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Who's governing the market? bringing the individual back into the study of the developmental state

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ABSTRACT

Research on the Northeast Asian economic miracle has focused on structural explanations, using institutional, geopolitical, and cultural variables. Much less focus has been on the role of the individuals (or "actors" or "agents") responsible for leading the developmental states. This article contributes by using homophily theory to add a novel explanation for the origins of the success of the East Asian developmental states. Homophily refers to the tendency for people who recognize distinct common attributes to bond, to "stick together". To study homophily, the article analyzes a dataset consisting of the 1,110 individuals who held one of the two most senior positions in the innovation policymaking organizations of the archetypal developmental states (Japan, Korea, and Taiwan) and the region's large, late developer (China), from 1945 to 2021. The article reveals national homophily around educational and occupational dimensions, especially the location of education and professional trajectories. Japan emerges as an outlier with the strongest homophily pattern; with its policy leaders being 6 times more likely than in the other cases to have the same educational and professional background, in terms of degree subject and university, and organizational path. This is surprising given that Japan is the quintessential developmental state; and raises questions about why the other developmental states, which in many respects emulated the Japanese model, did not replicate this aspect. Overall, the evidence suggests nationally distinct patterns of similar elite recruitment to the top of the developmental state resulted in positive developmental outcomes. These patterns were aligned with structural factors in a way that allowed these individuals to formulate and carry through successful policies.

1. Introduction

Explanations of the East Asian economic miracle tend to emphasize the propulsive effect of state industrial strategy in capitalist economies, combined with powerful support from the US government seeking to strengthen its western defense perimeter. Particular attention has been given to the way that state bureaucracies "governed the market" (Wade, 2004) through a delicate balance of autonomy and "embedded" relationships with industry (Evans, 1995). The literature elaborating this "developmental state" approach is vast and includes seminal works by Johnson (1982), Amsden (1989), Woo-Cummings (1999), and Kohli (2004).[1] Other analysts give more weight to variables beyond policy and

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[1] The developmental state approach has certainly not gone unchallenged. Before it came to be elaborated in the 1980s and 1990s, neoclassical economists provided the dominant interpretation of East Asian economic success, on the theme of "they succeeded because they got the prices right." Governments adopted increasingly liberal trade and investment regimes such that domestic prices were aligned to international prices and domestic producers faced unprotected international competition—prompting them to continuously upgrade and diversify (e.g., Balassa, 1981). From the 1990s, "counter-revisionists" argued that accounts of the role of industrial policymaking institutions, such as the Ministry of International Trade and Industry (MITI), harmoniously leading Japan's innovation capacity are overstated. These scholars assert that ineffective policy leadership, a lack of cohesion, and the rise of politicization appeared by the 1980s (Friedman, 1988; Okimoto, 1989; Kitschelt, 1991; Callon, 1995; Noble, 1998; Keller & Samuels, 2003). Scholars have also challenged the consistency of the model, noting that small- and medium-sized enterprises (SMEs) were also driving technology-centric upgrading, rather than only large firms, such as Japan's *keiretsu* or Korea's *chaebol* (Ibata-Arens, 2005; Breznitz, 2007; Greene, 2008; Lee, 2024).

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effective bureaucracy, including human capital investment (Onis, 1991), land reform (Iscan, 2018), the political regime type (Huff, Dewit, & Oughton, 2001), religion and the rationality of Confucianism as a disciplining and motivating culture (Dore, 1987), the size of the domestic market for manufactured goods (Grabowski, 1994), and colonial as well as pre-war origins (Gold, 1986; Kohli, 1994; Greene, 2008). Still others put geopolitics at the center, particularly the US strategy to draw Japan, South Korea, and Taiwan into its sphere of influence and dissuade them from allying with their communist neighbors (Cumings, 1987; Wade, 2019).

Less focus has been on the role of the individuals (or "actors" or "agents") responsible for leading the miracles. There are, though, anecdotal mentions of the traits of some policy leaders. For instance, Cumings (1987) notes that "Ito Hirobumi discovered the secret of the German state, colonial administrators studied French policies of assimilation, architects designed railroad stations in the classic style for Seoul and Taipei" (p. 52). Others point out that key leaders, such as the "father of the economic miracle" in Taiwan, K.T. Li (Greene, 2008), had certain educational backgrounds and spent time living overseas. In a similar way, Haggard and Cheng (1987) state that Korea's Economic Planning Board, which led economic reforms in the 1960s, worked closely with and drew "intellectual inspiration from transnational ties with AID [U.S. Agency for International Development] and the IMF [International Monetary Fund]" (p. 111).

Curiously, when individual agencies are mentioned, it is often without specifying who the individuals are and why they held their beliefs. For instance, in his depiction of Japan, Johnson (1987) asserts that "a developmental elite creates political stability over the long term" (p. 142), without identifying who these individuals were. Anchordoguy (1989) similarly describes MITI as a collective, saying that "MITI had mixed feelings about these firms' collaborations with foreign companies" (p. 25).

This same absence of actor-level characteristics has continued in recent literature. Edler and Fagerberg (2017) study innovation policymaking in an article titled "Innovation Policy: What, Why, and How," without analyzing the individuals who do the policymaking. Breznitz et al. (2018) offer a typology of innovation agencies in terms of the "ends, means and design" of implementing their missions, barely mentioning the people. Kattel, Drechsler, & Karo's (2022) book *How to Make an Entrepreneurial State* addresses "the 'how' question head on"—specifically, how "governments actually organize their efforts in relation to innovation" (p. 11)—but omits the "who" question.

This article advances the literature by exploring individual leaders in their context, to offer a bridge between agency and structural accounts and those that focus on specific (remarkable) individuals. We are interested in the cohesion amongst individual policy leaders in terms of their educational and professional backgrounds. We explore the extent to which there is homophily—the tendency of individuals with similar attributes to associate with each other—amongst policy leaders. Homophily has been shown to explain how 'birds of a feather who flock together' subscribe to similar ideologies or take similar actions (see Feld, 1982; McPherson and Smith-Lovin, 1987; Stolper and Walter, 2019). This sociological approach expects that homogenous groups are more likely to hold similar beliefs and to replicate themselves (around key foci, such as education and occupational experience) over time.

By studying the personal characteristics of the cohort of policy leaders in East Asia's developmental states, we offer an insight into how the homophily of the political leaders "governing the market" may have contributed to the formation and efficacy of the developmental state. Our core research question is: How similar are the education and professional backgrounds of the individuals leading policy within each developmental state? To what extent has the homophily of Northeast Asia's policy leaders changed over time? In answering these questions, we bring individuals' attributes into the analytical lens for studying the developmental state. We also distill 1980s and 1990s developmental state scholarship to ascertain expectations about the foci and density of policy leaders' backgrounds. In a take on Evans, Rueschemeyer, & Skocpol's (2010) oft-cited title, we strive to "bring the individuals back in" by examining the degree of homophily amongst national policy leaders. In doing so, the article offers a novel analytical approach for studying the developmental state.

The main finding is that Japan, the pioneer developmental state, has the greatest coherence, with its policy leaders having similar backgrounds, showing a strong tendency towards studying one degree subject (law) at one elite national university (University of Tokyo) and spending almost all the career within government (as distinct from revolving between government, academia, and business). This early coherence amongst Japan's policy leaders may help explain the country's post-war pursuit of a national development project. While exhibiting the strongest homophily, Japan is not alone in its policy leaders' similarities; China, Korea and Taiwan exhibit strong coherence around particular foci.

In terms of location of studies, we find that elite domestic universities were prominent in the backgrounds of policy leaders in Japan (especially University of Tokyo), Korea (Seoul National, Korea, Yonsei, known as the SKY universities) and Taiwan (National Taiwan University). In China, however, the elite universities of Peking and Tsinghua constituted more modest shares of policy leaders' educational backgrounds. Of them all, Japanese policymakers are the least likely to have studied abroad. Korean and Taiwanese policy leaders are more likely to have studied abroad. We find evidence of change over time with respect to foci in terms of where policy leaders studied; the data implies that geopolitical explanations and the availability of excellent training programs could explain why Korean and Taiwanese policy leaders studied in the United States, and why Russia (likely when it was still the Soviet Union) featured amongst key destinations for China. Over time, each country has become a leading destination for training its own policy leaders (especially at the bachelor's level).

With respect to degree subjects studied, our findings are broadly in line with developmental state scholarship's expectations. Chinese and Taiwanese policy leaders demonstrate a strong tendency to have studied science and engineering, Japanese policy leaders mainly studied law (which focused on public management). Perhaps surprisingly, these patterns have held over time, with law remaining the prominent degree subject in Japan from the post-war years through the 2010s, engineering or natural science persisting in China and Taiwan, and a mix of engineering, law and social science in Korea.

However, these differences in university specialization were not reflected in differences in broad development strategy. On the contrary, compared to the broad sweep of developing countries, the Northeast Asian ones adopted a fairly similar strategy. The law-trained Japanese bureaucrats did not pursue a substantively different policy orientation than the other, more natural science or social science-trained leaders. Our findings suggest that policymaking may be most shaped by the degree of homophily amongst policy leaders rather than the specific studying of one degree subject or another. This may both reaffirm and challenge the 'Chicago boys' research, which suggests that it is exposure to a form of (neoliberal) economic teaching that shaped policy leaders' subsequent policymaking (Becker, 1997).[2] Our findings suggest that 'how much' homophily, not necessarily the 'what' of the foci, may drive policy orientations.

[2] Racko (2011) finds a strong socialization effect in a comparison of value orientations of economics undergraduate students at the orthodox, hard-nosed Swedish School of Economics in Riga, Latvia, and those at the two leading Latvian universities, tracked over two years, 2005–2006 and 2006–2007. The two categories having been similar in demographic characteristics and value orientations at the start, the Swedish School students after two years gave much higher normative value to "instrumental rationality" and to the goals achievable through self-interest, and less to "socially oriented self-transcendence goals."

Finally, we found that the three prior positions that policy leaders were most likely to hold were all in government. In addition, the quintessential developmental state of Japan had policy leaders with the fewest "revolving door" movements. This similar background in government roles contributed to the coherence across Japanese policy leaders. In Korea the policy leaders moved mostly between government and private sector, in China and Taiwan, between government and academia or research. While this revealed cross-national difference, it again underscored the similarity of trajectories *within* each country.

Overall, this study offers an initial step in understanding how individuals coming from similar backgrounds have shaped East Asian developmental states. We contribute to developmental state scholarship by bringing in the individual level of analysis. The homophily of backgrounds in law and government service of policy leaders in the pioneer developmental state, Japan, is striking, and suggests that shared training and career trajectories may have contributed to its miracle. And this finding about Japan raises questions about why the other states, which in many respects purposefully emulated the Japanese model, did not replicate the concentration on law and deep government service. We argue that homophily around educational and professional foci, rather than diversity of expertise and social networks, may help account for differential developmental outcomes. For instance, high degrees of homophily may contribute to strongly held national development project beliefs and a willingness to take national development goals as one's own personal goals, whereas low homophily may not.

