

Long-Term Evolution of Business Ethics in Hong Kong

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Abstract

This paper introduces the distribution dynamics analysis (DDA) and demonstrates how to apply this technique in business ethics research using proprietary data measuring the general public's perception of business ethics levels in 206 major companies operating in Hong Kong. The employed data is comprehensive and longitudinal; 10,773 interviews were collected between 2012 and 2016 and transformed into the Confucian Business Ethics Score (CBES). The study documents a slow long-run convergence process and a slight improvement in business ethics levels across the businesses operating in Hong Kong. However, the results also indicate the emergence and migration of two convergence clubs with a small (large) group of businesses converging to the business ethics levels below (slightly above) the average standard. This paper offers several implications and avenues for future research directions.

Keywords

Business ethics; Confucius Business Ethics Score; distribution dynamics analysis; convergence club; mobility probability plot; Hong Kong; Junzi virtues

1 Introduction

Ethics is defined as the code of moral principles that set standards of good or bad and right or wrong behaviour (Schermerhorn, 2022). In recent decades, business ethics has received considerable attention from academics and practitioners alike (e.g., Robertson, 2008; Alzola et al., 2020). Such attention can be attributed to recurring corporate scandals around the world which have continued to keep the ethicality of businesses in the spotlight (e.g., Elbæk and Mitkidis, 2021). The importance of business ethics and the harms of unethical practices are illustrated by the costs of the recent scandals of Samsung and Volkswagen¹. On the contrary, good ethical business practices benefit various stakeholders, including companies themselves (Samson and Draft, 2018; Leelhaphunt and Suntrayuth, 2020), employees and even nations (Ip, 2010).

There is diversity in the conceptualisation and practice of business ethics worldwide (Sardy et al., 2010). Likewise, ethical concerns differ across countries, especially concerning the well-documented East-West dichotomy (Ramasamy and Yeung, 2009; Gift et al., 2013). With 91.6% of the population self-identifying as ethnic Chinese (Census and Statistics Department, 2021), Hong Kong is commonly classified as a “Confucian society” (e.g., Lam and Shi, 2008). Ex-post Hong Kong’s return to China in 1997, business activities between Hong Kong and Mainland China have been on an upward trajectory, while the reports of corruption, “under table dealings” and *guanxi*² increased significantly (Dunfee and Warren, 2001; Tang and Chiu, 2003; ICAC, 2022). Furthermore, unethical business practices, “*window dressing*” and poor governance in China are notorious (e.g., Sayari and Marcum, 2018; Wang et al., 2018). As a result, there have been concerns about a potential rise in corruption and downward pressure on business ethical standards in Hong Kong (e.g., Snell, 1999; Phau and Kea, 2007).

There is robust evidence highlighting the rejuvenation of Confucianism and its virtues among business leaders and scholars in China and other parts of Asia (e.g., Kim et al., 2020; Yang et al., 2020). A growing body of literature documents the positive effects of Confucian virtues on businesses’ competitiveness (Tian et al., 2022), profitability (Wang et al., 2020), ESG performance (Fu et al., 2021), and corporate environmental investment (Xu et al., 2019). Studies on Hong Kong’s business ethics usually focus on a specific company or industry and provide a cross-sectional view at a single point in time (Lam and Shi, 2008; Resick et al., 2011; Tian et al., 2022). However, how business ethics evolves over a longer period remains virtually unexplored³. Such a lack of longitudinal research constitutes a gap in the literature because business ethics and its practices are not static (Paik et al., 2019), but instead a function of time and culture (Berger and Herstein, 2014).

Given Hong Kong’s ethical affiliations and unique sociopolitical and economic developments, there is a strong rationale for a longitudinal study providing a long-term forecast of business ethics framed in Confucian virtues. To the best of our knowledge, this study is the first to employ the distribution dynamics approach (hereafter DDA) with its two display tools; ergodic distribution and mobility probability plot to provide a detailed forecast of the long-term evolution (convergence versus divergence) of business ethics in Hong Kong. The data employed are proprietary and provide a representative, longitudinal view of the general society on how 206 companies across seven major industries were performing in business ethics between 2012 and 2016. Specifically, we employ a structured questionnaire consisting of items concerning the five virtues of *Junzi*⁴ in the firms’ context. The final sample of 10,773 interviews has been transformed into the *Confucian Business Ethics Score* (CBES), i.e., a summary score of the perceived business ethics level of the company.

The findings can be summarized as follows. First, most of the sampled companies are subject to a slow-pace long-run convergence process towards a business ethics level slightly above the sample's average. This means that we could expect many of the businesses in Hong Kong to become slightly more ethical in the future. Second, we document the emergence and migration of two *convergence clubs*. Specifically, the results suggest that while most of the companies will congregate around CBES slightly above the average level, a small group of businesses will converge towards CBES significantly below the average. Third, the annual analyses reveal that by far the most significant change and improvement in business ethics' long-term outlook took place between 2012 and 2013. Summing up, this study provides nascent longitudinal evidence for practitioners, business leaders and policymakers concerned with business ethics in Hong Kong.

The rest of this paper is structured as follows. In Section 2 we review the work done by others on business ethics in Hong Kong with its shortcomings. Section 3 discusses the data and analytical framework employed. The empirical results are then presented and discussed in Section 4, while Section 5 concludes the paper and offers potential avenues for future research.

2 Literature review

2.1 Business ethics in Hong Kong

Ferrell and Gresham (1985) posit that to examine business ethics, one needs to look at cultural context rather than attempting to uncover universal moral principles. Moreover, the social cognitive theory model argues that business ethics depends on the interaction among the specific environment, person and behaviour in a social context (Bandura, 1986). Anecdotal and empirical evidence also suggests that there is diversity in the conceptualisation and practice of business ethics worldwide (e.g., Sardy et al., 2010), specifically concerning the East-West dichotomy (Ramasamy and Yeung, 2009; Gift et al., 2013).

