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Deciphering China's Social Credit Systems: Big Data, Surveillance, and Political Control

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Abstract

In 2014, the People's Republic of China (the PRC) launched the Social Credit Systems (SCSs or *shehui xinyong tixi*) with the use of big data to improve the country's low-trust social order (Creemers, 2018; Kabanov & Karyagin, 2018). This research is interested in how an authoritarian state handles civilian data and social credit rating. Given China's intricate surveillance network, the SCSs have shed light on the different surveillance approaches that have shifted from monitoring and tracking individuals to shaping their behaviours (Cho, 2020; Zeng, 2016). This dissertation conducts an analysis of how big data surveillance in the SCSs can facilitate political control in authoritarian states such as China. The use of big data in the SCSs may enhance the state's probability of detecting opponents with actionable knowledge whether to repress or co-opt target groups (Xu, 2021). Using case studies of the SCSs in Shanghai, Fuzhou, and Xiamen, this dissertation applies the process tracing case study method to uncover possible evidence that could allow the Chinese government to gain political control through targeted repression and selective co-optation. This dissertation argues that big data surveillance in the SCSs does not facilitate targeted repression because it is subject to sociotechnical limitations in precisely identifying the CCP's opponents, and it still requires manual operation to repress untrustworthy individuals who do not conform with the regime's expectations (Bi, 2021; Lewis, 2020). Unlike targeted repression, big data surveillance could facilitate selective co-optation to reward those who are loyal to the regime because this approach does not require target precision but categorisation instead (Kostka & Antoine, 2018; Lee, 2019). However, selective co-optation could only be possible if the government-run SCSs gain more popularity among Chinese citizens. Overall, big data algorithms are not the silver bullet to solve the CCP's socio-political problems (Shahbaz, 2018).

Keywords: China, Social Credit Systems, big data surveillance, dataveillance, political control, authoritarianism.

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List of Abbreviations

ANS	Autonomic nervous system
CCP	Chinese Communist Party
CCTV	Close-circuit television
CSR	Corporate Social Responsibility
GSP	Golden Shield Project
ID	Identification
JSR	Joint Sanctions and Rewards
MPS	Ministry of Public Security
NCISP	National Credit Information Sharing Platform
NDRC	National Development and Reform Commission
PCIC	Public Credit Information Catalogue
PCS	Personal Creditworthiness Score or simply social credit score for individuals
PRC	People's Republic of China
SCSs	Social Credit Systems
STS	Sociotechnical Systems

Chapter 1: Introduction

In 2014, the People's Republic of China (the PRC) launched the Social Credit Systems (SCSs or *shehui xinyong tixi*). The SCSs will use big data to improve the country's social order and strengthen the government's legitimacy (Creemers, 2018; Kabanov & Karyagin, 2018). This research is interested in how an authoritarian state handles civilian data, particularly when such data can be numerically evaluated. Given the intricate surveillance network across the country, the SCSs have shed light on different surveillance approaches that have shifted from monitoring and tracking individuals to shaping their behaviours (Cho, 2020; Zeng, 2016). This introductory chapter will elaborate on the background of the SCSs, including its objective of improving the level of trustworthiness in society. It will also include research aims and objectives as well as the chapter overview to briefly outline the dissertation.

1.1. Problem statement

The PRC central government announced the Planning Outline for the Construction of the Social Credit System (hereinafter the 2014 Planning Outline) in 2014. The Chinese government expressed its aim to craft a megaproject that will optimise the use of big data to its fullest. The document stated the purpose of the SCSs was to promote morality such as sincerity, honest, and traditional virtues, that the systems' objective is 'to raise the sincerity consciousness and credit levels of the entire society' (State Council, 2014; Creemers, 2018)

The 2014 Planning Outline has been depicted as the PRC's techno-social engineering strategy that aims to fix domestic challenges arisen from 'untrustworthy behaviours' in four different sectors: government affairs, businesses, the judiciary, and social services (Cho, 2020). Xi Jinping's administration recognised the rise of low-trust problems that plague Chinese society, namely, fraudulent activities such as tax evasion and counterfeit products, environmental degradation such as chemical spills, food poisoning,

and even official corruption (Engelmann, et al., 2019; Chen, et al., 2018). These problems are rooted in a weak judiciary and its dependency to local governments. Therefore, the moral decline in society across all of these groups has become a grave concern to the Chinese government because it contributes to China's domestic weaknesses and may delegitimise the longstanding power of the Chinese Communist Party (the CCP). Thus, the objectives of the establishment of the SCS are not limited to the promotion of sincere consciousness but also extend to the economic sphere (Engelmann, et al., 2019).

In addition, the State Council also set out the creation of the personal creditworthiness score (PCS)¹ as a part of the SCSs in the 2016 Guiding Opinions of the General Office of the State Council on the Strengthening of the Construction of a System of Individual Creditworthiness (hereinafter the 2016 Guiding Opinions) (Pei, 2020). According to the Plan, the SCSs will be extended beyond a traditional financial credit system. Conventionally, financial credit systems play an integral role as a 'technology of risk mitigation that keeps the market functioning' (Knight, 2021, p. 237). Financial credit is the aggregation of financial records belonging to individuals or corporate entities, providing 'easily readable, centralised, and alphanumeric summary' (Knight, 2021, p. 237). Originating from the pioneering work by American specialist credit agencies, financial credit systems provide financial institutions with a single, objective and comparable measure to calculate potential risks when making lending decisions (Knight, 2021, p. 237).

The Chinese government wishes to harness the credit rating technology from the financial sector into the social sphere to mitigate social risks while using big data to drive social credit profiling (Chen & Cheung, 2017). In this respect, social activities will be translated into numeric scores that indicate the level of trustworthiness of an individual (Xu, et al., 2021). Chinese citizens will

¹ The term social credit score will be used interchangeably with the abbreviation of the personal creditworthiness score (PCS) throughout the dissertation.

be subject to behavioural evaluation from the state based on how ‘trustworthy’ they are. The term can be vaguely interpreted and subjective and it is not always transparent how numeric scores are assigned to ‘trustworthy behaviours’ (Meissner & Wübbecke, 2016; Chen & Cheung, 2017).

Nevertheless, the CCP hopes that the SCSs will also boost opportunities for Chinese people to access more financial support. Only 320 million Chinese people have a financial credit record who can access official loans and investments (Engelmann, et al., 2019). The Chinese government claims that the social credit score will provide Chinese citizens with an alternative means to prove themselves trustworthy when applying for loans, even if they do not have a financial credit record. With the PCS embedded in the SCSs, Chinese citizens will be able to conduct financial activities with formal financial institutions and enjoy government services (Engelmann, et al., 2019).

Despite the benefits, the launch of the SCSs also potentially comes at a high price to Chinese society. The SCSs feature the ‘redlists’ (comprising a list of trustworthy individuals and businesses) and the ‘blacklists’ (containing a list of dishonest individuals and businesses) which are subject to incentive and punishment mechanisms respectively (Cho, 2020; Creemers, 2018). A person is safe if they manage to get a spot on the redlists or if they at least avoid the blacklist. But if a person appears on the blacklist, the consequences can be severe. For example, since the blacklist is published online, anybody can find this data easily on the Credit China website² which can potentially affect the future career or interpersonal relationships of blacklisted people (Cho, 2020).

In this regard, SCSs in China have drawn attention from Western media and academics which debate whether the SCSs serve other purposes beyond socio-economic problem solving. From the Western media point of view, the SCS allegedly resembles the omnipotent surveillance society in George

² Credit China website (<https://www.creditchina.gov.cn/>) functions as the online platform that provides updates and information regarding China’s multiple SCSs (Liu, 2019, p. 24).

Orwell's *Nineteen-eighty-four* whereby the Chinese government is the all-seeing state (Qiang, 2019; Meissner & Wübbecke, 2016). In contrast, other scholars suggest that the SCSs function as a 'broad policy project' comprising of fragmented initiatives and involving multiple stakeholders (Ahmed, 2019). Instead of a nationally unified system, the SCSs consist of multiple sub-systems designed individually by each government unit (Daum, 2018). Thus, the systems should be referred to as plural instead of singular (Ahmed, 2019). While there is also no national social credit rating applied to any Chinese citizens at the current stage, the SCSs are not equivalent to Orwellian nightmare (Ahmed, 2019).

1.2. Aim and objectives

The SCSs are a unique case study since no other country has ever implemented a social credit policy (Drinhausen & Brussee, 2021). The controversy surrounding SCSs draws this dissertation to delve deeper into the matter of government surveillance in the context of the SCSs and the use of big data. Based on the above debate, this dissertation considers whether the systems can facilitate political control through digital profiling, even though the systems are fragmented. In authoritarianism, the regime's intent to exert political control can be anticipated since the regime is not limited by the rule of law (Zeng, 2016). By collecting digital data, a government's social credit rating underlines the potential of big data to shape people's behaviours to conform to authoritarian rules (Kabanov & Karyagin, 2018; Kostka & Antoine, 2018). Therefore, this dissertation will explore China's SCSs based on the following research question. *In what ways does surveillance in the SCS facilitate political control in the PRC?* The research objectives are indicated below.

1. Understand why China has introduced SCSs;
2. Explain and understand the functionality of SCSs in terms of the data they collect and their ability to target and influence citizens; and

3. Reflect on the possibilities and limitations of SCSs in facilitating political control.

1.3. Chapter overview

This dissertation comprises six chapters. As this chapter discussed the emergence of social credit, Chapter 2 will conduct a literature review that seeks to understand the CCP's motivation behind the SCSs based on social management and the Chinese political context. The literature review will also sets out an understanding of government surveillance and big data based on the conceptual framework of dataveillance and the three pillars of authoritarian stability. It will particularly highlight repression and co-optation as the key focus that extends from dataveillance framework. Chapter 3 will elaborate on the research design of the dissertation, which uses process tracing case study method to guide the analysis of the SCSs for the three selected Chinese cities: Shanghai, Fuzhou, and Xiamen. Chapter 4 will discuss three case studies within the dataveillance framework to identify causal mechanisms that will facilitate repression and co-optation. Chapter 5 will apply a multidisciplinary approach to analyse the SCSs through the lens of dataveillance and authoritarian stability. Chapter 6 will conclude the dissertation with the key findings of the research question and will recommend future areas of study.

Chapter 2: Literature review

This chapter will review literature relevant to China's SCSs for better clarity the systems from previous studies, considering the existing state surveillance apparatus and the Chinese political context. It will also explore the underlying motivations for why the CCP is implementing the SCSs. In the second section, this chapter will lay the foundations for the conceptual framework of the research topic. It will begin with an understanding of surveillance through the lens of dataveillance, including the importance of data as an element for control, and how big data contributes to government

surveillance. The literature review will build on this further by using authoritarian theories, highlighting repression and co-optation. Finally, this chapter will address a research gap regarding this topic and raise sub-questions.

2.1. Overview and motivations behind the SCSs

2.1.1. Overview of the SCSs as a part of China's surveillance apparatus

The SCSs are conceptualised in academia as 'a set of mechanisms providing rewards or punishments as feedback to actors, based not just on the lawfulness, but also the morality of their actions, covering economic, social, and political conduct' (Creemers, 2018). According to Bachulska (2020), the term 'social credit systems' have been interchangeably referred to three different types of multiple sub-systems as follows.

1. SCSs rating businesses by government bodies,
2. SCSs rating individuals by government bodies, and
3. SCSs rating individuals by private enterprises (Bachulska, 2020).

As identified in Chapter 1, the Chinese government aims to target every unit in society, but the priority targets are currently businesses and individuals as the SCSs are still in a premature phase (Ohlberg, et al., 2017). The first type of the SCSs (aimed at businesses) is the most advanced as they enforce accountability and corporate social responsibility (CSR) of businesses and attract attention from economists (Bachulska, 2020).

The second type of the SCSs is the social credit rating on individuals, constructed in line with the 2016 Guiding Opinions with the responsibility of the local governments (Pei, 2020). At the local level, municipal governments are assigned to design and build their own social credit systems to rate local businesses and residents, including the creation of redlists and blacklists (Liu, 2019). Relevant government entities at the ministerial and municipal level also need to design and implement their own SCSs based on their respective specialisations. The National Development and Reform Commission (NDRC)

under the State Council oversees the central data aggregation of the SCSs in the National Credit Information Sharing Platform (NCISP) (Trivium China, 2020, p. 17). Then, administrative organs across China must transfer their datasets to the NCISP to combine national blacklist and redlist systems that are respectively subject to the Joint Sanctions and Rewards (JSR) (Liang, et al., 2018; Lewis, 2020).

The SCSs developed by private enterprises are often referred to as market credit systems (Trivium China, 2020). These platforms are not considered qualified for formal licenses despite being widely operated. Therefore, their scores are not included in the governments' scoring systems (Shen, 2019, p. 29). Therefore, this dissertation will only consider the second type of the government-run SCSs.

Regarding the government-run SCSs, Hoffman (2017b) argues that the SCSs are an instrument to social management (*shehui guanli*). Under this concept, the CCP must be able to manage the party's internal affairs as well as its interaction with Chinese society, fostering a complex governing system to sustain the CCP legitimacy. To manage the society, the Chinese government has been developing the Digital System for Society Management or a software that would enable automated information sharing across government entities (Woesler, et al., 2019, p. 12). Therefore, social management can be perceived as a 'holistic' and 'comprehensive' domestic security policy pertaining to both social order and party's survival through techno-social engineering (Hoffman, 2017a).

Hoffman (2017b) lays out the study of China's social management through the autonomic nervous system (ANS)³ as a framework. She identifies

³ ANS is the integration of Marxist-Leninist thought and traditional Chinese thinking on governance, explaining correlations between the core and periphery (Hoffman, 2017b).

the ‘Golden Shield Projects (GSP)⁴’ as the foundation of the SCSs which have already been in place for surveillance on individuals (Hoffman, 2017b). The GSP in China’s surveillance apparatus serves as a mechanism for problem identification since the overall objective is to unify all surveillance techniques and databases such as ‘speech and face recognition, smart cards, credit records, and Internet surveillance technologies’ (Hoffman, 2017b). The GSP serves the Ministry of Public Security (MPS) as a fundamental information network in security management and criminal records that the ministry coordinates with its subordinate bureaus at the local level (Chandel, et al., 2019, p. 112). Currently, the GSP allows Chinese security authorities the arbitrary power to access nationwide population databases that covered over 96 percent of total populations’ personal information online (Peterson, 2020; Qiang, 2019).

While the GSP lays the foundation of the information sharing system for the MPS, the SCSs are a supplementary surveillance mechanism that assess behaviours and stimulates effective judicial enforcement (Creemers, 2018; Daum, 2018). To fulfil social management, the SCSs entail both social and political control to pre-emptively prevent undesirable behaviours that would undermine the CCP’s ruling (Hoffman, 2017b; Hoffman, 2018). Therefore, the SCSs are set to incorporate big data (which will be discussed in section 2.2.1) to serve the Chinese government as a means to aggregate a large pile of data and regulate behaviours in businesses and among individuals (Woesler, et al., 2019).

However, Drinhausen and Brussee (2021) observe that ‘the SCS itself is not tasked with conducting political surveillance of individual behaviour. Its role is more clearly limited in recent party and policy documents.’ They presented an aggregation of the SCS-related documents that the most mentioned target group is the business sector, accounting for 73.3 percent. Individuals, on the other hand, only accounts for 10.3 percent of the mentions (Drinhausen &

⁴ Foreign media often makes a mistake on calling the GSP interchangeably with the Great Firewall, China’s internet censorship project. However, the two are not the same and the Great Firewall is only the subset of the GSP (Hoffman, 2017b; Peterson, 2020; Qiang, 2019).

Brussee, 2021). The Chinese government's key objective of the SCSs emphasises corporate actors more than individuals, explaining why the corporate SCSs are more advanced than other. Thus, the SCS rather functions as social engineering tools would later contribute to a meaningful socio-economic development by holding corporate firms accountable (Drinhausen & Brussee, 2021). Regarding surveillance on Chinese individuals, they argued that the GSP already serve that purpose (Drinhausen & Brussee, 2021; Brussee, 2021).

