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Social Capital and Innovation

- ## Can Social Trust Explain the Technological Innovation of the High-performing East Asian Economies?

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Abstract: The economic success and innovative outcomes of the high performing East Asian countries, albeit often characterized as low-trust societies, suggests reexamination of the presumed positive relationship between social trust and innovation. Multi-level analyses conducted in this paper reveal that the role of social capital in innovation is different in East Asia. Shared social norms such as growth primacy and reciprocity and values of accepting competition and performance-based incentives are the most essential driving-force of innovation in the East Asian countries, whereas social trust does not play a positive role there. The importance of the shared social norms and collective goals can be explained by the prominent role of the state in the East Asian development.

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1. Introduction

As Coase (1960) argued, social trust can facilitate innovation because it can reduce transaction costs among economic players. This argument is further supported by the school of social capital (Putnam 2000; Fukuyama 1995). In explaining the role of social trust, Fukuyama (1995) introduced the notion of high-trust and low-trust societies that are distinguished by the extent of trust-clusters. In high-trust environments, trust-based relationships exist between a large number of social actors so that individuals with wide ranges of backgrounds can socialize and cooperate with one another. On the other hand, in low-trust milieus, trust remains in families and friends and therefore interactions and cooperation with unrelated people are limited. As generalized trust with strangers (high-trust clusters) facilitates sharing valuable information and knowledge with wide ranges of entrepreneurs and economic actors, it plays an important role in innovation through the spillover of learning in society (Welter 2012). Therefore, countries of high-trust are likely to foster innovative entrepreneurship and economic growth. This hypothesis of social trust is further empirically examined in applied economic literature, in that its positive relationship with innovation and growth is provided (see Akcomak et al. 2009, Beugelsdijk and Schaik. 2005, Hauser et al. 2007, Knack and Keefer 1997, La Porta et al. 1997, Paldam and Svendsen 2000, and Zack and Knack 2001).

However, when one considers high-performing East Asian countries, this link may be puzzling. East Asian countries – especially China but also Korea to some degree – are often defined as low-trust societies (Fukuyama 1995) because personal ties based on family values tend to overshadow broader social networks and generalized trust. Despite the presumed low trust, East Asian countries demonstrate a high level of innovation that has contributed to their rapid growth in the last several decades. For instance, the Global Innovation Index that evaluates the inputs and outputs of innovation at the country level worldwide ranks East Asian countries ahead of most other countries in terms of innovation in technological and knowledge development – e.g. Singapore 5th, South Korea 12th, Hong Kong 14th and China 17th out of 126 evaluated countries in 2018 (in addition, Japan is ranked 13th). Also, these countries are characterized as early adopters of outcomes of innovation such as IT technologies, online games, and new medical treatment (e.g. Lasik).

This East Asian conundrum necessitates the reexamination of the relationship between social trust and innovation. Indeed, the relationship is likely complex and dynamic instead of

straightforwardly positive in a static manner. Specifically, social trust does not necessarily promote innovation directly, but its effect may be compounded with other societal conditions. For instance, it may not be trust itself but rather the latent social values underlying social trust – such as shared social norms, goals, and reciprocity – that are the key contributors to innovation. This presumption is articulated because innovation can take place when society shares certain goals of development that stimulate cooperation among stakeholders. Particularly in the East Asian contexts, development has been led by the state, in that the state plays the role of an entrepreneur by itself and participates in the market as the leader of innovation (that is different from the industrialization paths in the West that were mainly led by individual entrepreneurs). Under the collective leadership of the state, the role of social trust and social capital in innovation can be different from what was observed in the Western development. Because the state mediates cooperation among individual entrepreneurs and spillovers knowledge and technology, the level of trust between individual entrepreneurs may not be as important as in the West. It may rather be other social norms and values such as the degree to which individual entrepreneurs share the collective goals of development and accept the modes of such development proposed by the state that are crucial determinants of state-led innovation. With this argument, this paper is aimed to empirically examine how such collective social norms leverage innovation in East Asia by borrowing the concepts of social capital theory and disentangling dimensions of social capital to specify their roles in innovation.

To do so, this paper employs both macro and micro-analyses using the World Values Survey through which the relationships between different components of social capital (social trust, networks, norms, and values) and innovation are identified in six high performing East Asian economies (China, Hong Kong, Japan, South Korea, Singapore, and Taiwan). The findings of this paper show that social trust – generalized trust among unrelated people – is not an important determinant of innovation in East Asia, while the positive relationship between trust and innovation is generally supported worldwide. This weak tie between trust and innovation is found not only in countries with Chinese-majorities and South Korea which are considered low-trust societies, but also in Japan, a presumably high-trust society according to Fukuyama. Instead of social trust, shared societal goals of growth primacy and norms of accepting competition and performance-based incentives are the prime drivers of innovation in East Asia. This finding further contributes a new piece of evidence in explaining the East Asian development by revealing the importance of competition-based innovation (instead of cooperation-based competition as proxied by social trust).

2. Measuring Social Capital in the Context of the East Asian Innovation Economies

The central question of this paper addresses how presumably low-trust East Asian countries have assumed lead roles in innovation economy. One potential answer is that the relationship between social trust and innovation differs in East Asia compared to other economies, and social trust does not necessarily play an important role in innovation in the East Asian context. Instead, there are other crucial aspects of social capital that overshadow the effect of social trust and lead innovation there. This speculation becomes plausible if we consider the developmental path of the East Asian countries that upgraded their economic structures from agriculture to high-technology-based innovation economies within a few decades only. In the unprecedently rapid economic success of East Asia, the role of states is prominent because states have participated in the markets as innovative entrepreneurs themselves – distinguished from the Western development, in which innovation was predominantly led by private entrepreneurs (Moon and Prasad 1994). Whilst trust between entrepreneurs and investors can be an important driving force of private-led innovation as seen in the West, the essential element that facilitates public-led innovation can be different. Particularly, in state-led innovation, trust in formal institutions can be more important than trust between individuals. Furthermore, in order to participate in innovation projects sponsored by the state, it is necessary for stakeholders to share goals and demonstrate collective will for innovation and development mandated at the societal level. In this regard, social norms of shared values and orientation towards collective development can play a more deciding role in stimulating innovation than social trust. Thus, these types of social capital, namely trust in formal institutions and shared social norms and goals, are proposed as promoters of innovation in East Asia instead of social trust. With this argument in mind, this paper decomposes social capital into different components (trust, networks, values and norms) and identifies the net effect of each element to shed light on the role of social capital in the context of the East Asian innovation.

In decomposing the elements of social capital, this paper follows the definition of OECD's Measurement of Social Capital Project (Scrivens and Smith 2013). According to OECD, social capital is disentangled into four categories: personal and social networks, cooperative norms and values, trust, and civic engagement. This definition corresponds with the arguments of Putnam (1993) and Coleman (1990) who suggest social networks and shared norms as facilitators of social trust and civil participation. Hence, the empirical investigation of this paper

is designed to account for trust, norms, and network effects in its model. Furthermore, trust and network effects are distinguished between public and private domains. This is because trusting family (personal trust) and trusting unrelated persons (generalized trust) create different radiuses of trust (trust-clusters, Putnam 2000). Generalized trust can reach and include significantly more people for cooperation and investment activities and that is crucial to innovation on a large scale. With a similar argument, social networks are also divided based on their extent with outreach involving different people: namely, personal networks (hobby-based) and public-oriented networks (humanitarian-based). In addition, trust in public domains is separately accounted for by trust in formal institutions (namely, courts and parliaments) and fair rules that reflect the trustworthiness of social environments.

In decomposing the components of social capital, this paper places a particular emphasis on social norms shared by members of society because shared social norms arguably enabled the fast, state-led economic growth, and innovation of East Asia by providing collective goals and values encouraging development. Thus, shared norms and values are singled out as independent components of social capital in this paper in order to establish their direct relationship with innovation. Accordingly, the measurements of reciprocity (solidarity), shared societal goals of economic growth, and values of competition- and incentive-orientation (as the modes of achieving the societal goal of development) are incorporated in the empirical model of this paper.

3. Macro-analysis

Before closely examining the relationship between social capital and innovation in East Asia at the micro-level, a macro-analysis is conducted in this section to determine whether the effects of social trust and other components of social capital are different in East Asia compared to other countries. If so, such evidence can be used to support a distinguished role of social capital specific to the East Asian economic development.