Dolecheck (1992) examines business employees' attitudes towards business ethics in Hong Kong vis-à-vis the U.S. The results indicate that compared to the U.S., Hong Kong respondents are more likely to have different ethical standards at work than in private life. Furthermore, the Hongkongers equate ethics with remaining within legal boundaries, while valuing victory over competitors and business ethics. McDonald (1995) documents similar results, i.e., Hong Kong managers portray business ethics as staying within lawful boundaries (e.g., no theft and no bribery). Nyaw and Ng (1994) survey 551 business students from Canada, Japan, Hong Kong, and Taiwan, and investigate the extent to which people from different countries react to various ethical dilemmas. The authors find that Hongkongers and Canadians are more likely to engage in whistle-blowing activities and react ethically toward their competitors than Japanese and Taiwanese students. On the other hand, compare to other groups, Hongkongers display the lowest proclivity to react ethically toward their customers and suppliers.

Snell (1999) looks at the way Hong Kong Chinese staff tackle ethical dilemmas arising from a request by their work superiors to act unethically. His findings indicate that obedience to authorities at work is related to the cultural norms of "saving face" and preserving harmony which, in turn, can constitute a threat to the future business ethics standards in Hong Kong. Au and Wong (2000) find that under the impact of *guanxi*, even auditors who previously behaved in a professionally ethical manner will act in a professionally less acceptable way. However, Ebrahimi et al. (2005) in a survey study on business degree students establish that the ethical orientation of

respondents is positively correlated with their level of respect for the authorities. Tang and Chiu (2003) find that the love of money rather than economic pressure or money per se is the root of unethical behaviour amongst Hong Kong employees. Ramasamy et al. (2013) report that Confucian values orientation is positively associated with Chinese consumers' support of CSR in Hong Kong, Shanghai and Singapore. However other studies (e.g., Tsoi, 2010) document that business ethics, as reflected in CRS measurements, is considered less important in the Asia-Pacific region than in the West.

2.2 *Confucian virtues and business ethics*

Character-based and person-centred virtue ethics is the most prominent normative theory in business ethics (Kwong et al., 2015). While Western virtue ethics is based on the Aristotelian and Christian heritage, Eastern (or Asian) virtue ethics is largely influenced by Confucian teachings (Alzola et al., 2020). Accordingly, prior studies document significant differences in conceptualisations and practices of business ethics between countries falling under the Western vis-à-vis Eastern virtues sphere of influence (e.g., Dolecheck, 1992; Resick et al., 2011). Confucianism with its strong ethical component has been one of the most influential indigenous schools of thought in Asia. Confucian ethics focuses on developing moral qualities (virtues) in individuals (Alzola et al., 2020). Confucian society shares a belief that if a person has good character, he or she will behave ethically; similarly, if a business organisation has good character, it will behave ethically (Tian et al., 2022).

In the context of consumption, Chinese consumers expect firms to adhere to Confucian virtues in their business practices (Sun et al., 2016). Confucian virtues have been explicitly adopted as codes of business ethics in some business organisations across Asia (e.g., Tsai et al., 2011). In a cross-country survey, Resick et al. (2011) report that Hong Kong managers identify character, collective orientation, and respect for others as the main traits of ethical leadership. The authors argue that their findings highlight the influence of Confucian ideology on Hong Kong managers. Other researchers document positive associations between adherence to Confucian ethics and businesses' competitiveness (Tian et al., 2022), profitability (Wang et al., 2020), ESG performance (Fu et al., 2021), and corporate environmental investment (Xu et al., 2019).

One of the most important concepts in Confucian philosophy is *Junzi* or the noble man with high moral integrity (Chou and Cheng, 2020). Specifically, the concept of *Junzi* is built on five virtues consisting of benevolence [ren], righteousness [yi], propriety [li], wisdom [zhi] and trustworthiness [xin]⁵. Kwong et al. (2015) find that by adhering to the three *Junzi* virtues (ren, yi, and li), Hong Kong companies are more likely to enjoy customer loyalty. Liu and Stening (2016) argue that all five virtues of *Junzi* are pertinent to business ethics in Chinese societies. In a case study of a Taiwanese corporation, Chou and Cheng (2020) show that in line with the five virtues, Confucian leadership is characterized by humanistic practices towards the company's stakeholders. Tian et al. (2022) establish a positive association between the *Junzi* orientation of Hong Kong businesses and their performance.

2.3 *Motivations*

Most studies on business ethics in Hong Kong utilize small or non-generalizable samples (e.g., Dolecheck, 1992; Nyaw and Ng, 1994; Ebrahimi et al., 2005). However, such samples would inhibit the generalizability of the results (O'Fallon and Butterfield, 2005). Moreover, managers

and employees may feel uneasy about reporting unethical behaviours (Tang and Chiu, 2003) which, in turn, could lead to a biased result suggesting that people are more ethical in the workplace. Furthermore, except for Snell et al. (1999), studies examining business ethics in Hong Kong, adopt a cross-sectional approach (e.g., Lam and Shi, 2008; Resick et al., 2011; Tian et al, 2022).

Notwithstanding, multi-year, long-term longitudinal research on business ethics is very important for two reasons. First, business ethics and its practices are not static (Paik et al., 2019), but instead a function of time and culture (Berger and Herstein, 2014) and as such may change dynamically. As mentioned in the previous section, given the social and economic transitions in Hong Kong, it is worthwhile doing longitudinal research on Hong Kong's business ethics. Second, as per previous paragraphs, business ethics studies involve either students', employees', or managers' attitudes, which can be easily influenced by common method variance bias. A longitudinal design in conjunction with a representative sample gauging the opinions of the general population should reduce these systematic errors due to common method variance biases (Rindfleisch et al., 2008).