This article's data and methods are comprised of a novel analysis of the personal characteristics of Northeast Asia's innovation policy leaders over the post-WWII era. The dataset consists of the 1,110 unique individuals who held one of the two most senior positions in the innovation-centric industrial policymaking organizations of the archetypal developmental states (Japan, Korea, and Taiwan) and the region's large, late developer (China), from 1945 to 2021. Innovation-centric industrial policy refers to industrial policy that strives for technological catch-up or competition at the technological frontier. Hereafter we refer to this policy type as simply "innovation policy" for brevity. Applying state-of-the-art approaches to classifying personal characteristics, university experience is coded in terms of degree level, subject (using UNESCO Education Field Codes 2013), and country. For each individual, the three jobs they held before taking on their leadership role are coded in terms of the industry (using the International Standard Industrial Classification of All Economic Activities (ISIC)) and organization type (e.g., civil association, government, private, research institute, and university).[3]

2. A framework for understanding how the collective backgrounds of East Asia's innovation policy leaders may have shaped developmental outcomes

Homophily is defined as "the principle that a contact between similar people occurs at a higher rate than among dissimilar people", which offers insight into who one associates with, but also, how the associations shape the beliefs they hold (McPherson, Smith-Lovin, & Cook, 2001, p. 416-427). Homophily emanates from different dimensions or experiences, such as gender, socio-economic status, education, or occupation. These dimensions act as "foci" that can shape individuals' future decisions about whom to associate with (Feld, 1982), and the shared beliefs amongst the groups (Stolper and Walter, 2019).

This sociological approach is one analytical framework amongst a wider tradition of research that posits that experiences, such as intensive postgraduate training, create "strong professional identities and shared norms" that shape long-lasting views about optimal policymaking (Weymouth & Macpherson, 2012, p. 675). This line of research is cognate to scholarship on profession-based epistemic communities (Seabrooke & Tsingou, 2014) and socialization among professional groups (Nelson & Katzenstein, 2014), which both emphasize shared training and experience as driving a convergence in beliefs. Emerging research posits that formative educational and professional experiences "imprint" (Stinchcombe, 1965; Mezias, 1990; Marquis and Tilcsik, 2013), leaving an indelible impact on long-lasting beliefs and worldviews. Collectively, this research motivates the expectation that certain experiences are formative, and that the impact of these foci on long-lasting beliefs is accentuated when many members of a group have the same experience.

Researchers have begun to examine the relationship between policy leaders' personal characteristics and economic as well as political outcomes. The attributes studied include family background and socio-economic status (Hayo & Neumeier, 2014), university education (Besley, Montalvo, & Reynal-Querol, 2011; Chwieroth, 2007; Klingler-Vidra and Chalmers, 2023), work experience (Chalmers, Klingler-Vidra, Puglisi, & Remke, 2022), and transnational movements (Klingler-Vidra, Tran & Chalmers, 2021; Mercier, 2016; Kenney, Breznitz, & Murphree, 2013), affects actors' preferences and/or performance. The impacts of policy leaders' personal characteristics have been analyzed in several policy domains, including inflation (Gohlmann & Vaubel, 2007), market-liberalizing reforms (Dreher, Lamla, Lein, & Somogyi, 2009; Chwieroth, 2007), international organization conditionality (Lang, Wellner, & Kentikelenis, 2024) financial (Chwieroth, 2015), trade (Weymouth & Macpherson, 2012), and legal fields (Dezalay & Garth, 2010).

In developmental state scholarship, researchers point to shared beliefs and, separately, similar backgrounds, but the interaction of these two points has not been systematically examined. At the level of institutional shared beliefs, scholars assert that state bureaucrats "share a common sense of purpose" (Yeung, 2016, p. 25). Notions of a "bureaucratic rationality" (Chibber, 2002) and "contextual rationality" (Klingler-Vidra, 2018) also suggest the existence of cohesive belief systems within developmental state policymaking apparatuses. Existing scholarship also includes (anecdotal) observations about the personal characteristics of East Asian political leaders. For instance, scholars have linked select leaders, such as Korea's Park Chung-hee —the country's ruling general from 1961 to 1979—and his preference for Japanese-style industrial management to his education at the Japanese Imperial Military Academy near Tokyo (Fields, 1995; Thurbon, 2016).

Yet researchers do not know enough about where these shared institutional beliefs come from nor how these individual leaders were akin to their cohort. By examining the homophily of each country's policy leaders, this article offers a new line of understanding of the basis of national development projects. To sharpen expectations around the foci that may be propelling homophily amongst Northeast Asian developmental state leaders, we review literature on the personal characteristics of the region's industrial policymaking elite.

2.1. Foci 1: National patterns for pursuing tertiary education in certain countries

The literature reveals that policy leaders were often educational returnees (i.e., those who had studied abroad before taking up policy leadership positions back home). Take Taiwan as an example. The Taiwan paper prepared for the World Bank's 1993 book on the *East Asian Miracle* notes that "most institute researchers [at the Industrial Research and Technology Institute] have a PhD, many from a respected foreign university" (Kim & Leipziger 1993). Amsden (1989) notes that, in Japan and Korea, both countries "send thousands of managers and engineers to foreign countries to learn" (p. 233). Wade (2004) identified "returnees" as "those who returned to Taiwan with a foreign degree" (p. 218) as a category of graduates taking on employment in Taiwan's public and private sectors.

[3] Note that only full-time jobs were included. Board or association positions, or others that were described as honorary or meeting only a few times a year and were simultaneous to other roles, were excluded.

Several studies report that leaders completed studies in Europe, the former Soviet Union, and Japan. For instance, Gold (1986, p. 77) pointed out that K.T. Li, whom many herald as the "father of Taiwan's economic miracle" in the 1960 s and 1970 s, was "a British-trained scientist" (p. 77; he had a postgraduate scholarship to work with the celebrated physicist Ernest Rutherford at Cambridge University). Emphasizing the impact of studying in the former Soviet bloc, Tsai (1999) asserts that Chiang Ching-kuo's state-led industrialization policies in Taiwan in the early 1970 s were "probably owing to his training in the USSR" (p. 77).[4] Gold (1986) also notes that Sun Yat-sen sent "his loyal lieutenant, Chiang Kai-shek (1887–1975), to the Soviet Union for training" (p. 48).

At the level of cadres of leaders' foreign training, Studwell (2014) observes that, in South Korea, "until at least the 1970 s almost all the senior leaders and bureaucrats, including Park Chung-hee and planning chief Chang Ki-yong, were Japanese trained" (p. 82). Pointing to overseas studies in both Europe and Japan, Cao (2004) notes that, in China, during the period of National Party rule, many students studied in "Japan and European countries" (p. 23). Soviet training—in Moscow and also in the recruiting of Russian "defense scientists and engineers" who were brought to Beijing—has been documented for its impact on science and technology policy leaders in China (Cheung, 2022, p. 218–219).

The bulk of references to the place where Northeast Asia's policy leaders completed overseas education suggests the US—a key geostrategic player for the region—as the dominant destination. This tendency seems to be especially predominant at the postgraduate level. For instance, Woo-Cummings (1999) notes a strong pattern of South Korean policy leaders earning a PhD in the US. Similarly, studies of Taiwan's political economy comment on the pattern of obtaining advanced degrees in the US (Gold, 1986; Saxenian, 2006; Breznitz, 2007). Wade (2004) even delineates two opposing camps among Taiwan's industrial policymakers according to where they studied: "editorialists" or "locals" who were educated in China, Taiwan, or Japan, and "academics" who had "typically been to universities in the United States" (p. 220).

For instance, Y.S. Sun, the founder of Taiwan's celebrated Industrial Technology Research Institute (ITRI), was among a group of young technicians sent by the National Resources Commission to the United States in the 1940s for further training (Greene, 2008, p. 122). Saxenian (2006), in her work on the "new argonauts" flying between Taipei and Silicon Valley, explains that the Electronics Research and Services Organization recruited a "US-educated electrical engineer, Ding Hua-Hu, as the first director general" (p. 138). She shows that this was not an isolated practice, as "Genda Hu—who earned a PhD in electrical engineering from Princeton University" (p. 134) became director of ERSO in 1996. Saxenian (2006) reports that the representation of Taiwanese nationals at Stanford University was so well known that it motivated the term "Stanford Mafia." Gold (1986) points out that this pattern of US-educated Taiwanese leaders did not coincide with the origins of the state, but "as those men die off, they are being replaced by a new cohort of foreign-educated, relatively liberal technocrats" (p. 106). He goes on to suggest that "Taiwan's future rests in the hands of an elite many of whose members hold green cards" (p. 106). This underscores expectations for homophily around US education as a foci for Taiwanese policy leaders—and one that increased over time.

This US training is also seen in several studies of Chinese policymaking. A study of three influential think tanks in China found that, at the China Center for Economic Research at Peking University, a think tank founded by Justin Yifu Lin (former chief economist at the World Bank), 87.5% of members obtained their PhD from an American university (Li, 2016). Scholars assert that, as a result of the influx of returnees from studies in the US, "Chinese science has been gradually adopting the international norms about how science should be conducted" (Cao, 2004, p. 51).

Collectively, this review of developmental state literature on the country location of individual leaders and patterns amongst policymaking elite informs Hypothesis 1:

> *H1: Policy leaders from China, Taiwan, and Korea are more likely to study abroad, especially in the US, relative to Japanese policy leaders whose educational homophily is expected to center around studying at domestic institutions.*

2.2. Foci 2: National patterns of studying certain degree subjects

Researchers have made varying assertions about national predispositions toward policy leaders' pursuit of studying certain degree subjects. Taking a regional view, Studwell (2014) posits that "there was almost no role played in Japan, Korea or Taiwan by economists" (p. 82).

In the Chinese context, priorities for innovation were said to be set by "red engineers" who were both technical experts and Communist Party members who led the scientific agenda (Andreas, 2009; Cao, 2004). Cheung (2022: 220–221) emphasizes the concerted effort around boosting science and engineering graduates in China from at least the 1990 s. Lee (2018) explained that "during the two decades leading up to 2010, China was governed by engineers. Chinese officialdom was packed with men who studied the science of building physical things" (p. 51). The technical nature of their background fits with analyses of China's policymaking context more broadly, which has been depicted as "fragmented" and, as a result, "lends itself well to the development of specialized expertise" (Bell & Feng, 2013, p. 118). In the scientific policy arena, "high-energy physicists are among the ones with the strongest voice in the Chinese scientific community" (Cao, 2004, p. 39). Recent media coverage observed the prevalence of science, technology, engineering, and mathematics (STEM) studies amongst the Chinese Communist Party, with a third of the 205 central committee members in 2023 being STEM graduates (White & Yu, 2023).

In Taiwan, references to the educational background of policy leaders routinely emphasize their natural science, particularly engineering, backgrounds. Wade (2004) asserts that "most ministers and senior officials with responsibility for economic affairs graduated in engineering or science" (p. 219). In *Innovation and the State*, Breznitz (2007, p. 145) similarly contends that, in Taiwan:

> almost all of the top personnel of the development agencies and ministries have PhDs in various engineering disciplines. In addition, all the ministers responsible for industrial development, telecommunications, and science-and-technology policies have had doctoral degrees in engineering, before and after democratization. (p. 145)

Saxenian, in *The New Argonauts* (2006), similarly notes that "Taiwan's political leaders in the post-war period were overwhelmingly technocrats, with graduate degrees in engineering-related fields" (p. 133). Gold (1986) states that the Council for Economic Planning and Development's (CIECD) leadership "were primarily engineers and scientists, not economists or politicians," and it was they who "took responsibility for the four-year plans and also promulgated a Ten-Year Plan for 1965–1974" (p. 78). Greene (2008, p. 122) gives the example of Y.S. Sun, ITRI's creator, who was an electrical engineer, and K.Y. Yin, who led the Industrial Development Bureau in the 1950 s, also trained as an engineer.