Table 1 provides the results of the macro-analysis using the panel data of the World Values Survey as the measurements of people's aggregate social capital and the Global Innovation Index and the numbers of patents as innovation outputs at the country level. The empirical model used for the macro-analysis is presented below.

$$\text{Innovation}_{it} = \alpha_i + \beta_1 \text{social trust}_{it} + \beta_2 \text{social network}_{it} + \beta_3 \text{trust in formal institutions}_{it}$$
$$+ \beta_4 \text{shared goal}_{it} + \beta_5 \text{tolerance}_{it} + \beta_6 \text{GDP pc}_{it} + \beta_7 \text{population}_{it} + \gamma t + u_{it}$$

This model applies a decomposition method that distinguishes different components of social capital into: social trust (the share of individuals who trust other people in general), social networks (the share of individuals who have active membership in humanitarian organizations), trust in formal institutions (the share of individuals who trust the national parliament), the shared goal of growth (the share of individuals who suggest growth as the prime societal goal), and tolerance towards minorities (the share of individuals who accept homosexuals as neighbors). Social capital is divided into five categories in the macro-model here due to data availability. But, it is further decomposed with additional sets in the micro-analysis in the following section as more data are available in the micro-model. The decomposition of social capital enables us to find whether the presumed effect of social trust on innovation actually captures the net effect of social trust, or if latent effects of other components of social capital indeed drive the supposed relationship between social trust and innovation. Besides the five social capital variables, income (GDP pc) and population variables enter the model as control variables as they reflect important country characteristics.

In the macro-model, two innovation measurements are used as the dependent variables. First is the (log) number of patent applications of a country in a given year. Patents are considered as an indicator of innovation outputs and therefore the number of patents is the most frequently used measurement of innovation in the literature (Knack and Keefer 1997 and Zak and Knack 2001). Second, the Global Innovation Index – published by Cornell University and the World Intellectual Property Organization – is employed as an alternative measurement because this composite index reflects multi-dimensional facets of innovation. Among the different sub-components of the index, the sub-index of Knowledge and Technology Outputs is used in this analysis as the dependent variable. This sub-index consists of measurements of knowledge creation (e.g. patent applications), impact (e.g. high-tech. outputs), and diffusion (e.g. intellectual property receipts). It is chosen because this index focuses on the outputs of high-technology-related innovation activities that are most relevant for the scope of the analysis in this paper.

The period of investigation lies between 2005 and 2017 when the dependent variable is (log) patent applications, given that the data of the social capital variables are available in the World

Values Survey for this time-period. When the dependent variable is the Global Innovation Index (GII), the analysis includes the period of 2014–2017 due to the data availability of the GII. The cross-country time series data enables us to control for unobserved country heterogeneity, in that fixed effects are used for the model of patents and random effects for that of the Global Innovation Index. For the latter, random effects are applied because the social capital variables do not vary over the period from 2014 to 2017 (the latest wave of the World Values Survey ends in 2014). The rest of unobserved effects is addressed as an error term (u_{it}) and time-effects are controlled for by using year dummies (t) as denoted in the equation above.

In Table 1, the results are separately presented between the global sample of countries available in the World Values Survey (up to 83 countries) and six East Asian countries (China, Hong Kong, Japan, South Korea, Singapore, and Taiwan). The comparison between the full and the sub-sample of East Asia makes it possible to identify whether the effects of social trust and other components of social capital differ in East Asia. In the full sample, it is evident that social trust has a positive effect on innovation (both patent applications and the Global Innovation Index). Without considering the other components of social capital (see Columns 1 and 3), increasing social trust by 1 percentage point (pp.) increases the number of patent applications by 5.2 pp. and the score of the Global Innovation Index by 0.2 pp. When social networks, trust in formal institutions, shared societal goals, and tolerance are accounted for as the compounding effects of social capital (see Columns 2 and 4), the effect of social trust decreases but remains positive and significant. Given that accounting for the other compounding effects of social capital reduces the effect of social trust by between 17 and 60 percent, 40–83 percent of the total effect of social capital can be attributed to social trust in the global sample.

However, when the sample is limited with the six high-performing East Asian countries, the results present a quite different outlook. Without controlling for the other compounding effects of social capital, social trust has no effect on innovation (patent)[1] in these countries (Column 5), in contrast to the positive effect worldwide. Moreover, the effect of social trust becomes negative – although marginally significant at a 10 percent level only – after accounting for the compounding effects (Column 6). Instead, it is social norms, networks, and trust in formal

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[1] In the East-Asian sample, the number of patent applications is used as the sole dependent variable because the number of observations is too small when the Global Innovation Index is used instead.

institutions that promote innovation in East Asia, as all of these compounding effects become positive and significant.

This comparison signals that the role of social trust is different in the fast-growing East Asian economies with state-led innovation from other countries. This evidence provided by the macro-analysis calls for a closer examination on how different aspects of social capital contribute to innovation in East Asia. With this in mind, a more in-depth analysis using micro-data is conducted in the following section.

4. Micro-analysis

4.1. Model

In this section, the relationship between innovation and social capital in East Asian countries is more carefully examined by using different measurements of innovation and further decomposed components of social capital. In doing so, a micro-analysis that exploits individual variations is conducted for two reasons. First, this analysis can show how individuals' social capital influences their attitudes toward innovation in terms of stated preferences. This approach adds behavioral evidence of the role of social capital to the macro-level analysis. Second, the application of the micro-data allows the use of finer sets of social capital and innovation measurements because several variables are not available for all waves of the World Values Survey and therefore cannot be used for the panel analysis at the country level. In this micro-analysis, the 6th wave of the World Values Survey (2010–2014, the most recent data available) is used because this survey provides the largest set of social capital measurements.

Accordingly, 12 variables that reflect different aspects of social capital (instead of five variables in the macro-analysis above) are incorporated in the model. In particular, through these finer measurements, social capital in public and private spheres are distinguished. As Fukuyama (1995) points out, trusting unrelated people can enlarge the radius of people who can be trusted while trusting personally connected people would limit the radius of people trusted. The first refers to generalized trust in public spheres that can be used to promote knowledge sharing and investment in innovation, but the latter restricts cooperation and interactions with a broad spectrum of individuals, affecting innovation activities negatively. With this argument in mind, trust is divided into two measurements in this analysis: trusting unrelated people (generalized

trust) and trusting friends and relatives (personal trust). Furthermore, social networks that reflect the scope of connectivity among individuals and also function as a tool of informal sanction are decomposed into personal interest-based and public interest-driven networks: membership in recreational (sports and arts) and humanitarian networks. Also, trust in formal institutions is further detailed based on types of institutions: trust in parliaments, courts, and the fairness of the rule. The shared social norms and values are elaborated into: reciprocity, the shared societal goal of growth (growth primacy), the acceptance of competition-based values, tolerance towards minorities (homosexuals), and acceptance towards economic inequality caused by performance-based incentives.

Social Capital = {trust in strangers, scale 1–4; personal trust, scale1–4; social networks (humanitarian), scale 0–2; social networks (sports and arts), scale 0–2; trust in parliaments, scale 1–4; trust in courts, scale 1–4; trust in fairness, scale 1–10; reciprocity, scale 1–6; shared goal of growth, scale 0–1; competition-orientation, scale 1–10; tolerance, scale 1–10; acceptance towards inequality, scale 1–10}

The innovation measurements that are used as the dependent variable are individuals' attitudes towards technological and scientific development and new ideas and creativity. These variables measure individuals' preferences that reveal how much they value innovation. Six measurements comprise the set of the dependent variables as presented below:

Innovation = {giving an importance to: new ideas and creativity, scale 1–6, technological development, scale 1–3, science and technology in life, scale 1–10, science and technology in future, scale 1–10; and acceptance towards the statement, we depend too much on science (*as an antagonistic attitude against innovation*), scale 1–10, science makes the world better, scale 1–10}

In addition, individuals' demographic characteristics are also included as control variables in this micro-model. They are: an individual's gender (being a female), age (and age^2), marital status, income level, employment status (self-employed and unemployed), education (university degree), and an individual's preference towards risk-taking. Among these control variables, education proxies the trustworthiness of one's environments as educated individuals tend to interact with others who are also educated and thus presumably more trustworthy. Attitudes towards risks are included because innovation involves risky initiatives and therefore

9

an individuals' preference towards risks can be an important personal trait in measuring preferences towards innovation. Also, the self-employed may be more willing to accept innovation, while the opposite would be true for the unemployed. Moreover, each country dummy variable is incorporated in this model to account for shared cultural and cognitive frames (same language, rules, history, shared, collective experience, etc.) among individuals from the same country. Accordingly, the micro-model takes the following form below.

$$\text{Innovation}_i = \alpha + \Sigma_k \beta_k \text{' social capital}_{ki} + \Sigma_j \phi_j x_{ji} + \Sigma_m \lambda_m \text{' country}_{mi} + u_i$$

As the micro-analysis employs one wave of the World Values Survey, this model exploits individual-level variations without time-dimensions. In this model, k denotes each of the 12 social capital variables, j each of the nine demographic variables (x), and m each of the six country dummies. In addition to this model of the six countries, further micro-analyses are conducted for each country in order to identify country-specific effects of social capital and compare their differences across the countries. In this country analysis, country fixed effects are naturally excluded in the model and therefore, the equation of each country-analysis is modified as following.

$$\text{Innovation}_i = \alpha + \Sigma_k \beta_k \text{' social capital}_{ki} + \Sigma_j \phi_j x_{ji} + u_i$$

4.2.Micro-evidence

The micro-evidence further suggests that the role of social trust is complex in East Asia. The results presented in Table 2 show the effects of different components of social capital in the six East Asian countries, in that the importance of the shared social norms and goals towards growth is underscored. Note that when the dependent variable is 'too much dependence on science', the effects are expected to be opposite to those in the other models because this variable reflects negative attitudes against innovation. The micro-models of innovation are estimated by using an ordered probit regression method first given the ordered structures of the dependent variables and then by OLS in order to gauge the marginal effects.