3 Data and methodology

3.1 Sampling

The sampling strategy was designed to obtain a longitudinal and representative sample of the general population. Sampling the general population on business ethics is less likely to suffer from social desirability biases because the society (except for business managers and employees) has little incentive to inflate the ethical standards in the business. Specifically, the data was collected by using a face-to-face intercept-interview method as a part of a large-scale research project on business ethics in Hong Kong. Each year 50-70 undergraduate students were recruited and trained to assist the fieldwork as interviewers. Experienced interviewers from previous years were recruited to act as both interviewers and leaders in subsequent years.

To ensure a representative sample was collected every year, a three-stage area-sampling plan was deployed to generate a representative sample of the Hong Kong population every year. The sampling frame follows the constituency boundaries delineated by the Registration and Electoral Office for district-council elections and constituency maps were obtained from the Electoral Affairs Commission. Furthermore, each of Hong Kong's 18 districts was divided into smaller constituencies with similar population sizes, giving a total of over 400 constituencies. Additionally, random samples were drawn from roughly 10% of the constituencies in each district.

Within each constituency, interviewers were instructed to sample public transport exit points (bus stops, Mass Transit Railway exits, ferry terminals, tram stops, etc.), and sampling points were randomly selected through simple random sampling on an hourly basis. Following the intercepted protocol, individuals were approached as they entered the sampling areas, based on systematic random sampling. In short, this area-sampling approach combined stratified random sampling and systematic random sampling to generate a representative sample. Furthermore, the quota was applied in the recruitment process to reduce interviewer bias. The sample was then constructed to mirror the age distribution of the adult population in Hong Kong each year.

As this is a study of Confucian virtues in the modern business context and the targeted population was Chinese, it was natural that the interviews were conducted in Chinese. Moreover, there was on-site supervision and coaching to monitor and facilitate the administration of the

questionnaire survey. All these procedures were implemented as an integrated effort in raising data quality. One of the authors was the chair of a committee overseeing the data collection to ensure the data collection process over the years was of high and consistent quality and validity.

3.2 Measurement

A structured questionnaire was designed to measure the general public's assessment of the business ethics level in Hong Kong through the lens of the Confucian virtues of *Junzi* with the questionnaire items either self-developed or adopted from the Confucian classics (Chinese Text Project, 2022). The original items were measured by a 7-point Likert scale (from 1 to 7), where a higher value implied higher ethical standards (after reverse coding if necessary). Each questionnaire was then converted into a total numerical value (potentially ranging from zero to 100) by combining the score of all five virtues of *Junzi* (equally weighted), such that if the company scores all ones, then the total score is zero⁶. Summing up, the final sample consisting of 10,773 interviews has been translated into a company-level *Confucian Business Ethics Score* (hereafter CBES), i.e., a summary score of the perceived business ethics level of the company.

The final sample is based on data collected annually over five years between 2012 and 2016, inclusively. It represents the general public's perception of the business ethics performance of 206 major companies embedded in Hong Kong's daily life. These companies come from the following seven industries covering a wide range of businesses; (1) supermarkets and retail, (2) food and catering, (3) banking and financial services, (4) transportation and public services, (5) hospitality and tourism (6) online and offline media, and (7) real estate and property agencies. Such a diversified business portfolio should be well suited for tracing Hong Kong's general business ethics over the years.

Table 1 lists the industries with their respective average annual CBES and the number of respective companies. We can observe that the perceived business ethics is subject to divergent inter-industry annual fluctuations. Specifically, five industries (Retail, Catering, Finance, Transportation & Public, and Property) recorded an improvement over the period of investigation, while two industries (Hospitality & Tourism and Media) declined in terms of their CBES. Furthermore, all the industries performed the best (worst) in the initial (penultimate) year of study, that is 2012 versus 2015. The documented changes can be the outcome of many socio-economic and political factors which beyond the scope of this study. For instance, the poorest annual CBES in 2012 across all the industries corresponds to the peak in the total corruption complaints logged to the Independent Commission Against Corruption (ICAC) in 2011 (4,010) and 2012 (3,932), followed by a significant decline in the latter years covered in the sample (ICAC, 2022).

[Insert Table 1]

The average values of all 206 companies' CBES were computed for each year, and then the value of each company-specific CBES was further divided by the corresponding yearly average to calculate the relative value of each company's CBES for a particular year. Therefore, if the relative value is equal to 1, it means that the value of that company's CBES is equal to the mean of all the companies in a given year. By the same token, a value greater (smaller) than 1, implies that the value of that company's CBES is higher (lower) than the sample's mean. This procedure enables easy identification of the relative level of business ethics performance for each company. Furthermore, the relative CBES (hereafter RCBES) measurement is used as the input to generate the display tools of the DDA which will be discussed in detail in the next section.

3.3 Analytical framework

The DDA approach first developed by Quah (1993) has several important merits. First, the DDA can provide detailed information on the evolution of the studied variable's distribution. Second, the mobility of the entities within the distribution can be examined in detail. Third, the DDA offers a forecast for the shape of the steady-state, long-run (ergodic) distribution. This, in turn, enables the inference of future trends (e.g., convergence and divergence) in the examined variable (Maasoumi et al., 2007; Wojewodzki et al., 2023).