Japan, and especially the MITI, has been depicted as having an explicit tendency to promote based on the degree subjects studied. However, unlike China and Taiwan, it was law graduates, not natural scientists or engineers, who held leadership positions in Japan. Callon (1995) explains that there are two categories of "the men who will run MITI": "the *jimukan* (general officials) who have a shot at the top, and *gikan* (technical officials), who do not" (p. 50). He goes on to explain that the *gikan* have degrees in "science and engineering" and that "being a

[4] For more on Chiang Ching-kuo's time in the Soviet Union, see Durdin (1975).

gikan dooms an official's career," as the "top MITI positions are reserved for *jimukan"* (Callon, 1995, p. 5). Scholars note that the law school where many policy leaders studied (the University of Tokyo) "focused not so much on law as on European-style public administration" (Studwell, 2014, p. 82). The public administration—rather than strict legal studies—nature of this degree aligns with the expectation that non-technical bureaucrats (e.g., *jimukan)* were trained to help administer industrial activity.

In summary, our distilling of developmental state research on national tendencies for policy leaders to study certain degree subjects motivates Hypothesis 2:

> *H2: Innovation policy leaders in China and Taiwan are most likely to study engineering and natural sciences; in Korea, social science; and in Japan, exhibit a strong tendency for studying law.*

2.3. Foci 3: National patterns for studying at elite national universities

Universities offer a combination of cultural, human, and social capital that boosts the prospects of society's "elites" and the "state nobility" (Bourdieu, 1996; Bloch, Mitterle, Paradeise, & Peter, 2017). Highly ranked universities are examined by researchers for their outsized role in shaping the worldviews and social networks of policy leaders. In the context of the East Asian development state, researchers have acknowledged anecdotally that policy leaders tend to be graduates of elite national universities. This includes University of Tokyo's law school for Japan's MITI leaders (Callon, 1995), Korea's prestigious SKY universities (Lee, 2003), National Taiwan University in Taipei (Greene, 2008), and leading universities in China (Cao, 2004), such as Tsinghua University and Peking University, both based in Beijing. China's "elite scientists have attended 'key,' or prestigious universities in China, and if possible, tended to go abroad for graduate studies" (Cao, 2004, p. 9).[5] In fact, research has revealed that China's elite students (those who obtain the highest scores on college entrance exams) tend to pursue careers with the state, rather than the private sector (Bai et al., 2021).

In Japan and Korea, throughout the post-WWII period, recruitment by innovation policy institutions was depicted as concentrating on a few universities—and sometimes one exclusively. In Japan, scholars note the tendency to recruit from University of Tokyo (Anchordoguy, 2005). Callon (1995) explains that "officials at the highest tier of the internal career-ranking scheme" constitute a "small group of bureaucrats drawn primarily from elite universities such as the University of Tokyo" (p. 50). In Korea, a similar pattern of elite recruiting has been identified as the three SKY universities of Seoul National University, Korea University, and Yonsei University (Wong, 2005). Korea's Economic Planning Board, for instance, was characterized as selecting "its personnel from among the most talented graduates of the most prestigious universities" known as the SKY universities (Fields, 1995, p. 48).

Our review of literature on the tendency for policy leaders to have studied at specific universities motivated Hypothesis 3:

> *H3: Policy leaders—when they do study domestically—are most likely to study at their country's most elite universities: SKY in Korea, Peking and Tsinghua Universities in China, National Taiwan University in Taiwan, and the University of Tokyo in Japan.*

[5] The elite national universities have some direct connections to foreign institutions. Notably, in 1908 the US government "established a preparatory school for Chinese studying abroad, the forerunner of Qinghua University" (Cao, 2004, p. 23). Qinghua is now known as Tsinghua University and is often ranked as the number one university in China.

2.4. Foci 4: National patterns of previous private sector or public experience

In East Asian scholarship on business systems, political economy, and the developmental state, references are made to policy leaders' professional experience. Notably, there are observations of revolving door movements between academic and policy leaders in China, Korea, and Taiwan. In the Chinese context, for instance, movements between the Chinese Academy of Social Sciences and policy leadership roles are well documented (e.g., Bell & Feng, 2013). Cao (2004, p. 10) goes as far as saying that "scholar-officials dominated the social and economic affairs [and] had recognized political, economic, and social privileges and powers" (p. 10).

Emphasizing the frequency of movements, Yeung (2016) laments that Taiwan's "frequent rotation, typically between two to five years, of directors general among different departments and bureaus" is what "contributed to instability and inconsistency in policy directions and initiatives" (p. 37). Similarly, Wade (2004) depicts the Taiwanese setting as follows:

> The top decision-makers in industrial policy generally reach their positions only after long experience in several agencies and public enterprises, during which they build close working relationships with a stable core of colleagues. These ties later help to overcome the difficulties of horizontal communication across ministries and provide a basis for consensus about the broad strategies of industrialization. (p. 225)

There are also examples of policy leaders working in industry and then returning to policy positions in both Korea and Taiwan. A notable example is Y.S. Sun, who was head of Taiwan Power and was then, in 1973, appointed as Minister of Economic Affairs. It was in this role that Sun established ITRI and developed the understanding of the need for better connectedness between Taiwan's research and industrial communities that would serve the country so well after his appointment to the premiership in 1978 (Greene, 2008; Wade, 2004). Coverage of revolving doors in the Korean public policymaking context reveals that recruitment of chaebol executives includes "former high-ranking officials or retired generals, hired not for their managerial skills but for their personal and political influence" (Fields, 1995, pp. 57–58).

In contrast to these frequent movements across academia or industry, research depicts Japan's bureaucracies as being comprised of individuals who pursue lifetime careers in a government agency (Kattel, Drechsler, & Karo, 2022, p. 39). Typically, the public officials leading Japan's effective state–firm relations have backgrounds as public officials, rather than working in a *zaibatsu* or *keiretsu*. Callon (1995) asserts that "MITI is also a career agency" as "officials stay with it until they retire, creating an institutional continuity, history, and esprit de corps" (p. 186). Wade (2004) notes that, while Japanese policymakers are in "frequent contact with businesspeople" they do not move to industry until approaching retirement (p. 328).

This body of work on professional experience foci informs Hypothesis 4:

> *H4: Chinese, Korean, and Taiwanese policy leaders exhibit more "revolving door" movements between private and public sector roles, whereas Japanese policy leaders' experience is largely in the public sector.*

3. Data and methods

To test the hypotheses, we constructed a dataset covering senior leaders responsible for East Asian developmental states' innovation policy (see Schot & Steinmuller (2018) and Edler and Fagerberg (2017) for innovation policy conceptualizations).

The first step was to identify the leading innovation policymaking organizations in each of Northeast Asia's four developmental state regimes: China, Japan, Korea, and Taiwan. This required identifying

flagship innovation policies in each country to discover which organizations are making policy. Canvassing the Global Entrepreneurship Monitor's Startup Nations Atlas of Policies platform,[6] the Innovation Policy Platform, World Bank, European Union,[7] and national governments helped capture a comprehensive set of high-profile innovation policies. This resulted in a list of innovation policies that were originated by 39 agencies: eight each for China, Japan, and Korea, and 15 for Taiwan.[8] The policy analysis and literature review, collectively, helped account for the diffuse nature of innovation policymaking and the myriad agencies involved over the 70-year period. The a ppendix presents a full list of the 39 agencies, including their country, year of formation, and predecessor agency, where applicable.

The two most senior positions (e.g., Director and Deputy Director) in each agency were then identified. This required searching governmental websites that detailed the organization structure to specify which two titles were the most senior and to track how this position changed over time. This approach is consistent with studies of leaders' personal characteristics in innovation policy (Klingler-Vidra & Chalmers, 2023), as well as other empirical cases, such as Chwieroth (2007), who mapped the two most senior financial policy positions (the finance minister and the head of the central bank). These two most senior positions for all innovation agencies from the beginning of the post-war era were mapped in each agency. Taking 1945 as the starting point for data collection ensured a comprehensive approach. Of course, not all four polities were formalized in 1945, and in the case of China, a command economy approach persisted until Deng Xiaoping's ascent in 1978. Again, given the aim of analytically accounting for who was in charge throughout these different epochs, the analysis begins with the immediate end of WWII (see Pempel, 2021, and Callon, 1995, for examples of the emphasis on the beginning of the post-war era).

Next, each individual who held these positions during the 1945–2022 period (1945 for Japan, 1948 for Korea, and 1949 for China and Taiwan) was identified. This was done by conducting in-depth desk research using social media platforms (e.g., LinkedIn, Japan's Line, and China's Weibo), media coverage (e.g., national newspapers indexed on Factiva), and governmental websites. Especially for policy leaders early in the period (e.g., in the 1940 s), obituaries and biographies, such as those indexed by Nikkei Asia were used (see https://asia.nikkei.com/Life-Arts/Obituaries).

The result of these efforts is a novel dataset of 1,276 total position holders, including 1,110 unique individuals (some individuals held more than one of these leadership positions over time). At the country level, this amounts to 328 position holders (250 unique individuals) for China, 405 (374) for Japan, 200 (187) for South Korea, and 343 (299) for Taiwan. The ratio of the number of position holders relative to the number of individuals for each country is 1.3 for China, 1.08 for Japan, 1.07 for South Korea, and 1.15 for Taiwan. Less than 6% of the individuals in the dataset are female. We note that the dataset is skewed toward the 21st century, as the median start date is between 2003 and 2005 across the four countries. This skew reflects the existence of more policymaking organizations and shorter leadership tenures in the 21st century. In the discussion section, we reflect on the challenges this presents, and how we have worked to mitigate the challenges so that this study offers a comprehensive account of the degree of national homophily and its change over time.

Each policy leader was coded based on the following aspects of their tertiary education. To test hypotheses regarding the foci for the country location and degree subject of their education, university experience was coded at four levels—Bachelor's, Master's, MBA, and PhD—according to the institution's name, location (city and country), year completed, and degree subject studied. Coding the country where the university is located enabled the testing of H1. To test H2, the UNESCO 2013 International Standard Classification of Education Field Codes[9] were applied at the two-digit level to code degree subject studied. The 11 two-digit UNESCO categories are: 00 Generic programs and qualifications; 01 Education; 02 Arts and Humanities; 03 Social Sciences, Journalism, and Information; 04 Business, Administration, and Law; 05 Natural Sciences, Mathematics, and Statistics; 06 Information and Communication Technologies; 07 Engineering, Manufacturing, and Construction; 08 Agriculture, Forestry, Fisheries, and Veterinary; 09 Health and Welfare; and 10 Services.

For H3, which explores whether studies at domestic universities took place at elite institutions, attendance at the universities named in the developmental state scholarship was tested. The elite universities specified most in the literature are: Peking University and Tsinghua University in China, the SKY universities in Korea, National Taiwan University in Taiwan, and University of Tokyo in Japan. This is a narrow set of universities considered to be *the* elite universities, which necessarily will mean missing attendance at other highly ranked universities. However, we are analytically interested in accounting for homophily in terms of these policy leaders emanating from specific, elite institutions.

