacture goods in any industry in which they could produce the quantified results.

But which quantified results? Here we come to a key reform that made possible a system that would escape internal corruption by linking to external markets. The new military government initiated a paradigm shift from import substitution to export orientation. This meant that Korean entrepreneurs had to increase exports rather than continuing to cater to the domestic market. While many other underdeveloped nations pursued import substitution at that time, South Korea's sudden shift to export orientation must be analyzed in light of North Korea's economy, which grew considerably faster than South Korea's after the Korean War. Thus, according to the military government, the only way that South Korea could have won the economic race with its ideological enemy in the North was to boost production through exports. Moreover, from a political perspective, the United States largely disapproved of military strongman Park, who rose to power through a coup and then started to gradually abolish democracy and restrict civil rights. The previous government in South Korea had been highly dependent on American aid, and the new military government sought to shift towards export orientation as a measure to reduce the economic and political leverage of the United States. Though some scholars might also view export orientation as problematic as import substitution, it should not be forgotten that South Korea was facing a heavily militarized North during and after the Korean War. Rapid economic and technological growth was a matter of survival.

The priority on exporting did not reflect a wider commitment to free markets and free trade. Along the lines of Friedrich List's infant-industry argument, the Korean government established high tariffs and even import bans (for instance, of completed machines) so that, according to the argument, Korean companies could mature. Since the military government lacked experts, it considered for receipt of government support any producer who could demonstrate impressive export data. To monitor and evaluate Korean exporters, all Korean embassies were systematically instructed to collect trade data and submit them back to their home

country. The government established very ambitious export targets. Only companies that fulfilled these quantitative targets were rewarded, while those failing to meet export quotas within the specified timeframe no longer received government support. This quantitative bar ensured that certain ‘dead-wood’ types of free-riders and rent-seekers would effectively be filtered out, thereby mitigating the problem of personal favoritism and corruption while also solving the issue of inadequately qualified experts and generally reducing administrative costs. Indeed, even if South Korea had enough trained experts to evaluate companies in a qualitative peer-review system, the committee members would have been simply bribed due to Korea’s culture of corruption. Thus, the quantitative export system prevented extensive undermining by underperforming entrepreneurs.

Important in this transparent, quantitative system was the critical foreign consumer, in the United States, Japan, Europe, and elsewhere, who purchased Korean import goods such as textiles, footwear, and wigs in the 1960s. In the 1980s, as Korean companies shifted towards exporting electronics and cars, foreign consumers again showed a propensity to buy Korean products. Constant feedback from foreign consumers, their buying and abstention from buying, helped to mitigate the follies, corruptions, and foolishness of the government’s planning approach. For instance, some Korean car models lost their paint after a couple of days when subjected to intense sunshine, and some other models suffered suspension damage due to differences in local roads (M. O. Kim and Jaffe 2010, 212). Rather than denying the problems or bickering over blame, the Korean exporting companies immediately applied a special paint or reinforced the suspension systems to satisfy buyers overseas. Needless to say, without an export-orientation system, the quantitative planning system of the government would have failed, as is the case for North Korea primarily catering standardized goods of poor quality to the people in the DPRK. Though South Korean companies were monopolists or oligopolists domestically, they had to compete fiercely for market shares overseas by finding new niches and improving the quality of their goods.

Exporting Korean companies were rewarded, whereas many of those failing to do so went out of business. Beginning in 1962, entrepreneurs who fulfilled the ambitious export targets were invited by the government to monthly export-promotion conferences, during which these entrepreneurs could talk directly to the president himself. Export success was officially honored. Successful exporters were given access to important ministers, through whom they could ask the government to remove import restrictions on immediate raw materials and even those on completed machines, liberalizations that would in turn further increase exports of their respective goods. As long as Korean companies could meet the goals posted by the government, they were eligible to receive further government support. In this manner, certain Korean exporters grew larger and larger.

This system, of non-experts setting ambitious targets and using incorruptible hard statistics to evaluate important matters, is still prevalent in South Korea. Despite economic liberalization reforms (C. H. Lee 1995) and democratization processes in the 1980s (Choi and Yoon 2016), South Korea is still using this military-style quantitative system in planning. Indeed, this system has been applied to develop higher education in South Korea, which will be discussed next.