The DDA can be divided into the traditional Markov transition matrix analysis and the stochastic kernel approach. However, one weakness of the former approach is that the demarcation of the group associated with the selection of grid values is somewhat arbitrary. The latter approach is thus deemed to be superior as it can tackle the thorny issue of demarcation. Furthermore, one can view the stochastic kernel approach as an extension of the traditional Markov transition matrix analysis with two major improvements; the infinite number of states and the exclusion of the arbitrary step in choosing the grid values (for more details please refer to Cheong and Wu, 2018). Summing up, the stochastic kernel approach is used in this paper because of its above-listed merits. The bivariate kernel estimator can be defined as follows.

$$\hat{f}(x, y) = \frac{1}{nh_1h_2} \sum_{i=1}^n K\left(\frac{x-X_{i,t}}{h_1}, \frac{y-X_{i,t+1}}{h_2}\right) \quad (1)$$

Where n is the number of observations, X_i is the RCBES value of a company at time t , Y_i is the RCBES value of that company at time $t+1$, K is the kernel function, and h_1 and h_2 are the respective bandwidths. The computation of the bandwidths is based on the procedures suggested by Silverman (1986). Assuming that the distribution is of the first order⁷ and time-invariant, we can derive the density function as shown in equation (2).

$$f_{t+\tau}(z) = \int_0^{\infty} g_{\tau}(z|x)f_t(x)dx \quad (2)$$

Where $f_{t+\tau}(z)$ is the τ -period-ahead density function of z conditional on x , $g_{\tau}(z|x)$ is the transition probability kernel which maps the distribution from time t to $t+\tau$, while $f_t(x)$ is the density function of the distribution of the RCBES value of all the companies at time t . By the repeated use of equation (2), one can compute the long-run distribution where the time τ approaches infinity. Such distribution is called the ergodic distribution and shows the final stage of evolution in the distribution given that the transitional dynamics remain unchanged. Therefore, the ergodic distribution can be computed as follows.

$$f_{\infty}(z) = \int_0^{\infty} g_{\tau}(z|x)f_{\infty}(x)dx \quad (3)$$

Where $f_{\infty}(z)$ is the ergodic function with infinite τ , representing the distribution of the RCBES in the long-run steady-state equilibrium. One of the potential hurdles when applying stochastic kernel analysis is the number of episode transitions in the data. Quah (2001) suggests that it is better to employ annual transitions as it can increase the number of samples so that the estimation is more reliable. Moreover, it can avoid the pitfall of transient fluctuations in the data (Quah, 2001).

Another crucial issue is the shape of the distribution. It should be noted that many distributions of indicators are not normal but skewed. Moreover, one can expect outliers with either extremely high or low values. This is a pivotal issue as the estimation of the kernel can be affected adversely

in the region of the tail. Therefore, the sophisticated approach of the adaptive kernel with flexible bandwidth is adopted in this study to circumvent that thorny issue. It involves two steps in computation as follows. The data is first used to calculate a pilot estimate, and then the bandwidth is rescaled by a factor which is dependent on the density of the kernel. Although this approach is more complicated, it tackles the sparseness of the data which, in turn, makes the forecast significantly more accurate, especially for the regions with very little data (Silverman, 1986).

There are many traditional display tools of the stochastic kernel approach e.g., the contour map, the three-dimensional plot, the highest density region plot and the stacked conditional density plot. However, none of the above display tools can present the comparison results clearly in a single combined figure. Cheong and Wu (2018) develop a new approach for presenting the findings derived from the DDA called the mobility probability plot (hereafter MPP) which can show the comparison results clearly as several MPPs can be superimposed in the same figure. Moreover, the MPP can provide detailed information on the probability mass, by providing a direct visual representation of the probability of net upward movement of the entity's RCBES within the distribution.

Due to its merits over traditional tools, the MPP has been recently employed in various areas of empirical research. For example, the MPP tool has been used to analyze electricity consumption (Cheong et al., 2019), country-level information transparency (Williams et al., 2022), housing affordability (Liu et al., 2022) and even companies' credit ratings (Lee et al., 2021). The MPP can be calculated as presented in equation (4) below.

$$p(x) = \int_x^{\infty} g_{\tau}(z|x)dz - \int_0^x g_{\tau}(z|x)dz \quad (4)$$

Where $p(x)$ is the net probability of upward mobility. Specifically, the MPP shows the probability of net upward mobility (measured by the Y-axis) for the whole spectrum of company-level RCBES values (the X-axis). The net upward mobility probability is the sum of the probability values of moving upwards minus the sum of the probability values of moving downwards. Furthermore, it is conveniently expressed in percentages and ranges from -100 to 100 such that a positive (negative) value means that the company will have a net probability of moving upwards (downwards) within the distribution in years to come.

4 Results and discussions

The transitional dynamics of company-level RCBES based on annual data from 2012 to 2016 are presented in Figure 1 as a three-dimensional plot (panel A) and a two-dimensional contour map (panel B). Specifically, the right-hand, left-hand and vertical axes in panel A, show the RCBES values in year t , $t+1$, and the height of the stochastic kernel, respectively⁸. Moreover, the different colours indicate different densities/heights of the stochastic kernel such that with increasing density (moving from the lowest to the highest), the blue colour transitions into green, then yellow and eventually into the red colour.

Figure 1 also shows that the outermost contour line stretches from the RCBES value of 0.7 to 1.3. Because the RCBES is calculated relative to the sample's mean which equals one, the smallest (largest) RCBES value of 0.7 (1.3) indicates the CBES significantly below (above) the average level. Finally, we can observe that the stochastic kernel has one major peak located around the RCBES value of approximately 1.05, i.e., just above the sample's average value. This result

highlights that many entities tend to cluster around the RCBES value very close to the sample's mean.

[Insert Figure 1]

Furthermore, looking at Figure 1, one can observe that the density mass is largely concentrated along the 45 degrees main diagonal. This, in turn, implies that most of the entities (companies) tend to remain in their current positions with little change in the coming periods. Therefore, the convergence process or mean reversion in RCBES will be slow and spread over many years.