While the current focus of government documents has been on business, it does not mean there is any reason not to investigate the impacts of SCSs on individual behaviours. The SCSs will allow the Chinese government to influence citizens' behaviours in a way that is not possible within the existing surveillance system (Meissner & Wübbecke, 2016). This is especially true in authoritarian regimes where control is important to secure regime survival (Hassan, et al., 2022; Kabanov & Karyagin, 2018).

Despite the current fragmented development, the SCSs' original aim is to extend from the GSP by linking all of the state's individual surveillance networks together. It will, once completed, combine a large centralised online database with automated information sharing between a wider range of government agencies that is not limited to only security sector (Liang, et al., 2018, p. 246). The SCSs' central information sharing will also tackle administrative problems that each agency tends to work in separation due to different specialisation and reluctance of information sharing (Hoffman, 2017b). The 18-digit ID number paves the way for digital profiling across all surveillance networks as it reduces anonymity and duplication on the systems. These efforts will keep the Chinese government informed in order to make future decisions on internal security issues in social management (Hoffman, 2018).

2.1.2. Unpacking political motivation based on the Chinese context

As mentioned in Chapter 1, the SCSs aim to reinforce ‘trust’ in Chinese society. Thus, the two key elements in the SCSs, the social credit scores and the JSR, will take part in developing the ‘sincerity culture and traditional virtues’ by implanting the societal norms that uphold trustworthiness (Creemers, 2018). The SCSs are set to steer Chinese individuals to behave in a desirable manner according to the law, market mechanisms, and self-regulatory settings (Creemers, 2018).

‘Trust’ is defined in the SCSs objective as ‘the ability of an individual or socially interacting entity to rely on someone or a(nother) socially interacting entity acting in an honest or trustful manner’ (Chen, et al., 2018, p. 3). In the Chinese cultural context, ‘trust’ (*xin*, sometimes translated as honesty) is rooted from Confucianism as an integral part of virtue (Chen, et al., 2018, p. 3). *Xin* is a component in Chinese terms for both financial credit reporting (*zhengxin*) and one of the country’s socialist values, trustworthiness (*Chengxin*) (Zhang, 2020, p. 570). Therefore, the term ‘social credit’ (*shehui xinyong*) connotes the combination of ‘financial creditworthiness and the trustworthiness quality of an individual or an organisation’ (Zhang, 2020, p. 570). Sometimes, the policy framework for the SCSs is loosely defined as ‘trust systems’ (*chengxin tixi*) as noticed in the term ‘individual trust system’ (*geren chengxin tixi*) that this dissertation will focus on. (Zhang, 2020, p. 570).

Instead of cherished human rights in democratic principles, morality such as trustworthiness is regarded highly and respectfully in Chinese society. It is crucial to address Chinese values in the SCSs. To the CCP, Western or universal values⁵ are considered a threat to China’s long Confucius traditions

⁵ Western values include ‘democracy, human rights, media and judicial independence, civil society, pro-market neo-liberalism, and “nihilist” criticism of past errors by the CCP’ (Garver, 2016, p. 766). Chinese leaders through time have accused these values as being sugar-coated weapons that Westerners use to ideologically infiltrate into and destabilise Chinese society (Garver, 2016, p. 766).

and socialist ideology (Garver, 2016). According to Knight (2021, p. 245-246), the moral crisis of low-trust society has rooted from 1) patron-client systems among family and social networks, and 2) rapid socio-economic changes as a result of reforms and the opening up policy (*gaige kaifang*). Chinese society since the 1980s has experienced the emergence of socio-economic individualism, political corruption, and extreme inequality, as well as the decline of collective identity in Confucianism which overall undermines individual moral agency (Knight, 2021, p. 246).

In this regard, the CCP as a ruler cannot neglect such moral crisis. According to the 2014 Planning Outline, the guiding ideology of the SCSs demonstrates the clear role of the CCP from Deng Xiaoping's theory of the Three Represents (Creemers, 2018) that refers to the following duties: 'Development trend of China's advanced productive forces (*xianjin shengcanli*), orientation of China's advanced culture (*xianjin wenhua*), and fundamental interests of the overwhelming majority of the Chinese people (*zhueda duoshu rende genben liyi*)' (Mohanty, 2003, p. 238). The Three Represents theory differentiates Chinese political culture from Western democracies in the sense that the righteous leader does not have to come from popular election in order to gain legitimacy (Garver, 2016). In China's definition of democracy, the righteous leader must be the one leading the Chinese nation as a strong and benevolent state that is capable of providing support to its citizens. Regarding human rights, the CCP takes into consideration mainly development and modernisation as the key elements to serve Chinese people to improve their living standard above poverty line (Garver, 2016).

Thus, the trust issues became a moral deficiency that the CCP, as a righteous leader of the state, needed to address at the earliest opportunity (Knight, 2021). In this regard, the Chinese leadership can be understood from Confucian traditional concept of 'rule by virtue' (*dexing zhengzhi*) which is the rule of law by the Chinese definition (Knight, 2021; Creemers, 2018; Chen, et

al., 2018). As the supreme leader, the CCP needs to act as ‘the mediator of what can normatively be considered as moral and immoral, as well as the sole ‘moral agent’ entrusted with promoting such a vision of society (Knight, 2021, p. 246). Therefore, the line between social control and political control in the PRC has become blurred as the Party is always involved.

When it comes to the SCSs, the Chinese government then combines the two notions of ‘moral construction’ (*daode jianshe*) and ‘social engineering’ (*shehui gongcheng*) (Knight, 2021, p. 246). The construction of the SCSs then reflects the attempt to build a ‘moral-driven technocratic society’ or an ‘exemplary society’ where people nurture ‘disciplinary culture where virtue is rewarded, and ethical wrongdoing is punished’ (Knight, 2021, p. 246). Here, Chinese statecraft can be seen as being influenced by Confucius thinking and morality and rooted from ancient dynastic eras (Suter, 2020). Until now, China has been upholding its socialist principles in governance but embraces capitalist forces to enhance the country’s economic prosperity. Its socialist values persist in the government’s role in resource allocation in society. The Han Chinese majority enjoy the economic security and political stability but sacrifice parts of their civil liberties by complying with the CCP regime (Cook & Dimitrov, 2017).

As the country’s socialist market economy progresses combined with the arrival of Internet, the CCP found itself at risk of losing control. Suter (2020, p. 50) observes that ‘liberal and authoritarian forms of power share elements that simultaneously aim at the development of individuals and [to] improve the capacity of the state to govern.’ The invention of the SCSs is a political technology to mitigate risks and promote ‘exemplary society’, providing new insights of how the SCSs enable new approach as a governing mechanism and a source of political control (Suter, 2020, p. 50).

Prior to the SCSs, the Chinese government used to employ methods on collecting personal archives (*dang’an*) that are usually unavailable to

individuals, but security authorities can access (Zeng, 2016). However, *dang'an* has been an analogue means of personal profiling (Liang, et al., 2018). Modern surveillance technologies allow the PRC to employ more sophisticated methods which are reflected in the SCSs. With the PCS, it can be implied that Chinese authorities can generate digital profiles for individuals and provide ratings based on their behaviours (Creemers, 2018). The social credit scores then become a part of digital version of *dang'an* when the Chinese government requires all 18-digit identification number to be compulsory in registrations on telecommunication, administrative services, social security, taxation, and even social media. As trust in Chinese society is declining, the SCSs offers more opportunity to control citizens and encourage greater social stability in consistence with Confucius norms (Creemers, 2018).

Besides social credit ratings, redlists and blacklists are other key elements in the SCSs. The principle behind these systems derives from the statement in the 2014 Planning Outline; 'Allow the trustworthy to roam everywhere under heaven while making it hard for the discredited to take a single step' (State Council, 2014). Categorising people into redlists and blacklists has its root from China's imperial legacy of 'the designation of class' (*chengfen*) that distinguishes those who are good (the red) and bad (the black) (Knight, 2021, p. 247). The 'black' in particular is often referred to the 'revisionist or renegade' against the CCP (Knight, 2021, p. 247). Being identified as the black would face the combined punishment based on collective law enforcement (*baojia*) enforced back in Song Dynasty era (Knight, 2021, p. 246). Nowadays, Xi's government implement this concept in the joint punishment system against the judgement defaulters (*laolai*). The Chinese government extends it beyond judicial decisions by allowing other administrative organs to also disproportionately punish them (Knight, 2021, p. 247).

The JSR are divided into joint incentive and joint punishment systems. The joint incentive system would celebrate those who are listed on the redlist for distinguishing dedication to the CCP. The redlist is relatively new system, implemented during Xi administration as a steering mechanism for positive behaviours in parallel to the blacklist (Knight, 2021, p. 247). However, the blacklist draws attention due to its ties with the joint punishment system which demonstrate the repressiveness of the SCSs. The blacklists in the SCSs resemble other blacklisting in other countries that prevents the blacklisted persons from securing loans or getting a job in government affairs (Arsène, 2019). But the major difference is that the blacklist is tied to the collective punishment, stemming from the revision of the Civil Litigation Law in 2012 (Creemers, 2018). The Supreme People's Court standardised the joint punishment practice and blacklist system in 2013 which set forth the blacklist based on the ability to act upon court orders or administrative decisions. If a person fails to carry out such obligation, he or she will be enlisted on a blacklist system and subject to joint sanctions from various agencies (Creemers, 2018).

Several scholarly works have discussed the repressive potential of the SCSs (Xu, et al., 2021; Kostka & Antoine, 2018; Chen & Cheung, 2017). While there are clear motivations for the CCP to use SCSs for political purposes, there have also been examples where the CCP has used these systems to exert political control. For example, the SCSs stopped a lawyer and a journalist from purchasing plane tickets, indicating that they are on the blacklists due to their inability to fulfil court orders (Wang, 2017). In 2019, political protesters and petitioners⁶ were also recorded on provincial blacklists in Zhejiang, Shandong, Jiangsu, and Fujian (Xu, et al., 2021, p. 13). These provinces cited their failure in following government procedures as the reason that petitioners are

⁶ Despite Chinese political environment prohibiting popular protests, petitioning is not entirely uncommon for Chinese population. Some petitioners travel to the capital to express their distrust of their local governments. Depending on circumstances, petition activities can sometimes be perceived as unauthorized if the authorities discretionarily consider them disruptive (Song, 2018).

blacklisted. Such procedures should not be violated by large gatherings outside of central or local government buildings (Xu, et al., 2021, p. 13).

2.2. Conceptual framework: dataveillance, big data, and authoritarianism

The previous section discussed how the SCSs are established for the enhancement of state surveillance apparatus within social management to regulate individual behaviours (Hoffman, 2017b). As morality is deemed highly in Confucius tradition, trust is seen as a fundamental value in Chinese society, and thus the CCP launched the SCSs in response to the moral decline (Knight, 2021) For the CCP to maintain social stability and prevent resistance, it needs to exert political control over Chinese citizens through the use of big data in the SCSs (Chen, et al., 2018). This section will develop a conceptual framework of dataveillance to understand how China may use big data in the SCSs to gain political control over its citizens. It will further develop this by placing this in the context of an authoritarian regime.

2.2.1. Dataveillance: anatomising elements of control in government surveillance

Government surveillance is nothing new to the security of nation-states for both democratic and authoritarian regimes alike. Lyon (2014, p. 2) described surveillance as ‘focused, systematic, and routine attention to personal details for purposes of influence, management, protection, and direction.’ Deriving from French terms *sur* (from above) and *veillir* (to watch) (Galič, et al., 2017), surveillance refers to a governing technique that is also ‘a way of ensuring that citizens follow social rules, norms, and expectations, while constituting a form of social control by an authority’ (Lyon, 2006).

Given the Chinese government’s effort to integrate big data into the SCSs, this dissertation will specifically concentrate on big data surveillance that helps the Chinese government capture the proliferation of data for internal security assessment. According to Andrejevic and Gates (2014, p. 186), the term ‘big data’ refers to ‘the unprecedented size of contemporary databases and the

emerging techniques for making sense of them'. Big data comprises at least three major characteristics: high volume, high velocity, and high variety, meaning that big data can process an unprecedentedly large pile of data quantified from multiple sources with a rapid pace (Jain, et al., 2016). With the involvement of big data in government surveillance, the dissertation considers dataveillance as the most relevant surveillance theory to the SCSs.

Dataveillance is the theory that refers to 'the systematic monitoring of people's actions or communications through the application of information technology' (Clarke, 1988). Surveillance technologies today enable actors to 'impact and shape power on citizens' daily life [more] than pre-internet paper-based data entries' (Galič, et al., 2017, p. 28). Although the theory was coined in 1988, it has only gained momentum in recent years due to increasing attention among researchers (Clarke & Greenleaf, 2017, p. 4). Dataveillance theory highlights 'digital persona' as the key concept that represents 'shadow' as a person leaves data behind through observing or recording devices (Clarke & Greenleaf, 2017, p. 2). This concept has expanded from Deleuze's 'dividuals' in control societies. Distinctively, the digital age has changed the conceptualisation of surveillance when data represents pieces of a person's identity (Galič, et al., 2017).

In earlier surveillance literature, Foucault's *Discipline and Punish* (1977) lays the foundation of surveillance studies. Surveillance reflects an asymmetric power of the gaze over the subjects. Surveillance is instrumentalised for 'discipline' to maintain social order. Borrowing the concept of panopticon from Jeremy Bentham, the prison architecture where the authority (or the watcher) is able to see inmates (or the watched) from central control tower but not vice versa. In this case, Foucault illustrated that this forced prisoners to realise that they were being watched at all times and influenced their behaviours to always act as if someone is always watching (Gane, 2012, p. 615). Thus, surveillance from Foucault's elaboration represents the disciplinary

techniques that the watcher becomes omnipotent and omnipresent, demonstrating ‘panoptic settings make individuals perform on themselves, without coercion, different operations and exercises of power’ (Manokha, 2018, p. 220). However, Deleuze (1992) has shifted the power of surveillance from discipline to focus on control.

In contrast to Foucault, Deleuze (1992) elaborated that surveillance engaged more with data rather than physical individuals, turning them into an abstract subject to a social control instead of disciplinary power (Galič, et al., 2017). Deleuze (1992) argued that ‘individuals become less relevant as subjects of surveillance; it is no longer actual persons and their bodies that matter or that need to be subjected and disciplined, but rather the individuals’ representations’ (Deleuze, 1992, cited in Galič, et al., 2017, p. 20). Individuals in this case then become divided into ‘dividuals’, for example, their different societal roles as consumers, workers, or family members. Such personal data can be constructed into unique profiles on different platforms (Galič et al., 2017), fostering datafication, ‘the process by which subjects, objects, and practices are transformed into digital data’ (Southerton, 2020; Lee, 2019). Deleuze’s main concept is, therefore, control societies where ‘data-bodies become more important than the real bodies (of physical individuals)’ (Deleuze, 1992).

In this respect, the power to control society has shifted towards controlling access of data. Therefore, surveillance infrastructure such as the SCSs is needed to capture and synthesise a heterogeneity of data flows and convert them into actionable knowledge (Clarke & Greenleaf, 2017; Andrejevic & Gates, 2014; Liang, et al., 2018). Dataveillance pays close attention to traditional surveillance techniques and their relations in surveillance networks. Within surveillance, the infrastructure consists of organisational software, hardware, and regulatory mechanisms (Clarke & Greenleaf, 2017).

The SCSs, as discussed above, contain elements of both control and disciplinary techniques. The digital profile created through the SCSs can be

considered a form control. Datafication in Chinese society reflects Deleuze's control societies whereby citizens generate data into the Chinese digital space. Individuals of Chinese citizens would be aggregated into digital social credit profiles for behavioural assessment as citizens perform their roles in society (Cabestan, 2020). The blacklist and joint punishment systems by contrast can be considered a form of discipline because they would still give the state the ability to discipline individuals to achieve an exemplary society (Creemers, 2018; Suter, 2020; Knight, 2021).