Incentivizing exports in academic planning

From a technical point of view, incentivizing exports in economic planning does not differ much from incentivizing exports in academic policy. If one designates academic articles published in respected international journals as ‘exported goods,’ with the editors, peer reviewers, and readers as critical foreign ‘consumers’ who impel local scholars to maintain certain international quality standards as well as address relatively important issues, then similar schemes for budgeting, planning, and evaluation can be implemented by the government. As a reminder, Korean producers who could not meet the ambitious export targets of the government in the past went unsupported (e.g., by losing tax exemptions or being denied access to electricity discount rates) while those fulfilling and exceeding the quota were rewarded (e.g., by receiving shipping waivers or getting access to government loans). In academia, such a system represents a ‘publish or perish’ regime: The ‘publish’ part is left to academic practices worldwide, while the ‘perish’ part is effectuated by governmental institutions acting as huge players in the academic sector within South Korea.

Ever since the WoS has become a central standard in research as well as international university rankings, the Korean government has by and large made publications in WoS journals mandatory.⁴ This is first and foremost a quantitative system, requiring government officials in the Korean Ministry of Education to

4. Depending on the individual institute and government program, WoS publications are either directly made mandatory or indirectly strongly encouraged by valuing articles published in a domestic journal as only 0.25 to 0.50 of that of an article published in a WoS journal. Also depending on the individual institute and government program, books are not acknowledged at all or are worth 0.50 to 1.50 of an article published in a WoS journal. Furthermore, depending on the individual institute and government program as well as the total number of authors, co-authored articles are worth only 0.10 to 0.70 of that of a single-authored one. In that case, some institutes and government programs give small bonuses (usually about 0.10 points) to scholars with special roles such as being the corresponding author or lead author of a multi-authored paper. Since top universities are competing against each other, the exact publication requirements for promotion and recruitment at specific institutes are commonly not made public but shared only with internal members or selected external job applicants. For some insights on the point system at Yonsei University, see S. K. Kim 2016.

simply count the number of articles Korean scholars recently published in the WoS. Officials then set ambitious targets, such as one single-authored WoS publication per year over a certain period of evaluation (e.g., five years), and those scholars who meet or surpass the quota are rewarded with extra funding, higher income, and most importantly contract extensions, including tenure appointments. Those who cannot 'export' their research articles to WoS journals are no longer supported by the government. Similar to Korean entrepreneurs in the 1960s, Korean scholars can freely choose their area of activity as long as their research is published in a WoS journal. This quantitative system allows certain Korean scholars to expand their enterprise, and departments if not whole universities to grow, while minimizing certain forms of rent-seeking, free-riding, and corruption, particularly of the dead-wood variety. This system also does not require external experts with high English proficiency, another major advantage.

Indeed, before the introduction of a transparent and quantitative publish-or-perish system, Korean universities and scholars were severely underperforming (Oh 2007). One possible contributing factor was that Korean academia was no exception to the rule of personal favoritism. In the words of a Korean: "Korean businesses are corrupt. Korean media are corrupt. Korean scholars are corrupt. It doesn't matter if they are educated or not, whether they went to college or are only high school graduates" (E. H. Kim and Yu 1997, 206).

The personal favoritism that formerly plagued Korean academia can clearly be observed when examining faculty recruitment. As is commonly known, only stellar performers are recruited at American top universities (Goldsmith et al. 2001). These scholars are then supposed to further contribute to the rise of the university and department in the research rankings as well as educate outstanding students. Perhaps one reason for the underperformance of Korean scholars in the past is that incumbent professors simply recruited their own former Ph.D. students.⁵ For illustration, as of fall 2011, two-thirds of all professorship appointments were landed this way at Korean universities (McNeill 2011). Indeed, Korean faculty boards preferred to recruit the least active candidate, notably "former students and those who will not compete with them but those who will obey and follow" (Cho 1999). Korean academia was also shielded from international competition. The few foreign scholars who were working at Korean universities were commonly asked two questions by their colleagues: "when did you come to Korea?" and next, "when are you leaving Korea?" (T. Kim 2005). This quite well

5. Interestingly, Japan's academia was similarly characterized by "institutional inbreeding" in the 1950s, with an estimated 90 percent of regular professors being former graduates (Bronfenbrenner 1956, 395). An interesting future research question would be to investigate how Japanese scholars and schools could rise to a world-class level by today, as evidenced by the rankings of Japanese universities or over 20 Nobel prizes, despite apparent similar personal biases in faculty recruitment in the past.

