Scoring systems in the United States, Europe and China

A comparative human rights analysis of the regulation of scoring systems

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Department of Law, Technology, Markets and Society

Name: Olaf de Bonth
Student number: 2001509
Supervisor: Dr. Linnet Taylor
Second Reader: Lucas Jones, LLM

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Chapter 1 - Introduction

1.1 Background

Scoring systems have been used for a long time. For hundreds of years, public and private entities all over the world have been using scoring mechanisms to rank individuals, predict their behaviour and make decisions based on a score. The caste system in colonial Mexico, for example, categorised individuals according to their perceived ethnic and racial background.[1] The category a person would be placed in would then have legal and social consequences. In a time where technology was not as advanced and where the used datasets were not as extensive as they are today, these systems were not that complex. However, these systems have evolved because of the use of new technologies and new datasets. They are also being implemented on a wider scale with different applications. In the US, and to a lesser extent in Europe, there already is a long history in the use of credit scoring systems. An example of a different and new application of scoring mechanisms are the Chinese social credit systems. In the social credit system plan, as well as the national big data and artificial intelligence strategies, the expanded use of automated, data-based systems for social control are promoted.[2] This globally increasing use of scoring systems and the transition of relatively single-purposed scoring systems, for example determining the likelihood of default on a loan, to social scoring as seen in China today, which involves scores that can prohibit certain means of transport or even prevent people from leaving the country, has led to situations in which human rights are at risk.

1.2 Problem statement

With the implementation of the Chinese social credit systems and other algorithm-driven scoring systems in Europe and the United States, scoring systems are being used in different parts of the globe. Scoring systems are used for different purposes and in different manners, regulated by different laws. In the US and some European countries like Germany, Denmark and the UK, credit scoring systems are used to measure risks of default. Besides the traditional credit scoring, alternative scoring systems have arisen in the public and private

[1]Hana Layson, Charlotte Ross and Christopher Boyer, 'Caste And Politics In The Struggle For Mexican Independence: Digital Collections For The Classroom' (*Dcc.newberry.org*, 2013). <https://dcc.newberry.org/collections/caste-and-politics-in-mexican-independence> accessed 24 July 2020

[2] Rogier Creemers, 'China's Social Credit System: An Evolving Practice Of Control' (2018) SSRN Electronic Journal 2.

sphere in both Europe and the US. These systems are increasingly implemented in various fields with different goals (e.g. fraud prevention, commercial activity prediction etc.), and people are likely to encounter, or have encountered them in the past. Furthermore, traditional credit scores are used for more decisions than just deciding about potential borrowers. This will be discussed in Chapter 2.

One of the more extreme alternative scoring applications is China's social credit systems. These systems will be discussed as an example of what wide implementation of coordinated scoring systems can lead to. The Chinese social credit systems are presented as a future cure-all for China's current social and governance problems, and have the aim of solving long-standing issues including insufficient ways to assess the creditworthiness of market participants, corruption, fraud, and consumer protection issues.[3] The systems in their current state consist of experimenting with pilots and creating a nationwide framework for assessing both financial credit and moral integrity.[4] Public, private and combined pilots are initiated in different cities throughout China. What pilots will be implemented on a larger scale in the future is still unclear. The Chinese systems assign scores based on behaviour which can provide certain advantages (e.g. quicker access to certain services) or disadvantages (e.g. not being allowed to purchase an airplane ticket) and have the aim to be pervasive and intrusive in the lives of citizens. Even though the system is still in the pilot stage, almost 27 million people have been prevented from purchasing an airline ticket because they were blacklisted.[5] This shows that the system already has a wide reach despite not being implemented on full scale.

Because their rise in numbers and complexity, these scoring systems have gotten an increased impact on the lives of citizens. Many important decisions are based on scoring, which means that their results may have major consequences for individual's rights. These developments ask for an adequate regulatory response, as currently, there are many issues with scoring practices. Some of these issues are that scoring systems can be discriminatory, contain errors or disproportionally impact personal autonomy. These issues are able to exist due to regulatory disconnect; current regulatory instruments do not sufficiently connect with scoring practices. The extent of this problem is major; everybody can be affected by the issues

[3] Mareike Ohlberg, Shazeda Ahmed and Bertram Lang, 'Central Planning, Local Experiments The Complex Implementation Of China's Social Credit System' (2017) Merics 5.
[4] Mareike Ohlberg, Shazeda Ahmed and Bertram Lang, 'Central Planning, Local Experiments The Complex Implementation Of China's Social Credit System' (2017) Merics 9.
[5] (*Xinhuanet.com*, 2019) <http://www.xinhuanet.com/fortune/2019-07/17/c_1124761947.htm> accessed 22 June 2020.

that scoring practices create. This results in many human rights being at stake. Furthermore, especially minorities are vulnerable to negative consequences of scoring systems, as they are more likely to receive negative scores. Improving regulatory approaches to scoring systems may solve these issues, and can particularly protect minorities. By systematically analysing the problems that arise from scoring systems, suggestions for improvements to regulatory approaches can be given. This the main aim of this thesis.