Degli Espoti (2014) suggests an analytical framework to complete a surveillance cycle on the basis of dataveillance as the means to analyse corporate marketing strategy. As she demonstrates the practices of big data analytics, this dissertation considers her framework to be feasible for government surveillance involving big data as well. Dataveillance practices consists of four actions that form a surveillance cycle: recorded observation, identification and tracking, analytical intervention, and behavioural manipulation. The feedback loop completes the cycle by evaluating whether the organisational objective has been achieved (see Figure 1) (Degli Espoti, 2014).

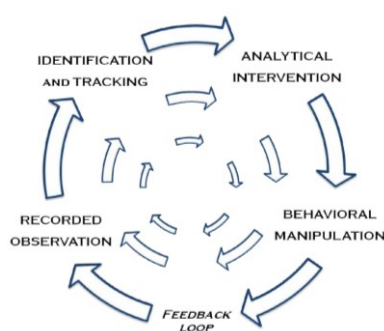


Figure 1 Cycle of dataveillance developed by Degli Espoti (2014)

The first two actions (recorded observation, and identification and tracking) can be conceptualised into the surveillance process because these techniques exist prior to the used of big data technologies. Therefore, the surveillance process of dataveillance entails conventional surveillance

techniques that perform recorded observation, identification, and tracking, through central controlling infrastructure (Degli Esposti, 2014). For example, close-circuit television (CCTV camera) or sensory devices can observe and transfer information to a database for recording. Degli Esposti (2014) argues that recorded observation functions allow an organisation to know its subject better by ‘accumulating, harvesting, reconstructing’ digital data. Therefore, identification is required for an organisation to be able to profile and track an individual. Common examples of identification are unique identifiers or codes in passports, ID cards, or any biometric information that are translated into digital data (Degli Esposti, 2014). Regarding the SCSs, the real name and ID registration of a person would be the starting point of the surveillance process.

The second process is analytical intervention which refers to the analytical techniques that allow users to obtain actionable knowledge (Degli Esposti, 2014). As this dissertation concentrates on big data surveillance, this process can explain how big data enables traditional surveillance techniques beyond monitoring and tracking. The arrival of big data has changed the conventional surveillance practices from monitoring and tracking to those which collect as much data as possible and which use predictive analytics (Andrejevic & Gates, 2014; Liang, et al., 2018).

Analytical intervention involves either big data algorithms or human analysts which analyse raw data in search of patterns which can later be used as ‘actionable insights’ (Degli Esposti, 2014). Combining big data into the context of government surveillance, a state is able to gain ‘actionable intelligence’ derived from big data analytics (Andrejevic & Gates, 2014, p. 186). Nevertheless, raw data requires mathematical values to create such actionable knowledge (Degli Esposti, 2014). Thus, big data contributes to the reconfiguration of surveillance: it is not just about collecting as much as possible, but also how to use it in an informed decision-making process through big data analytical techniques (Andrejevic & Gates, 2014).

While surveillance traditionally requires the monitoring of specific objects and information, big data transforms it into an approach that ‘tracks everything about everyone at all times’ (Andrejevic & Gates, 2014, p. 190; Liang, et al., 2018, p. 416). This is dubbed as the ‘collect-everything’ approach and is enabled by the ability to collect enormous quantities of both online and offline data automatically and indiscriminately from multiple sources. This approach does not require specific goals. Data can be collected and stored for a certain timeframe without any pre-determined goal which is controversial in comparison to a conventional targeted surveillance approach that comprises a clearly defined goal (Van Dijck, 2014). The ‘collect everything’ approach therefore offers data collection without a predetermined purpose (Liang, et al., 2018).

Predictive capability is another concern with big data in government surveillance. Big data analytics offer the anticipatory technique to ‘foresee the future in order to control the present’ (Lyon, 2016, p. 6). Computer algorithms can now make inductions about individual characters based on their interests that they leave behind, for example, preferences and purchasing history, visited websites, to name a few. Therefore, big data analytics should be understood as a means to ‘analyse seemingly unrelated data and discover unanticipated correlations’ (Andrejevic & Gates, 2014; Liang, et al., 2018). Big data offers new analytical techniques that are capable of ‘customised profiling’ (Liang, et al., 2018) which aggregate individuals’ data representations and forge them into a representative identity. ‘In this sense, big data provides tailored approaches by which the state can implement individualized and selective scrutiny’ (Andrejevic & Gates, 2014). In the SCSs, an individual’s social credit score acts as their aggregated data representation that can be reconstructed in the analytical intervention process (Chen & Cheung, 2021).

The final process in dataveillance is behavioural manipulation, a controversial action taken after gaining knowledge from the analytical

intervention (Andrejevic & Gates, 2014). Degli Esposti (2014) highlights the process as the ability to intentionally influence people's behaviours towards a designated direction. In other words, this process aims to shape individuals' ways of thinking, decision-making, or even behaviour. Prospective patterns of behaviours which are anticipated can be defined as 'performative expectations' (Degli Esposti, 2014). Once patterns are identified, a plan to influence behaviours can be initiated to maintain or change such actions in the future (Degli Esposti, 2014, pp. 210-212). People may not realise that their data is analysed for profits or other purposes (Degli Esposti, 2014, p. 220).

In this process, the means for behavioural manipulation can vary in accordance with power characteristics such as '(1) coercive power – the application, or threat of application, of physical sanctions forcing the subjects to alter their behaviour; (2) material power – material resources and rewards making the subjects think of their own interests; and (3) symbolic power – the use of prestige, appreciation, and recognition to convince people' (Kostka & Antoine, 2018, p. 3). It is still unknown whether behavioural manipulation can be effective in this process. To expand on Degli Esposti's behavioural manipulation process, the next section will discuss how big data can be used in the context of authoritarian regimes and, in particular, how big data surveillance can be devised for political control.

2.1.2. Three pillars of authoritarian stability: Authoritarian approach to behavioural manipulation

As discussed in the previous section, Degli Esposti (2014) suggests that analytical intervention using big data can pave the way for behavioural manipulation because of big data's capability to collect, store, and reconstruct data for future prediction. In a political context, big data is capable of 'exacerbating the power differential between state and private citizens' (Liang, et al., 2018, p. 417). Big data also has the potential to trigger behavioural changes, shaping contemporary politics and social control (Coté, et al., 2016, p.

5). Thus, it allows the state to gain societal compliance of the population and exert political control over citizens (Xu, et al., 2021).

In Western democracies, big data surveillance has always been a part of scholarly debates because its potential impact can damage intelligence ethics and human rights, undermining the basic principles of democracy. Many intelligence officers and security practitioners in these countries claim that the effectiveness of surveillance technologies in counterterrorism, crime prevention, and counterespionage support its use (Cayford & Pieters, 2018). Despite this, dataveillance has become one of the most controversial governing techniques in democratic societies because it reveals signs of ‘digital authoritarianism’, an act that blurs the line between democratic and autocratic practices (Yayboke & Brannen, 2020). Digital authoritarianism refers to ‘a way for governments to assert power and control information flows through digital tools and the Internet’ (Shahbaz, 2018; Albrecht & Naithani, 2022). For example, data collected from surveillance can later be used for political purposes such as gauging strength of the incumbent, analysing public opinions, and even manipulating electoral results. An attempt to aggregate data flows by the United States’ National Security Agency is a prominent example (Lyon, 2014).

However, while a plethora of academic work on big data surveillance revolve around the threats to democratic values, little attention is paid to the regime dynamics in authoritarianism (Kabanov & Karyagin, 2018). According to Suter (2020, p. 50), ‘scholars in democratic countries often rely on exaggerated distinctions between democratic and non-democratic regime types and thereby fail to capture new ways in which governing practices may evolve’. According to Kabanov and Karyagin (2018), Gerschewski’s three pillars of stable authoritarianism can be a viable tool to understand how autocracies may leverage big data for political stability. The three pillars consist of legitimacy (the arduous effort to maintain public satisfaction), repression (the use of force

against an opposition or wider population), and co-optation (the ability to persuade relevant and strategic actors to support the regime) (Gerschewski, 2013).

In stable authoritarianism, the three pillars provide complementarity advantages to each other. Legitimacy is the most prominent pillar that keeps authoritarian regimes in power because it represents the symbolic element that convinces mass support and the symbolic leverage against elite opponents or regime challengers (Gerschewski, 2013). Additionally, technologies such as the Internet and ICTs also brought about a regime challenge in authoritarianism. The revolutionary forces in the Arab Spring threatened dictators and autocrats outside of Egypt and Tunisia, with ICTs as a liberation tool (Kabanov & Karyagin, 2018). Learning from such experiences, authoritarian regimes elsewhere, including China, have had to consider whether to abandon technologies or embrace them to avert a risk from lagging behind in socio-economic development (Kabanov & Karyagin, 2018; Zeng, 2016).

Authoritarian regimes commonly adopt political adaptation strategies to cope with digital transformation (Gerschewski, 2013). Big data is discursively used to showcase governance and state capacity, demonstrating authoritarian performance legitimation to ‘foster passivity and political indifference among most of the population’ (Dukalskis & Gershewski, 2017). For example, the PRC does so by promoting the use of modern technologies such as big data in the rhetoric of ‘modernisation’ (Zeng, 2016). Non-democracies can use big data to articulate a ‘window-dressing’ policy to demonstrate the increase in transparency and modernity despite contradictions regarding privacy violations and discrimination (Kabanov & Karyagin, 2018).

As legitimacy is the supreme goal of authoritarian states (Kabanov & Karyagin, 2018), two supporting pillars that complement legitimacy are repression and co-optation, primary instruments for political control. This research will highlight these two pillars that authoritarian conducts to alter

citizens' behaviours, particularly against their political opposition (Frantz & Taylor-Kendall, 2014; Xu, 2021). Hassan, et al, (2022, p. 157) define political control as 'the state's tactics used to ensure societal compliance across a broader array of behavioural outcomes than common conceptions of state capacity.' Political control can be differentiated from state capacity in the sense that the incumbent exerts overarching power to sustain the autocratic regime such as the pre-emption of regime resistance (Hassan, et al., 2022). In contrast, state capacity should be viewed as a state's ability to accomplish public policy, for example, taxation (Hassan, et al., 2022).

First, repression is straightforward. Authoritarians commonly opt for two types of repression to assert coercive power. 'Empowerment rights restrictions' are the first option that indiscriminately target the majority of an entire population to limit the rights from several aspects such as freedom of speech and the rights to assembly (Frantz & Taylor-Kendall, 2014). Indiscriminate repression can escalate to the use of force such as counter-protest, mass atrocity, or genocide (Xu, 2021). Dictators would rely on this approach when they are unable to identify their opponents whose characteristics are diffused and hidden among the population (Frantz & Taylor-Kendall, 2014, p. 336).

Another type is 'personal integrity violations' or simply targeted repression on specific individuals. This approach would only occur when dictators detect the threat. Xu (2021) argues that targeted repression is preferred rather than indiscriminate repression because it can be operated in a stealth mode and easier to enforce behavioural changes of political opponents. Targeted repression has less trade-offs compared to indiscriminate repression because the latter may provoke international sanctions, damage economic productivity, stir public backlash, and potentially destabilise the internal affairs of elites (Xu, 2021). In turn, targeted repression is less visible, and thus prevents popular mobilisation. Through his theorisation, Xu (2021, p. 9) claims that 'targeted

repression against individual opponents and weakening challenger organizations is far more frequently employed as an everyday tool of repression in dictatorships than indiscriminate repression.’

Second, co-optation is a more feasible tool to secure regime legitimacy because it does not require force. Co-optation is considered ‘the provision of basic public goods such as social stability and long-term economic growth’ but can also be the ‘distribution of perks’ (Frantz & Taylor-Kendall, 2014, p. 334). These provisions represent material power that coerce recipients to comply with authoritarian rules and influence them to become loyal (Frantz & Taylor-Kendall, 2014, p. 334). Often, the co-optation approach is directed towards political opponents to shift to the government’s side, but selective co-optation can be too expensive to convince only a handful of the opposition to support the regime. It is also ineffective because it does not guarantee the commitment of the co-opted even after they accepted the offer as they may not keep their promises and could later mobilise (Xu, 2021, p. 7).

Thus, stable authoritarian rulers prefer non-exclusive co-optation to the population as a whole because this approach can reinforce state legitimacy with a benevolent government capable of providing public goods and welfare distribution (Dukalskis & Gershewski, 2017). According to Frantz and Taylor-Kendall (2014), co-optation lowers the chances of large-scale political escalations that threaten regime survival. This approach can also deter any challenge from elites if they wish to take over. Therefore, co-optation can help an authoritarian secure its power by gaining support from the population and using the support as a claim of its legitimacy that discourage challengers because doing so would trigger popular dissatisfaction (Frantz & Taylor-Kendall, 2014, p. 335). Again, non-exclusive co-optation does not guarantee the compliance from anti-regime radicals. Moreover, both non-exclusive and selective co-optation can still be costly to the regime (Xu, 2021, p. 8). Therefore,

the regime has an incentive to selectively co-opt those who show signs of loyalty (Frantz & Taylor-Kendall, 2014, p. 334).

In this respect, big data has provided authoritarian regimes with more information on whether to employ targeted repression and selective co-optation to save the regime's reputation and spending (Xu, 2021, pp. 8-9). Before big data emerged, dictators suffered from the 'vertical information problem', the problem which the regime is unable to obtain citizens' hidden political preferences⁷ (Xu, 2021, p. 2). The diffused nature of political opposition problematises authoritarian calculation whether its legitimacy is intact. In this respect, big data is of great interest for authoritarianism because the technology allows classifications and predictions of behavioural patterns even before goal determination (Xu, 2021).

Xu (2021) argues that 'information through digital surveillance increases dictators' probability of detecting radical opponents' through the exploitation of datafication. Kabanov and Karyagin (2018) also claim that autocratic governments are likely to use big data to obtain public expectations without direct engagement from citizens, meaning that dictators can observe what populations are thinking or their true political opinions. Big data is capable of fulfilling a political control calculus on which tactics, targeted repression or selective co-optation, would be feasible. Less visibility of repression will also likely ease citizens' concerns and stop hiding political opinions (Xu, 2021, p. 8).

While some authors have found that big data can facilitate the government's ability to manipulate citizens behaviour (Andrejevic & Gates, 2014; Degli Esposti, 2014), this dissertation will consider whether the SCSs can manipulate behaviour and thus facilitate political control. To expand from the dataveillance framework, this dissertation uses two of Gerschewski's pillars of

⁷ Citizens in an authoritarian state tend to avoid the risk of violent repression by imposing self-censorship, concealing actual opinions towards the regime (Xu, 2021, p. 2).

authoritarian stability to examine the ways in which big data surveillance in the SCSs can provide essential information for an authoritarian regime to make decision on whether targeted repression or selective co-optation is feasible.

2.3. Conclusion: Identifying research gap

To conclude the literature review, the Chinese government is motivated to implement the SCSs in response to a low-trust society (Knight, 2021). The CCP has a duty to uphold the core socialist values through the process of social management (Creemers, 2018; Hoffman, 2017a). Under this concept, the CCP assumes a role of moral guardian whose responsibilities are to maintain social order as well as to ensure regime survival. The intertwining of political and social affairs within the CCP has made political and social control inseparable (Hoffman, 2017b).

The dataveillance framework has provided a path to conceptualise the SCSs as a part of China's surveillance apparatus (Liang, et al., 2018). Given that the GSP is in operation, the proliferation of data has increased the amount data available to the government. The SCSs can be perceived as a supplementary surveillance mechanism as China extends its reach (Hoffman, 2018). In addition to the existing surveillance network, big data can be the analytical means through which the Chinese authorities assess the level of trustworthiness of citizens based on their digital profiles in the SCSs. In the eyes of the Chinese government, the term 'trustworthy' is not limited to the ability to act with honesty (Hoffman, 2017a). The term can be vaguely interpreted at its disposal. Therefore, those who are deemed 'untrustworthy' will be referred to as the Party's opposition which includes both political opponents and any citizens who do not uphold Chinese values⁸ (Woesler, et al., 2019). Both types endanger the CCP's legitimacy.