illustrates that foreigners were not supposed to earnestly compete with Korean scholars. Moreover, even when Korean universities received a large donation in the range of \$100 million, Korean faculty members would use the funds to build a “‘world class Engineering Building’ with splendid faculty offices and laboratories but [fail] to recruit a single ‘world class faculty’” (Cho 1999). Moreover, many Korean professors in the 1980s did not have a Ph.D., just a master’s degree (Jung 2014, 86), and these were likely not qualified to evaluate candidates according to scholarly standards. Indeed, until the initiation of government schemes such as BK21, WCU, or HK (see below) since the late 1990s, the number of Ph.D. graduates was very low in South Korea. For instance, only 2,742 doctoral degrees were conferred in the pre-reform year of 1990, as opposed to 11,093 in 2003 (Schwekendiek 2015, 371).

The traditional peer-review system of recruitment and promotion failed in Korean academia. Kang (2002, 61) provides further tentative evidence for the degree of internal personal favoritism: “In 1989, almost two-thirds (63%) of the bureaucracy in Korea’s Ministry of Finance and almost half (47%) of Economic Planning Board (EPB) civil servants...had graduated from Seoul National University (SNU). Normally, these statistics are used as evidence of the superior quality of the SNU students. What tends to be less well known, however, is that faculty members at SNU’S Graduate School of Public Administration are often asked to help write the national civil exams ... [This] does provide a clue that not all is as it appears within the vaunted Korean bureaucracy.”

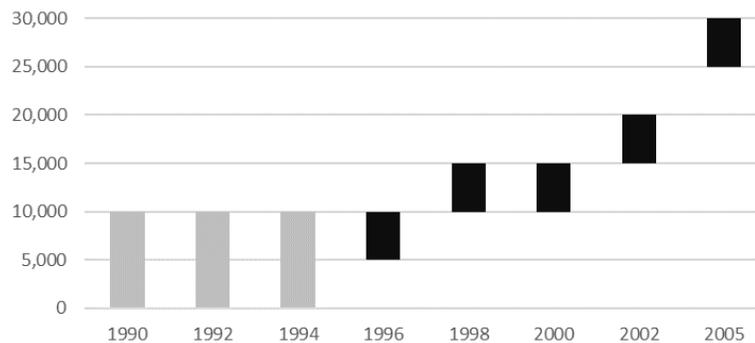
Not only was recruitment of professors in Korean academia questionable, promotion of faculty members was inefficient and not geared at all towards producing research articles in international journals. Indeed, whereas scholars at American universities are commonly promoted based on their publications and citations in WoS journals, if only tacitly (Klein and Chiang 2004a), there were no requirements at all to publish in international journals in order to get promoted from assistant professor to associate professor or tenured professor in Korean academia. Korean universities, similar to Korean companies, basically gave lifetime guarantees to their employees, for Confucian reasons. Although being recruited was difficult in the past, once candidates managed to land a job, international publications were not required to keep it, since “tenure has traditionally been automatic, and evaluation and compensation systems [were] weak” (McNeill 2011).

To put it another way, in the past, Korean academia differed from Western academia in that Koreans placed more emphasis on ‘input’ than on ‘output,’ meaning that personal networks were often more important than one’s actual publication record. As a result, Korean scholars were extremely underproductive. During the 1980s, prior to academic reforms, Korea ranked only around 50th in the world in terms of science papers published (Oh 2007, 707). However, major aca-

democratic reforms were undertaken in the late 1990s. Most strikingly, the Asian financial crisis that nearly bankrupted South Korea in 1997 provided important external momentum for the reforms.