To test the professional experience expectation, H4, the prior work experience of each policy leader was coded. This was done for the three jobs they held prior to their leadership position, including their job title, years in the role, company name, company size, and industry. Each role was coded as pertaining to one of the following five categories: "Government," "University," "Private," "Research Institute," or "Civil association." This delineation of organization types helps to distinguish more carefully between the public and private sectors, by reflecting the scholarship's mention of "research institutes," especially in the Chinese and Taiwanese contexts, with Chinese Academy of Sciences and ITRI. Similarly, the delineation of university as its own category helps to test the expectation that movements were made to and from the university setting, which has been noted as a distinct pathway from advancing within bureaucratic or political bodies.

4. Results

H1 assesses homophily in terms of the country where policy leaders attended university at different degree levels (BA, MA, MBA, and PhD). The central expectation, based on the review of the developmental state literature, is that when policy leaders from South Korea and Taiwan study abroad, they are most likely to study at US-based universities, especially for a PhD. Fig. 1 presents the results for H1, illustrating the country-location for each university attended (y-axis) and the four degree levels for the entire post-war period. The results support H1. First, policy leaders in Korea and Taiwan are clearly more likely to hold US-based degrees than their counterparts in China and Japan. As a share of total degrees, Korean policy leaders exhibit strong homophily in this regard, as they hold twice the share of US-based degrees held by Chinese and Japanese policy leaders, and Taiwanese policy leaders hold 3.5 times more. In terms of PhDs, for China, only about 5% of PhDs are

[6] For more on the GEN's SNAP ATLAS, visit: https://www.genglobal.org/startup-nations/snap#:~:text=The%20Startup%20Nations%20Atlas%20of,public%2Dsector%2Dsupported%20programs.

[7] The European Union funds the "China Innovation Funding" project: https://chinainnovationfunding.eu/china-innovation-policies/.

[8] Identification of policymaking organizations in the four countries revealed relatively more restructuring of Taiwanese policymaking organizations. Yeung (2016) notes that the classic developmental state's "elite bureaucracy" comprised pilot agencies that played an "effective role in conceiving, coordinating and implementing industrial policy" (p. 11). Breznitz et al. (2018), in their account of contemporary innovation policymaking, delineate the range of agencies responsible for innovation policy.

[9] The UNESCO Education Field Codes are available here: https://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-fields-of-education-and-training-2013-detailed-field-descriptions-2015-en.pdf.

earned in the US, while Japan has the fewest, at just 2%; for Korea and Taiwan, about 10% and 20% of PhDs earned by policy leaders are from US-based universities, respectively.

But domestic university degrees, earned at home, make up the bulk of earned degrees in each country. However, China and Japan, with 80% and 90% of domestic degrees, respectively, stand out from Korea and Taiwan on this metric, where only 60%–70% of policy leaders earn domestic degrees.

We also consider how patterns of education destination have changed over time. Table 1 shows the top three most frequent destinations for study across seven time periods (roughly, decades) based on the year that each leader began their policy role. In the 1950s, the United States emerged as a leading educational hub for China, Korea, and Taiwan, while Japan remained the most consistent study destination for its own policymakers. The data implies that China was a top destination for both policy leaders in China *and* Taiwan in the 1950s and 1960s because these individuals had studied at mainland Chinese institutions long before Taiwan was established in 1949. The early pull to US academic institutions may reflect both the geopolitical context and the science and technology prowess of established universities in the United States. Geopolitics and (colonial) history could also help to explain the relative dominance of Japan as a destination for Korea's innovation policy leaders (as Thurbon (2016) and others have shown in their studies of the Japanese training of Korean elites).

In the 1970s and 1980s, China saw more diversification with France and the United Kingdom appearing amongst the leading study destinations, alongside the US, while Taiwan started to have its own domestic institutions amongst the top destinations. Korea continued to split its education paths between domestic institutions and US or Japan-based studies, maintaining homophily in terms of its policy leaders continuing to emanate from similar paths.

Interestingly, and perhaps reflecting both the quality of its institutions and its stature as a leading economy in the region, amongst the policy leaders in position in the 2000s, Japan was a leading destination for the Chinese, Korean and Taiwanese context. These policy leaders studied in Japan earlier in their career, when Japan Inc. was well-established as a global economic power. Again, potentially reflecting geopolitical alliances, the Chinese policy leaders at the helm in the 1990s exhibited homophily as they also had studied in the Soviet Union (Russia) in large numbers. In the most recent period (2010–2022), the United States remained a key destination for university studies across all four countries, with the United Kingdom becoming an important study destination amongst would-be Japanese, Korean and Taiwanese policy leaders. Overall, there is a reasonably strong degree of homophily over time in terms of the set of countries where they studied.

For H2, attention turns away from where policy leaders studied to *what* they studied. The central expectation relates to degree subjects—specifically, that policy leaders in China and Taiwan focus on degrees in engineering and the natural sciences, while those in Korea focus on the social sciences, and those in Japan tend to earn degrees in law. Fig. 2 presents the results of these homophily tests. The most-studied degree subjects (across all degree levels and across the full period) are: in China, the natural sciences (36%) and engineering (35%); in Japan, business and law (44%) and social science (19%); in Korea, business and law (28%), social science (25%), and engineering (24%); and in Taiwan, engineering (34%) and social science (25%).

These results give broad support for H2. China shows a strong emphasis on natural science and engineering in recruitment to the top innovation positions. Japan makes a strong contrast, with a high proportion of degrees in business and law. Even when the business and law category is disaggregated, degrees in law still dominate in Japan, constituting 36% of degrees obtained by Japanese policy leaders. This evidence of strong homophily corroborates assertions that a de facto glass ceiling existed for engineers in organizations like MITI (Callon, 1995), as leadership positions have been said to only be available to generalist graduates, and not engineers. Taiwan has a large share of policy leaders with backgrounds in engineering, as expected; but also, less expected, a pronounced focus on social science. Finally, Korean policy leaders have a more varied mix, from business and law (28%), social science (25%), and a strong representation of degrees in engineering (24%).

The second part of H2 examines change over time in the degree subject studied by policy leaders in each country. Have the homophily trends charted above persisted or shifted? Table 2 shows the most frequently studied degree subjects across seven time periods (roughly, decades) based on the year that each policy leader began their policy role.

The results in Table 2 indicate a great deal of persistent homophily in China and Japan. In China, an early focus on the natural sciences[10] (1950–1990) gave way to a more recent change to degrees in engineering. In Japan, degrees in law are clearly dominant across more than seven decades (1950 to present). The results for Korea are more mixed, with changes in degree frequency across time. Finally, for Taiwan, there is a fairly high degree of consistency in the prioritization of engineering degrees across six of the eight time periods, only punctuated by social science degrees in 1970–1980.

H3 concerns the tendency for foci in terms of policy leaders obtaining degrees from elite domestic institutions. To test H3, the number of degrees obtained from these elite universities was counted for each country, and the percentage of elite degrees out of all degrees in each country was calculated. The results are as follows: Japan, 44%; Korea, 40%; Taiwan, 38.6%, and China, 12%. The highest concentration of elite degrees was in Japan, where 44% of policy leaders attended the University of Tokyo for at least one degree. This is followed closely by Korea, where the SKY universities dominate the backgrounds of innovation policy leadership; but we also note that there were more chances for policy leaders to have attended this elite set, as Korea had three elite universities identified, whereas Japan and Taiwan had only one, and China, two. The path to a leadership position was the least strict in China, only one in ten leaders attended one of the top two national universities.

To get a sense of the distribution of university studies beyond these elite institutions, Table 3 presents the top five universities per degree level per country for the entire period. For China, the table shows that, of the holders of one of the top two positions in its innovation agencies across the entire period, 9.8% had a BSc or BA from Tsinghua, 7.2% from Peking, and so on.

Table 3 reveals that University of Tokyo is the most dominant single university, where more than half of Japanese policy leaders obtained their BSc and BA degrees. The University of Tokyo, in this sense, acts as the single strongest foci for one of the country's homophily.

The final part of the analysis, the test of H4, focuses on the professional experience settings for policy leaders in the data set. Fig. 3 plots previous jobs in terms of their classification as civil associations, government, private sector, research institutes, or universities. Across all four countries, there is a clear tendency for previous employment to be in government jobs. The overall percentage of government jobs relative to all other types of jobs is—in descending order of homophily—72% in Japan, 60% in Korea, 54% in Taiwan, and 45% in China.

Japan's innovation policy leaders show the highest frequency of careers as bureaucrats, consistent with developmental state accounts (see Callon, 1995; Wade, 2004). The second most common job history is in civil associations (11%), followed by universities (7%), private sector (6%), research institutes (4%). China's policy leaders have had much more experience in research institutes (26%), such as Chinese Academy of Sciences (CAS), and universities (19%). Korean policy leaders, by contrast, often have prior experience in the private sector (22%). Finally, Taiwanese policy leaders tend to have prior work experience at universities (22%).

Each country exhibits its own relative tendency for similar

[10] Natural sciences include biology, chemistry, mathematics, statistics, and physics.

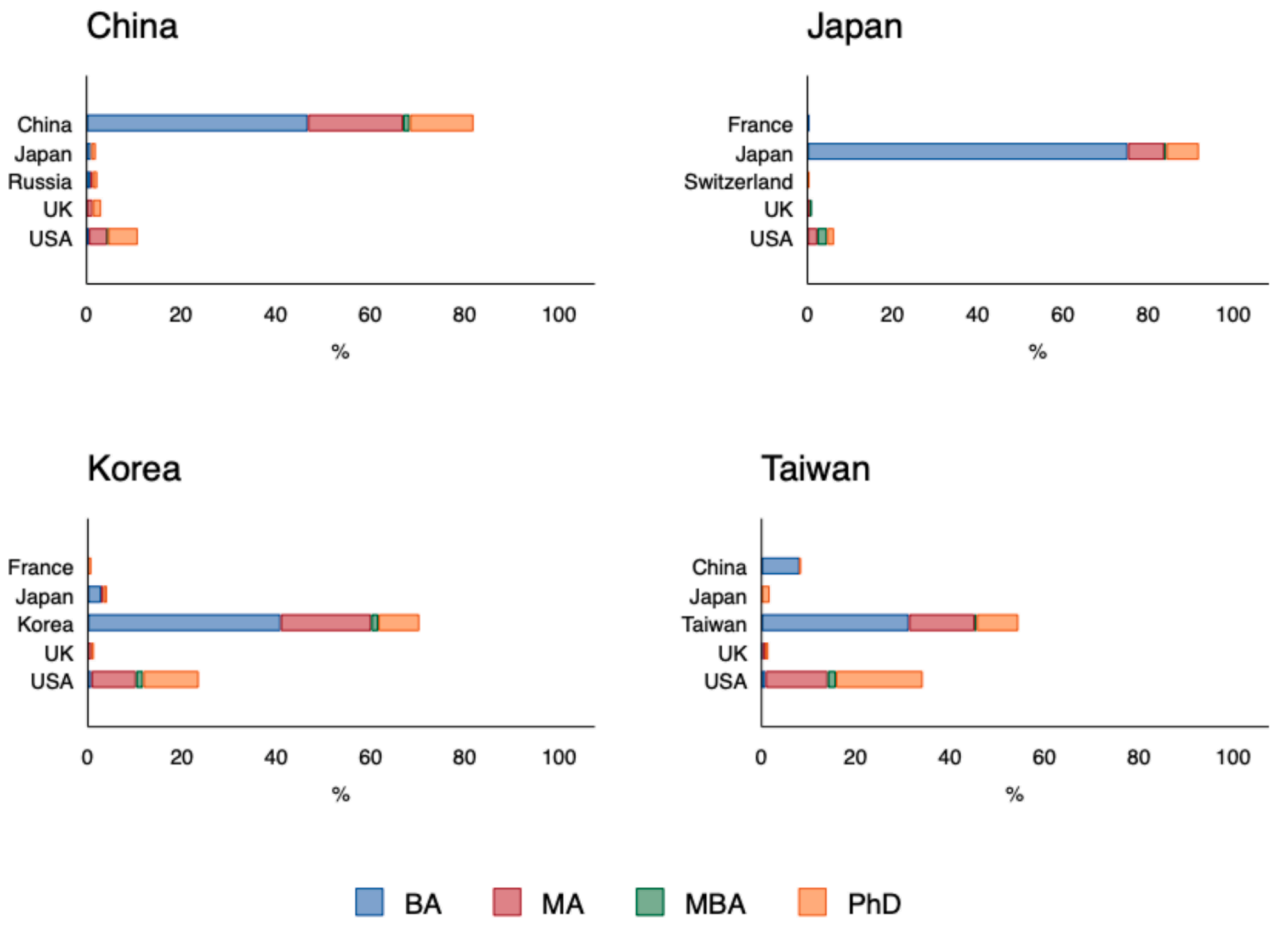

Fig. 1. In which country did policy leaders study at each degree level? Top five countries in which to study.