⁸ This dissertation will use this term 'opposition' throughout, but the term contains a dual meaning: actual political challengers to the CCP and individuals or groups who destabilise the social order in Chinese society.

Unlike democratic countries, the authoritarian regime's ultimate goal is its survival and to remain in control. Authoritarian regimes therefore manipulate the population to exert political control, gain societal compliance, and deter any possible mass resistance (Hassan, et al., 2022). The methods employed by authoritarian regimes differ to those in democratic countries – repression and co-optation are the primary means through which authoritarian regimes seek to gain political control over the population and thus support their legitimacy (Frantz & Taylor-Kendall, 2014). Big data surveillance, to the extent that it allows the government to repress and co-opt the population, can therefore facilitate political control (Hoffman, 2017a; Xu, 2021).

As the CCP legitimacy depends on the Chinese public, big data surveillance in the SCSs could enable a new mode of control with a predictive capability, which can manipulate citizens' behaviours in the CCP's direction (Yu, 2020). While several scholars have investigated the potential impact of SCSs on political control, the surveillance literature is mainly developed from democratic conceptions of political control and does not develop further on how big data surveillance can be optimised in a true authoritarian context (Suter, 2020; Kabanov & Karyagin, 2018).

To fill the research gap, the dissertation will instead consider the ability of big data surveillance in the SCSs to facilitate political control in an authoritarian context based on the below research question.

In what ways does surveillance in the SCSs facilitate political control in the PRC?

The dissertation will apply the framework of dataveillance to repression and co-optation, the primary means through which an authoritarian state can alter people's behaviours to control society. For the SCSs, to increase the effectiveness of repression and co-optation, they must help authorities identify political opponents through digital profiling and predictive behavioural patterns (Kabanov & Karyagin, 2018). Once the target group is identified by the

authorities, the regime can then use such information to decide whether to use a repressive or co-optative approach against the target group (Xu, 2021). However, for SCSs to facilitate political control it must also be the case that the CCP can alter the behaviour of identified opponents in the direction of the CCP (Kabanov & Karyagin, 2018). It is through this behavioural change that the CCP can gain societal compliance and maintain its legitimacy through the assurance of a functioning social order.

In search of answers for the research question, this dissertation will address the following sub-questions.

1. To what extent does big data surveillance in the SCSs facilitate targeted repression or selective co-optation by increasing the likelihood of identifying opposition?
2. To what extent does big data surveillance contribute to the behavioural manipulation of the population and therefore exert political control?

Chapter 3: Research design and methodology

3.1. Process tracing case study method

This research will apply a case study design to capture the key components of the SCSs because there have been no government-run social credit system in other countries (Chen & Cheung, 2021). Therefore, the case study method is a qualitative research method that provides a flexible research strategy to examine a contemporary issue in detail and in a specific context (Yin, 2009, p. 17). Due to its versatile nature, the case study method in this case provides an advantage to apply relevant theories to guide data collection and analysis (Yin, 2009, pp. 17-18).

Specifically, the process tracing method is best suited to study the SCSs because it allows the investigation of causal mechanisms throughout the sequences of an event or a system (Levy, 2008, p. 5). By following processes or sequences, researchers are able to generate or test a hypothesis based on causal

mechanisms that impact the outcome of a case study (Bennett & Checkel, 2015, p. 7). However, the process does not solely rely on historical evidence but focuses on the theoretical causation that links causes and outcomes. It means, ‘mechanisms are not causes, but are causal processes that are triggered by causes and that link them with outcomes in a productive relationship’ (Beach, 2017, p. 2). Therefore, this method assists researchers in discovering additional evidence or conditions between cause and effect (Levy, 2008, p. 11)

To infer a causality in a case study, the causal conjunction and the causal chain are crucial typologies of configurational thinking for the understanding of how causal mechanisms are connected to the causation (Blatter & Haverland, 2012). The causal conjunction refers to how ‘the causal conditions work together in a specific situation’, whereas the causal chain is how ‘the causal conditions work together in a specific sequence’ (Blatter & Haverland, 2012, p. 94). The two topologies are different as the former focuses on how multiple conditions work and interact to each other in a specific timeframe. The latter concentrates on specific conditions and adequate preconditions that influence future causal factors, occurring in a chain of events that would finally lead to an outcome (Blatter & Haverland, 2012, p. 94).

This dissertation will focus on the causal chain over the causal conjunction as to uncover which conditions in the dataveillance process contribute to the hypothesised outcome (Blatter & Haverland, 2012). It starts with the use of big data in China’s surveillance apparatus which is the first step that can be proceeded to Y which is effective political control. However, the process tracing method can shed light on other causal mechanisms which mean there can be more than two factors that lead to Y (Bennett & Elman, 2006). If so, it can be inferred based on the applied theories that X might not always be the primary cause of Y. To reach Y, other conditions must be understood from the set of factors. Given the three processes of dataveillance, X_1 and X_2 must be

examined through a causal chain of mechanisms in the SCSs that can lead to Y below.

X₁: Big data surveillance must be able to target an opposition.

X₂: Once the opposition can be targeted, an authoritarian can specifically repress or co-opt the targeted opposition.

Y: If X₁ and X₂ are true, then big data surveillance can facilitate political control.

Understanding processes in the SCSs requires a conceptualisation of the systems as a part of a larger infrastructure that constitutes causal relationships. Therefore, it is worth considering the integral parts that transmit power to the hypothesized outcome (Beach & Pedersen, 2016). At the moment, the local SCSs are the closest level to individuals in China (Maurtvedt, 2017). Observing causal factors inside the pilot projects is crucial to understanding how the government-run SCSs can impact citizens.

As this research is focusing on the causal relationship between big data surveillance and political control, it will also seek to uncover whether there is any diagnostic evidence or conditions that may arise as the research progresses. Process tracing is useful to draw causal inference based on a series of activities to generate a hypothesis (Collier, 2011). Therefore, it is crucial to be able to recognise the accessibility of data sources as a guidance for case selection (Blatter & Haverland, 2012, p. 102).

3.2. Research scope and case study selection

At present, the SCSs have not been completed across the country, despite a deadline of 2020 (Drinhausen & Brussee, 2021). Only 43 cities across the country have implemented local SCSs in their respective designs, differing themselves from each other. All of them are still at the pilot stage (Kostka & Antoine, 2018). Given the timeframe for this dissertation is limited, it cannot cover every government-run project in the SCSs.

Since the case study approach does not require a random or representative sample (Yin, 2009), the dissertation selects three different Chinese cities with pilot projects: namely, Shanghai, and two cities from Fujian province, Fuzhou, and Xiamen. The three cities are primarily selected based on the availability of open-source material available in English. But these cities are also different in terms of administrative divisions (South China Morning Post, 2016; Fujina Provincial Government, 2014; China Daily, 2021), population size (National Bureau of Statistics of China, 2021; Fuzhou Bureau of Statistics, 2021; CEIC, 2021), and economic capabilities (Liu, 2019) as shown in the Table 1 below. Given such differences, these cities are significant in terms of observing how big cities in China develop their SCSs.

Table 1 Case study selection of Chinese cities

	Shanghai	Fuzhou (Fujian)	Xiamen (Fujian)
Administration	Direct-administered municipality (Largest city in the PRC)	Provincial administration (Provincial capital city)	Special Economic Zone/Municipality with independent planning status
Population in 2020 (estimate)	24.87 million	8.29 million	5.16 million
GDP in 2018 (estimate)	3,268 billion RMB (370.46 billion GBP)	785 billion RMB (88.99 billion GBP)	479 billion RMB (54.30 billion GBP)

3.3. Data collection

To trace the process within the local SCSs, this dissertation collects data based on secondary sources available in English and Chinese, mainly official regulations, policy documents, and news content. It also uses English academic literature and journal articles that are collected from academic databases with the University of Glasgow Library's access. Although other research methods such as interviews or surveys can also be suitable for this topic, the difficulties from the ongoing COVID-19 pandemic in China have been a major obstacle to collecting necessary data about the SCSs from fieldwork (Knight & Creemers,

2021). Shanghai in particular has recently been under severe lockdowns due to the recent major outbreaks of COIVD-19 (Yuan, 2022).

Moreover, data collection about authoritarian states can be difficult due to the secrecy of government surveillance, the lack of transparency, and China's Internet censorship that blocks foreign IP addresses from accessing certain websites. Nevertheless, the government's websites (gov.cn) are accessible. Thus, this dissertation uses available English sources to conduct an inductive approach to gather more information about the selected cases. Some English documents are officially translated and posted on the government websites such as Shanghai's regulations. Whereas other documents are translated into English by professionals who made them available online, for example, by China Copyright and Media and China Law Translate.

Supplementary data was also collected from Chinese sources by using keywords in Pinyin (romanised version of Chinese language) such as the SCSs (*shehui xinyong tixi*), individual creditworthiness system (*geren chengxin tixi*), social credit score (*shehui xinyong fen*), blacklist (*hei mingdan*), and redlist (*hong mingdan*), for example. This dissertation uses Google Translate⁹ and the Chinese search engine, Baidu, to search for data from Chinese sources. A recent study has recorded the improved accuracy of translations from Chinese to English to up to 95 percent (Aiken, 2019). However, it is a controversial means for research because the automated translations fail to capture language nuances or technical terms which hinder the validity of data sources (Doherty, 2017). Therefore, to ensure the accuracy of the data from different Chinese websites the documents have been sent to a professional translator in English and Chinese for a proofreading and correction of the translations.

⁹ Google Translate was upgraded from Phrase-Based Machine Translation (PBMT) model to a Neural Machine Translation (NMT) model in 2016 (Aiken, 2019).

3.4. Data analysis

For the analysis, this dissertation aims to employ a multidisciplinary approach because the SCSs entail different but essential components that allow the systems to operate. The dissertation will consider whether big data surveillance in the SCSs enables the likelihood or the possibility for targeted repression and selective co-optation. The analytical framework will include approaches from dataveillance that emphasises the legal interpretation and how regulations are executed into practice (Clarke & Greenleaf, 2017). According to Clarke and Greenleaf (2017), dataveillance can be influenced by regulations which set permission or constraint in a varied degree. For example, legal regulations determine conditions to which activities can be proceeded in dataveillance process (Clarke & Greenleaf, 2017, p. 10).

Moreover, it is crucial to understand several aspects of the systems such as sociotechnical systems (STS) in addition to legal considerations in dataveillance. The STS approach draws attention to the relationships between actors such as local governments (main actors for data collection and aggregation), analytical intervention process (big data as the key technology to analyse data), and individuals (users of the systems) (Degli Esposti, 2014; Baxter & Sommerville, 2011). In this way big data surveillance must be considered 'beyond a narrow view of technologies as having positive or negative effects and see them as part of sociotechnical systems' (Degli Esposti, 2014, p. 222). The STS approach enhances a better understanding of how technical systems are used within different organisational contexts and how they result in a desirable outcome set in an organisation's goal (Baxter & Sommerville, 2011, p. 4) STS can be suitable for a cross-sector analysis which does not emphasise on scientific works because STS methods are 'more akin to philosophies than the sorts of design methods that are usually associated with systems engineering' (Mumford, 2006, cited in Baxter & Sommerville, 2011, p. 5).

As the PRC has a different governing system from Western democracy, it is worth highlighting the social context in Chinese society as well in order to grasp better understanding of the systems. Due to the growing influence of big data in today's world, it is important to consider sociotechnical systems within an authoritarian country (Clarke & Greenleaf, 2017), especially when the SCSs are influencing how a state utilises big data for internal affairs.

3.5. Challenges and limitations

The major challenge is that the process tracing method can overall lead to a probabilistic outcome, hindering generalisability of the case to others (Hedström & Ylikoski, 2010). This dissertation has narrowed the specifications based on the three cases to test hypotheses. Should more evidence arise, there can be further development of whether big data surveillance in the SCSs can facilitate political control or any other approach. Although it may not be applicable to a wider generalisation, this method offers a broader approach to think of how big data surveillance may evolve in other contexts (Blatter & Blume, 2008). 'Process tracing offers a comparative advantage to other methods in terms of generating observable implications' (Levy, 2008, p. 11).

Regarding the analytical framework, dataveillance is relatively young in comparison to other surveillance theories, but this framework can shed light on data politics as modern technologies have grown more influential in today's political arena, particularly in a true authoritarian context (Clarke & Greenleaf, 2017). The case studies of local SCSs will contribute to better understanding of how the government-run SCSs function within the SCSs ecology. Although the study may not be replicated to other cases elsewhere, understanding the complexity of the SCSs can guide foresights about how data can lead to behavioural manipulation in an authoritarian manner. In this way, citizens in democratic countries can resist their governments in case their incumbents attempt to establish or push forward social credit rating regime (Chen & Cheung, 2021). Particularly for citizens in the countries positing in-between

democracy and authoritarianism, the analysis of this dissertation should guide a thinking process to identify whether their government attempts to exert political control through technological uses.

Chapter 4: Report on the selected local pilot projects

This chapter report on the empirical findings of the case studies in Shanghai, Fuzhou, and Xiamen. Through the process tracing method, this chapter divides the dataveillance process within the local SCSs into three sections. First, this chapter elaborate the surveillance process to consider the collection of data relevant to the social credit scores. It also considers the relevant actors and data sources as well as the legal stipulations to understand the scope of data usage and constraint. Second, this chapter considers the analytical intervention process, elaborating on the mechanisms for generating a social credit score. And third, this chapter focuses on how an individual's social credit score can contribute to behavioural manipulation through incentives and punishments.

4.1. Surveillance process: Identification and digital profiling mechanisms

4.1.1. Social credit data collection

In stipulating and constructing their respective SCSs, the local regulations follow the 2016 Guiding Opinion (Pei, 2020). To collect data for social credit scores, each local regulation identifies 'natural persons' as individuals who must be a local resident with 'permanent household registration within [an] administrative region' (Shanghai Municipal People's Government, 2018, Article 11; Fuzhou Municipal People's Government, 2017, Article 14; Xiamen Credit Office, 2019, Article 8). The three regulations set out a scope of data collection for the local authority to collect a wide range of information on individuals as follows.

1. Real names and national ID numbers for identification;

2. Employment status, educational record, marital status, administrative licensing, and qualifications;
3. Engagement with the CCP such as awards received from government entities and participation in volunteer services and/or charities organised by government entities; and
4. Criminal conviction, information on court judgement of civil and commercial affairs, information on failing to perform court judgement, and warning information of overdue payment. (Only in case of an individual has been recorded as untrustworthy.) (Shanghai Municipal People's Government, 2018, Article 11; Fuzhou Municipal People's Government, 2017, Article 14; Xiamen Credit Office, 2019, Article 8).

Although the regulations state what data is collected, these categories are broadly defined and it is not clear whether additional information beyond this scope can be collected (Creemers, 2018).

4.1.2. Relevant actors, data sources, and digital platforms to facilitate social credit score inquiry

In handling data collection, each city establishes a responsible agency to aggregate the data transferred from different administrative units under the local governments' jurisdiction (see Table 2) (Creemers, 2018; Lewis, 2019). Each city also has to publish the public credit information catalogue (PCIC), aggregating basic information above and listing numbers of administrative charges which specify behaviours are considered untrustworthy. For example, In Shanghai, the social credit data is aggregated based on 3,000 information items provided by over 100 municipal units (Schmidt, 2017). In Fuzhou, 16 municipal ministerial offices provide 50 data sources, including the Traffic Police, Common Reserve Fund, and Committee for Urban Management as the main sources (Lewis, 2019). Xiamen draws the data sources from 57 categories and more than 750 items (Xinhuanet, 2018). According to the regulations, the PCIC must also be open for public comments, meaning score indicators are

subject to change according to administrative assessment (Shanghai Municipal People's Government, 2017, Article 10 ; Xiamen Credit Office, 2019, Article 8-9).