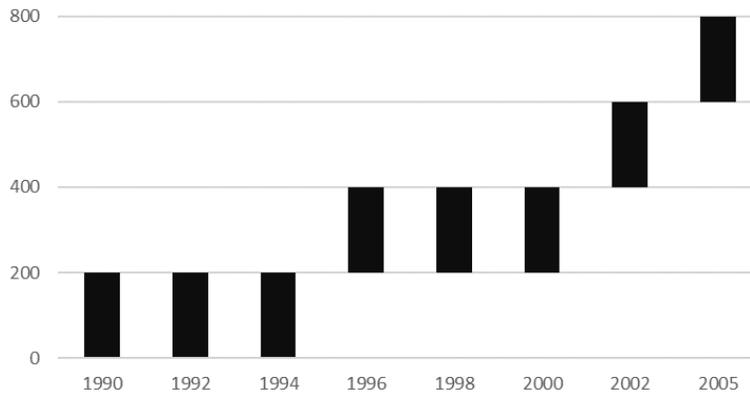
The 1997 crisis affected higher education in three ways. First, in the wake of the crisis, the International Monetary Fund demanded that Korea's Confucian tradition to guarantee jobs-for-life had to end (M. O. Kim and Jaffe 2010, 55). In lieu of an input-based recruiting and promotion system, output or performance levels of individual employees would be evaluated at both companies and large institutions including universities. Figures 1 to 3 indicate that Korean publications in WoS journals rose dramatically starting from the crisis period in the late 1990s. By 2005, the numbers of both SCI and SSCI papers from South Korea had nearly quadrupled over 1990. The rate of A&HCI articles from South Korean researchers started to improve later compared to SCI and SSCI publications, but improved nearly five-fold by 2005 compared to 1990 (Seong et al. 2008). As mentioned above, this remarkable rise under all three indexes can likely be explained by the fact that Korean scholars are much more competitive now.

Figure 1. SCI papers published by Korean institutes, 1990–2005



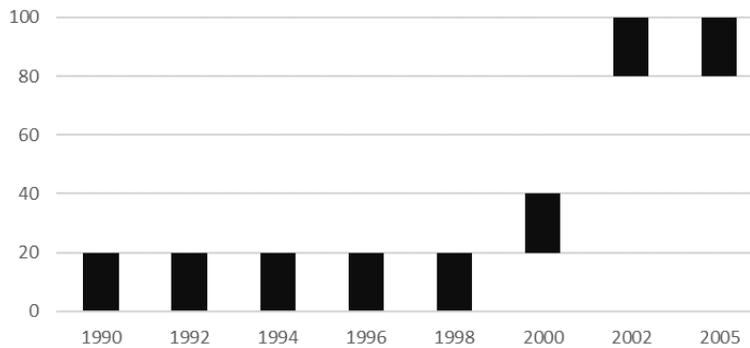
Notes: Minimum to maximum ranges in each year are indicated. Data for 1990 to 1994 are inferred. *Source:* Seong et al. (2008, 62).

Figure 2. SSCI papers published by Korean institutes, 1990–2005



Note: Minimum to maximum ranges in each year are indicated. *Source:* Seong et al. (2008, 100).

Figure 3. A&HCI papers published by Korean institutes, 1990–2005

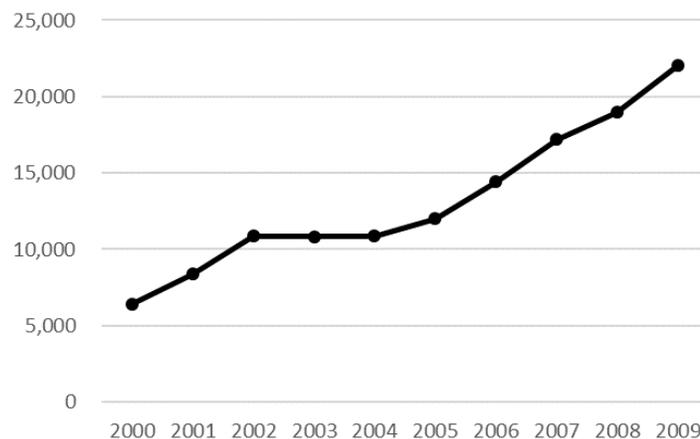


Notes: Minimum to maximum ranges in each year are indicated. *Source:* Seong et al. (2008, 101).

Secondly, during the Asian crisis the Korean government began to place more emphasis on the English language, the *lingua franca* of global communication. At the same time, the government de-emphasized ‘luxury’ languages such as German and French. To make young Koreans more competitive and prepare them for global challenges at research universities and exporting companies, the government made English education mandatory in all schools from the 3rd grade, instead of the 7th, as before the crisis (Yi 2002, 30). Suddenly, English teaching programs boomed on TV and radio, and thousands of native English speakers were hired in South Korea (Yi 2002). Figure 4 shows the dramatic annual inflow of foreign language instructors coming to South Korea since 2000. Most of them taught English to Korean children in private cram schools.