Closely examining the effect of each component of social capital provides contradicting evidence for the role of social trust. Trusting unrelated people (strangers) constrains individuals from having positive attitudes towards development in technology and science (*Technological*

Development) instead of boosting their support for innovation. The generalized trust plays a positive role in innovation only when it concerns promoting new and creative ideas (*New Ideas and Creativity*). This finding of the generally negative effect of social trust maintains regardless of the in/exclusion of the other components of social capital. Adding the other social capital variables in the model intensifies the negative influence of social trust as the size of the effect increases by 30–60 percent (and when the dependent variable is '*Science Makes the World Better*', the negative magnitude becomes twice as large).

Instead of generalized social trust, personal trust (trusting related people) plays a more positive role in innovation in East Asia. This type of trust has a positive effect on four of the six innovation measurements. This finding hints at a possibly peculiar aspect of East Asian development, in that its innovation has been facilitated through cooperation between personally connected individuals instead of broad spectra of people. On the other hand, the role of social networks – both public and personal-interest driven – is limited in explaining innovation in this region.

Different from the negative or insignificant effect of generalized social trust, trust in formal institutions is more important for the promotion of innovation. Trust in the three different types of formal institutions (courts, parliaments, and fairness of the rule) has a significant effect of increasing individuals' positive attitudes towards innovation as seen in three to four models out of six innovation measurements.

More importantly, shared social norms and societal goals reveal the most prominent effects on determining one's attitudes toward innovation. Particularly, the shared goal of growth, competition-orientation, and acceptance towards economic inequality have robustly positive, significant effects in all models, through which positive attitudes towards innovation are boosted and negative attitudes (*Too Much Dependence on Science*) are constrained. Agreeing that economic growth is the prime goal of the country enhances positive attitudes towards innovation by 1.5–2.4 pp. and reduces negative perceptions by 1 pp. Increasing the degree of accepting the norm of competition by 10 pp. enhances one's innovative attitudes by 1.2–8.7 pp. Acceptance of economic inequality (performance-based incentives) as a tool of promoting individual efforts by 10 pp. boosts one's supportive attitudes towards innovation by 0.3–3.3 pp.

These findings emphasize the importance of the shared societal goal of growth primacy through stimulating competition and individual efforts in East Asia as these social norms are found as the driving-forces of boosting innovative attitudes of individuals. In addition, the importance of social norms is further supported by the evidence for the positive role of reciprocity that is found significant in four of the six models. Increasing the degree of reciprocity for others in society by a one-score point (on a six point-scale) encourages one's positive attitudes towards innovation by about 1–2 pp. The positive role of social norms found in this analysis provides an indication that the East Asian innovation and growth has been achieved through societal collective will and shared norms towards development.

Among the individual demographic characteristics, gender is an important trait that shapes one's attitudes towards innovation. Women tend to support innovation less than men, and the negative effect of being a female on innovation is still found after controlling for one's risk-taking attitudes. This gender difference in innovation may be explained by the limited role women could play in developmental phases therefore resulting in them being given less opportunities to contribute to innovation (this is probably true not only in East Asia but also worldwide). Determining why women are less innovative suggests a new question for future studies that, of course, requires a more extensive examination. In contrast to gender, the effects of income and education are insignificant in most specifications. However, some evidence shows that higher income and university education enhance individuals' positive attitudes towards innovation, and this finding implies that innovation can be an outcome of trustworthy environments (with educated, resourceful people).

4.3. Comparison across Six East Asian Countries

The micro-evidence suggests that shared social norms and goals are important factors of innovation in East Asia. However, the role of this type of social capital can be different across each of the East Asian countries. Thus, a further micro-analysis is implemented in this section by using the sample of each of the six East Asian countries. This approach enables us to identify any country-specific effects of the different aspects of social capital. Table 3 presents the results of the country-analyses. Overall, the findings suggest that there exist country differences in the role of social norms and social trust inside the East Asian countries.

First, in China (see Table 3.1), the importance of shared social norms and values is generally confirmed but the specific aspects of social norms that are important are different from the aggregate analysis of the six-countries above. The most crucial component of social norms in explaining one's attitudes towards innovation in China is reciprocity among individuals in society. The effect of reciprocity is significant in all six models – increasing positive attitudes towards innovation and decreasing negative perceptions against it. Also, the values of accepting competition as a means to stimulate individual efforts has a largely significant and positive effect on innovation. However, the shared goal of growth primacy plays a minimal role in determining innovative attitudes among Chinese – the effect is either insignificant or sometime even negative, contrary to the positive effect at the aggregate level of the six countries shown in Table 2. This finding is puzzling in nature because innovation is the outcome of two potentially conflicting values, mutual assistance and competition, at the same time in China. It mirrors the complex path of China's fast development, in which both traditional (reciprocity) and individual (competition) values co-exist and concur. In addition, the effect of trust – both generalized and personal trust – is largely trivial as is the limited role of social networks. There is evidence that trust in formal institutions – parliaments – is important, signaling that trusting people's representation is closely associated with acknowledging innovation as essential for the development of the country.

In Hong Kong (Table 3.1), the results are different from China to a considerable extent. Generalized trust has a pronounced role in discouraging innovative attitudes – similar to the aggregate results of the six countries but different from the insignificant effect in China. Also, the effect of reciprocity is less important in Hong Kong than in China as it is significant in two models out of six only. On the other hand, there are also similarities with China. The shared goal of growth does not play any meaningful role in Hong Kong. The important component of social capital for people in Hong Kong is values of accepting competition; these have a significantly positive effect in four of the six models, with this finding corresponding to that of China and the aggregate results of the six countries. Trust in formal institutions is also important in Hong Kong – particularly, trust in the fairness of the rule and, to some extent, trust in parliaments and courts. The differentiated results between (mainland) China and Hong Kong show that different social norms and values are stressed in these two economies despite their shared ethnic backgrounds and Chinese tradition. This might be explained by different economic and institutional developmental paths they have taken in the recent history. This

interpretation hints that current values of a country overshadow rooted traditional norms in explaining innovation.

South Korea and Japan show similar effects of social capital to a great extent (Table 3.2). In both countries, the effect of trust is considerably limited in explaining innovative attitudes, as both social and personal trust have no effect in general. In addition to the limited role of trust, social networks are not an important determinant of promoting innovation: no effect in Japan and either an insignificant or negative effect in South Korea. These findings provide counter-evidence for the argument of Fukuyama who hypothesized Japan as a high-trust society (therefore relying on generalized social networks for economic cooperation and innovation) and Korea as a low-trust society (therefore relying on personal networks). Instead of trust and network effects, there are two other components of social capital that play a meaningful role in these two countries: (i) trust in justice (trust in courts in both countries and trust in the fairness of the rule in South Korea); and (ii) social norms that support the societal goal of growth primacy and the norm of competition.