1.3 Literature review

Some of the scoring systems that will be addressed in this thesis, such as certain credit scores and fraud detection systems, use automated decision making. Automated decision-making (hereinafter 'ADM') and algorithms are so closely related with the use of scoring systems that they therefore deserve attention. The main privacy, scoring specific and social justice criticisms related to scoring systems will be displayed.

One of the most frequent criticisms on ADM is the lack of transparency of these systems. This results in people not understanding why decisions are taken, and make them feel powerless.[6] This lack of transparency also makes it hard to check for biases, errors, and discrimination.[7] Because the algorithms and ways of working are often protected because of trade secrets or governmental secrecy, full disclosure is not possible, and spotting issues is also not possible. In April 2019, an EU high-level expert group on AI published ethics guidelines for trustworthy AI which focusses on fostering and securing ethical and robust AI. The document nuances the earlier made argument about the importance of transparency and states: 'Note that transparency cannot prevent non-discrimination or ensure fairness, and is not the panacea against the problem of scoring.' But also states that: 'a fully transparent procedure should be made available to citizens, including information on the process, purpose and methodology of the scoring'.[8] However, the lack of explainability is also a common issue; not only the 'subjects' of ADM lack the knowledge about what (their) data is being used (for) and how a decision is made. There are algorithmic systems, like neural networks, of which

[6] Florian Wittner 'A Public Database as a Way Towards More Effective Algorithm Regulation and Transparency?' Leonie Reins (eds), *Regulating New Technologies in Uncertain Times*. (32 Information Technology and Law Series, T.M.C. Asser Press, The Hague)
[7] Céline Castets-Renard, 'Accountability Of Algorithms In The GDPR And Beyond: A European Legal Framework On Automated Decision-Making' (2019) SSRN Electronic Journal 6.
[8] High-Level Expert Group on Artificial Intelligence set up by the European Commission, 'Ethics Guidelines For Trustworthy AI' (2019).

data scientists are increasingly unable to explain the processes of. The focus of these systems is only on the efficiency of the results, human understanding is sacrificed.[9]

Besides the transparency and explainability critique about the process of the use of algorithms, several authors have elaborated on the fact that algorithms are not neutral and can perpetuate stereotypes and social segregation.[10] They can put people in boxes and disadvantage the already disadvantaged, which can lead to further social and economic segregation. This classification and ranking of people into categories can 'divide society into echo chambers of like-minded peers.'[11] Implicit biases are also common,[12] the reason for this is that training data sets for algorithms are often data sets that reflect sociocultural, pre-existing biases.[13] Of course, human decision-making may also be influenced by bias, but using a scoring system that is not neutral on a large scale may have a bigger impact.

Focussing on the scoring systems themselves, the experience of being rated could cause a chilling effect and nudge people to behave differently.[14] The mere fact that your actions and behaviour are being tracked through data could alter your behaviour and limit your freedom, or your perceived freedom. This can occur in scoring situations by both public and private entities. The more classic example is the chilling effect as a consequence of government surveillance. Also, scoring has an impact on the scored individuals' privacy because of the data that is being collected which could range from 'related data' which have a clear connection to the good or service to 'unrelated data' of which the connection to the good or service is unclear, far-fetched or non-existent. This can lead to situations in which access to a good or service may be denied, even though the person would be granted this access when related data is used. Furthermore, it has been argued that users are not able to 'reasonably estimate their disutility' of providing their data in exchange of an economic benefit.[15]

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[9] Céline Castets-Renard, 'Accountability Of Algorithms In The GDPR And Beyond: A European Legal Framework On Automated Decision-Making' (2019) SSRN Electronic Journal 7.
[10] Anupam Chander, 'The Racist Algorithm?' (2017) 115 Michigan Law Review 1038 <https://repository.law.umich.edu/mlr/vol115/iss6/13> accessed 25 August 2020.
[11] Omer Tene and Jules Polonetsky, 'Big Data for All: Privacy and User Control in the Age of Analytics' (2013) 11 Nw. J. Tech. & Intell. Prop. 239.
[12] For more about implicit biases *See* Sarah E Redfield, *Enhancing Justice: Reducing Bias* (American Bar Association, Judicial Division 2017).
[13] Batya Friedman and Helen Nissenbaum, 'Bias In Computer Systems' (1996) 14 ACM Transactions on Information Systems (TOIS) 330-347, 334.
[14] Kari Paul, 'How Rating Everything From Your Uber Driver To Your Airbnb Host Has Become A Nightmare' (*MarketWatch*, 2019) <https://www.marketwatch.com/story/how-rating-everything-from-your-uber-driver-to-your-airbnb-host-has-become-a-nightmare-2019-04-01> accessed 20 November 2019.
[15] Katherine J. Strandburg, 'Free Fall: The Online Market's Consumer Preference Disconnect' (2013) Vol. 2013 University of Chicago Legal Forum 95-172.