The ergodic distribution shown in Figure 2 represents the future long-run steady-state equilibrium in RCBES under the assumption of unchanged transitional dynamics. We can observe that the distribution is unimodal with the peak located centrally around the RCBES value of 1.02. This result is consistent with the results from Figure 1 and translates into the long-run converge process towards the mean. The observed convergence is preferred since it implies that a majority of the entities will have their CBES close to the mean, thereby suggesting a lower disparity.

[Insert Figure 2]

Because the probability mass displayed in Figure 1 is scattered along the diagonal, it is difficult to determine where the greatest portion of the probability mass lies. With the new framework of MPP, this problem can be effectively solved as the MPP offers a direct visual interpretation of the probability mass. Specifically, the MPP shows the net probability of upward (improvement) or downward (deterioration) movement of the company's perceived RCBES in years to come. In other words, a positive value (MPP above the horizontal axis) suggests an improvement in business ethics in the future, while a negative value (below the horizontal axis) means that business ethics will deteriorate.

The MPP for the RCBES based on the full period of examination (from 2012 to 2016) is shown in Figure 3. We can see that the entities with the RCBES values below (above) 1.02 have a probability of moving upwards (downwards) in the distribution in the coming years. In other words, the Hong Kong firms with below the mean RCBES values have a net tendency to improve their ethical performance in the future and as such converge towards the average level of business ethics in Hong Kong. On the other hand, the results highlight that the companies with RCBES values greater than 1.02 have an undesirable net tendency to deteriorate in the future.

Furthermore, the positioning of the MPP and its only intersection with the horizontal axis at the RCBES value of 1.02, indicates that many entities will move and assemble around the intersection point. This is in line with the interpretation drawn from the ergodic distribution in Figure 2, where the peak is located at the same RCBES value of 1.02. This, in turn, highlights that the shape of the ergodic distribution is determined by the transitional dynamics as reflected through the movement of MPP. Summing up, Figures 1, 2 and 3 collectively paint an optimistic picture from the perspective of convergence to the mean. Therefore, the policymakers should focus on new motivations, strategies and policies aiming at further improvement of the ethical business practices (absolute CBES values) in Hong Kong.

[Insert Figure 3]

Hong Kong's return to China in 1997 has been followed up by robust growth in business activities with the Mainland. However, concurrently, the incidents and claims of corruption and

other unethical behaviours also increased (see e.g., ICAC, 2022). Such a worrying trend might be associated with unethical business practices migrating from the Mainland to Hong Kong. Consequently, there have been concerns about a potential rise in corruption in Hong Kong and deterioration in its business ethics standards in the future (e.g., Snell, 1999; Phau and Kea, 2007).

Business ethics has recently received much attention in Hong Kong with collaborative efforts of the government, the business community, NGOs and NPOs trying to promote and develop business ethics to a new altitude⁹. It is therefore of interest to examine the transitional dynamics across the period of investigation to understand more about the evolution of business ethics (proxied by the RCBES) over time. Accordingly, the full sample period is divided into five sub-periods: 2012, 2013, 2014, 2015 and 2016. The MMPs and the ergodic distributions based on these sub-periods are shown in Figures 4 and 5, respectively.

Figure 4 shows five MPPs representing each year of the investigation ranging over the RCBES values from 0.7 to 1.2. Overall, the year-to-year comparison highlights a general phenomenon where entities with lower RCBES in one year tend to improve in the next period, while those with higher RCBES in the current year, have a net tendency to deteriorate in the following year. More specifically, we can observe that the MPP for the earliest period (2012) lies above the horizontal axis over the longest range of RCBES values (from 0.7 to 1.12). Furthermore, the 2012 MPP lies significantly above other MPPs for the smallest (from 0.7 to 0.74) and largest (from 1.02 to 1.18) RCBES levels.

Moreover, Figure 4 shows that except for the MPP corresponding to the year 2015, the MPPs lie above the horizontal axis for all RCBES values less than one (below the average). Moving on to the MPP representing the most recent of sampled years (2016), it plots beneath the earlier MPPs for the largest RCBES values (from 1.1 to 1.2). Thus, Figure 4 implies that during the period of investigation the companies with business ethics above the average level either increased their proclivities to move down in the distribution or switched from the net tendency of improving to deteriorating in terms of business ethics proxied by the RCBES. Additionally, the business ethics performance for most entities improves visibly in 2016 as compared with 2015. Such a positive development in the most recent year of investigation is consistent with a documented improvement in Hong Kong's Corruption Perceptions Index for the corresponding period (Transparency International, 2022).

[Insert Figure 4]

Figure 5 shows that all five ergodic distributions are bimodal, i.e., with one major and one minor peak. This result signifies the emergence of two *convergence clubs* (conditional convergence) and their fluctuations over time. A more detailed inspection highlights interesting differences among the distributions. Specifically, the major peak of the ergodic distribution for 2012 and 2013 (panels A and B) has the lowest and greatest height, respectively. Such disparity translates into a substantial change in the long-run steady-state equilibrium of RCBES during just one year with the least (most) significant convergence process in RCBES in 2012 (2013). Another important change occurring between the first two years of investigation is the location of the peaks or the migration of *convergence clubs*. Specifically, one can observe that the major peak has moved from below the average RCBES value of around 0.87 in panel A to above the average RCBES value of 1.02 in panel B. A similar (although of smaller magnitude) movement toward a larger RCBES value applies to the minor peaks located at the RCBES values of 1.05 (1.08) in ergodic

distribution for 2012 (2013). The above disparities suggest a significant change/improvement in business ethics' long-term prospects taking place between 2012 and 2013¹⁰.