In both countries, trust in courts has a significant, positive effect in five of the six models. Additionally, trust in the fairness of the rule increases positive attitudes towards innovation and decreases negative perceptions in South Korea (the effect is significant in four of the six models). The shared goal of growth plays a somewhat more significant role in Japan than in South Korea – the effect is significant in five models in Japan and four in South Korea. However, the size of the effect is largely greater in South Korea when it is significant. Both South Koreans and Japanese tend to accept the norm of competition as a mode of innovation – with the significance of the effect in three models out of six. However, the two countries are different in accepting the role of performance-based economic incentives (economic inequality) as a mode of stimulating innovation. In Japan, the acceptance of inequality has a generally positive effect on innovative attitudes. In contrast, the effect is more mixed in South Korea. It increases positive attitudes towards the role of science and technology today – the dependent variables labeled as *Sc. & Tech.* (i.e. agreeing that science and technology make our lives easier now) and *World* (i.e. agreeing that science makes the world better). But the effect of accepting inequality negatively affects attitudes towards the role of science in the future (*Future*, i.e. science and technology provide better opportunities for the next generations). This difference suggests that South Koreans tend to accept economic inequality as a currently valid norm for

development but not for the future, whereas Japanese are more inclined to take such economic incentives in general.

While both countries generally support the role of the social values of competition- and incentive-based growth in innovation, South Koreans and Japanese place a different emphasis on the norms of social inclusion. In South Korea, reciprocity of mutual assistance plays an important role in stimulating innovation, whilst, in Japan, it is tolerance towards minorities. This difference indicates a distinguished emphasis on the inclusion of different social groups in the two countries: the broad social inclusion of generally mutual groups (South Korea) and the inclusion of excluded minorities (Japan). Additionally, the gender effect is also different between South Korea and Japan. Women have a lower level of positive attitudes towards innovation in Japan – similar to the average gender effect in the six countries. However, women are as innovative as men in South Korea, as the gender effect is largely insignificant there. This result is similar to that of Hong Kong where there is also no gender difference in innovative attitudes. Overall, South Korea and Japan closely mirror the role of social capital in East Asia, in that the shared social norms of growth primacy and competition are most important for innovation. This is possibly because these two countries play a lead role in the region given the levels of their economic development and their economic sizes.

In Singapore (Table 3.3), generalized social trust has a negative effect as in most other neighboring countries in East Asia. However, the effect of personal trust is mixed – positive, negative, or insignificant depending on the types of attitudes towards innovation. Social network effects are also generally negative, constraining positive attitudes towards innovation. In Singapore, the positive effects of the shared social norms are found as like in the other countries, but the effects are less significant compared to them. Specifically, reciprocity, the shared goal of growth, and acceptance towards inequality have positive, significant effects in only three of the six models. On the other hand, the value of accepting competition is a more robust determinant of boosting innovation-oriented attitudes – similar to the results of the other East Asian countries. This finding contributes to the argument that innovation is more competition-based activities than cooperation-based ones in East Asia. Additionally, trust in the fairness of the rule is an important formal institutional factor of innovation in Singapore.

The findings on Taiwan (Table 3.3) are largely similar to Singapore's. The effect of generalized social trust is negative or insignificant, while personal trust has no effect on innovation. Social

norms play a positive role in cultivating innovative attitudes to some extent, although their effects (i.e. the effects of reciprocity, the shared goal of growth, and acceptance towards inequality) are significant in two to three models only (out of six). However, the shared value of accepting competition provides a more robust impact on boosting positive attitudes towards innovation and constraining negative ones. The effect is positive in four of the six models. In addition, trustworthy formal institutions are important also in Taiwan, particularly the fairness of the rule and the parliament. Personal-interest driven social networks (sports and arts) have a positive effect of stimulating innovative attitudes in this country, albeit the effect is significant in two models only. This positive (although limited) effect of personal networks may be explained by the industrial structures of Taiwan as a small country that consists of many small-medium size, family-owned enterprises.

Overall, the effect of trust tends to be negative in smaller countries (Hong Kong, Singapore, and Taiwan) but insignificant in larger ones (China, Japan, and South Korea). But, in any case, social trust does not play a positive role in influencing individual attitudes towards innovation. Instead, it is the shared social norms such as the societal goal of growth primacy, acceptance towards competition and performance-based economic incentives, and reciprocity that are important for innovation in East Asia. In addition to the social norms, trustworthy formal institutions are also crucial in stimulating individual support for innovation. This analysis renders the importance of social norms as the facilitator of innovation in this region, while questioning the positive role of social trust. While social norms are found to be important in all six East Asian countries, specific components of social norms that have significant effects differ across the countries, necessitating country-specific investigation in a future study.

5. Conclusion

The findings of this paper emphasize the importance of the shared social norms of growth primacy as well as the values of accepting competition and performance-based incentives as the prime drivers of innovation. Further scholarship is encouraged to investigate country-specific norms that lead innovation in each country's contexts – for example, the role of reciprocity in China and growth primacy in South Korea and Japan.

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Table 1. Macro-analysis: the Effects of Social Capital on Innovation (Cross-country panel)

Sample	All Countries				East Asia	
DV	(log) Patent		Global Innovation Index		(log) Patent	
	(1)	(2)	(3)	(4)	(5)	(6)
Social Trust	0.052	0.021	0.215	0.178	0.029	-0.031
	(0.010)***	(0.011)*	(0.051)***	(0.056)***	(0.031)	(0.013)*
Social Network		-0.068		-0.249		0.164
		(0.023)***		(0.212)		(0.025)***
Trust in Formal		-0.003		0.055		0.157
Institutions		(0.007)		(0.046)		(0.023)***
Shared Goal of		-0.005		-0.038		0.090
Growth		(0.009)		(0.086)		(0.013)***
Tolerance		0.002		0.059		0.054
		(0.005)		(0.042)		(0.007)***
(log) GDP pc	2.091	0.786	6.098	5.776	2.433	3.766
	(0.541)***	(0.379)**	(0.631)***	(0.663)***	(0.288)***	(0.253)***
(log) Population	3.668	2.579	0.836	0.740	5.959	3.901
	(1.039)***	(0.942)***	(0.511)	(0.538)	(2.917)	(1.172)**
Country Effects	FE	FE	RE	RE	FE	FE
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
Period	2005–2014		2014–2017		2005–2014	
No. Observations	897	401	264	254	91	40
No. Countries	83	78	54	52	6	6
R^2 (within)	0.45	0.20	0.35	0.35	0.97	0.98

Note: Parentheses are robust standard errors that are clustered at the country level. * $p< .10$, ** $p< .05$, *** $p< .001$.

Table 2. Micro-Analysis: the Effects of Social Capital on Individual Attitudes towards Innovation in East Asian Countries

(World Values Survey 6th Wave, 2010–2014)

Table 2.1.