To facilitate social credit score inquiry, all three cities are tasked to provide central websites and mobile applications. Local governments develop these platforms in cooperation with private sector as listed in Table 2 (Schmidt, 2017; Longshine, n.d.; Ahmed, 2019; Lewis, 2019). For example, in Shanghai, residents can inquire about their scores from the Credit Shanghai website or the Honest Shanghai application (*xinyong shanghai*) (O'Meara, 2016). In line with Fujian Province's regulation, Fuzhou introduced a multi-purpose mobile app, E-Fuzhou, with the function called Jasmine Point (*moli fen*) (Fuzhou Digital Office, 2018). Xiamen also opted for mobile application for social credit inquiry through Egret Point (*bailu fen*) accessible in the WeChat, a popular online communication and payment app (Xinhuanet, 2018). While mobile apps may contain information on other activities, for example location data, it is not clear whether this will be available to local authorities in addition to the data outlined above.

Table 2 *Relevant actors and social credit inquiry platforms*

	Shanghai	Fuzhou	Xiamen
Responsible local agencies for data aggregation	Shanghai Economic Information Center (Shanghai Public Credit Information Service Center)	The Fuzhou NDRC Big Data office	Xiamen Guoxin Credit Big Data Innovation Research Institute with the guidance from the NDRC
Social credit inquiry platform	- Credit Shanghai, - Honest Shanghai app	- Credit Fuzhou, - E-Fuzhou app (Jasmine Point)	- Credit Xiamen - WeChat app (Egret Point)
Third party developer	Zhengxin Fangsheng Credit Rating Co., Ltd.	Longshine Co., Ltd. for E-Fuzhou app, and JD Finance for Jasmine Point	Xiamen Information Group

4.1.3. Data protection

Given that local authorities can collect a wide range of information, the Chinese government has improved data protection laws to prevent the acquisition of irrelevant data without written consent (Pei, 2020). Local regulations also dedicate specific articles to prevent authorities from collecting the data such as ‘income, savings, negotiable securities, commercial insurance, and real estate’, as well as ‘religious faith, gene, fingerprints, blood type, diseases or medical history, and other personal information prohibited by laws or administrative regulations’ (Shanghai Municipal People's Government, 2017, Article 14; Fuzhou Municipal People's Government, 2019, Article 11; Xiamen Credit Office, 2019, Article 16). According to the regulations, how long social credit data can be stored varies across three cities, with the maximum of five years in Shanghai and Xiamen and three years in Fuzhou (Shanghai Municipal People's Government, 2017, Article 35; Xiamen Daily, 2021; Fuzhou Municipal People's Government, 2017, Article 21).

The three cities’ regulations are dedicated to administrative liabilities that prevent officials from abusing their power and other forms of illegal practices such as negligence or favouritism. These articles signify the improvement in data protection in China. Each regulation also prohibits relevant officials from manipulating social credit data through illegal collection beyond the scope given above, score alteration or falsification, disclosure or leaking state secrets, and failure in handling objections from natural persons (Shanghai Municipal People's Government, 2017, Article 50; Fuzhou Municipal People's Government, 2019, Article 33; Xiamen Credit Office, 2019, Article 54).

Considering this section, the local regulations identify the scope of data collection, which must be consistent with the 2016 Guiding Opinions and other national policy documents such as the Personal Information Security Specification (or the Specification in short) as national privacy standard to ensure personal data protection and information control (Roberts, et al., 2021,

p. 69). However, the 2017 Cybersecurity Law stands as the highest national law in data protection, but it does not specifically define personal privacy (Roberts, et al., 2021). Catá Backer (2019, p. 211) pointed out that data protection lies at the hand of state responsibility rather than individual vital interests. Thus, the Chinese government is not limited by legal obstruction to make use of data collection from any sources for political purposes since ‘data protection and data security are guaranteed for the state, but not for the individual’ (Woesler, et al., 2019, p. 13). As local government agencies assume the role as surveillance actors, the construction of the SCSs encourage them to adopt digitisation of their document and administrative procedures to facilitate information sharing (Ohlberg, et al., 2017). The next section will discuss how local authorities use this data to assess an individual’s behaviour and generate a social credit score.

4.2. Analytical intervention process: Social credit score generation mechanisms

This section explores what evidence is available on the analytical intervention process in the different case studies. This focuses on what behaviours the SCS’s observe and how they use these to identify the opposition. Only local public authorities have the power to determine who is placed on blacklists and redlists. For the SCSs to work effectively, the local governments try to keep the specific scores and monitored behaviours unknown to users because this will prevent any attempt from individuals to manipulate scores (Woesler, et al., 2019, p. 13). Therefore, officials do not reveal the score indicators for each behaviour but only describe administrative charges for wrongdoings on the PCIC. This is similar to the private sector, which conceals how scores are generated to maintain competitiveness in their market and prevents their clients from document falsification to reach a desired score (Packin & Aretz, 2016, p. 45; Packin, 2019)

Despite the opacity of the behaviours considered by the local authorities, the remainder of this section reviews the available evidence in each of the case studies to understand the analytical techniques used in generating a social credit

score. Due to different administrative systems, Shanghai, Fuzhou, and Xiamen, executed their social credit policy with their own capabilities, resulting in a different process for generating scores. Although details on Shanghai's score generation mechanism are unattainable, Fuzhou and Xiamen case studies provide an integration of big data algorithms in the SCSs (Lewis, 2019).

According to the Fuzhou Digital Office (2018), the local authority uses a six-variable algorithmic model or multi-dimensional scoring with indicators such as basic information, judicial credit, administrative credit, economic strength, employment strength, and personal ability (see Figure 2). In Jasmine Point, scores range from zero to 1,000 points, with average scores between 600-650 points. Citizens will receive a basic credit score of 500 points and additional 500 points can be either increased or deducted based on the behaviours that Fuzhou government bodies deems appropriate (Fuzhou Digital Office, 2018). Lewis' interview with local officials reveals that authorities manually assign scores and will deduct scores based on four categories:

- 'Minor: 5–10 points,
- Moderate: 15–20 points,
- Serious: 30–50 points, and
- Extreme: 100–150 points' (Lewis, 2019).

In contrast, Xiamen uses a FICO five-variable algorithmic model which has five indicators: basic information, trustworthiness such as keeping promises, breach of trust such as dishonest or contract-breaking behaviours, credit repair, and overall credit behaviour (see Figure 2) (Lewis, 2019). Unlike, Xiamen's regulation does not specify the criteria of trustworthy and untrustworthy behaviours (Xiamen Credit Office, 2019). Egret Points share the same range as Jasmine Points, 0-1,000, with an average score at 666 points (Lewis, 2019).



Figure 2 Algorithmic model illustrated by Lewis (2019)

The development of social credit ratings reflect the PRC’s effort to adjust itself in a capitalist market environment where private companies also operate respective SCSs (Kostka & Antoine, 2018). There are also examples elsewhere in Western democracies where private companies generate scores based on social behaviours. For example, Affirm, the US financial company, considers digital profiles on Facebook as a part of its evaluation of whether to approve a loan to its clients. In Germany, Schufa scoring can rate a client with a lower credit rating if he or she resides in a low-rent or poor neighbourhood (Wong & Dobson, 2019, p. 225). Considerations on social life of a person can be a pre-determining factor whether such a person deserves services from private organisations. However, private credit ratings evaluate such information to assess an individual’s ability to repay (Wong & Dobson, 2019, p. 225). The difference between China’s SCSs and social credit rating in the Western world is that a social credit score will not be limited to one aspect such as loan approval but will encompass several aspects of life (Wong & Dobson, 2019; Langer, 2020).

Given the varying level of information available on what behaviours impact an individual's social credit score, Fuzhou and Xiamen’s algorithmic models demonstrate that big data algorithms are involved, but the decision to increase or reduce scores relies entirely on the discretion of local authorities (Lewis, 2019). Big data algorithms only aggregate scores from multiple authorities on the SCSs platforms and reveal a final score to an individual. Each score will be categorised into levels which are varied across the three cities (see

Table 3) (Schmidt, 2017; Fuzhou Digital Office, 2018; Credit China, 2018). If an individual receives a low score, he or she can apply for credit restoration on the local credit websites, except the individuals who are categorised as seriously untrustworthy (Xiamen Daily, 2021).¹⁰

According to Lewis (2020), algorithms in the local SCSs are still at a pre-mature level, meaning that advanced algorithmic decision-making driven by artificial intelligence (AI) is not in use for automated and predictive scoring. While it is clear an individual’s social credit score is, it is difficult for individuals to always understand what factors improve their scores. It also limits researchers from identifying what behaviours are deemed ‘trustworthy’ or ‘untrustworthy’ to the CCP (Lewis, 2020). Having explored at how the local authority assess people’s behaviour, the next section will discuss local initiatives that have potential to manipulate a person’s behaviour.

Table 3 Social credit scoring

	Shanghai	Fuzhou	Xiamen
Algorithmic model	N/A	Six-variable	FICO five-variable
Score range	N/A	0-1000	0-1000
Average score	646 points (as of 2016) (Ming, 2016)	600-650 points (as of 2019)	666 points (as of 2019)
Categorisation	Very good, good, bad (Schmidt, 2017)	Excellent, very good, good, average, poor, very bad	Excellent, very good, good, average, bad

4.3. Behavioural manipulation process: Facilitating mechanisms

4.3.1. Incentives: Convenience and special services

As discussed in the previous section, the primary mechanism through which local authorities influence citizens’ behaviours is the social credit score that entails benefits or punishment (Cho, 2020). Despite the opacity in how the

¹⁰ For example, such behaviours include any behaviours that threaten the livelihood of other persons’ physical integrity, unfair business conducts, failure to perform legal obligations, failure to participate in military services, or any behaviours that the state considers untrustworthy (Shanghai Municipal People's Government, 2017. Article 25; Fuzhou Municipal People's Government, 2019, Article 22; Xiamen Credit Office, 2019, Article 21)

score is generated, the social credit score can influence people to behave in ways that local authorities consider ‘trustworthy’. Individuals can also observe others with high scores, which stimulate the construction of societal norms where individuals act trustfully in the CCP’s expectation (Bi, 2021). To gain benefits, citizens in these cities have to engage in activities that local governments promote, while trying to avoid activities that may lead to punishment such as administrative charges indicated in the PCIC. The better the incentives (and the worse the punishments), the more likely that people will try to behave in ways that they can maintain or improve their scores (Kostka & Antoine, 2018). Users will increasingly engage in activities which enhance their score to access these benefits. In this way, the local governments can manipulate people’s behaviours based on the CCP’s directives (Woesler, et al., 2019).

However, the SCSs are in their nascent stages. Although the three cities provide mobile apps for social credit inquiry, there has only been a small share of registered users (Lewis, 2019). Accessing scores from the credit websites does not stimulate as many activities for datafication as mobile apps. Mobile apps contain more functions than websites, for example, push notifications, facial recognition systems, and location data, to name a few (Privacy International, 2017).

For instance, all of the mobile apps in the three cities do not only facilitate social credit inquiry but also have multifaceted functions. For example, the Honest Shanghai app allows users to use facial recognition to access their social credit scores and to share them with others via Chinese social media platforms (Tengfei.com, 2020). The E-Fuzhou app provides an access to one-code passes to use public transport and register vehicle licence (Longshine, n.d.). Xiamen’s choice of embedding sub-software in WeChat also demonstrates the attempt to reach a wider range of users for Egret Point because WeChat gains popularity from at least 900 million people nationwide (Privacy International, 2017).

With the convenience facilitated by the apps, the local governments aim to normalise online administrative services by encouraging citizens to use mobile apps for perks and special services from the governments. For example, registered users in Fuzhou who gain more than 683 Jasmine points will be able to access ‘priority waiting line, administrative assistance, and express processing’ when they visit government agencies (Lewis, 2019).

In Xiamen, WeChat already provides communication and electronic payment services (Privacy International, 2017). In addition to the app, Egret Point facilitates a wide range of credit services in the fields of social security, public transportation, medical care, and public services. The Xiamen municipal government is promoting ‘Xinyi+ Credit’, joint reward incentives between public and private organisations for users with high scores (Credit China, 2018; Ahmed, 2019).

For example, Zhongshan Hospital (Xiamen University affiliation) has agreed to allow individuals to use social credit instead of medical insurance. The hospital exempts individuals with high scores from payment procedures under the scheme ‘see a doctor first and pay later’ (Fujian Daily, 2022). Another example is the use of social credit score for parking services. Users with over 530 points can unlock different payment functionality, and users with over 680 points can get a 10 percent discount on parking. With these services, users are incentivised to improve their scores by ‘sticking to their credit habits and using the app more’ such as active volunteering and unpaid blood donation (Fujian Daily, 2022).

The installation of the applications remains voluntary. While data is not available for Shanghai, evidence from Fuzhou and Xiamen shows that the SCSs apps have already been downloaded by 13-20% of residents (Lewis, 2019; Fujian Daily, 2022). Therefore, the local governments are more likely to promote incentives to engage more users on the mobile apps rather than punishing people with low scores (Lewis, 2019). Offering administrative

benefits can encourage increased adoption of the mobile applications in the public which could in turn normalise the acceptance of the SCSs (Kostka, 2018).

The incentive function of the local SCSs works in a similar fashion to loyalty schemes in marketing strategies in the business sector worldwide. Loyalty schemes capture more clients and influence them to continue using their services or products (Kostka & Antoine, 2018, p. 6). Degli Espoti (2014, p. 221) points out that businesses will try to improve their performance by offering incentives or rewards users which can be considered behavioural manipulation. For example, rating functions in social media and online service platforms, such as Facebook and Twitter, calculate an individual rating based on numbers of likes or retweets. These ratings make up their profiles which businesses are likely to use to decide whether to offer sponsorship, advertisement, or other kinds of offers (Wong & Dobson, 2019, p. 222).

Likewise, incentives in the SCSs portray government's improvement of its administrative services to cope with digitalisation as Internet users in China grow, particularly in urban cities (Kostka, 2018; Kostka & Antoine, 2018). It is also important to note that other governments also facilitate convenient public services via mobile application. For example, in the UK there is an app to facilitate tax payment with incentives such as easier tax refund functions (HM Revenue & Customs, 2022). However, the local governments in China implement the incentives in an overarching approach by launching multipurpose mobile applications to facilitate a broader scope of convenient services (Lewis, 2020).

4.3.2. Punishments and local blacklists

Another set of mechanisms for behavioural manipulation is the blacklists and joint punishment systems that aim to encourage people to abide by law. The SCSs' blacklists are potentially repressive in the SCSs because local authorities can expose the real names and other personal details on the credit websites or public spaces. In some cases, blacklisted persons are also named

and shamed (Tham, 2016), which incorporates the coercive power to assert social norms and compliance on the society. This approach can deter people from acting in ways against the CCP's values, including mass protests (Arsène, 2019). However, there are only a small number of blacklisted individuals reported on Shanghai's credit website which might not have a big impact on the Chinese public.

The blacklists of individuals are combined in the Three Lists, which are the blacklists of untrustworthy firms and dishonest individuals and the redlist of honourable individuals (Credit China (Shanghai), n.d.). Despite Shanghai's enormous population, only three individuals are on the redlist for scientific and technological achievement, while 37 natural persons (with their names and IDs concealed) and 63 legal entities are on the Blacklists (Credit China (Shanghai), n.d.). The natural persons have been listed with unauthorised activities involving radio-related actions such as illegal and disruptive transmission of radio frequencies or wireless identity theft. Extremely serious cases involve counterespionage such as the illegal provision of information related to national security to overseas organisations and illegal radio transmission by foreign entities on PRC territory (Credit China (Shanghai), n.d.).