Furthermore, Figure 5 shows that the ergodic distributions for the most recent years of examination (2015 and 2016) are virtually identical, which suggests a potential stabilization in the transitional dynamics of RCBES. Specifically, we can observe that the major (minor) peak in panels D and E is located at the RCBES value of 1.02 (0.87). Therefore, one might expect that in the long run, the majority of entities will converge towards relative business ethics slightly above Hong Kong's average level, while a smaller group of entities will follow a different path by converging to a significantly lower level of business ethics.

Summing up, the results presented in Figure 5 indicate an improvement in cross-company business ethics in Hong Kong and a long-run convergence nearby the average level, assuming the transitional dynamics remained unchanged. Furthermore, we can expect the emergence of two *convergence clubs* which might pertain to the proclivities of companies from industries with similar attributes to cluster. Furthermore, the limitations or barriers may prevent one group of companies from moving to a higher convergence club. This indicates that attainment of the relative CBES could be affected by the nature of the business sector and requires further inter-industry analysis.

[Insert Figure 5]

5 Conclusions

This study initiates the application of the display tools of the DDA (ergodic distribution and MPP) in the investigation of business ethics. Accordingly, this research provides empirical evidence based on the annual Junzi index spanning over 5 years (2012-2016) and covering 206 major companies operating in Hong Kong. Because the Junzi index is based on a representative sample of 10,773 interviews gauging the opinions of the general population in a longitudinal setting, this study provides generalizable results revealing the long-term forecast trends of business ethics. Therefore, we extend previous research with findings based on much smaller, mainly cross-sectional samples.

The results can be summarized into three key findings. First, the transitional dynamics of the relative *Confucius Business Ethics Score* (RCBES) indicate that the majority of businesses in Hong Kong are subject to a slow long-run convergence process towards levels slightly above the average level of business ethics. This, in turn, suggests that most Hong Kong businesses will become slightly more ethical in the long run, while cross companies' disparities in standards of business ethics will decline. Second, annual analyses reveal the emergence of two *convergence clubs*, thereby implying only conditional convergence with some companies following a different path towards below the average CBES values. Third, the results suggest the most significant annual change/improvement in RCBES's long-term outlook between 2012 and 2013. On the contrary, annual analysis shows virtually identical and positive long-term outlooks in the most recent two years period (2015 - 2016).

Our findings might be of value to the policymakers, practitioners and business leaders in Hong Kong and help them recognize and implement Junzi virtues as a standard of business ethics. Furthermore, the documented fluctuations in RCBES could serve as a warning and an incentive to business leaders and policymakers who might consider the application of the DDA to monitor the general public's perception of companies' ethical standards on an annual basis. Because the results rely on the assumption of no changes in the transitional dynamics and considering dramatic

sociopolitical and economic developments of the last few years, a follow-up analysis based on the most recent period is required. Moreover, documented *convergence clubs* indicate that attainment of the RCBES might be affected by the nature of the business sectors, thus future research with industry-level analysis is required. Lastly, in the future, the researchers can apply the DDA display tools to other Chinese and Asian countries and cities.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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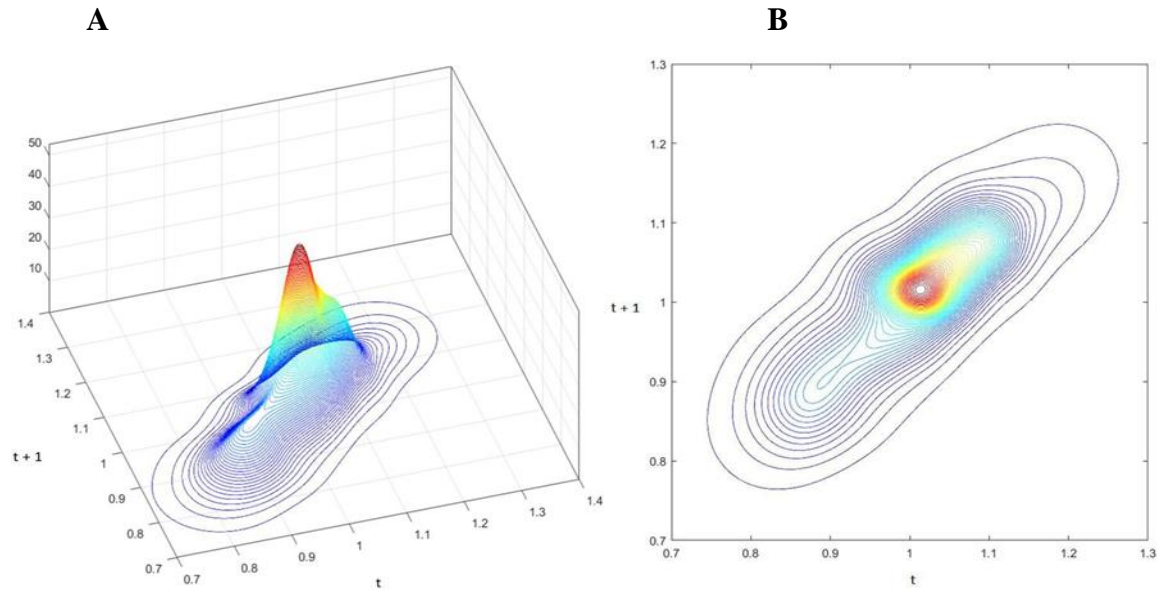
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Table 1. Average annual Confucian Business Ethics Score (CBES) in seven industries between 2012 and 2016.