DV	New Ideas and Creativity				Technological Development				Science and Technology in Life			
Method	Ordered Probit		OLS		Ordered Probit		OLS		Ordered Probit		OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Trust in Strangers	0.110	0.065	0.130	0.067	-0.069	-0.090	-0.031	-0.040	-0.050	-0.080	-0.089	-0.143
	(0.019)***	(0.020)***	(0.022)***	(0.021)***	(0.021)***	(0.023)***	(0.010)***	(0.010)***	(0.019)***	(0.020)***	(0.034)***	(0.035)***
Personal Trust		-0.077		-0.082		0.006		0.003		0.043		0.100
		(0.023)***		(0.025)**		(0.026)		(0.012)		(0.023)*		(0.040)**
Social Network (humanitarian)	0.192	0.068	0.230	0.074	0.015	-0.023	0.005	-0.010	-0.054	-0.034	-0.136	-0.089
	(0.026)***	(0.012)***	(0.030)***	(0.032)**	(0.033)	(0.036)	(0.015)	(0.016)	(0.028)*	(0.031)	(0.052)***	(0.055)
Social Network (sports and arts)		0.064		0.070		0.025		0.010		-0.040		-0.072
		(0.012)***		(0.013)***		(0.015)		(0.007)		(0.013)***		(0.023)***
Trust in Courts	-0.015	-0.020	-0.022	-0.025	0.124	0.063	0.054	0.027	0.134	0.099	0.256	0.183
	(0.018)	(0.022)	(0.021)	(0.023)	(0.021)***	(0.025)**	(0.009)***	(0.011)**	(0.019)***	(0.022)***	(0.035)***	(0.040)***
Trust in Parliaments		0.002		0.002		0.091		0.038		0.022		0.048
		(0.021)		(0.023)		(0.024)***		(0.011)***		(0.021)		(0.038)
Trust in Fairness		0.017		0.017		-0.001		-0.001		0.047		0.078
		(0.007)***		(0.007)**		(0.008)		(0.003)		(0.007)***		(0.012)***
Reciprocity		0.191		0.205		0.055		0.021		0.012		0.007
		(0.013)***		(0.014)***		(0.014)***		(0.006)***		(0.012)		(0.021)
Shared Goal of Growth	0.058	0.093	0.070	0.101	0.133	0.152	0.060	0.068	0.110	0.106	0.201	0.185
	(0.025)**	(0.026)***	(0.030)**	(0.007)***	(0.030)***	(0.031)***	(0.013)***	(0.013)***	(0.025)***	(0.026)***	(0.045)***	(0.045)***
Competition-orientation		0.021		0.022		0.061		0.026		0.090		0.144
		(0.006)***		(0.007)***		(0.007)***		(0.003)***		(0.007)***		(0.012)***
Tolerance	0.002	0.005	0.002	0.005	-0.021	-0.021	-0.010	-0.009	0.011	0.011	0.024	0.022
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)***	(0.006)***	(0.003)***	(0.003)***	(0.005)**	(0.005)**	(0.009)**	(0.010)**
Acceptance of Inequality		0.019		0.020		0.025		0.010		0.040		0.072
		(0.006)***		(0.006)***		(0.006)***		(0.003)***		(0.006)***		(0.010)***
Risk-taking		0.278		0.302		0.0008		0.004		0.001		-0.012
		(0.012)***		(0.012)***		(0.013)		(0.005)		(0.011)		(0.019)
Gender (female)	-0.169	-0.089	-0.208	-0.101	-0.156	-0.149	-0.066	-0.061	-0.053	-0.056	-0.074	-0.080
	(0.024)***	(0.026)***	(0.029)***	(0028)***	(0.030)***	(0.031)***	(0.013)***	(0.013)***	(0.025)**	(0.025)**	(0.045)*	(0.045)*
Age	-0.029	-0.011	-0.035	-0.012	0.0005	0.004	0.001	0.003	-0.016	-0.016	-0.030	-0.030
	(0.005)***	(0.005)**	(0.006)***	(0.006)**	(0.006)	(0.006)	(0.003)	(0.003)	(0.005)***	(0.005)***	(0.009)***	(0.009)***
Age^2	0.0003	0.00009	0.0003	0.00009	0.00003	-0.00002	2.32e-06	-0.00002	0.0002	0.0002	0.003	0.0003
	(0.0001)***	(0.00006)	(0.0001)***	(0.00006)	(0.00006)	(0.00006)	(0.00003)	(0.00003)	(0.00005)***	(0.00005)***	(0.0001)***	(0.0001)***
Marital Status	-0.057	0.0006	-0.070	-0.0003	0.040	0.036	0.017	0.017	0.020	0.098	0.208	0.168
	(0.032)*	(0.034)	(0.039)*	(0.036)	(0.038)	(0.039)	(0.017)	(0.017)	(0.007)***	(0.033)***	(0.059)***	(0.059)***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Income	0.050	0.028	0.061	0.032	-0.017	-0.028	-0.007	-0.010	0.006	0.012	0.041	0.025
	(0.007)***	(0.007)***	(0.008)***	(0.008)***	(0.008)**	(0.009)	(0.003)**	(0.004)***	(0.007)***	(0.008)	(0.013)***	(0.014)*
Self-employed	0.119	0.062	0.142	0.069	0.043	0.014	0.018	0.004	0.006	-0.003	0.009	-0.005
	(0.047)**	(0.049)	(0.056)**	(0.053)	(0.060)	(0.062)	(0.026)	(0.026)	(0.048)	(0.050)	(0.090)	(0.089)
Unemployed	0.026	0.078	0.024	0.078	-0.006	0.033	-0.002	0.013	-0.037	0.022	-0.092	-0.007
	(0.071)	(0.073)	(0.085)	(0.079)	(0.074)	(0.078)	(0.033)	(0.034)	(0.068)	(0.068)	(0.129)	(0.124)
University Education	0.186	0.144	0.225	0.160	0.031	0.006	0.010	-0.0005	0.073	0.057	0.172	0.146
	(0.029)***	(0.030)***	(0.034)***	(0.033)***	(0.036)	(0.037)	(0.016)	(0.016)	(0.029)**	(0.030)*	(0.052)***	(0.052)***
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,446	7,117	7,446	7,117	7,462	7,108	7,462	7,108	7,399	7,071	7,399	7,071
No. Countries	6	6	6	6	6	6	6	6	6	6	6	6
(pseudo) R²	0.03	0.08	0.09	0.23	0.05	0.06	0.07	0.09	0.02	0.03	0.05	0.10

Table 2.2.

DV	Science and Technology for the Future				Too Much Dependence on Science				Science Makes the World Better			
Method	Ordered Probit		OLS		Ordered Probit		OLS		Ordered Probit		OLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Trust in Strangers	-0.059	-0.096	-0.107	-0.169	-0.027	-0.024	-0.053	-0.048	-0.032	-0.078	-0.049	-0.126
	(0.019)***	(0.020)***	(0.036)***	(0.037)***	(0.018)	(0.020)	(0.041)	(0.044)	(0.019)*	(0.020)***	(0.033)	(0.034)***
Personal Trust		0.062		0.120		-0.006		-0.010		0.051		0.090
		(0.023)***		(0.041)***		(0.023)		(0.050)		(0.023)**		(0.039)**
Social Network (humanitarian)	-0.008	-0.012	-0.043	-0.033	0.037	0.033	0.082	0.069	-0.089	-0.092	-0.180	-0.173
	(0.027)	(0.030)	(0.051)	(0.055)	(0.025)	(0.028)	(0.056)	(0.062)	(0.028)***	(0.031)***	(0.050)***	(0.054)***
Social Network (sports and arts)		-0.014		-0.031		0.010		0.027		-0.019		-0.034
		(0.013)		(0.024)		(0.012)		(0.028)		(0.013)		(0.022)
Trust in Courts	0.145	0.102	0.281	0.192	-0.032	-0.023	-0.074	-0.053	0.169	0.076	0.299	0.134
	(0.019)***	(0.022)***	(0.035)***	(0.041)***	(0.018)*	(0.021)	(0.040)*	(0.047)	(0.019)***	(0.022)***	(0.033)***	(0.038)***
Trust in Parliaments		0.035		0.076		-0.017		-0.034		0.126		0.214
		(0.022)*		(0.039)*		(0.021)		(0.046)		(0.022)***		(0.037)***
Trust in Fairness		0.047		0.081		0.011		0.025		0.056		0.088
		(0.007)***		(0.013)***		(0.007)		(0.015)		(0.007)***		(0.012)***
Reciprocity		0.016		0.016		-0.021		-0.050		0.046		0.064
		(0.012)		(0.022)		(0.012)*		(0.027)*		(0.012)***		(0.021)***
Shared Goal of Growth	0.082	0.080	0.158	0.148	-0.048	-0.047	-0.105	-0.102	0.126	0.131	0.236	0.238
	(0.025)***	(0.025)***	(0.047)***	(0.047)***	(0.025)*	(0.025)*	(0.056)*	(0.057)*	(0.025)***	(0.025)***	(0.043)***	(0.044)***
Competition-orientation		0.089		0.145		-0.025		-0.058		0.079		0.119
		(0.007)***		(0.012)***		(0.007)***		(0.014)***		(0.007)***		(0.011)***
Tolerance	-0.002	-0.003	-0.001	-0.002	-0.002	0.0001	-0.002	0.001	0.003	0.004	0.011	0.013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	(0.005)	(0.005)	(0.010)	(0.010)	(0.005)	(0.005)	(0.012)	(0.012)	(0.005)	(0.005)	(0.009)	(0.009)
Acceptance of Inequality		0.030		0.050		0.005		0.009		0.031		0.031
		(0.006)***		(0.010)***		(0.006)		(0.013)		(0.006)***		(0.006)***
Risk-taking		-0.002		-0.023		-0.004		-0.008		-0.016		-0.016
		(0.011)		(0.020)		(0.011)		(0.025)		(0.011)		(0.011)
Gender (female)	-0.051	0.057	-0.075	-0.088	-0.014	-0.024	-0.030	-0.055	-0.046	-0.052	-0.049	-0.052
	(0.025)**	(0.025)**	(0.046)	(0.046)*	(0.025)	(0.025)	(0.055)	(0.057)	(0.024)*	(0.025)**	(0.042)	(0.025)**
Age	-0.019	-0.019	-0.036	-0.037	-0.001	-0.001	-0.003	-0.002	-0.008	-0.008	-0.014	-0.008
	(0.005)***	(0.005)***	(0.009)***	(0.009)***	(0.005)	(0.005)	(0.011)	(0.011)	(0.005)	(0.005)	(0.009)	(0.005)
Age^2	0.0002	0.0002	0.0004	0.0004	0.00002	0.00002	0.00004	0.00004	0.0001	0.0001	0.0002	0.0001
	(0.00005)***	(0.00005)***	(0.0001)***	(0.0001)***	(0.00005)	(0.00005)	(0.0001)	(0.0001)	(0.00005)**	(0.00005)**	(0.0001)**	(0.00005)**
Marital Status	0.094	0.083	0.175	0.145	0.047	0.051	0.104	0.111	0.072	0.053	0.136	0.053
	(0.032)***	(0.033)**	(0.060)***	(0.060)**	(0.032)	(0.032)	(0.072)	(0.073)	(0.032)**	(0.033)	(0.057)**	(0.033)
Income	0.014	0.006	0.033	0.019	-0.008	-0.008	-0.017	-0.018	0.018	0.010	0.038	0.010
	(0.007)**	(0.007)	(0.013)**	(0.013)	(0.007)	(0.007)	(0.016)	(0.017)	(0.007)***	(0.007)	(0.012)***	(0.007)
Self-employed	-0.031	-0.036	-0.076	-0.085	0.079	0.088	0.176	0.195	0.062	0.063	0.101	0.063
	(0.049)	(0.051)	(0.093)	(0.094)	(0.048)*	(0.049)*	(0.107)*	(0.110)*	(0.050)	(0.051)	(0.097)	(0.051)
Unemployed	-0.016	0.050	-0.065	0.030	0.171	0.163	0.380	0.358	-0.032	0.033	-0.066	0.033
	(0.070)	(0.069)	(0.136)	(0.131)	(0.067)**	(0.068)**	(0.149)**	(0.150)**	(0.068)	(0.070)	(0.121)	(0.070)
University Education	-0.0003	-0.023	0.020	-0.011	0.039	0.045	0.087	0.10	0.045	0.027	0.095	0.027
	(0.029)	(0.030)	(0.055)	(0.055)	(0.029)	(0.029)	(0.065)	(0.066)	(0.029)	(0.030)	(0.051)*	(0.030)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,371	7,051	7,371	7,051	7,170	6,892	7,170	6,892	7,375	7,054	7,375	7,054
No. Countries	6	6	6	6	6	6	6	6	6	6	6	6
(pseudo) R^2	0.01	0.03	0.05	0.09	0.01	0.01	0.05	0.05	0.03	0.05	0.10	0.14