More importantly, the Asian crisis provided decision makers a good opportunity to implement English language reforms in academia, too. English had crowded out German as the *lingua franca* used in natural sciences journals as well as human sciences journals by World War II. In 1996, 91 percent of research in the natural sciences and 83 percent of research in the social sciences and humanities were published in the English language (Darquennes and Nelde 2006, 70). However, even Swedes, who commonly have one of the highest proficiencies of English as a foreign language, predominantly publish research in the Swedish language. “Without reformed graduate programmes [and] efforts to make people write papers in English,” writes Daniel Waldenström (2005, 67), Swedish scholars prefer to publish in their local language. In South Korea, big nationwide reforms enacted in the wake of the Asian crisis made it possible to establish English in all education settings, despite massive protest by local scholars. Most reputable Korean universities increased the share of classes conducted in English to 50 percent, and some technical colleges such as the prestigious Korea Advanced Institute of Science and Technology have 100 percent of classes in English (Schwekendiek 2015). Admittedly, Korean scholars could have simply hired bilingual translators to submit their works for publication in WoS journals. However, the English translation industry in South Korea has been quite underdeveloped, to the extent that even translations of international treaties have been flawed (Fouser 2011). The lack of professional bilingual translators has made it very hard for non-English-speaking Korean scholars to compete. In light of Korea’s aforementioned culture of corruption, the shift to English eliminated many rent-seekers and free-riders since they would not be able to teach or publish at an international level.

Figure 4. Inflow of foreign language instructors to South Korea, 2000–2009



Source: Tonggyecheong (2010, 219).

Thirdly, during the Asian crisis, South Korea underwent a paradigm shift away from a materials-oriented manufacturing economy to a knowledge-based one (Hur and Bessey 2013). Although South Korea initiated liberalization starting from the 1980s, the Asian crisis induced the government to again play an active if not proactive role by investing in key infrastructure (Eichengreen et al. 2012, 83). As in most countries, universities are at the forefront of developing human capital and venturing into knowledge-based technologies. However, in the past, even the most prestigious and leading Korean universities were more teaching-oriented than research-oriented (Oh 2007, 708), and in the wake of the crisis the Korean government earnestly began to upgrade Korean universities to international research universities. With the emergence of world university rankings in the mid-2000s, the Korean government injected about \$110 million to get 10 to 15 Korean universities into the top 200 (Weidman and Joh 2008). Numerous massive government programs in the range of billions of U.S. dollars have been initiated since the late 1990s to strengthen individual researchers and research clusters in the natural sciences, social sciences, and the humanities.

Eighty-three percent of research and development funding for Korean universities comes from public sources (Seong et al. 2008, 35). Most of the public funding is allocated by government agencies such as the Korean Ministry of Education and the National Research Foundation of Korea. Major government-funded schemes were initiated by Korean presidents who regarded higher education policy as a personal mission. As a response to the Asian crisis in 1997, Korean president Kim Dae-Jung (in office from 1998 to 2003) initiated the Brain Korea 21 Century (BK21) project, which ran from 1999 to 2012. It mainly supported education and research in the basic and applied sciences but did also fund the social sciences and medical sciences. The human-rights lawyer turned president, Rho Moo-Hyun (in office from 2003 to 2008), favored the humanities and arts for personal reasons and also because South Korea ventured into cultural technologies—movies, music, online games—at that time. He initiated the Humanities Korea (HK) program, which supported humanities departments for a period of up to ten years. President Lee Myung-Bak (in office from 2008 to 2013) was challenged by the world financial crisis of 2007, and his vision was to further upgrade South Korean research universities as a way out of future recessions. He initiated the World-Class University (WCU) project (2008–2013), for the purpose of which the government targeted prolific, world-renowned foreign professors in any creative and critical field in the humanities, social sciences, and natural sciences to come to South Korea. As of this writing, the current president, Park Geun-Hye, in office since 2013, initiated the Brain Korea 21 Century Plus (BK21+) project, which combines the old BK21 project and the recent WCU project under one umbrella. Each of these large schemes is funded by the government in the range of a few billion dollars over the

respective periods. For instance, the BK21 project was funded with a total budget of \$3.5 billion from 1999 to 2012 (Seong et al. 2008, xv).