Table 1
Top Three Country Locations where Policymakers Studied (1950–2022),

Period	China	Japan	Korea	Taiwan
1950–1959	1. USA2. China3. UK	1. Japan	1. Korea2. Japan3. USA	1. China2. USA3. Germany
1960–1969		1. Japan	1. Korea2. Japan	1. China2. USA3. UK
1970–1979	1. China2. USA3. France	1. Japan2. Thailand	1. Korea2. China3. USA	1. China2. USA3. Taiwan
1980–1989	1. China2. USA3. UK	1. Japan	1. Korea2. USA	1. USA2. Taiwan3. China
1990–1999	1. China2. USA3. Russia	1. Japan2. UK	1. Korea2. USA3. Japan	1. Taiwan2. USA3. Canada
2000–2009	1. China2. USA3. Japan	1. Japan2. USA3. Switzerland	1. Korea2. USA3. Japan	1. Taiwan2. USA3. Japan
2010–2022	1. China2. USA3. Austria	1. Japan2. USA3. UK	1. Korea2. USA3. UK	1. Taiwan2. USA3. UK

professional backgrounds, whether it be academics (Taiwan), private sector (Korea) or research institutes (China). This is evidence of professional experience type as another foci for homophily amongst national policy leaders.

To gain a deeper insight into these patterns, we conducted a sequence analysis (using the SQ Ado function in Stata[11]). Fig. 4 plots the top ten most common job experience sequences for policy leaders in each country; each sequence comprises the three jobs held before their leadership role. The x-axis shows job experiences from the earliest job, on the left, to the second, and then third job, on the right. The third job is the one held immediately prior to their policy leader role. The y-axis shows the number of policy leaders per country while the color patterns indicate different career path sequences and corresponds to the legend. For example, we can see that the most common sequence in all four countries is for a policy leader to have held all three prior jobs in government roles, which is indicated by a red color pattern for job1, job2, and job3. In China, and as indicated in the y-axis, more than 100 policy leaders demonstrate this pattern.

This sequence analysis shows a clear picture of the dominance of previous government jobs (illustrated in red) for policy leaders in each country. This is consistent across all countries and is most dominant in Japan. A second finding is the absence of frequent revolving doors: most prior job experience is in just one job type, including having all three prior work roles in a university (dark green) or research institute (orange), which are common career paths for policy leaders in China, Japan, and Taiwan. Korea is strikingly different: having all three prior jobs in the private sector (indicated by the pale green color) is common among policy leaders (though still less common than having exclusive work experience in government).

In this final part of our analysis, we examine the propensity of homophily around three foci: occupation type, degree subject studied, and whether individuals studied domestically. Homophily here is

[11] See https://www.stata.com/statalist/archive/2006–08/msg00186.html (accessed December 30, 2022).

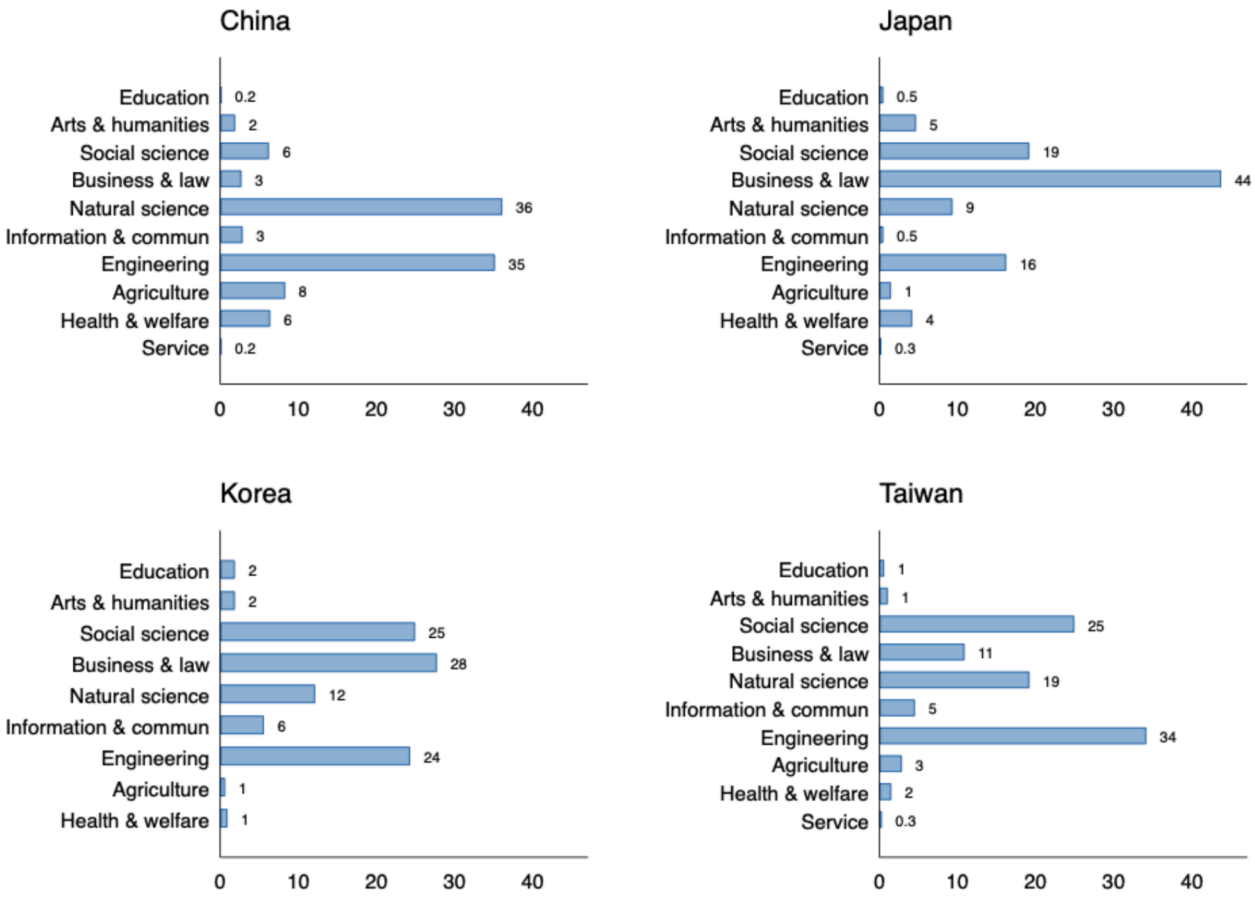

Fig. 2. Degree subjects studied (% nationally).

Table 2
Most-studied degree subject per period (1950–2022)[1].

Period	China	Japan	Korea	Taiwan
1950–1959	Natural sciences	Law	Law	Engineering
1960–1969	Natural sciences	Law	Law	Engineering
1970–1979	Natural sciences	Law	Business and administration	Social sciences
1980–1989	Natural sciences	Law	Engineering	Engineering
1990–1999	Engineering	Law	Social sciences	Engineering
2000–2009	Engineering	Law	Social sciences	Engineering
2010–2022	Engineering	Law	Engineering/Social sciences	Engineering

[a] Observations begin as follows: China (1949), Japan (1945), Korea (1948), and Taiwan (1949). The number of observations in these first few years are too few to delineate any meaningful trends or conclusions. Hence, the table's analysis begins in 1950 for all countries.

measured through the Herfindahl index, which captures the degree of concentration within each dimension. Higher values indicate greater similarity in professional and educational backgrounds. The *Occupation* variable categorizes policymakers' jobs into five sectors: Civil Association, Government, Private, Research Institute, and University, with the index reflecting the homogeneity of occupational experiences. *Degree subject studied* evaluates the diversity of academic disciplines studied, where higher Herfindahl values indicate less subject diversity. The *Studied at home* variable measures whether policymakers were educated domestically or abroad, with the index capturing the proportion of domestic education. The *Overall Homophily* score is the average of these three indices, offering a broad measure of similarity in occupational and educational experiences. The Herfindahl values are detailed in Table 4.

The results indicate varying levels of homophily across the foci. China shows moderate diversity in occupation and subjects studied, but a high concentration of policymakers who studied domestically, leading to an overall homophily score of 0.38. Japan stands out with the highest overall homophily score of 0.53, primarily due to its concentration of policymakers with government jobs and domestic education. Korea presents a moderate level of homogeneity with an overall score of 0.39, but a score of 0.58 for studying at home. Taiwan, with the lowest overall homophily score of 0.35, reflects the greatest diversity in both occupational and educational experiences. These findings illustrate the range of shared experiences among policymakers in different national contexts.

We offer a final test of national homophily, comparing odds ratios based on logic regression analysis. This again reveals that across the education and professional experience foci, Japan stands out as having the greatest homophily. Table 5, below, shows the results for Japan relative to the three other case studies.

The first result is that Japanese policy leaders are 5.6 times more likely to have studied domestically compared to all policymakers in the other three countries. Second, the concentration in Japan's single elite university—University of Tokyo—is 1.85 more likely than that of Chinese, Korean or Taiwanese policy leaders studying at Tsinghua University, Seoul National University or National Taiwan University, respectively. Third, the likelihood of Japanese policy leaders to have studied law is a significant 16.4 times greater than that of the other countries' policy leaders. Fourth, Japan's policy leaders are 1.5 more likely to have government-only careers compared to policymakers in the other three countries. Overall, Japanese policy leaders are 6.34 times more likely to have the same educational and professional background, in terms of degree subject and university, and professional experience path. The leaders of the first economic miracle are, thus, much more

Table 3
Top five universities per degree level per country.