Industry	Number of companies	Average annual Confucian Business Ethics Score (CBES)				
		2012	2013	2014	2015	2016
Retail	30	61.7	67.4	64.9	67.9	64.3
Catering	30	59.4	61.4	62.1	66.5	64
Finance	30	59.2	64.3	62.7	66.6	62
Transportation & Public	29	59.5	66.9	63.7	69.2	61.6
Hospitality & Tourism	30	62.9	66.9	62.9	67.9	61.1
Media	27	61.5	68.7	65	68	59.8
Property	30	45.9	58.4	55.9	57.8	54.7

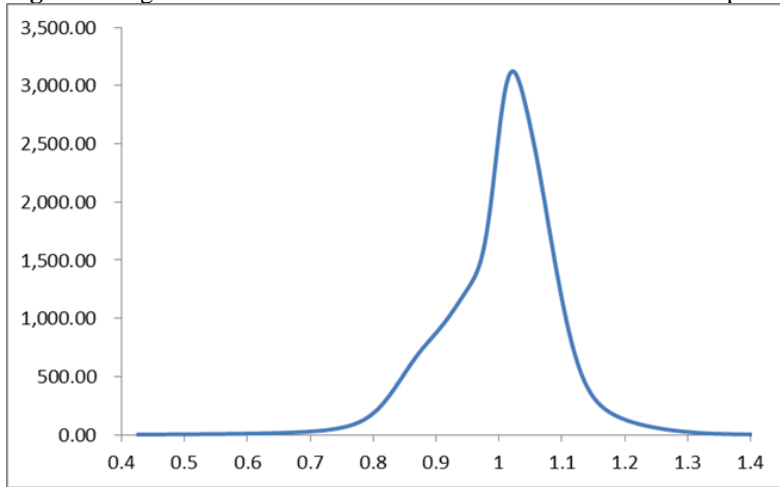
Source: Authors' calculations

Figure 1. Three-dimensional plot (panel A) and two-dimensional contour map (panel B) of transition probability kernel for company-level RCBES based on the 2012-2016 period.



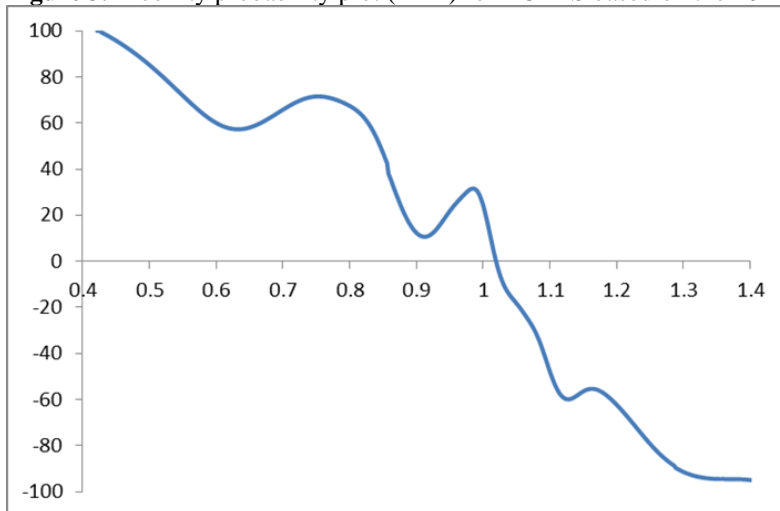
Source: authors' calculation.

Figure 2. Ergodic distribution for RCBES based on the 2012-2016 period.



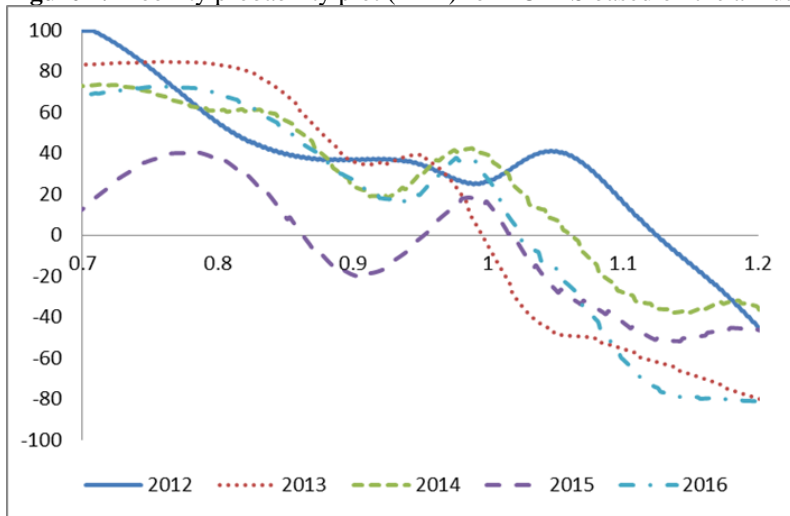
Source: authors' calculation

Figure 3. Mobility probability plot (MPP) for RCBES based on the 2012-2016 period.