Note: Parentheses are robust standard errors. * $p< .10$, ** $p< .05$, *** $p< .001$.

Table 3. Country-Analysis: the Effects of Social Capital on Individual Attitudes towards Innovation in Each of Six East Asian Countries

Table 3.1. China and Hong Kong

Country	China						Hong Kong					
DV	New Idea	Tech. Dev.	Sc. & Tech.	Future	Too Much	World	New Idea	Tech. Dev.	Sc. & Tech.	Future	Too Much	World
Trust in Strangers	-0.016	0.021	-0.041	-0.111	-0.317	-0.008	0.050	-0.071	-0.434	-0.500	-0.246	-0.134
	(0.054)	(0.024)	(0.081)	(0.082)	(0.131)**	(0.070)	(0.063)	(0.032)**	(0.122)***	(0.123)***	(0.126)*	(0.110)
Personal Trust	-0.024	-0.048	0.048	0.123	0.082	0.010	-0.114	0.015	0.164	0.192	0.122	-0.060
	(0.057)	(0.023)**	(0.082)	(0.082)	(0.129)	(0.067)	(0.076)	(0.036)	(0.135)	(0.129)	(0.144)	(0.116)
Social Network (humanitarian)	0.233	0.068	-0.061	-0.399	-0.220	-0.712	0.077	-0.002	-0.038	-0.025	-0.025	-0.157
	(0.132)*	(0.049)	(0.329)	(0.313)	(0.374)	(0.288)**	(0.080)	(0.036)	(0.148)	(0.136)	(0.168)	(0.140)
Social Network (sports and arts)	0.172	0.011	-0.223	-0.131	0.239	0.041	0.103	-0.004	-0.070	0.001	-0.176	-0.089
	(0.049)***	(0.017)	(0.095)**	(0.095)	(0.121)*	(0.065)	(0.036)***	(0.018)	(0.062)	(0.064)	(0.074)**	(0.061)
Trust in Courts	0.134	-0.003	-0.063	-0.015	-0.205	-0.032	0.022	0.054	0.166	0.220	0.023	0.243
	(0.058)**	(0.020)	(0.090)	(0.087)	(0.135)	(0.072)	(0.061)	(0.030)*	(0.118)	(0.116)*	(0.114)	(0.104)**
Trust in Parliaments	-0.041	0.030	0.238	0.275	0.348	0.298	0.067	0.053	-0.107	0.066	-0.195	0.348
	(0.058)	(0.024)	(0.093)**	(0.091)***	(0.134)***	(0.077)***	(0.056)	(0.026)**	(0.112)	(0.111)	(0.109)*	(0.099)***
Trust in Fairness	0.027	0.004	0.123	0.086	-0.061	0.123	0.035	-0.011	0.107	0.107	-0.035	0.153
	(0.017)	(0.006)	(0.029)***	(0.030)***	(0.042)	(0.023)***	(0.022)	(0.009)	(0.043)**	(0.041)***	(0.044)	(0.036)***
Reciprocity	0.298	0.054	0.098	0.122	-0.157	0.150	0.155	0.019	0.043	-0.017	0.062	0.141
	(0.036)***	(0.017)***	(0.049)**	(0.053)**	(0.077)**	(0.044)***	(0.039)***	(0.016)	(0.067)	(0.066)	(0.075)	(0.063)**
Shared Goal of Growth	0.033	-0.007	-0.170	-0.347	-0.098	-0.040	0.090	0.050	0.059	0.157	-0.056	0.115
	(0.063)	(0.025)	(0.093)*	(0.097)***	(0.152)	(0.077)	(0.081)	(0.038)	(0.150)	(0.150)	(0.159)	(0.130)
Competition-orientation	0.013	0.031	0.094	0.111	-0.106	0.048	-0.006	0.031	0.114	0.062	-0.104	0.111
	(0.016)	(0.007)***	(0.025)***	(0.027)***	(0.039)***	(0.020)**	(0.020)	(0.009)***	(0.037)***	(0.035)*	(0.040)***	(0.034)***
Tolerance	-0.023	0.003	0.016	-0.012	0.073	0.002	-0.009	-0.009	0.036	-0.010	0.018	0.026
	(0.014)*	(0.006)	(0.023)	(0.026)	(0.037)*	(0.019)	(0.017)	(0.008)	(0033)	(0.033)	(0.034)	(0.029)
Acceptance of Inequality	0.022	0.004	0.020	-0.002	0.015	0.010	-0.006	0.011	0.095	0.089	-0.066	0.018
	(0.012)*	(0.004)	(0.017)	(0.018)	(0.031)	(0.015)	(0.019)	(0.008)	(0.035)***	(0.033)***	(0.038)*	(0.031)
Risk-taking	0.334	-0.028	-0.036	-0.060	-0.053	-0.032	0.234	0.020	-0.092	-0.108	-0.068	-0.121
	(0.026)***	(0.010)***	(0.040)	(0.042)	(0.061)	(0.031)	(0.031)***	(0.016)	(0.062)	(0.062)*	(0.069)	(0.059)**
Gender (female)	-0.115	-0.065	-0.103	-0.149	-0.357	-0.012	-0.162	-0.020	0.033	0.075	-0.041	0.032
	(0.063)*	(0.026)**	(0.091)	(0.099)	(0.149)**	(0.078)	(0.083)*	(0.039)	(0.156)	(0.151)	(0.161)	(0.136)
Age	-0.024	-0.005	0.003	0.025	-0.008	-0.014	-0.002	0.002	-0.041	-0.064	0.007	-0.046
	(0.015)	(0.006)	(0.021)	(0.024)	(0.035)	(0.018)	(0.014)	(0.007)	(0.028)	(0.024)***	(0.030)	(0.024)**
Age^2	0.0001	0.00005	-0.0001	-0.0003	-4.79e-06	0.0001	1.63e-06	0.00003	0.0006	0.0009	-0.0001	0.0006
	(0.0002)	(0.00006)	(0.0002)	(0.0003)	(0.0004)	(0.0002)	(0.0002)	(0.0001)	(0.0003)*	(0.0002)***	(0.0003)	(0.0002)**
Marital Status	0.090	-0.036	0.037	-0.046	-0.079	0.039	0.012	0.004	0.161	0.140	-0.054	0.259
	(0.096)	(0.036)	(0.136)	(0.153)	(0.220)	(0.125)	(0.105)	(0.046)	(0.188)	(0.170)	(0.195)	(0.161)
Income	0.051	-0.023	-0.029	-0.009	-0.021	-0.004	0.038	-0.009	-0.034	0.012	0.052	-0.014
	(0.019)***	(0.007)***	(0.030)	(0.031)	(0.045)	(0.023)	(0.023)	(0.011)	(0.045)	(0.042)	(0.046)	(0.042)
Self-employed	0.142	-0.057	0.113	-0.013	-0.369	-0.068	-0.282	-0.021	-0.094	-0.221	0.396	-0.003