	BSc/BA	MSc/MA	MBA	PhD
China	**Tsinghua University (9.8%)**	Chinese Academy of Sciences (10.4%)	Tongji University (18.2%)	Chinese Academy of Sciences (12.6%)
	Peking University (7.2%)	**Peking University (6.1%)**	China Europe International Business School (9.1%)	Caltech (4%)
	Fudan University (3.3%)	University of Science and Tech. of China (4.3%)	Hunan University (9.1%)	Peking Union Medical College (3.4%)
	University of Science and Tech. of China (2.9%)	Renmin University of China (3.7%)	Party School of the Central Committee of CPC (9.1%)	**Peking University (3.4%)**
	Beihang University (2.6%)	**Tsinghua University (3.1%)**	**Peking University (9.1%)**	Rheinisch-Westfälische Technische Hochschule Aachen (3.4%)
Japan	**University of Tokyo (50.47%)**	**University of Tokyo (26.4%)**	Harvard University (30.7%)	**University of Tokyo (29.5%)**
	Waseda University (7.2%)	Waseda University (9.4%)	Kellog Management School (15.4%)	Tohoku University (6.8%)
	Keio University (6.6%)	Kyoto University (7.5%)	Waseda University (15.4%)	Tokyo Institute of Technology (6.8%)
	Kyoto University (5.3%)	Georgetown University (5.7%)	Carnegie Mellon University (7.7%)	Kyoto University (4.5%)
	Sophia University (2.51%)	Hokkaido University (5.7%)	Cornell University (7.7%)	Massachusetts Institute of Technology (MIT) (4.5%)
Korea	**Seoul National University (43.82%)**	**Seoul National University (24.6%)**	Myungji University (16.7%)	Korea Advanced Institute of Science & Technology (8%)
	Yonsei University (8.4%)	Korea Advanced Institute of Science & Technology (10.66%)	University of Pennsylvania (16.7%)	**Yonsei University (6.82%)**
	Korea University (6.18%)	**Yonsei University (9.8%)**	**Yonsei University (8.3%)**	Massachusetts Institute of Technology (MIT) (4.6%)
	Hanyang University (4.5%)	Hanyang University (5.7%)	Columbia University (8.3%)	Chungbuk National University (3.4%)
	Sungkyunkwan University (4.5%)	Sogang University (4.1%)	Dong-A University (8.3%)	Cornell University (3.4%)
Taiwan	**National Taiwan University (24.3%)**	**National Taiwan University (24.4%)**	National Taipei University (22.2%)	**National Taiwan University (8.3%)**
	National Cheng Kung University (7.1%)	Massachusetts Institute of Technology (MIT) (7.5%)	University of Chicago (16.6%)	Cornell University (5.5%)
	National Chengchi University (6.7%)	National Chiao Tung University (6.9%)	National Taipei University of Technology (11.1%)	Columbia University (4.1%)
	National Tsing Hua University (4.9%)	National Chengchi University (4.5%)	University of Louisville (11.1%)	National Chengchi University (4.1%)
	National Chiao Tung University (4.2%)	Stanford University (4.5%)	University of Southern California (11.1%)	National Taiwan University of Science and Technology (4.1%)

Note: Bold text represents the national elite universities.

likely to have the same beliefs imprinted on them by virtue of the homophily across educational and professional foci.

5. Discussion and Conclusion

This article advances the study of individuals in research on the developmental state and innovation policymaking. While a large body of scholarship has taken institutional and structural approaches to explain why countries pursue strategies (Doner, Ritchie, & Slater, 2005), the article argues that this is an incomplete understanding of policymaking, as the characteristics of the institutions are constructed by the actors who design and manage agencies and policymaking processes. To understand "how to make an entrepreneurial state" (Kattel, Drechsler, & Karo, 2022), the article argues that we need to understand the source of the beliefs of the actors leading the organizations. We extend emerging research on the relationship between individuals and policy outcomes (see Chwieroth, 2007; Klingler-Vidra and Chalmers, 2023; Lang et al., 2024) to offer an initial step in this direction for understanding the developmental state. Our framework is grounded in sociological theories of how the homophily of educational and professional experiences shape adherence to similar beliefs. To apply it to this empirical area, we test our expectations on a novel dataset of innovation policy leaders in China, Japan, Korea, and Taiwan since the end of WWII. The nationally coherent patterns offer a novel explanation for why East Asian developmental states effectively, coherently pursued national development projects.

To ascertain which foci are expected to propel homophily amongst national policy leaders, we distilled remarks made in the developmental state scholarship and tested them against a large sample —- for the first time. We find that anecdotal assertions about the content and cohesiveness of backgrounds of developmental state elites are largely validated by the systematic analysis. In particular, Japanese policymakers are remarkably homogeneous in the location of their tertiary studies, degree subjects, and government-centric career trajectory. It is striking that this pattern of studying law at *the* elite domestic university was not replicated across the developmental states that followed, especially because research suggests that they purposefully adopted other aspects of the Japanese model.

We have four more specific findings. First, Korean and Taiwanese policy leaders frequently studied overseas, especially in their security ally, the US. Second, in terms of universities, Japanese policy leaders studied overwhelmingly at one domestic university; and their Korean and Taiwanese counterparts also came from a tiny number of elite national universities, though less so than in Japan. Peking and Tsinghua universities comprised a much smaller share of Chinese leaders' educational backgrounds, suggesting less homophily in this aspect of the Chinese case. Third, in terms of degree subjects, Chinese and Taiwanese policy leaders mostly have natural science and engineering backgrounds, while Japanese policy leaders studied law (but with a focus on public management).

These homophily patterns have held over time, with law remaining

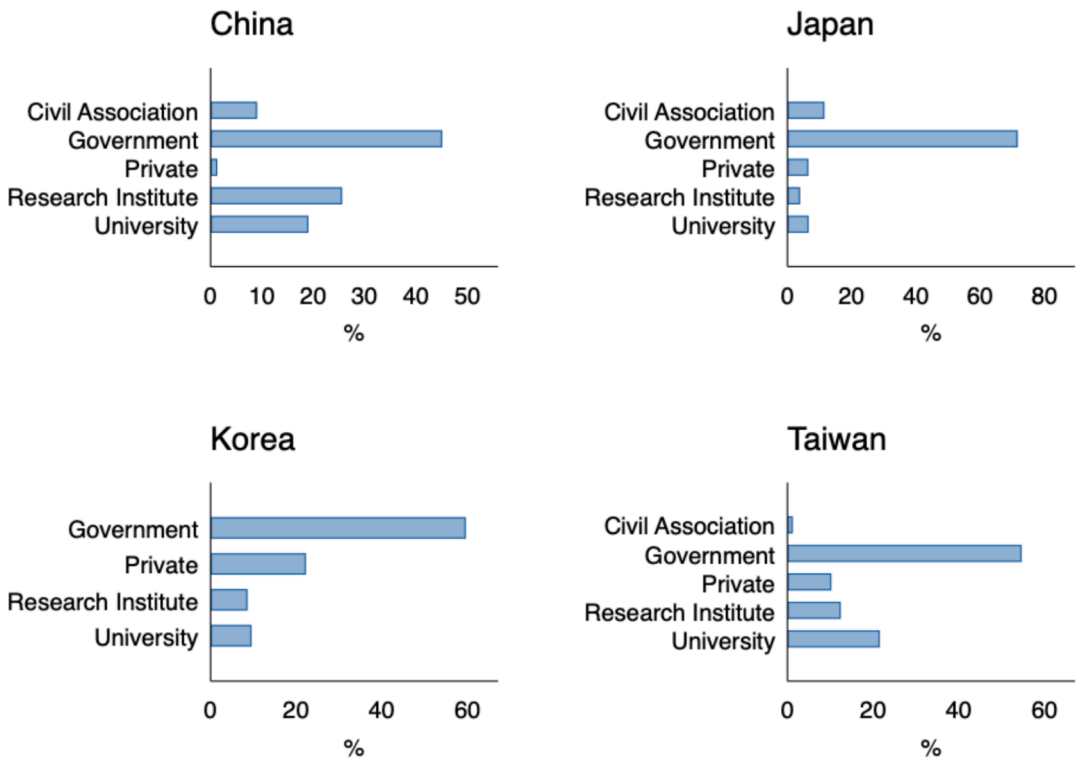

Fig. 3. What jobs did policy leaders do prior to their leadership roles?

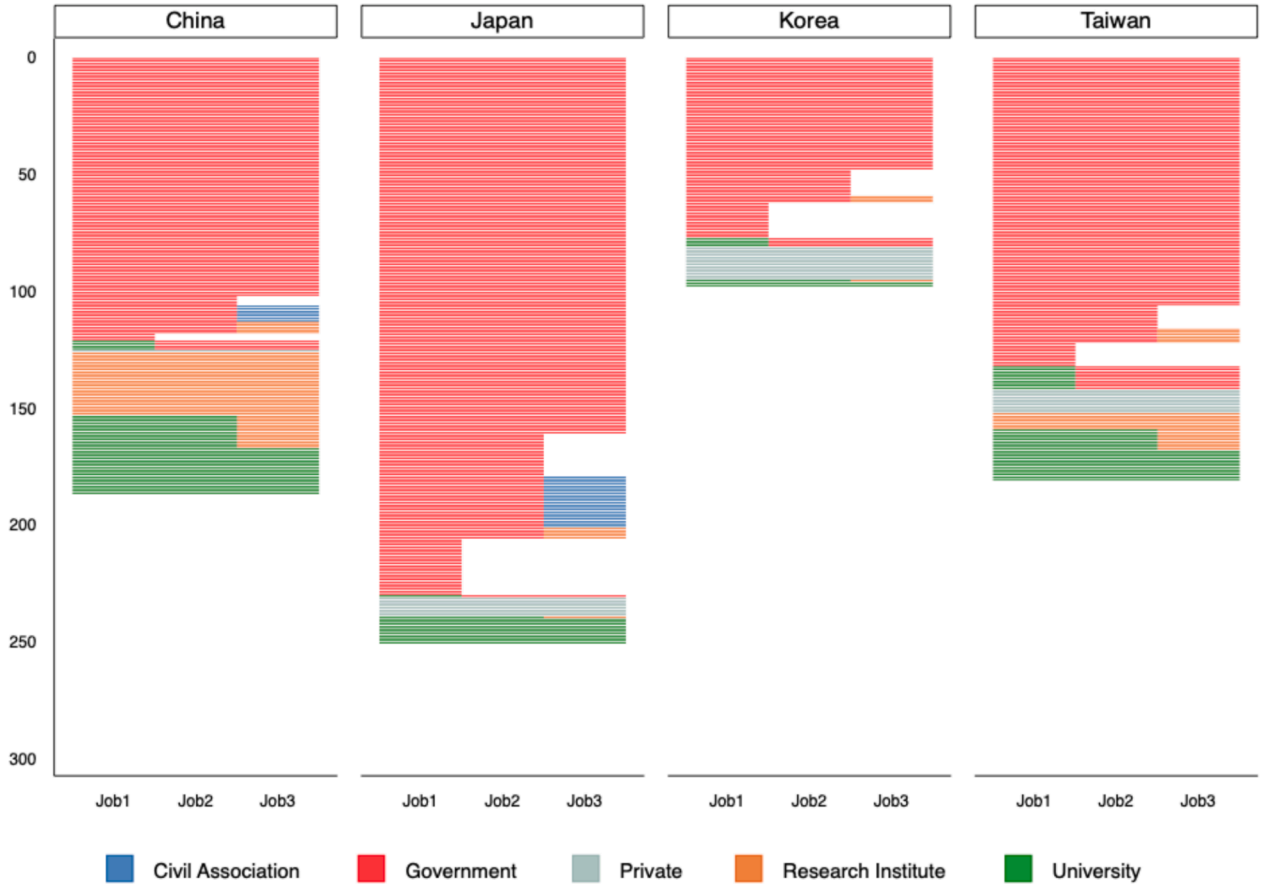

Fig. 4. Top 10 most common career paths (sequence) of policy leaders.