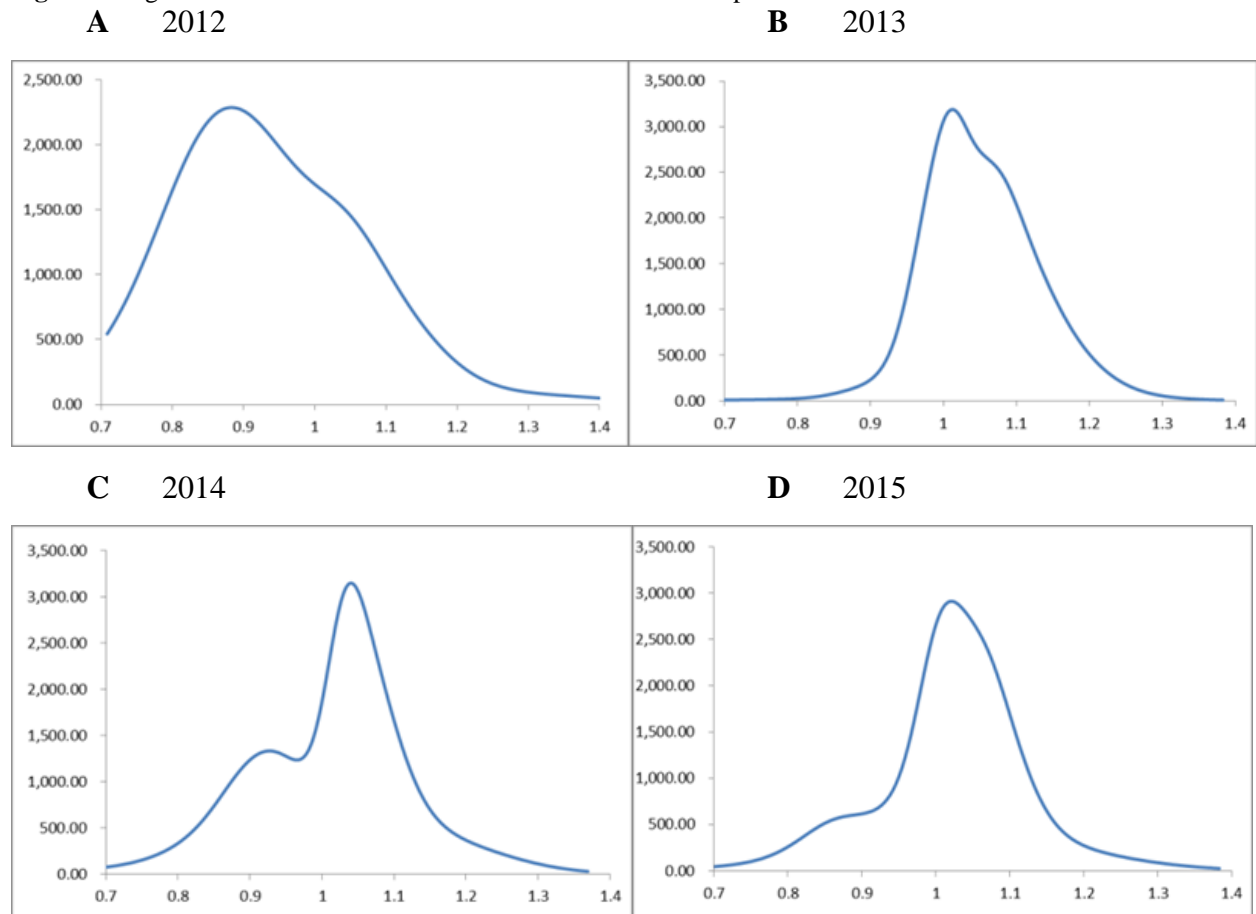
Source: authors' calculation

Figure 4. Mobility probability plot (MPP) for RCBES based on the annual sub-periods: from 2012 to 2016.

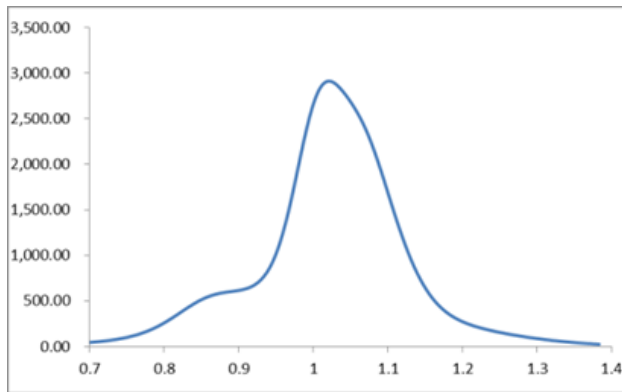


Source: authors' calculation.

Figure 5. Ergodic distribution for RCBES based on the annual sub-periods: from 2012 to 2016.



D 2016



Source: authors' calculation.

Notes

- ¹ Skipping some safety assurance procedures to boost the production time of Samsung Galaxy Note 7 in 2016 has tarnished Samsung's reputation and led to several billion USD in losses. Similarly, the emission cheating scandal in which German car manufacturing giant Volkswagen has been embroiled cost various stakeholders tens of billions USD.
- ² The term *guanxi* has been present in Chinese tradition for millennia. Lovett et al. (1999) succinctly describe *guanxi* as "networks of informal relationships and exchanges of favors that dominate business activity throughout China and East Asia" (p.231).
- ³ A noteworthy exception is Snell et al. (1999).
- ⁴ Encyclopædia Britannica (2012) explains that according to Confucian teachings, the *Junzi* is "an exemplar whose virtuous influence promotes a flourishing human community (...) the junzi is not a commander of or ruler over inferior subjects but rather a moral person who leads by his character and conduct."
- ⁵ For more details on these five virtues see e.g., Liu and Stening (2016) and Tian et al. (2022).
- ⁶ The validity and reliability of the Junzi questionnaire have been discussed in Kwong et al. (2015).
- ⁷ That means that the distribution at time $t + \tau$ depends on t only and not on any previous distribution.
- ⁸ Likewise, the vertical and horizontal axis in panel B shows the RCBES values in period t and $t+1$, respectively.
- ⁹ For the recent initiatives in the promotion and development of business ethics in Hong Kong see HKBEDC (2022), IBES (2022), ICAC (2022), and JA Hong Kong (2022).
- ¹⁰ The above results are consistent with the largest annual decline of nearly 33% (from 3,932 in 2012 to 2,653 in 2013) in the number of corruption complaints lodged with the ICAC since its inception in 1975 (ICAC, 2022).