However, Fuzhou and Xiamen have not listed any natural persons as dishonest on their official websites (Lewis, 2019). For Fuzhou, only the first 150 entries are shown (and these relate to businesses), and access beyond this list is not allowed without verification. Credit Fuzhou also publishes the Three lists together. The redlist revealed the names and unified social credit codes of the qualified companies, whereas the remaining lists reveal the names of untrustworthy companies but conceal their 10-digit unique social credit codes (Credit Fuzhou, n.d.). For Xiamen, only 50 companies are blacklisted due to tax violations, whereas a specific log-in is required to access information about natural persons' credit information (Credit China (Xiamen), 2022).

Despite no evidence on how scores are deducted for Shanghai's blacklisted individuals, the cause of blacklisting derives from the violation of administrative procedures which local authorities can discretionally interpret as 'untrustworthy' (Credit China (Shanghai), n.d.). Additionally, no-one with a low score has been blacklisted and punished in Fuzhou and Xiamen. Local governments have not planned on any punishment against anyone whose scores are low due to the lack of a legal framework (Lewis, 2019). As a low social credit score does not have any impact on the blacklist, it has signalled that the local governments do not want to deter their residents from signing up on the mobile applications. Moreover, the COVID-19 pandemic has also shifted the focus of the local governments to a more pressing issue (Knight & Creemers, 2021). According to these findings, the next chapter will analyse how big data surveillance facilitate political control from given conditions in this chapter.

Chapter 5: Analysis of big data surveillance in facilitating authoritarian political control

In the previous chapter, the dissertation traced the dataveillance process within the local SCSs to consider whether the regulations provide the relevant data to allow local authorities to identify and monitor individuals, how they assign them a social credit score and finally how they can manipulate their behaviour in the CCP's direction. This found that the SCSs can collect a wide range of information about individuals but that there may be some limited restrictions in place because of data protection (Shanghai Municipal People's Government, 2017; Fuzhou Municipal People's Government, 2019; Xiamen Credit Office, 2019). Social credit scores could be used to influence people's behaviour and exert political control, but it is not clear how these have been generated so far and the local authorities have focused more on providing benefits than punishments. It also revealed an absence of a connection between social credit scores and blacklist systems (Lewis, 2019). This finding indicates

the lack of advanced automation required to predict anti-regime behaviours from the population (Lewis, 2019). Building on these findings, this chapter will address the two sub-questions of this dissertation:

1. To what extent does big data surveillance in the SCSs facilitate targeted repression or selective co-optation by increasing the likelihood of identifying opposition?
2. To what extent does big data surveillance contribute to the behavioural manipulation of the population and therefore exert political control?

It will do so by looking separately at targeted repression and selective co-optation. In addition to repression and co-optation, this chapter will also discuss other relevant issues to political control and challenges that have arisen from the COVID-19 pandemic.

5.1. Targeted repression

One method a stable authoritarian regime uses to gain political control is targeted repression (Frantz & Taylor-Kendall, 2014). As discussed above, this section will focus on targeted repression (personal integrity violations) because big data surveillance may allow the government to target specific individuals or groups and to punish them in order to discourage them from engaging in undesirable behaviour (Xu, 2021; Bi, 2021). However, there are risks of conducting targeted repression through big data. For example, if the government is unable to identify the specific individuals it wishes to target then targeted repression will not be effective. Similarly, if the government identifies the wrong individuals, then there is a risk that there could be a public backlash which could undermine the legitimacy of the SCSs and even the CCP itself (Xu, 2021).

5.1.1. Sociotechnical considerations: Limitations of big data algorithms in target precision

The CCP's primary goal is to harness big data algorithms to reduce uncertain human decisions (Woesler, et al., 2019), but data scientists have

stressed concerns regarding the data quality risks in big data processing because data quality determines the reliability of algorithmic outputs as well as the accuracy of the result (Taleb, et al., 2021). Only a few surveillance scholars discuss the sociotechnical aspects of surveillance technologies, particularly regarding big data algorithms (Galič, et al., 2017; Lyon, 2007). Concerning the question of whether big data surveillance will increase the likelihood of identifying opposition, algorithms in big data are not reliable for targeted repression because this approach requires targeted precision to avoid any risks arising from public backlash (Bi, 2021). Therefore, big data surveillance does not facilitate political control for several reasons: algorithmic bias, polycentric data sources, and data subjectivity that hinders objective scoring. However, big data surveillance can still facilitate repression in an indirect way through sorting mechanisms and legal stipulations of the SCSs-related regulations.

Algorithmic bias: Algorithms are defined as ‘an abstract formalized description of a computational procedure’ (Dourish, 2016, p. 3, cited in Holton & Boyd, 2021, p. 183). Nowadays, algorithms are intensively indispensable to computing programmes (Janssen & Kuk, 2016). As algorithms are computed, programming languages are the source of algorithmic functions which are based on objectivity and inductive inference (Janssen & Kuk, 2016). Fundamentally, algorithmic outputs process representative input datasets from objective measurement, detached from subjective judgements (LeCun, et al., 2015; RTi Research, 2017).

Despite a hopeful statement from scientists that algorithms can be ‘politically neutral and free from human interference’ (Janssen & Kuk, 2016), algorithms can be biased because of the objective derivation of knowledge (Janssen & Kuk, 2016). Objectivity in algorithms means they generalise output data from limited and incremental data representations of an individual digital profile (Taleb, et al., 2021). This process does not involve in-depth knowledge or causal relationships in human behaviours (Lewis, 2019).

Considering the surveillance process, data collection in the local SCSs is limited to basic information as set out in Chapter 4. Details on personal identification such as name and ID number, administrative engagements, criminal record, and bill or tax payments, superficially represent an aggregated segment of an individual which may not reflect his or her overall identity, including true political preferences (Chen & Cheung, 2021). If the Chinese authorities wish to analyse behavioural patterns of an opposition based on a social credit profile and regardless of the score, the representative input data is limited (Chen & Cheung, 2017). The analytical intervention process using algorithms will not provide precision in behavioural prediction.

Algorithms to date are not capable of grasping social complexity in the SCSs due to the lack of cognitive ability (Green & Hu, 2018). Based on inductive reasoning, algorithms are unable to process behavioural dynamics of humans, no matter how much data they collect. Algorithms cannot comprehend the plurality of social contexts unlike human cognitive capabilities because society is full of epistemic, subjective values. (Green & Hu, 2018). Take the following scenario as an example. Algorithms can objectively categorise an individual as untrustworthy because s/he joined a protest, but algorithms do not recognise the contextual reason the individual participates because he or she was treated unfairly by a government agency (Arsène, 2019). Moreover, new types of behaviours can emerge in a constant pace that algorithms are unable to capture (Green & Hu, 2018). In this way, humans will continue to adapt their behaviour to avoid detection from algorithms in the SCSs (Bi, 2021).

Despite more than thousands of items being considered, algorithm outputs in the SCSs will not be able to reveal true political preferences based on social credit scores, especially when most of the Chinese population already conduct self-censorship (Bi, 2021; Lagerkvist, 2010). The influx of data from polycentric sources can also alter the data interpretability and lead to data inaccuracy (Packin & Aretz, 2016; Janssen & Kuk, 2016).

Polycentric data sources: Social credit data derives from polycentric sources such as different government agencies whose disciplines vary, resulting in a heterogeneity of data (Devereaux & Peng, 2020). These agencies have different views of security definitions, resulting in different interpretations of behaviours that deserve different degrees of rewards and penalties (Bigo, 2012). Therefore, ‘data of various aspects have different goals, and they are in their nature incommensurable’ (Bi, 2021). It means the systems encounter an unstable environment and constantly have to ‘adapt to the ever-changing values of users’ (Devereaux & Peng, 2020).

Moreover, several Chinese media reports also pointed out the lack of coordination within the SCSs infrastructure, constituting ‘data islands’ or data disconnectedness across relevant government and private sectors (Ohlberg, et al., 2017, p. 7). Different bureaucracies are also criticized for their reluctance to coordinate with other agencies, leading to ‘insufficient data exchange’ between themselves. This results in inconsistency in data collection and data formatting that hinders the integration of social credit datasets (Ohlberg, et al., 2017, p. 7). For example, the Shanghai regulation explicitly lists untrustworthy behaviours, whereas regulations in Fuzhou and Xiamen do not. Moreover, each local government comprises of different administrative units whose interpretation of untrustworthy would be drastically different or broad. On top of that, it will be even harder to integrate this with other government surveillance initiatives (Creemers, 2018).

Data heterogeneity from polycentric sources rather leads to ‘indiscernible and un-anticipatable patterns’ (Chakrabarti, 2009, cited in Andrejevic & Gates, 2014). In other words, behavioural patterns generated from algorithms cannot accurately interpret how such patterns are formed due to the opacity of algorithms themselves combined with the ambiguity of the SCSs analytical intervention process (Liang, et al., 2018; Xu, et al., 2021; Packin & Aretz, 2016). As Devereaux and Peng (2020, p. 383) claim, ‘data from

polycentric ecologies of personal ratings will not be universally subjectively useful. Nor will all possible useful personal ratings emerge within a single institutional ecology'. That is because data in the SCSs emerge piece by piece and the algorithms are not capable of grasping the entirety of social contexts (Devereaux & Peng, 2020). Identifying anti-CCP or immoral behavioural patterns based on the SCSs datasets risks data misrepresentation and unintended consequences such as public backlash.

Data subjectivity hindering objective scoring: As details regarding big data algorithms' functions are confidential for the purposes of state secrets and social management, the derivation of algorithmic output is also imperceptible to humans (Janssen & Kuk, 2016). The complexity of the algorithmic procedure does not provide transparency on the causal relationship between data and algorithms (Janssen & Kuk, 2016; Wong & Dobson, 2019). In the SCSs, examples of multidimensional algorithmic models demonstrate a certain level of complexity, but they are still subject to legal guidance and interpretation because they involve human authorities (Lewis, 2020). Thus, human discretion still prevails in decision-making on how scores should be increased or deducted. The pilot SCSs rely on subjective data unlike financial credit system that rely on mathematical models. In the case of the SCSs, the absence of people being punished from low scores indicates that local authorities have kept algorithmic use to the minimum by only generating scores based on manual inputs (Lewis, 2020).

This limitation does not directly engage with targeted repression with precision, but it limits how the Chinese authorities will be able to use social credit scores to punishment individuals (Bi, 2021). The lack of data interpretability in social credit scoring can also lead to public infuriation and social repercussions if the algorithmic systems falsely misrepresent an individual as untrustworthy or politically hostile based on low scores (Bi, 2021). For example, in the local SCS, indicators to which behaviours are categorised

as dishonest are vague and ambiguous. For instance, Xiamen distinctively uses a FICO model to calculate social credit scores, but the city remains opaque about the numeric value and interpretation of the five variables in the FICO model (Lewis, 2019). According to Xiamen's officials, one of the areas to be considered in Egret Point is keeping promises which refers to 'behaviours that care about others and yield a return to society' (Lewis, 2019). However, officials were unable to explain how scores would be affected in this respect. In comparison to the traditional FICO Scores in the US, the company explains on its website how its clients' FICO scores are calculated. Despite data gathering from various sources, FICO groups datasets into five categories and publicly declare the percentage of each indicator¹¹ (myFICO, 2022).

Fuzhou is the only city which provides numeric scores with a scale of severity. However, there is no clear explanation to which kinds of behaviours deserve better or lower scores (Lewis, 2019). For example, the Traffic Police and Common Reserve Fund in Fuzhou set an average score between 62 and 70 to be deducted from serious offences, but they cannot explain why different charges deserve severer scores than others¹² (Lewis, 2019). This would problematise the interpretability of why one behaviour obtains more points but not the others (Bi, 2021, p. 316). It also undermines the legitimacy of the SCS as people do not understand why they have been given a particular score and may resist the system.

To sum up this section, social credit profiling through big data algorithmic processing does not provide reliable results if Chinese authorities wish to target the opposition. At the moment, data collected in the SCSs is only

¹¹ For example, FICO scores consider the weight of financial record in percentage, justifying the significance of each category such as 'payment history (35%), amounts owed (30%), length of credit history (15%), new credit (10%) and credit mix (10%)' (myFICO, 2022).

¹² Lewis (2019) observes that Fuzhou's scoring indicators are unclear in the interpretation. For instance, employment category is assessed based on 'hard-working' behaviour, while economic category is measured in a similar fashion to financial credit such as 'delayed payment to common reserve fund defraud/cheat' (Lewis, 2019).

the segment of an individual representation that does not reflect the entirety of one's identity (Chen & Cheung, 2021). As the SCSs consider a wide range of social behaviours, algorithms are incapable of processing subjective behaviours due to objectivity in computational language. Moreover, data in the SCSs derives from polycentric sources, portraying data heterogeneity and inconsistency (Devereaux & Peng, 2020). The lack of coordination and uniformity among local government agencies would also hinder the integration with other organisations, particularly since their interpretations of trust-keeping and trust-breaking behaviours are different (Ohlberg, et al., 2017). At the current stage, administrative discretion is prevalent in assigning scores because subjectivity in behavioural evaluations still require human interpretation (Lewis, 2020; Creemers, 2018).

Local governments do not want to risk using big data algorithms to assign a PCS and identify the CCP's political oppositions or trust-breaking behaviours from big data algorithms (Creemers, 2018). According to empirical findings, there is only a local blacklist of natural persons published in Shanghai, while there is none in Fuzhou and Xiamen. As the officials cited, the necessary legal foundation is insufficient. But it is also evident that technical capacity of the SCSs is not sophisticated for targeted repression (Lewis, 2020). As Bi (2021, p. 316) states, 'at the current development stage, big data can still not process incommensurability of different social variables.' Therefore, with the sociotechnical limitations of big data, social credit profiling relies on data relevant to an individual that cannot predict accurate behavioural patterns, posing the risk of data misrepresentation, as well as the legitimacy of the regime (Bi, 2021).

5.1.2. Legal consideration: Legal loopholes and joint punishment systems

The most repressive tools in the SCSs are the blacklist and the joint punishment system. The CCP uses big data surveillance in the SCSs as a social sorting mechanism to label citizens as trustworthy or untrustworthy (Creemers,

2018; Lee, 2019). As the primary objective of the systems is social risk mitigation, algorithms operate by sorting individuals into categories based on level of risks evaluated by administrative officials. Once a person is blacklisted, algorithms ensure they are not only disproportionately punished in their local area but also in all other area (Chen & Cheung, 2021).

One complexity of the SCSs is that they overlap with the existing legal systems (Chen & Cheung, 2021, p. 20). Although social credit scores do not lead to any penalty, tying the scores to the blacklist can be confusing (Daum, 2018). Local regulations preserve the right for government agencies or security authorities to expand the interpretation of untrustworthy people by referring to other laws at regional or national level (Von Blomberg, 2018). For instance, the articles on seriously untrustworthy persons are prominent examples as they are all present in the three pilot regulations. Untrustworthy behaviours can be discretionarily prescribed through local regulations, court convictions, or administrative procedures, to shape an individual's behaviour in line with the CCP's values (Arsène, 2019).

The disproportionate punishment also demonstrates that the Chinese government decontextualises the wrongdoings and generalises all of them in the joint punishment system. By labelling 'untrustworthy' as the key word, the foundational logic of the SCSs overlooks the subjectivity of different contexts and behaviours (Chen & Cheung, 2021, p. 17). The decontextualisation of the joint punishment approach is a 'distorted representation of reality' because the Chinese government computerised the SCSs to match the rigidity of the algorithmic classification (Chen & Cheung, 2021, p. 18). As citizens are categorised in ranks and labels such as 'seriously untrustworthy', 'untrustworthy', and 'trustworthy', big data algorithms will provide respective treatments to each category as computationally coded in the software (Chen & Cheung, 2021, p. 17).

Nevertheless, in Shanghai, Article 32 of the regulation tries to resolve the disproportionality by imposing different punishments based on the nature of behaviours and circumstances (Shanghai Municipal People's Government, 2017; Chen & Cheung, 2021). That is why names and ID numbers of the blacklisted persons are concealed. Local governments still need to adjust the functionality of the SCSs in response to public reaction as they want to avoid public discontent (Creemers, 2018). For instance, the Suining mayor in Jiangsu Province encountered public and media repercussions on the A to D grading in the city's SCS design. The municipal government also included controversial points deductions for unauthorised petitions (Song, 2018).