	(0.209)	(0.087)	(0.329)	(0.385)	(0.471)	(0.327)	(0.241)	(0.103)	(0.442)	(0.493)	(0.499)	(0.422)
Unemployed	0.280	-0.019	0.286	0.098	1.400	0.349	-0.060	0.071	-0.095	0.081	-0.144	-0.032
	(0.218)	(0.078)	(0.295)	(0.379)	(0.488)***	(0.298)	(0.194)	(0.076)	(0.340)	(0.337)	(0.357)	(0.313)
University	0.134	0.032	0.051	0.084	0.298	-0.025	0.242	-0.099	0.210	0.065	0.425	-0.077
Education	(0.092)	(0.035)	(0.145)	(0.165)	(0.222)	(0.116)	(0.098)**	(0.058)*	(0.176)	(0.185)	(0.184)**	(0.164)
Observations	1,299	1,282	1,283	1,270	1,164	1,286	890	889	890	890	889	887
(pseudo) R^2	0.29	0.07	0.09	0.09	0.06	0.10	0.18	0.09	0.09	0.11	0.05	0.15

Table 3.2. Japan and South Korea

Country	Japan						South Korea					
DV	New Idea	Tech. Dev.	Sc. & Tech.	Future	Too Much	World	New Idea	Tech. Dev.	Sc. & Tech.	Future	Too Much	World
Trust in Strangers	-0.018	-0.05	-0.053	-0.170	0.230	0.161	0.034	0.001	-0.285	-0.145	-0.090	-0.103
	(0.066)	(0.031)	(0,112)	(0.111)	(0.149)	(0.105)	(0.057)	(0.028)	(0.095)***	(0.097)	(0.113)	(0.087)
Personal Trust	0.027	-0.005	0.042	0.151	-0.304	-0.136	0.007	0.028	0.145	0.093	-0.115	0.038
	(0.078)	(0.037)	(0.130)	(0.123)	(0.176)*	(0.131)	(0.065)	(0.032)	(0.105)	(0.114)	(0.128)	(0.098)
Social Network (humanitarian)	0.154	-0.045	-0.022	-0.157	-0.018	-0.333	0.330	-0.102	-0.143	-0.132	-0.007	-0.283
	(0.120)	(0.068)	(0.206)	(0.188)	(0.286)	(0.213)	(0.086)***	(0.052)*	(0.150)	(0.148)	(0.181)	(0.148)*
Social Network (sports and arts)	0.017	0.031	-0.045	0.008	0.043	0.058	0.056	0.012	-0.005	0.019	0.019	-0.031
	(0.034)	(0.018)*	(0.060)	(0.059)	(0.082)	(0.054)	(0.032)*	(0.017)	(0.057)	(0.058)	(0.065)	(0.054)
Trust in Courts	0.162	0.050	0.219	0.306	0.120	0.293	0.094	0.102	0.252	0.265	-0.083	0.290
	(0.062)**	(0.030)*	(0,108)**	(0.102)***	(0.138)	(0.103)***	(0.056)*	(0.029)***	(0.104)**	(0.104)**	(0.115)	(0.095)***
Trust in Parliaments	0.005	0.045	0.108	0.083	-0.032	0.296	0.113	-0.036	0.019	-0.083	-0.088	-0.018
	(0.060)	(0.029)	(0.102)	(0.101)	(0.133)	(0.099)***	(0.052)**	(0.029)	(0.095)	(0.093)	(0.109)	(0.081)
Trust in Fairness	-0.009	-0.008	0.004	-0.026	-0.010	0.052	0.029	-0.009	0.100	0.088	-0.092	0.071
	(0.019)	(0.008)	(0.032)	(0.031)	(0.045)	(0.033)	(0.020)	(0.010)	(0.032)***	(0.033)***	(0.039)**	(0.029)**
Reciprocity	0.265	-0.012	0.030	0.077	0.060	-0.002	0.109	0.027	0.125	0.109	0.0001	-0.003
	(0.037)***	(0.016)	(0.055)	(0.053)	(0.076)	(0.055)	(0.033)***	(0.017)*	(0.053)**	(0.054)**	(0.062)	(0.052)
Shared Goal of Growth	-0.027	0.121	0.328	0.387	-0.398	0.310	0.074	0.097	0.461	0.468	-0.113	0.372
	(0.072)	(0.038)***	(0.121)***	(0.119)***	(0.164)**	(0.121)**	(0.072)	(0.038)**	(0.117)***	(0.122)***	(0.141)	(0.110)***
Competition-orientation	0.025	0.006	0.078	0.112	-0.045	0.095	0.021	0.046	0.173	0.201	-0.039	0.147
	(0.018)	(0.008)	(0.033)**	(0.031)***	(0.042)	(0.034)***	(0.019)	(0.010)	(0.034)***	(0.035)***	(0.039)	(0.031)***
Tolerance	0.016	-0.008	0.051	0.039	-0.078	0.027	0.012	-0.011	-0.021	-0.011	-0.049	-0.023
	(0.013)	(0.007)	(0.022)**	(0.022)*	(0.029)***	(0.022)	(0.015)	(0.008)	(0.026)	(0.027)	(0.030)	(0.025)
Acceptance of Inequality	0.014	0.028	0.105	0.058	-0.045	0.105	0.017	0.009	0.115	-0.106	0.041	0.073
	(0.019)	(0.008)***	(0.032)***	(0.030)*	(0.041)	(0.032)***	(0.016)	(0.008)	(0.030)***	(0.031)***	(0.033)	(0.027)***
Risk-taking	0.332	0.010	-0.005	0.062	0.005	0.080	0.335	0.042	0.093	0.087	-0.040	0.141
	(0.039)***	(0.018)	(0.064)	(0.057)	(0.087)	(0.059)	(0.033)***	(0.016)***	(0.052)*	(0.052)*	(0.062)	(0.050)***
Gender (female)	-0.179	-0.086	-0.259	-0.254	0.038	-0.114	-0.140	-0.024	-0.156	-0.111	-0.011	-0.099
	(0.075)**	(0.038)**	(0.127)**	(0.124)**	(0.170)	(0.121)	(0.074)*	(0.039)	(0.120)	(0.120)	(0.144)	(0.106)
Age	0.013	0.012	-0.065	-0.042	-0.037	0.018	-0.039	0.005	-0.073	-0.052	-0.042	0.012
	(0.017)	(0.008)	(0.027)**	(0.026)	(0.035)	(0.025)	(0.017)**	(0.009)	(0.029)**	(0.028)*	(0.033)	(0.028)

Age^2	-0.0001	-0.0001	0.0006	0.0005	0.0004	-0.0002	0.0003	-0.0001	0.0007	0.0006	0.0004	-0.0001
	(0.0002)	(0.0001)	(0.0003)**	(0.0002)*	(0.0003)	(0.0002)	(0.0002)*	(0.0001)	(0.0003)**	(0.0003)*	(0.0003)	(0.0003)
Marital Status	0.038	0.007	-0.017	0.053	-0.023	-0.085	0.118	0.152	0.647	0.623	0.378	0.419
	(0.088)	(0.045)	(0.150)	(0.152)	(0.200)	(0.145)	(0.099)	(0.056)***	(0.164)***	(0.163)***	(0.186)**	(0.148)***
Income	0.003	-0.009	0.012	0.013	-0.054	0.010	-0.019	-0.008	-0.031	-0.052	-0.061	0.036
	(0.013)	(0.007)	(0.024)	(0.023)	(0.030)*	(0.021)	(0.021)	(0.011)	(0.038)	(0.038)	(0.042)	(0.034)
Self-employed	0.118	-0.071	-0.050	0.009	0.760	0.140	0.056	-0.020	-0.074	-0.348	-0.053	-0.065
	(0.110)	(0.056)	(0.208)	(0.181)	(0.284)***	(0.183)	(0.096)	(0.050)	(0.154)	(0.160)**	(0.179)	(0.139)
Unemployed	0.343	0.158	0.194	0.208	-0.351	-0.167	0.143	0.004	-0.447	-0.598	-0.104	0.250
	(0.267)	(0.104)	(0.311)	(0.345)	(0.469)	(0.378)	(0.191)	(0.089)	(0.314)	(0.327)*	(0.360)	(0.260)
University Education	0.016	0.018	0.293	0.073	-0.298	0.428	0.207	-0.120	0.117	-0.078	0.083	-0.123
	(0.084)	(0.043)	(0.125)**	(0.128)	(0.182)	(0.121)***	(0.086)**	(0.043)***	(0.132)	(0.134)	(0.158)	(0.124)
Observations	969	980	945	939	897	935	1,019	1,020	1,015	1,015	1,015	1,014
(pseudo) R^2	0.22	0.08	0.08	0.09	0.06	0.12	0.29	0.10	0.16	0.16	0.03	0.13