Table 4
Herfindahl values homophily scores.

Country	Occupation	Degree subject Studied	Studied at home	Overall Homophily
China	0.31	0.19	0.65	0.38
Japan	0.54	0.21	0.84	0.53
Korea	0.42	0.17	0.58	0.39
Taiwan	0.37	0.19	0.5	0.35

Table 5
Cross-national comparison of policy leaders' similarity.

Variable	Japanese policymakers are *x* times more likely than those from China, Korea, and Taiwan to have …
Studied at home	5.6 (0.99)**
Studied at their elite national university*	1.85 (0.23)***
Studied law	16.4 (16.46)***
Had a career only in government roles	1.5 (0.19)***

Notes: results are odds ratios with standard errors in parentheses and are based on four different logistic regression models where the number of observations is 2191.
*p < 0.1; **p < 0.05; ***p < 0.01.
*For Korea, rather than all three SKY universities, we only consider Seoul National University, which is attended far more than Yonsei University or Korea University.

the prominent degree subject in Japan from the post-war all the way to the late 2010 s, and engineering or natural science dominating in China and Taiwan. Korea continues to show a mix, with law, business, social science, and engineering all holding the top spot at different points in the post-war era. The Korea mix of degree subjects is more varied than the other countries, but the combination of subjects is persistent over time. Finally, the three prior roles that policy leaders were most likely to hold before joining the leadership were all in government. Among the four countries, Japanese policy leaders clearly had the fewest movements, while Korean policy leaders had more private sector posts, and Chinese and Taiwanese policy leaders moved across academic or think-tank positions.

Analytically, how does this individual level of analysis contribute to the extant literature on the developmental state? First, it shows that there is remarkable homophily in terms of the educational and professional experience of policy leaders, especially in Japan. This similarity in personal characteristics may have shaped the national development project from the outset. But causality could also run in the opposite direction—the developmental state institutions' policy preferences could be the result of the shared beliefs of the individuals initially designing and leading the organizations. In Japan, for instance, studies at a national university, especially the University of Tokyo, and in the subject of law focused on public management, dominated the backgrounds of policy leaders from the start. This shared history, especially the imprinting of a public management ethos that is held by a highly similar cohort, could help explain the national development project norms so strongly held at organizations like MITI. Taiwanese policy leaders have a similar, but less extreme homophily profile, as many studied natural science or engineering, often at a US university. This returnee pattern, imbued with shared social networks and professional training, could help explain both an institutional orientation toward policy that favors US links and prioritizes Silicon Valley-style information and communication technologies prowess (e.g., semiconductors).

Second, it offers another view of the persistence of the developmental state. Scholars have debated whether the developmental state is "dead or alive" (Wade, 2018), and others have claimed that it is so apparent that state-directed development has been replaced with a neoliberal approach that a new research agenda is needed (Naseemullah, 2023). The article suggests that, at the policy leader level, there is evidence of path dependence, as individuals depicted by exhibiting varying high degrees of homophily in terms of similar educational backgrounds and professional experiences have led Northeast Asian innovation policy in the immediate post-war era through to the 21st century.

While the article offers a new line of research between the levels of individual leaders and structural explanations, there are limitations to the approach. First, the dataset's distribution is skewed towards the 21st century rather than evenly distributed across the post-war era. But this skewness does not undermine our ability to examine homophily over time, back to the policy leader cohorts in the early decades. We used the same data collection and coding means across the entire dataset. The relatively greater number of policy leaders in more recent decades reflects the relatively larger number of agencies as well as the shorter periods of time in which some policy leaders are in post (this is especially true in the Taiwanese case).

Second, the study is limited in the extent to which it can systematically test for how much policy leaders' similar experiences and education shaped their beliefs. This is because the policy leaders cannot be readily interviewed or surveyed; many are deceased or otherwise unreachable. One way forward in testing this relationship could involve studying their speeches or policies made while they held their leadership role. As an illustration, Klingler-Vidra and Chalmers (2023) analyze the media coverage of innovation policy leaders who held office from 1998 until 2019. This approach is relevant for the more recent policymakers in the dataset, but not equally possible for those who served at the start of the post-war period. Still, our novel analysis of the homophily of national policy leaders offers an explanation for the source of the shared beliefs about national development projects in the Northeast Asian region.

Avenues for future research include exploring the other direction of policy leaders' travel; that is, studies can explore what policy leaders do afterward. For instance, the "descending from heaven" concept that is common in the Japanese context involves policy leaders who retire and then take up high-profile industry positions. Johnson (1982) describes this *amakudari* ("descent from heaven"), which occurs at a fairly young age. Wade (2004) also discusses this tendency to seek a good job upon retirement from civil service roles. Examining revolving door movements after holding policy leader roles could offer new insight into sources of embeddedness and ability to achieve political settlements. Future research could also advance these individual-level understanding in terms of agency and contextual types. For instance, studies could examine educational and career trajectory patterns in terms of innovation agency types, such as Breznitz et al.'s (2018) five typologies. Studies can also explore the extent to which more and less politicized innovation policymaking organizations are underpinned by different human and social capital patterns. And then there is the task hinted at but not explored here, of integrating these "who" patterns with macro-structural factors, such as geostrategic and political alliances and imperatives, that allowed these individuals to carry through successful national development projects, taking national development objectives as their own personal objectives.

CRediT authorship contribution statement

Robyn Klingler-Vidra: Writing – review & editing, Writing – original draft, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization. **Adam William Chalmers:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Robert Wade:** Writing – review & editing, Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1

Appendix:. Innovation agencies

Country	Organization	Year founded	Previous entity
China	Ministry of Communications and Information	1999	
China	China Association for Science and Technology	1958	
China	Chinese Academy of Sciences	1949	Academia Sinica
China	Ministry of Industry and Information Technology / Ministry of Industry & Information Technology (MIIT)		
China	State Council of China / Chinese Academy of Engineering (CAE)	1994	
China	National Development and Reform Commission / State Development Planning Commission (NDRC)	2003	National Development Planning Commission(NDRC pre-2003)
China	Ministry of Science and Technology (MoST)		
China	Cyberspace Administration of China (CAC)		
Japan	Japan Innovation Network	2013	
Japan	National Institute of Science and Technology Policy	1988	
Japan	Ministry of Economy, Trade and Industry	2001	Ministry of International Trade and Industry (MITI)
Japan	Japan External Trade Organization	1958	
Japan	Small and Medium Enterprise Agency	1948	within MITI
Japan	Information-Technology Promotion Agency	2004	
Japan	Innovation 25 Strategy Council	2006	
Japan	Council for Science, Technology and Innovation	2014	Council for Science and Technology Policy (CSTP)
Korea	Ministry of Science and ICT	2017	Ministry of Science, ICT and Future Planning
Korea	Ministry of Science, ICT and Future Planning	2013	
Korea	National Science and Technology Council	1999	
Korea	Ministry of SMEs and Startups	2017	Small and Medium Business Administration (SMBA)
Korea	Korea Technology Finance Corporation	1989	
Korea	Center for Creative Economy and Innovation	2014	
Korea	Korea Institute of Science and Technology Information	1962	
Korea	Korea Technopark Association	1997	
Taiwan	Ministry of Science and Technology (MoST)	2014	National Science Council
Taiwan	National Science Council (NSC)	1967	
Taiwan	National Council on Science and Development	1959	
Taiwan	National Development Council (NDC)	2014	Council for Economic Planning and Development
Taiwan	Ministry of Economic Affairs (MOEA)	1937	National Economic Council
Taiwan	Industrial Development Bureau, MOEA	1937	
Taiwan	Industrial Technology Research Institute (ITRI)	1973	
Taiwan	Institute for Information Industry (III)	1979	
Taiwan	Taiwan Institute of Economic Research (TIER)	1976	
Taiwan	Council for Economic Planning and Development (CEPD)	1977	
Taiwan	Department of Industrial Technology, MoEA	1979	
Taiwan	Council for United States Aid (CUSA), Executive Yuan	1948	
Taiwan	Chung-Hua Institute for Economic Research (CIER)	1981	
Taiwan	Council for International Economic Cooperation and Development	1963–1973	
Taiwan	Economic Planning Council	1973–1977	

Data availability

We will make the policy leader codebook and dataset available as an online resource on SSRN.

References

Amsden, A. (1989). *Asia's next giant: South Korea and late industrialization*. Oxford University Press.

Anchordoguy, M. (1989). *Computers Inc.: Japan's challenge to IBM*. Harvard University Press.

Anchordoguy, M. (2005). *Reprogramming Japan: The high-tech crisis under communitarian capitalism*. Cornell University Press.

Andreas, J. (2009). *Rise of the Red Engineers: The Cultural Revolution and the Origins of China's New Class*. Stanford: Stanford University Press.

Bai, C.-E., Jia, R., Li, H., & Wang, X. (2021). Entrepreneurial Reluctance: Talent and Firm Creation in China. *National Bureau of Economic Research*. https://doi.org/10.3386/w28865

Balassa, B. (1981). *The newly industrializing countries in the world economy*. Pergamon.

Becker, G. (1997). What Latin America owes to the "Chicago Boys." *Hoover Digest*. October.

Bell, S., & Feng, H. (2013). *The Rise of the People's Bank of China: The Politics of Institutional Change*. Harvard University Press.

Besley, T., Montalvo, J. G., & Reynal-Querol, M. (2011). Do educated leaders matter? *Journal of Economics, 121*, F205–F227. https://doi.org/10.1111/j.1468-0297.2011.02448.x

Bloch, R., Mitterle, A., Paradeise, C., & Peter, T. (2017). *Universities and the production of elites: Discourses, policies, and strategies of excellence and stratification in higher education. Palgrave.*

Bourdieu, P. (1996). *The state nobility: Elite schools in the field of power*. Stanford University Press.

Breznitz, D. (2007). *Innovation and the state: Political choices and strategies for growth in Israel*. Taiwan and Ireland: Yale University Press.

Breznitz, D., Ornston, D., & Samford, S. (2018). Mission critical: The ends, means, and design of innovation agencies. *Industrial and Corporate Change, 27*(5), 883–896. https://doi.org/10.1093/icc/dty027

Callon, S. (1995). *Divided sun: MITI and the breakdown of Japanese high-tech industrial policy, 1975–1993*. Stanford University Press.

Cao, C. (2004). *China's scientific elite*. Routledge Curzon.

Chalmers, A. W., Klingler-Vidra, R., Puglisi, A., & Remke, L. (2022). In and out of revolving doors in European Union financial regulatory authorities. *Regulation and Governance, 16*(4), 1233–1249. https://doi.org/10.1111/rego.12424

Cheung, M. T. (2022). *Innovate to Dominate: The Rise of the Chinese Techno-Security State*. Ithaca: Cornell University Press.