Therefore, in practice social credit profiling can provide additional information on the individual in question to Chinese security authorities when necessary. Despite the nascent stage of the SCSs which means that data cannot be integrated using big data algorithms, authorities can still manually draw more information about targeted individuals. The data from the SCSs can be interpreted in condition which 'big data can be used in linking different kinds of datasets together' (Von Blomberg, 2018, p. 88) if authorities consider other national documents such as the 13th Five Year Plan or the national big data strategy (Zeng, 2016; Von Blomberg, 2018). Moreover, the real-name and ID registration requirements in the 2017 Cybersecurity Law has made manual access possible (Creemers, 2018). As presented in Fuzhou and Xiamen's examples, individuals can use their social credit scores in exchange for public transport or medical treatments, meaning that the activities related to social credit can be recorded and tracked. Therefore, it is likely that the information collection from the SCSs will not be limited to what the municipal regulations have stipulated (Von Blomberg, 2018).

To summarise, since the scores have nothing to do with the blacklist at the moment, big data surveillance only facilitates the categorisation of the population to distinguish who is blacklisted and who is not (Creemers, 2018;

Lee, 2019). It does not facilitate political control through the increase of likelihood in precisely detecting an opposition. Instead, the actual repressive tool in the systems is the disproportionate punishment that local authorities repress those who are labelled ‘untrustworthy’ (Bi, 2021). This approach reflects the attempt to make the SCSs compatible with algorithmic classifications, but it still requires manual operation to repress and influences behaviours of targeted groups (Chen & Cheung, 2021, p. 18).

5.2. Selective co-optation

Although big data surveillance in the SCSs does not increase the likelihood in targeted repression through precise detection or predictive behavioural analysis, sorting algorithms in the SCSs can foster selective co-optation (Hoffman, 2017b; Creemers, 2018). For selective co-optation, grouping according to social credit scores is sufficient. As discussed in the literature review, stable authoritarianism tends to pursue co-optation to gain political opposition to be on their side (Frantz & Taylor-Kendall, 2014). But due to SCSs objective to stimulate trustworthy behaviours, the Chinese government needs to co-opt the majority of its population in a non-exclusive manner and steer them to comply with the CCP rule (Hoffman, 2017a). Then, big data algorithms can facilitate selective co-optation by distinguishing individuals who deserve rewards based on the social credit score ranking and the trustworthy label.

However, selective co-optation can only be possible when the SCSs become widely renowned among the Chinese public. At the current stage, the government-run SCSs have not gained enough popularity among citizens (Kostka, 2018). For example, only about 20 percent of total populations in Fuzhou and Xiamen are using mobile applications with social credit inquiry software (Lewis, 2020). Moreover, many Shanghai residents have not heard of the Honest Shanghai application either (Zhou & Xiao, 2020). With these conditions, the CCP needs to use non-exclusive co-optation strategy to

encourage more users to voluntarily register themselves on the government's applications or subprogrammes. Although the PCS can be initially inquired from local credit websites using ID numbers, inquiring social credit on mobile apps can facilitate convenient and fast-paced services. In this way, the local governments would not be perceived as coercive and may then use the SCSs embedded in mobile apps to influence behaviour for societal compliance (Kostka & Antoine, 2018; Xu, et al., 2021).

This reflects the CCP's effort to catch up with technologies as mobile apps and electronic payments became the new norm in Chinese society, particularly in wealthy eastern provinces (Chen & Cheung, 2021). Currently, mobile services are widespread across the country. 'Without access to mobile payment services, it would be difficult, if not impossible, to live in urban areas of China' (Chen & Cheung, 2021). Since China is gradually becoming a cashless society whereby mobile applications are dominant, the CCP is seizing the opportunity to assert itself in citizens' daily life.

According to Kostka (2018, p. 23), Chinese citizens regard the SCSs positively since the Chinese government promotes to them as 'an instrument to improve the quality of life and to close institutional and regulatory gaps, leading to more honest and law-abiding behaviour in society.' The local governments currently attempt to convince the public of the SCSs' usefulness as a high social credit score allows an individual to conveniently access medical or transport services (Kostka & Antoine, 2018). Moreover, the incentive systems will attract 'wealthier educated urban citizens' witnessed from the pilot projects that are concentrated mainly on the east coast¹³ (Kostka, 2018). These groups of urban citizens are 'tech-savvy', the term for up-to-date people with technology and digital knowhow. They are more likely to accept the SCSs as a sign of China's

¹³ The SCSs have not spread to some regions, for example, Western regions such as Tibet and Xinjiang (Engelmann, et al., 2019; Liu, 2019).

technological progress that provides access to a wider range of benefits (Kostka, 2018).

The Chinese population does not perceive the SCSs as a pressing issue because the Chinese government positions the SCSs as a mechanism for social-order maintenance (Kostka & Antoine, 2018; Xu, et al., 2021). For example, the government-run SCSs are advertised as the ‘cure-all solution’ to low-trust society that plagues Chinese society (Ohlberg, et al., 2017). One way to perceive the systems can be the government’s effort to improve consumer protection (Ohlberg, et al., 2017). The Honest Shanghai app exemplifies the function that users can check the social credit score of local businesses before using their services (Schmidt, 2017; O'Meara, 2016). Overall, the Chinese public trusts the central government’s role in handling personal data because the citizens perceive it as ‘a law-abiding organisation’ that is ‘more likely to protect [the] public good’ than the private sector (Ohlberg, et al., 2017, p. 8). Therefore, the Chinese public is concerned more about private companies handling their personal data. The government can leverage its position and devise the SCSs to enhance its legitimacy from the Chinese population (Catá Backer, 2019).

However, one needs to bear in mind that mobile applications pertain to functions that can be pervasive to individual privacy such as records of how users spend money, whether they pay on time, and even extend to online purchasing history (Privacy International, 2017). For example, applications elaborated in Chapter 4 also include facial recognition to facilitate convenience in accessing the services and scores, evident in the three local mobile applications. Mobile applications on a portable device can serve as recording machine for surveillance (ENISA, 2017). The Chinese government therefore recognises the possibility in datafication of individual behaviours while also influencing people through a form of nudging and gamification similar to loyalty schemes (Groot, 2020; Kostka & Antoine, 2018). In this regard, big data

surveillance in the SCSs can facilitate a subtle form of selective co-optation to encourage more desirable traits from Chinese citizens (Chen & Cheung, 2021).

State-society relations may explain why the Chinese government is using big data surveillance in the SCSs in a subtle way. State-society relations between the CCP and wealthy populations in eastern provinces are less asymmetric than ethnic minorities in its western regions (Cook & Dimitrov, 2017). Although sacrificing a large part of their civil liberties under the CCP rules, Chinese people can still enjoy economic and social security in exchange from the Chinese state (Cook & Dimitrov, 2017). In particular, Chinese citizens tend to support the regime when government policies have economically benefitted them (Dickson, 2012). However, over the past decade, the Chinese urban population has recently grown more ‘politically liberal, pro-market, and non-nationalistic’ in contrast to the CCP’s core socialist values (Mazzocco, 2022). Therefore, ‘the party-state must contend with well-formed ideological views among its citizens that diverge with its own and is pursuing policies that face substantial, even if quiet, public opposition’ (Mazzocco, 2022).

Big data surveillance in the SCSs, therefore, enables the regime to quietly collect more data from this population while offering special services in return to those who possess high scores (Arsène, 2019). The SCSs come along with coercive distribution, or material rewards that can nudge citizens’ behaviours and align their ideology with the regime by using social credit scores (Kostka & Antoine, 2018). At the same time, the ability to provide public services can also leverage the CCP leadership position and state apparatus as the legitimate rulers who can satisfy the masses (Hassan, et al., 2022).

As of now, low social credit scores are not connected with any punishments or blacklists. Combined with China’s existing censorship and propaganda, Kostka and her co-authors pointed out that citizens are less likely to be aware of the repressive potential of the SCSs (Xu, et al., 2021). The central and local governments only publish news about incentives that citizens can

enjoy, but they rarely present news on its repressive potential in relation to blacklisting and joint punishment (Xu, et al., 2021). Mainly, the Chinese public do not question the existence of the systems (Ohlberg, et al., 2017) because they believe the SCSs will maintain social stability and instigate public safety when people remain honest (Xu, et al., 2021). Therefore, citizens tend to support the authoritarian tool because the social benefits divert their attention away from political costs (Xu, et al., 2021, pp. 9-10)

For example, the SCSs in principle may only contain a specific type of punishment which is for Chinese people who conduct dishonest behaviour such as overdue financial or tax payments or breaking contracts. These blacklisted individuals are exposed publicly on government credit websites (Engelmann, et al., 2019). But in practice, there is also potential to punish those who are or have connections with political dissidents, activists, or anyone who threatens national security (Xu, et al., 2021). For the latter, the Chinese government has an incentive to censor the repressive potential to prevent public misperceptions regarding the SCSs (Xu, et al., 2021). China has a persistent record of limiting freedom and empowerment rights (Zeng, 2016). Thus, it is inevitable that the Chinese government can exploit the SCSs in a subtle manner (Xu, et al., 2021, pp. 12-13).

Thus, the SCSs will promote more co-optation from the citizens with more benefits from the public sector to boost datafication in big data surveillance (Trivium China, 2019). The government incentives can be influential to steer behavioural changes as users will likely maintain or try increase their scores. Kostka and Antoine¹⁴ (2018, p. 14) suggests that citizens who possess high scores and have received benefits are more likely to change their behaviours to improve the PCS. They also found that over 80 percent of

¹⁴ In Kostka and Antoine's research (2018), the result is the mixture of users from private-run SCSs while users from government-run SCSs are limited. But their research provides evidence that the SCSs are capable of altering people's behaviours.

respondents changed their behaviours at least once to avoid penalties (Kostka & Antoine, 2018, p. 14).

To summarise, the CCP promotes non-exclusive co-optation to encourage more citizens to co-opt into big data surveillance systems through material incentives such as administrative perks and special services (Kostka & Antoine, 2018, p. 20). Once citizens opt in, algorithms can sort them into categories based on the level of their scores and authorities can selectively reward those who have high scores as the indicator of possessing trustworthy behaviour to the Chinese state (Lee, 2019). However, these conditions are subject to the penetration rate of mobile applications used in the local SCSs; otherwise, big data surveillance cannot facilitate the selective co-optation approach. In this regard, the CCP devises big data surveillance in the SCSs not to precisely target the opposition but to co-opt Chinese citizens (Hoffman, 2017a). It is also a subtle way that the Chinese state asserts itself into societal norms of using mobile applications as datafication tools. Currently, the SCSs do not have an opt-out option (Devereaux & Peng, 2020). Those who inquire about their PCSs will be subject to inescapable surveillance apparatus as their digital profiles can be linked arbitrarily (Chen & Cheung, 2021) Therefore, the Chinese government can coerce citizens to comply with the systems through a variety of steering mechanisms (Devereaux & Peng, 2020).

5.3. Self-censorship: automated individual responsibility

Since big data surveillance does not allow target precision and predictive capability, the CCP has to rely on empowerment rights restrictions for repression, including limiting freedom of expression. Due to the heavily imposed censorship and existing surveillance networks, the PRC has already successfully established social norms that induce self-censorship among Chinese individuals (Zhen, 2015; Lagerkvist, 2010). The SCSs have the potential to intensify the pre-existing self-censorship by 'overt' surveillance in contrast to its Western democratic counterparts that keep surveillance covert

(Ahmed, 2019; Creemers, 2018). It is difficult to gauge the degree of self-censorship so far since the SCSs have not yet gained much participation from citizens. However, this section will discuss self-censorship based on dataveillance-related theories.

The SCSs offer symbolic influence since the PCS can represent an individual's reputation (Langer, 2020). Big data surveillance in the SCSs, therefore, serves as an assessment that reflect the levels of reputation in Chinese society based on their score categorisation (Kostka & Antoine, 2018, p. 20; Langer, 2020). Apart from repression and co-optation, the Chinese government uses big data surveillance in the SCSs to establish norms of 'individual responsibility' in both physical and digital domains (Hoffman, 2017a).

Hoffman (2017a) points out that the concept of the social credit is to 'automate individual responsibility'. As a part of the CCP's social management, the SCSs are designed to orientate responsibility in line with the CCP's direction. Using ID numbers to represent Chinese citizens' profiles can preemptively prevent untrustworthy behaviours that are considered a threat to regime legitimacy (Hoffman, 2017b). As the key objective of 'trust' was emphasised, trustworthiness to the CCP alludes to not only an action with reliability but also an action that the CCP deems worthy of socialist values (Hoffman, 2017a).

Although there have not been many studies on how dataveillance and big data impacts society or political control (Galič, et al., 2017, p. 28), one study elaborates the correlation of chilling effects to dataveillance as 'a self-inhibition in everyday digital media use with the attendant risks' (Büchi, et al., 2022, p. 10). Although their study focuses mainly on empirical cases in democracies, the dissertation recognises the similarity in the Chinese practice. Since big data can be used symbolically (Kabanov & Karyagin, 2018), the CCP can use big data surveillance in the SCSs to propagate state capability by monitoring citizens with numeric evaluation. Despite the opacity on how users receive their scores,

the realisation of big data surveillance's existence would prevent collective actions against the regime (Głowacka, et al., 2021, p. 42).

Big data surveillance in the sense of dataveillance can lead to 'gradual normalization of feelings of resignation despite unease' or the feelings of withdrawal before acting (Büchi, et al., 2022, p. 3). The cause of these feelings arises from the 'exogenous shocks through public scandals of others' (Büchi, et al., 2022, p. 5). The incorporation of public naming and shaming and judicial enforcements such as blacklisting and joint punishment can resonate salience shocks to remind people of consequences if they do not conform with the CCP's constructed norms (Kostka & Antoine, 2018; Büchi, et al., 2022). Once individuals realise that the segment of knowledge about them is constantly assessed by the state, they would refrain themselves from behaving in ways that lead to individual risks (Kostka & Antoine, 2018, p. 3; Stoycheff, 2016). Meissner and Wübbecke (2016, p. 53) state that 'the SCSs build on and reinforces the basic principle of surveillance: its pure existence already influences behaviour. If people assume they are being observed, they behave differently – conforming to existing rules or whatever they deem right.'

Therefore, to achieve automated individual responsibility, the CCP wields the concept of automated computational data analytics in the social credit scoring to reminds citizens that they are being watched and assessed (Kostka & Antoine, 2018; Iveson & Maalsen, 2019). Evaluating a citizen based on their data representation has implications that can trigger fear of social sanctions included in the SCSs even though the systems have not deployed any automated decision-making algorithms. This implication demonstrates Foucault's disciplinary power that influences how one would act and develop self-discipline (Suter, 2020).

By tying ID numbers with the SCSs and other surveillance networks, it emphasises the normalisation of the asymmetric gaze that undermines the freedom of speech in both the public and virtual space, including mobilisation

as a result of objectionable information dissemination online (Zeng, 2016, p. 1454). For example, the prohibitions on browsing contentious content about the government, expressing anti-government messages, and liking people's social networks related to anti-government contents, contribute to self-censorship when users realise that the government is monitoring them through big data surveillance (Lagerkvist, 2010).

At the same time, the SCSs are also posed as a mechanism of control in Deleuze's control society. In this respect, Chinese individuals have become 'dividuals' in the digital world and holding them accountable in the real world (Zeng, 2016; Chen & Cheung, 2021). Chinese social credit scorers are controlled from any behaviours that can delegitimise the CCP as their data is subject to evaluation. Although big data surveillance is not capable of predictive scoring, its existence can remind people that their data can be archived and evaluated (Iveson & Maalsen, 2019). According to Chen and Cheung (2021, p. 23), a data representation or 'data self' is tied to a user's physical self. Big data surveillance transitions the SCSs from a system of discipline to a system of control. The SCSs accumulates datafied segments of an individual that do not represent the whole identity of such a person, 'redefining and overtaking the real bio-selves' (Chen & Cheung, 2021, p. 23).