Table 3.3. Singapore and Taiwan

Country	Singapore						Taiwan					
DV	New Idea	Tech. Dev.	Sc. & Tech.	Future	Too Much	World	New Idea	Tech. Dev.	Sc. & Tech.	Future	Too Much	World
Trust in Strangers	-0.109	-0.032	-0.006	0.014	0.014	-0.164	0.132	-0.111	-0.140	-0.240	0.088	-0.127
	(0.034)***	(0.016)**	(0.055)	(0.032)	(0.032)	(0.054)***	(0.068)*	(0.034)***	(0.110)	(0.130)*	(0.132)	(0.130)
Personal Trust	-0.133	0.027	0.226	0.015	0.015	0.345	-0.103	-0.010	-0.168	-0.065	0.021	-0.129
	(0.042)***	(0.020)	(0.064)***	(0.039)	(0.039)	(0.070)***	(0.077)	(0.037)	(0.0125)	(0.148)	(0.144)	(0.144)
Social Network (humanitarian)	-0.034	0.024	-0.168	-0.120	0.119	-0.084	0.042	-0.006	-0.049	-0.043	0.122	-0.249
	(0.062)	(0.027)	(0.098)*	(0.051)**	(0.051)**	(0.085)	(0.059)	(0.032)	(0.101)	(0.107)	(0.111)	(0.107)**
Social Network (sports and arts)	0.047	0.002	-0.123	-0.0006	-0.001	-0.174	0.094	-0.001	-0.038	-0.001	0.103	0.100
	(0.025)	(0.012)	(0.041)***	(0.022)	(0.022)	(0.041)***	(0.032)***	(0.017)	(0.054)	(0.059)	(0.060)	(0.056)*
Trust in Courts	-0.009	0.012	0.324	-0.0004	-0.0004	0.107	-0.058	-0.005	0.133	0.024	-0.104	0.131
	(0.051)	(0.021)	(0.083)***	(0.044)	(0.044)	(0.081)	(0.058)	(0.029)	(0.099)	(0.111)	(0.118)	(0.113)
Trust in Parliaments	-0.043	0.046	-0.050	-0.029	-0.029	0.127	-0.057	0.082	0.095	0.222	-0.071	0.240
	(0.046)	(0.020)**	(0.075)	(0.044)	(0.044)	(0.076)*	(0.058)	(0.029)***	(0.097)	(0.109)**	(0.112)	(0.108)**
Trust in Fairness	0.003	0.002	0.042	0.029	0.029	0.041	-0.0006	0.002	0.100	0.122	0.030	0.104
	(0.013)	(0.006)	(0.020)**	(0.012)**	(0.012)**	(0.020)**	(0.021)	(0.010)	(0.037)***	(0.037)***	(0.039)	(0.039)***
Reciprocity	0.179	0.016	-0.005	0.051	-0.051	0.002	0.240	0.009	0.073	0.198	-0.073	0.153
	(0.026)***	(0.012)	(0.038)	(0.022)**	(0.022)**	(0.037)	(0.040)***	(0.019)	(0.066)	(0.072)***	(0.074)	(0.071)**
Shared Goal of Growth	0.215	0037	0.315	-0.021	-0.021	0.350	0.080	0.162	0.129	0.138	-0.016	0.328
	(0.056)***	(0.026)	(0.085)***	(0.049)	(0.049)	(0.084)***	(0.081)	(0.042)***	(0.128)	(0.140)	(0.145)	(0.141)**
Competition-orientation	0.043	0.010	0.160	-0.012	-0.012	0.118	0.020	0.030	0.104	0.053	-0.075	0.113
	(0.012)***	(0.006)*	(0.020)***	(0.011)	(0.011)	(0.019)***	(0.020)	(0.010)***	(0.038)***	(0.036)	(0.040)*	(0.039)***
Tolerance	0.010	-0.005	0.052	0.009	0.009	0.072	0.024	-0.007	0.002	-0.067	-0.006	-0.028
	(0.012)	(0.005)	(0.017)***	(0.011)	(0.011)	(0.018)***	(0.016)	(0.008)	(0.027)	(0.029)**	(0.030)	(0.028)

Acceptance of Inequality	0.011	0.012	0.066	0.001	0.001	0.056	0.044	0.0002	0.041	0.006	0.052	0.052
	(0.012)	(0.005)**	(0.019)***	(0.011)	(0.011)	(0.018)***	(0.016)***	(0.007)	(0.026)	(0.027)	(0.030)	(0.027)*
Risk-taking	0.332	-0.0001	0.027	0.016	0.016	-0.056	-0.160	0.003	-0.076	-0.062	-0.063	-0.031
	(0.024)***	(0.010)	(0.032)	(0.020)	(0.020)	(0.033)*	(0.035)***	(0.017)	(0.055)	(0.066)	(0.067)	(0.064)
Gender (female)	-0.043	-0.055	0.060	0.027	0.027	-0.113	-0.099	-0.133	-0.230	-0.200	-0.102	0.055
	(0.053)	(0.025)**	(0.079)	(0.047)	(0.047)	(0.080)	(0.078)	(0.041)***	(0.128)*	(0.141)	(0.146)	(0.138)
Age	0.006	0.005	-0.022	0.012	0.012	-0.023	-0.034	0.002	-0.021	-0.040	0.021	-0.009
	(0.010)	(0.005)	(0.015)	(0.009)	(0.009)	(0.014)	(0.015)**	(0.007)	(0.025)	(0.026)	(0.030)	(0.026)
Age^2	-0.00006	-0.00007	0.00028	-0.0001	-0.0001	0.00027	0.003	5.38e-06	0.0002	0.0004	-0.0003	0.0002
	(0.0001)	(0.00005)	(0.00015)*	(0.0001)	(0.0001)	(0.00014)*	(0.00015)**	(0.0001)	(0.0003)	(0.00025)*	(0.0003)	(0.0003)
Marital Status	-0.090	0.018	0.072	0.098	0.098	-0.033	-0.040	-0.078	0.010	-0.221	-0.030	-0.171
	(0.067)	(0.031)	(0.105)	(0.061)	(0.061)	(0.102)	(0.102)	(0.050)	(0.158)	(0.183)	(0.199)	(0.176)
Income	0.073	-0.006	0.109	-0.003	-0.003	0.072	0.053	0.015	0.196	0.150	0.084	0.080
	(0.019)***	(0.008)	(0.029)***	(0.018)	(0.018)	(0.030)**	(0.026)**	(0.013)	(0.047)***	(0.048)***	(0.050)*	(0.048)*
Self-employed	0.067	0.004	-0.200	-0.025	-0.025	0.158	-0.124	0.035	0.432	0.205	0.353	0.298
	(0.117)	(0.052)	(0.195)	(0.115)	(0.115)	(0.194)	(0.156)	(0.073)	(0.224)*	(0.250)	(0.274)	(0.252)
Unemployed	0.113	0.015	0.032	0.363	0.363	-0.079	-0.170	-0.128	0.001	-0.306	-0.020	-0.455
	(0.135)	(0.056)	(0.191)	(0.106)***	(0.106)***	(0.193)	(0.228)	(0.126)	(0.386)	(0.417)	(0.440)	(0.454)
University Education	0.063	0.068	0.112	-0.033	-0.033	0.177	0.267	0.019	0.091	-0.187	0.067	0.061
	(0.062)	(0.030)**	(0.095)	(0.059)	(0.059)	(0.096)*	(0.086)***	(0.045)	(0.134)	(0.150)	(0.158)	(0.147)
Observations	1,916	1,916	1,916	1,916	1,916	1,916	1,024	1,021	1,022	1,021	1,011	1,016
(pseudo) R^2	0.23	0.03	0.13	0.11	0.03	0.11	0.18	0.06	0.08	0.07	0.03	0.08

Note: Parentheses are robust standard errors. * $p< .10$, ** $p< .05$, *** $p< .001$.