Shortcomings in incentivizing exports in academic planning

While this research argues that incentivizing exports in academic planning using WoS journals has mitigated the effects of personal favoritism in South Korea and contributed to the rise of Korean universities, the chosen system of quantified export does have some drawbacks. As the saying goes, you get what you measure.

It seems that the Korean system has led to an overproduction of research papers since Korean scholars are primarily evaluated based on the number of publications in WoS journals. Indeed, since Korean scholars were so underproductive in the past, decision makers put less emphasis on the status of specific journals or the citation count of individual articles published in WoS journals, common markers of the influence of research. Since it is arguably already difficult to publish in any WoS journal, even for Western scholars, the Korean government simply used the three WoS indices per se as quality signals. For comparison, citation count is often an important factor for promotion in U.S. economics departments (Klein and Chiang 2004a). One manifestation of the apparent overproduction of WoS journal articles is that Korean scholars lagged dramatically behind in relative citation counts. For instance, with respect to SCI papers in the mid-2000s, South Korea was ranked 13th in the world in number of publications but only 28th in citations per paper. The average 5-year citation count for Korean SCI papers was only 3.22, as opposed to Swiss papers (ranked first) cited on average 7.14 times or U.S. papers (ranked third) at 6.46. One study on South Korea's prestigious Seoul National University (SNU) revealed that although the number of science publications by SNU faculty members surpassed those of their peers at Stanford University in 2002–2003, the citation count of SNU scholars was only 65 percent of that of Stanford University at that time (Oh 2007).

According to a Korean insider, the low citation counts of Korean scholars are likely due to a lack of original research: “What most, if not all, professors and researchers are doing in Korea is simply repeating what other researchers have done elsewhere in the world—what I refer to as ‘cleaning up’ or ‘janitorial’ works. They are mostly content simply accumulating knowledge ... The sad truth is that [Korea is] without any original research ... I was asked some time ago by one of the *SCIENCE* correspondents as to why Korea spent so much money on research but [lacks] a single world class research outcome” (Cho 1999). It may be that since

Korean scholars are pushed to publish as much as possible in WoS journals, they more conveniently adjust to existing research rather than venturing into completely new research projects (Frey 2003).

As a further illustration of the lack of originality in Korean research, it should be mentioned that South Korea's only Nobel Prize was the Peace Prize awarded in 2000 to then President Kim Dae-Jung for his engagement with North Korea. Japan has several Nobel Prize winners despite having essentially the same language disadvantages. During the Asian crisis, the Korean Minister of Science even had the absurd idea to establish a national institute dedicated to produce future Nobel Prize winners (Cho 1999), without considering the root problems in Korean academia. As a result of the later worldwide financial crisis, a new government-funded research institute, the Institute for Basic Science, has opened in South Korea, with the "big hope is that the country can innovate its way out of a looming economic crisis—and win a Nobel prize in the process" (Zastrow 2016).

Perhaps the main reason for the lack of world-class research from South Korea, as evidenced by its low citation counts, is the incentive system itself. In South Korea, early-career academics are more productive in terms of publications in international journals than late-career scholars (Jung 2014, 98). Since the quantity of international journal papers is more important than the quality in order to gain tenure in South Korea, most early-career scholars focus on maximizing WoS publications.

Another issue is that the WoS system tends to lock scholars into journals included there. True, Korean scholars have great leeway to publish in WoS journals outside their own field or discipline, whereas such publications might not 'count' in many Western contexts (Goldsmith et al. 2001, 218). But the emphasis on WoS journals has many drawbacks.

First, consider the German excellence initiative. It was launched to bring universities to a world-class level, but it did not make publications in indexed (international) journals compulsory. Many German scholars continue to publish books or articles in domestic journals, especially in the humanities and qualitative social sciences, but these forms of publication are 'invisible' publications because they are not evaluated at all in the world university rankings. That may not help raise their status in international rankings, but is humankind not served by scholars addressing those who speak their own language? One legitimate shortcoming of a globally oriented WoS system is that it shunts scholars away from local issues in local languages where they have more local knowledge. That problem looms especially large for the humanities and social sciences, where—let's face it—the vast majority of scholars do not really have much to say to the world at large, but might have something to say to people closer to home.