Chibber, V. (2002). Bureaucratic Rationality and the Developmental State. *American Journal of Sociology, 107*(4), 951–989. https://doi.org/10.1086/341010

Chwieroth, J. (2007). Neoliberal economists and capital account liberalization in emerging markets. *International Organization, 61*, 443–463. https://doi.org/10.1017/S0020818307070154

Chwieroth, J. (2015). Professional ties that bind: How normative orientations shape IMF conditionality. *Review of International Political Economy, 22*(5), 757–787. https://doi.org/10.1080/09692290.2014.898214

Cumings, B. (1987). The origins and development of northeast Asian political economy. In F. C. Deyo (Ed.), *The political economy of the new Asian industrialism* (pp. 44–83). Cornell University Press.

Dezalay, Y., & Garth, B. (2010). *Asian legal revivals: Lawyers in the shadow of empire*. University of Chicago Press.

Doner, R. F., Ritchie, B. K., & Slater, D. (2005). Systemic Vulnerability and the Origins of Developmental States: Northeast and Southeast Asia in Comparative Perspective. *International Organization, 59*(2), 327–361. http://www.jstor.org/stable/3877907.

Dore, R. (1987). *Taking Japan seriously: A Confucian perspective on leading economic issues*. Stanford University Press.

Dreher, A., Lamla, M. J., Lein, S. M., & Somogyi, F. (2009). The impact of political leaders' profession and education on reforms. *Journal of Comparative Economics, 37*, 169–193. https://doi.org/10.1016/j.jce.2008.08.005

Durdin, T. (1975). Chiang Ching-kuo's Taiwan. *Pacific Community, October*, 92–117.

Edler, J., & Fagerberg, J. (2017). Innovation policy: What, why and how. *Oxford Review of Economic Policy, 13*(1), 2023. https://doi.org/10.1093/oxrep/grx001

Evans, P. (1995). *Embedded autonomy: States and industrial transformation*. Princeton University Press.

Evans, P., Rueschemeyer, D., & Skocpol, T. (2010). *Bringing the state back in*. Cambridge University Press.

Feld, S. L. (1982). Social Structural Determinants of Similarity among Associates. *American Sociological Review, 47*(6), 797–801. https://doi.org/10.2307/2095216

Fields, K. J. (1995). *Enterprise and the state in Korea and Taiwan*. Cornell University Press.

Friedman, D. (1988). *The misunderstood miracle: Industrial development and political change in Japan*. Cornell University Press.

Gohlmann, S., & Vaubel, R. (2007). The educational and occupational background of central bankers and its effect on inflation: An empirical analysis. *European Economic Review, 51*, 925–941. https://doi.org/10.1016/j.euroecorev.2006.05.001

Gold, T. B. (1986). *State and society in the Taiwan miracle*. Armonk, M. E: Sharpe.

Grabowski, R. (1994). The successful developmental state: Where does it come from? *World Development, 22*(3), 413–422. https://doi.org/10.1016/0305-750X(94)90131-7

Greene, J. M. (2008). *The origins of the developmental state in Taiwan*. Harvard University Press.

Haggard, S., & Cheng, T. J. (1987). State and capital in the East Asian NICs. In I. F. Deyo (Ed.), *The political economy of the new Asian industrialism* (pp. 84–135). Cornell University Press.

Hayo, B., & Neumeier, F. (2014). Political leaders' socioeconomic background and fiscal performance in Germany. *European Journal of Political Economy, 34*, 184–205. https://doi.org/10.1016/j.ejpoleco.2014.01.009

Huff, W. G., Dewit, G., & Oughton, C. (2001). Credibility and reputation building in the developmental state: A model with East Asian applications. *World Development, 29*(4), 711–724. https://doi.org/10.1016/S0305-750X(00)00118-2

Ibata-Arens, K. (2005). *Innovation and entrepreneurship in Japan: Politics, organizations, and high tech firms*. Cambridge University Press.

Iscan, T. (2018). Redistributive land reform and structural change in Japan, South Korea, and Taiwan. *American Journal of Agricultural Economics, 100*(3), 732–761. https://doi.org/10.1093/ajae/aax093

Johnson, C. (1982). *MITI and the Japanese Miracle The Growth of Industrial Policy, 1925-1975*. Stanford University Press.

Johnson, C. (1987). Political institutions and economic performance. In F. Deyo (Ed.), *The political economy of the new Asian industrialism* (pp. 136–164). Cornell University Press.

Kattel, R., Drechsler, W., & Karo, E. (2022). *How to Make an entrepreneurial state: Why innovation needs bureaucracy*. Yale University Press.

Keller, W. W., & Samuels, R. J. (2003). *Crisis and innovation in Asian technology*. Cambridge University Press.

Kenney, M., Breznitz, D., & Murphree, M. (2013). Coming back home after the sun rises: Returnee entrepreneurs and growth of high-tech industries. *Research Policy, 42*(2), 391–407. https://doi.org/10.1016/j.respol.2003.11.001

Kim, K., & Leipziger, D. M. (1993). *Korea: A case of government-led development*. World Bank.

Kitschelt, H. (1991). Industrial Governance Structures, Innovation Strategies and the Case of Japan: Sectoral or Cross-National Comparative Analysis. *International Organization, 45*, 453–493. https://doi:10.1017/S002081830003318X.

Klingler-Vidra, R. (2018). *The venture capital state: The Silicon Valley model in East Asia*. Cornell University Press.

Klingler-Vidra, R., & Chalmers, A. W. (2023). Entrepreneurial university's regional socio-economic development: The alumni policymaker mechanism. *Business and Politics*. https://doi.org/10.1017/bap.2023.9

Klingler-Vidra, R., Tran, B. L., & Chalmers, A. W. (2021). Transnational experience and high- performing entrepreneurs in emerging economies: Evidence from Vietnam. *Technology in Society, 66*, Article 101605. https://doi.org/10.1016/j.techsoc.2021.101605

Kohli, A. (1994). Where do high growth political economies come from? The Japanese lineage of Korea's "developmental state". *World Development, 22*(9), 1269–1293. https://doi.org/10.1016/0305-750X(94)90004-3

Kohli, A. (2004). *State-Directed Development: Political Power and Industrialization in the Global Periphery*. Princeton University Press.

Lang, V., Wellner, L, & Kentikelenis, A. (2024). Biased bureaucrats and the policies of international Organizations. *American Journal of Political Science,* https://doi.org/10.1111/ajps.12921.

Lee, B. (2003). How the "SKY" universities dominate. *Korea JoongAng Daily*, January 27.

Lee, K.-F. (2018). *AI superpowers: China, Silicon Valley, and the new world order*. Houghton Mifflin Harcourt.

Lee, K. (2024). *Innovation-Development for Detours for Latecomers*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009456234.

Li, C. (2016). China's new think tanks: Where officials, entrepreneurs, and scholars interact. *China Leadership Monitor, 29*, 1–21.

Marquis, C., & Tilcsik, A. (2013). Imprinting: Toward a multilevel theory. *Academy of Management Annals, 7*(1), 195–245. https://doi.org/10.1080/19416520.2013.766076

McPherson, J. M., & Smith-Lovin, L. (1987). Homophily in Voluntary Organizations: Status Distance and the Composition of Face-to-Face Groups. *American Sociological Review, 52*(3), 370–379. https://doi.org/10.2307/2095356

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a Feather: Homophily in Social Networks. *American Review of Sociology, 27*, 415–444. https://www.jstor.org/stable/2678628.

Mercier, M. (2016). The return of the prodigal son: Do return migrants make better leaders? *Journal of Development Economics, 122*, 76–91. https://doi.org/10.1016/j.jdeveco.2016.04.005

Mezias, S. J. (1990). An institutional model of organizational practice: Financial reporting at the Fortune 200. *Administrative Science Quarterly, 35*(3), 431–457. https://doi.org/10.2307/2393312

Naseemullah, A. (2023). The political economy of national development: A research agenda after neoliberal reform? *World Development, 168*. https://doi.org/10.1016/j.worlddev.2023.106269

Nelson, S. C., & Katzenstein, P. J. (2014). Uncertainty, risk, and the Financial Crisis of 2008. *International Organization, 68*, 361–392. https://doi.org/10.1017/S0020818313000416

Noble, G. W. (1998). *Collective action in East Asia: How ruling parties shape industrial policy*. Cornell University Press.

Okimoto, D. (1989). *Between MITI and the market: Japanese industrial policy for high-technology*. Stanford University Press.

Onis, Z. (1991). Review: *The Logic of the Developmental State*. *Comparative Politics, 24*(1), 109–126.

Pempel, T. J. (2021). *A regime of regimes: Prosperity and plunder in the Asia-Pacific*. Cornell University Press.

Racko, G. (2011). On the normative consequences of economic rationality: A case study of a Swedish Economics School in Latvia. *European Sociological Review, 27*(6), 772–789.
Saxenian, A. (2006). *The new argonauts: Regional advantage in a global economy*. Harvard University Press.
Schot, J., & Steinmueller, W. E. (2018). Three frames for innovation policy: R&D, systems of innovation and transformative change. *Research Policy, 47*(9), 1554–1567. https://doi.org/10.1016/j.respol.2018.08.011
Seabrooke, L., & Tsingou, E. (2014). Distinctions, affiliations, and professional knowledge in financial reform expert groups. *Journal of European Public Policy, 21*(3), 389–407. https://doi.org/10.1080/13501763.2014.882967
Stinchcombe, A. L. (1965). Social structure and organizations. In J. G. March (Ed.), *Handbook of organizations* (pp. 142–193). Rand McNally & Co.
Stolper, O., & Walter, A. (2019). Birds of a Feather: The Impact of Homophily on the Propensity to Follow Financial Advice. *Review of Financial Studies, 32*(2), 524–563. https://doi.org/10.1093/rfs/hhy082
Studwell, J. (2014). *How Asia works: Success and failure in the world's most dynamic region.* Profile Books.
Thurbon, E. (2016). *Developmental mindset: The revival of financial activism in Korea.* Cornell University Press.
Tsai, P.-L. (1999). Explaining Taiwan's economic miracle: Are the revisionists right? *Agenda: A Journal of Policy Analysis and Reform, 6*(1), 69–82.
Wade, R. H. (2004 [1990]). *Governing the market: Economic theory and the role of government in East Asian industrialization*. Princeton University Press.
Wade, R. H. (2018). The developmental state: Dead or alive? *Development and Change, 49*(2), 518–546. https://doi.org/10.1111/dech.12381
Wade, R. H. (2019). East Asia. In D. Nayyar (Ed.), *Asian Transformations: An Inquiry into the Development of Nations* (pp. 477–503). Oxford: Oxford University Press.
Weymouth, S., & Macpherson, J. M. (2012). The social construction of policy reform: Economists and trade liberalization around the world. *International Interactions, 38*, 670–702. https://doi.org/10.1080/03050629.2012.726185
White, E., & Yu, S. (2023). Xi's dream of a Chinese military-industrial complex. *Financial. Times., 20.* June.
Wong, J. (2005). Re-making the developmental state in Taiwan: The challenges of biotechnology. *International Political Science Review., 26*(2), 169–191. https://doi.org/10.1177/0192512105050
Woo-Cummings, M. (Ed.). (1999). *The developmental state*. Cornell University Press.
World Bank. (1993). *The East Asian miracle: Economic growth and public policy*. Oxford University Press.
Yeung, H.-W.-C. (2016). *Strategic coupling: East Asian industrial transformation in the new global economy*. Cornell University Press.