5.4. Challenges and unintended consequences: The COVID-19 pandemic and public scepticism

There are challenges to the CCP in using the SCSs for political control which do not entirely guarantee regime legitimacy. As COVID-19 pandemic disrupts the world, it has also accelerated datafication and the adoption of mobile applications in both government and private services (Khalil, 2020). People who have access to smartphones increasingly take part in contactless activities on their electronic devices. In the same fashion as its democratic counterparts, China's contact tracing applications such as health codes were

introduced when the first wave broke out in Wuhan, Hebei Province in early 2020 (Knight & Creemers, 2021; Dou & Wu, 2022).

For the SCSs specifically, the Chinese government discovered the systems' flexibility in law enforcement such as using the social credit punishment on medical suppliers who overpriced or sold counterfeit products. On the other hand, the central government also eased social credit consequences related to taxation and debt repayment. For example, affected businesses were exempted from taxation, and affected individuals could rearrange debt repayment without penalty. (Knight & Creemers, 2021).

However, as the pandemic reaches the second year, China's radical zero-covid policy has taken its toll, particularly in Shanghai. Its residents suffered the most from a two-month lockdown in response to the recent outbreak of the Omicron variant (Yuan, 2022). Early in 2020, the Shanghai municipality devised its local SCS to enforce quarantine rules and travel restrictions, including the prevention of COVID-19 patients and close contacts altering their medical history (Hamilton, 2020; Borak, 2020). Those who did not comply were enlisted on its social credit blacklist system (Knight & Creemers, 2021, p. 12).

Despite Shanghai's SCS threatening to blacklist any violator, Shanghai residents staged both online and offline protests in resentment against the stringent measures and severe lockdown (Yuan, 2022; Dou & Wu, 2022; Tan, 2022). Shanghai residents are infuriated not only because of COVID-19 restrictions but also because of economic stagnation. As the central government offers no exit plan from the pandemic, imposing lockdown every time the virus surges can be disruptive, and citizens perceive this measure as lacking compassion. Shanghai residents have begun losing trust in the government (Pike & Nagorski, 2022; Jett, et al., 2022).

Even in a strictly controlled environment in authoritarianism, criticism is not entirely absent. As the SCSs flexibly expand the enforcement scope during COVID-19, Chinese policymakers and intellectuals have been doubting

the scope of which behaviours should be included in the SCSs as it has shifted from market regulation objectives to curb with the pandemic (Knight & Creemers, 2021, p. 18). Some online critics also shed light on the SCSs' weakened efficacy for its original purposes of regulating the market and strengthening judicial and administrative enforcement. Knight and Creemers (2021) raised an example; 'Should running a red light or a failure to wear a face mask stop one from being able to take out a mortgage?' Some experts suggest there should be a clear distinction between diverse activities which draws the attention back to the proportionality in punishment measures (Knight & Creemers, 2021, p. 19).

Thus, the COVID-19 pandemic has challenged both the development of the SCSs and the CCP's legitimacy (Jett, et al., 2022). During the pandemic, the flexibility of the SCSs demonstrates the likelihood that the systems can be utilised beyond their original objective because 'trustworthiness' can be interpreted differently over time. On the other hand, the pandemic also challenges the regime with public health and economic crises that distract the public attention from the SCSs to the national measures in containing the virus (Knight & Creemers, 2021). Despite the SCSs' existence, it does not guarantee the complete absence of the mass mobilisation against the regime.

Chapter 6: Conclusion

To conclude the dissertation, the SCSs have reflected the Chinese government's emphasis on the use of modern technologies such as big data to fix social instability that threatens its legitimacy (Chen, et al., 2018). The CCP leadership deems itself as the moral guardian whose duties are intertwined between the maintenance of political and social order. As the CCP tries to restore 'trust' in the society, it also needs to ensure that there should be no resistance against the regime (Knight, 2021; Hoffman, 2017b). The concept of social credit has been developed from financial credit rating as a risk mitigation

technology that would allow the CCP to gauge potential threats to the regime from Chinese society (Knight, 2021). Extending beyond the country's existing surveillance apparatus, the SCSs could bring about actionable knowledge to exert political control.

From the dataveillance framework, the use of big data surveillance rests on the hypothesis that it provides opportunities to collect, store, and process voluminous and various datasets at the fast pace beyond human capacity (Andrejevic & Gates, 2014). With these advantages, big data surveillance can pave the way to behavioural manipulation with actionable knowledge (Degli Esposti, 2014). When applied in authoritarianism, big data analytics is capable of tackling the vertical information problem. Autocrats struggle to uncover the public's true opinion such as discontent or mobilisation to plot against the regime. Therefore, big data surveillance could deliver the information necessary for the regime to make decisions on how to exert political control (Xu, 2021).

Actionable knowledge from big data surveillance could help an authoritarian regime such as the CCP to conduct targeted repression to reduce visibility of its repressive operations and avoid backlashes and reputational damage (Xu, et al., 2021). The big data surveillance could also help co-opt groups of population to distinguish between who the CCP should provide more rewards to reduce the costs of non-exclusive co-optation (Xu, 2021; Hoffman, 2017a). By creating social credit profiles of citizens, the CCP could evaluate citizens' behaviours and target anyone who does not conform with the regime's expectation (Meissner & Wübbecke, 2016).

In response to the research question, *in what ways does surveillance in the SCSs facilitate political control in the PRC?* This dissertation conducts an analysis within the dataveillance framework by incorporating the hypotheses that big data surveillance could facilitate targeted repression and selective co-optation by increasing the likelihood of identifying the opposition. If big data surveillance facilitates precise targets, the regime can then exert political control

to gain compliance. However, through the process tracing method, the case studies of local pilot projects in Shanghai, Fuzhou, and Xiamen, demonstrate several problems in precise targeting through big data surveillance in the SCSs (Creemers, 2018; Lewis, 2020).

Essentially, targeted repression requires precision; otherwise, the regime would be at risk of mass resistance due to false targeting (Xu, 2021). According to the research findings, big data algorithms in the SCSs are at the pre-mature stage where manual operation is required. The absence of connection between social credit scores and blacklists demonstrates the lack of both technical and legal capacities (Lewis, 2019). Sociotechnical limitations in big data have not been in the CCP's calculus, hindering the achievement of the nationwide data aggregation (Bi, 2021). At the current stage, targeting opposition with precision and predicting behavioural patterns are not possible because big data algorithms cannot cope with the following limits.

First, algorithms can be unreliable because of algorithmic bias (Janssen & Kuk, 2016). Due to the rigidity of computational language, algorithmic outputs are derived from inductive inference which only consider given datasets. Data collection in the SCSs only represents limited segments of an individual which do not exhibit the entire identity and can result in imprecise targeting (Chen & Cheung, 2021). As the SCSs consider a wide range of social behaviours, algorithms are incapable of processing subjective behaviours since they lack cognitive capability in processing the ever-changing nature of humans (Janssen & Kuk, 2016). Second, data in the SCSs derives from polycentric sources, portraying data heterogeneity and inconsistency in data interpretation and data formats (Devereaux & Peng, 2020). The lack of coordination and uniformity among local government agencies would also hinder the integration with other organisations, particularly since their interpretations of trust-keeping and trust-breaking behaviours are different (Ohlberg, et al., 2017; Bi, 2021).

The two problems above lead to the prevalence in administrative discretion in manually assigning social credit scores to Chinese individuals. Because the opacity in algorithmic systems and the vague scope of ‘trustworthiness’, local authorities are unable to explain why an individual receives a certain score (Lewis, 2020; Bi, 2021). Local governments do not want to risk using big data algorithms to arbitrarily assign the score and identify the CCP’s opposition because mistakes by algorithms could lead to public resistance (Lewis, 2020).

According to the abovementioned sociotechnical problems, this dissertation argues that big data surveillance in the SCSs currently does not facilitate political control in the forms of targeted repression because this approach requires precision. In this respect, big data surveillance indirectly facilitates targeted repression by sorting blacklist out of other categories. As big data algorithms’ functions are limited in the SCSs, big data surveillance in the SCSs works as a social sorting mechanism (Lee, 2019) that labels the population based on ranking and categories such as ‘trustworthy’ and ‘untrustworthy’ (Creemers, 2018; Chen & Cheung, 2021). When algorithms recognise the untrustworthy label on any individual regardless of a social credit score, untrustworthy individuals will be automatically subject to the blacklist and the joint punishment system where their wrongdoings are decontextualised. Thus, the most repressive tool in the SCSs is the disproportionate punishment that overlaps with the existing judicial enforcement (Chen & Cheung, 2021; Arsène, 2019; Daum, 2018).

However, big data surveillance in the SCSs can still facilitate political control in a subtle way through selective co-optation (Hoffman, 2017a). Because co-optation does not require precise targeting, the sorting algorithms can then allow the CCP to selectively co-opt citizens whose scores are high because high scores can reflect an individual’s loyalty to the CCP and socialist values (Kostka & Antoine, 2018). In this regard, big data algorithms facilitate

selective co-optation by categorising citizens with high scores to receive rewards that are accessible across administrative services. Citizens are incentivised to register themselves on multifunctional mobile applications to inquire their scores (Groot, 2020).

To make this approach possible, the co-optation approach in the SCSs is subject to the condition that Chinese citizens interact more with the SCSs through mobile apps. The local case studies in Shanghai, Fuzhou, and Xiamen, exemplify that the government-run SCSs have not yet reached a high number of app users, while the app remains voluntary (O'Meara, 2016; Lewis, 2019). Therefore, the local governments adopt non-exclusive co-optation strategy to encourage more people to register on mobile apps to access special services. With this strategy, the CCP can reinforce its legitimacy with the image of a benevolent and modernised state while encouraging more people to opt in the government-run SCSs with local governments' various incentives (Frantz & Taylor-Kendall, 2014; Kabanov & Karyagin, 2018). If successful, this strategy will stimulate datafication from mobile app usage in which the Chinese government can use big data surveillance to collect more data quietly from their mobile devices. Once there are more people signed up to the mobile apps, the government can then use social credit scores to steer their behaviours in the similar fashion to the loyalty schemes in the business sector (Kostka & Antoine, 2018).

Moreover, some scholars consider that the Chinese government has made its surveillance 'overt' (Ahmed, 2019; Creemers, 2018). In theory, this approach will encourage a higher degree of self-censorship as people will refrain from acting in ways that pose risks to their integrity (Lagerkvist, 2010; Büchi, et al., 2022). As Hoffman (2017b) puts it, the PRC has adopted the concept of 'automated individual responsibility' from automated computational data analytics to assess citizens which reminds them of socio-political expectations from the regime. The inclusion of the blacklists and punishments

serves as exogenous shocks to individuals that intensify the chilling effect (Büchi, et al., 2022). The ID numbers used to inquire social credit scores will also remind Chinese citizens that they can be held accountable for a segment of their behaviour, particularly if they do not conform with the regime in both physical and digital domains (Chen & Cheung, 2021). Thus, the SCSs in themselves promote political control through the intensification of self-censorship that restrict freedom of speech (Chen & Cheung, 2017).

The COVID-19 pandemic has posed challenges to the Chinese government in addressing the public health crisis and social order (Knight & Creemers, 2021). On the one hand, the SCSs were flexibly adjusted for the purposes of virus containment which have not been included in the SCSs-related regulations. This suggests that the SCSs can be extended to issue in which the Chinese state regards as pressing (Knight & Creemers, 2021). China's zero-COVID policy has challenged the existence of the SCSs and its own legitimacy as mass protests erupted in Shanghai with public discontent (Yuan, 2022; Dou & Wu, 2022; Tan, 2022).

Overall, the SCSs are meant to serve as the CCP's legitimization tool by 'positioning them as absolute arbiters of moral authority' and 'aiming to tackle "difficult judicial enforcement (*zhixing nan*)"' (Knight, 2021, p. 245). Using the morality as the key rhetoric, the SCSs have become a flexible mechanism that the Chinese government can adapt in pursuit of any policy that it deems a priority (Knight & Creemers, 2021). To this end, the SCSs are positioned as the tool that promotes both a modernised and moralised society in China by encouraging citizens to improve their moral virtue of trustworthiness (Zeng, 2016).

One way to think of the SCSs is that authoritarianism and democracy need to maintain social order alike. Both regimes conduct surveillance and surveillance can be a double-edged sword that shall be subject to legal regulations on how data in surveillance should be used (Lyon, 2014; Clarke &

Greenleaf, 2017). In contrast to democracy, authoritarianism is more cautious to resistance forces from its population (Xu, 2021). The SCSs are aimed to preemptively prevent the emergence of large-scale resistance from a wider population through the co-optation and disproportionate punishment (Hoffman, 2017b; Chen & Cheung, 2021).

In a trustful society, however, ‘trusting people do not feel a need to support policies aimed at controlling potential misbehaviour as they do not expect other people to harm them’ (Trüdinger & Steckermeier, 2017, p. 424). In other words, there is no need for the state to draw the line between what behaviour is trustworthy and what is not if the society is functioning. Therefore, the creation of the SCSs reflect the CCP’s socio-political weakness that the regime seeks solutions from big data technologies to assist its surveillance apparatus (Zeng, 2016). Social instability in the PRC threatens the CCP’s role as the moral guardian who is still unwilling to give up transparency and judicial dependency, while hoping the big data technology would fix societal problems (Devereaux & Peng, 2020).

At the current stage, big data surveillance in the SCSs cannot (yet) facilitate effective political control due to sociotechnical problems and the lack of systems’ interactions with Chinese citizens in terms of social credit scores (Lewis, 2020). Big data shall not be regarded as a silver bullet to all socio-political problems, especially regarding ‘trust’. Algorithms cannot solve trust problems because the algorithmic systems themselves are not transparent in design and depend on big data experts (Creemers, 2018). Even though the social credit rating is set to be a risk management mechanism for the CCP’s legitimacy and political control (Knight, 2021), it is still subject to the abovementioned conditions in which big data algorithms do not guarantee that the regime can repress or co-opt the population effectively (Janssen & Kuk, 2016; Bi, 2021).

The Chinese government’s strong ambition in the construction of SCSs infrastructure nationwide has not met the initial deadline for completion by 2020

(Sun, 2021). It would be incorrect to conclude that the PRC is a real-world cyber dystopia (Ahmed, 2019), but the relentless development of modern technologies in China hints that the regime will continue to improve its surveillance apparatus, including the SCSs (Zeng, 2016). Currently, the PRC has spent its national budget on internal security more than the military expenditure which is already the second largest defence spending behind the US (Zeng, 2016, p. 1452).

Therefore, it would be of great interest to researchers to further study the continuing development of the SCSs post-pandemic. As the SCSs are in its nascent stage, the future research on the adoption of mobile apps for social credit inquiry would illuminate the direction of whether the SCSs can be successfully used as a tool for political control from gradual co-optation to absolute societal compliance. Since the dissertation could not cover all 43 pilot projects, future research can expand on other pilot projects which implement the SCSs differently from the three selected cases. While this dissertation has focused on the impact of SCSs on political control, it has not used primary source material from citizens who use or do not use the government-run SCSs platforms. Future research could look at the perceptions of Chinese citizens towards the SCSs to understand their attitudes towards them. Moreover, Chinese policymakers are sceptical of the SCSs' functionality in which different behaviours should not be subject to disproportionate and decontextualised punishment (Knight & Creemers, 2021; Chen & Cheung, 2021). Lastly, even though this dissertation mainly discusses the government-run social credit rating schemes in China, the country is not unique in using data on social behaviours. In Western democracies and other countries, non-state actors (such as large social media firms) also collect data on people's social behaviour (such as who people are connected with) and try to change their behaviour. For example, Cambridge Analytica harvested 87 million Facebook users' data so its clients can use for political campaign to alter voting behaviours (Hern, 2018; Ur Rehman, 2019).

Future research could also investigate the potential impact of these systems on social and political behaviours in democratic states.

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