Second, the focus on the WoS also means that other valid forms of publication such as monographs are undervalued. Particularly, humanists or discursive social scientists may lose from this system, as expressed by a scholar at Yonsei University in South Korea: “In the humanities, it’s very important to publish books rather than journal articles. I mean, journal articles are okay, but they don’t really generate much reputation for the author. But the Yonsei system places very little emphasis on books” (S. K. Kim 2016, 85).

Third, the WoS is a reflection of establishment academia, which some feel has its own biases. Daniel Klein and Eric Chiang (2004b) look specifically at SSCI and complain of slant to the political left, and academia in general is known to lean to the left. Some will argue that, just as Western academia in the twentieth century led many underdeveloped countries in a statist direction, with development planning, import substitution, and socialist ideas and ideals generally, Western academia today could possibly mislead thought, culture, and policy.

Fourth, South Korea’s system gives great advantage to WoS, forgetting that other reputable journal indices exist. For instance, Scopus has replaced the WoS in the QS World University Rankings (2010 to present) after QS and THE split in 2009. While the WoS was taken by the government as a standard in research in the late 1990s, bureaucrats fail to realize that in the meantime Scopus has emerged as a second global standard. The focus on the WoS is making local universities less competitive in areas where other journal indices are strong and perhaps more appropriate.

Fifth, it is doubtful that scholarship should be treated as an economic commodity (Nelson 1959). Since the generation of scientific knowledge is not a market and generates no prices because such knowledge is generally non-proprietary, using a market analogy (i.e., publications in international journals equaling commodities exported) for academic research is perhaps inappropriate.

Sixth, and as a more generalizable criticism, South Korea’s aggressive academic policy might be considered by some scholars as a violation of academic ethics, where researchers are ideally on the “search for truth” in order to “enlighten society” (Polanyi 1945, 1962) rather than being publication machines. The premises for this to happen are a balanced development across scientific disciplines, including even neglected fields, along with decentralized, independent funding (Polanyi 1945; 1962), all of which conditions are perhaps more difficult to meet under the present publish-or-perish system in South Korean academia. In a similar vein, William Butos and Thomas McQuade (2012) argue that destabilizing and distorting effects are less likely to occur under a system of decentralized, competitive funding sources—which is not the case with respect to research in Korean academia which is primarily funded by the government.

Concluding remarks

One lesson that undeveloped countries can learn from South Korea's university reforms is to utilize a quantitative system in the short term. In particular, undeveloped nations that suffer from 'brain drain' and therefore lack experts to assess the quality of projects might benefit from the Korean model. The system requires no English proficiency on the part of bureaucrats, who primarily cross-check the name of a specified journal in a recent WoS list. Since many of today's underdeveloped nations use French, Spanish, or other languages, a WoS-based evaluation system literally overcomes certain language barriers in higher education administration. The Korean system also mitigates mediocrity in hiring and firing, where stellar performers are generally at a disadvantage since incumbent faculty members do not want to be outperformed (Goldsmith et al. 2001, 87). For instance, about 25 percent of Chinese students who study abroad, many of whom are extremely talented, choose to stay in their host nations. These students do not want to return home in part due to widespread corruption and bias in academia, where mediocrity is rewarded and outstanding performance is punished (Cao 2008). As referees and editors of WoS journals reviewing submitted articles are not likely to be susceptible to bribery, the system also minimizes corruption, which is another common issue in today's underdeveloped nations. The combination of quantitative goal posts and critical foreign consumers keeps rent-seeking at bay and ensures that minimum quality standards are met. Thus, the Korean system can break the vicious circle of inefficient recruitment and promotion at universities in underdeveloped countries.

While using the WoS to incentivize scholars in underdeveloped countries might make sense, the example of South Korea also suggests that it comes with disadvantages, as discussed in the previous section.

The alternatives that are actually practical in a given time and place are always just a few, and each alternative involves big drawbacks and apparent injustices. One thing is certain: In academia, like everywhere else, incentives matter.

Most of the statistical data discussed herein, such as the university rankings⁶ or the number of papers published in the SSCI, SCI, and A&HCI, unfortunately

6. Data of the THE-QS World University Rankings (published from 2004 to 2009) cannot readily be compared to the recent THE World University Rankings or QS World University Rankings because the ranking methodology changed (including for instance new criteria such as "industry income"), ranking weights were altered, or because the journal database changed from WoS to Scopus.

exclude the 2010s. Future research will have to extend the analysis of Korean schools and scholars into the current decade.

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