The potential for targeting vulnerable consumers as a result of using scoring systems is also a risk that has been identified.[16] This means that vulnerable consumers can be identified by using scoring systems, and this vulnerability can be exploited by targeted advertisement which could make the vulnerable consumer buy a product which is not in their interest or is not fairly priced.

After analysis of European and American literature about regulation, scoring and ADM, it can be observed that the lack of transparency combined with the lack of data control of the data subject are prevalent scoring-related issues. Most attention is paid to privacy and data protection, where other human rights are often overlooked. Also, existing research often focusses on specific laws or practices, which means that a broader, systematic analysis lacks. Furthermore, the development from simple to more complex wide-reaching scoring practices has led to situations in which more human rights are being violated which are not taken into account in current researches. The current researches are thus more specific or narrow, which makes it hard to formulate regulatory improvements as they do not take into account the broader range of problems, challenges to scoring and regulatory instruments. In short, current research is fragmented which makes it difficult to properly formulate regulatory improvements. By using a human rights framework, combined with a comparison, a broader analysis of issues in different jurisdictions can be given. A human rights framework goes beyond privacy and includes a wider range of topics including autonomy, free movement and a right to information. This broader analysis is able to take in account different (types of) laws and provide a more comprehensive overview of what situations of regulatory disconnect are present in the regulatory approaches to scoring. This brings to light issues which are only limitedly discussed in current research, and thus fills in the gap in literature. This can result in solutions for human rights issues that fit the current regulatory landscape, and can better protect the rights of individuals, especially minorities. Following from this, solutions can be presented which improve protection of human rights. This leads to the following research question:

What human rights issues can be identified when comparing regulation regarding scoring and scoring systems in China, Europe and the United States using a human rights framework and what are possible regulatory responses?

[16] Mikella Hurley and Julius Adebayo, 'Credit Scoring in the Era of Big Data' (2017) 18 Yale J.L. & Tech 200-201 <https://digitalcommons.law.yale.edu/yjolt/vol18/iss1/5> accessed 26 August 2020.

The following sub-questions will help answering the main research question:

1. *What are scoring systems and what scoring-developments have taken place in China, Europe and the United States?*

2. *What differences are there in regulatory approaches to scoring in Europe and the US?*

3. *To what extent are human rights issues present in China, Europe and the US?*

4. *What regulatory measures could be taken to prevent these issues from occurring in Europe and the US?*

1.4 Methodology and context

The methodology consists of comparative research and took an empirical approach. With the comparative research, regulations regarding scoring in Europe and the US were analysed and compared which led to similarities and differences in regulatory approaches to scoring systems. As China does not have the rule of law, it cannot be part of this comparison. However, China will be discussed as it is a leader in scoring technologies. It is an extreme example of what scoring can do when it is used to a large extent in both the private and public sector. The comparison is done in question four and five. The differences led to insights in how effective certain regulatory approaches are and what human rights issues were present in different approaches.

Empirical legal research has a focus on 'law in action' instead of 'law in books'. It explored how the behaviour of citizens and organizations are affected by a certain rule.[17] These approaches were used to analyse the relevant regulations and their implications for scoring. They allowed to look at the functioning of the regulations and what human rights issues they do or do not solve. Furthermore, the empirical legal research part of the thesis discovered what challenges are being made to scoring systems, and what this means for the existing regulations. This is necessary to be able to make recommendations for improvements of the frameworks.

The comparative methodology was of value because it allowed for a broader research and broader understanding of the phenomenon of scoring, and a broader understanding of

[17] Ben van Velthoven, 'A Young Person'S Guide To Empirical Legal Research. With Illustrations From The Field Of Medical Malpractice' (2016) Law and Method DOI: 10.5553/REM/.000016.

regulatory approaches. The comparison led to insights in how scoring can be regulated, and what gaps there are in current approaches. These gaps were addressed in the last chapter, in which regulatory improvements were suggested. The empirical approach was chosen because it was able to analyse to what extent challenges to the systems can be made, and why this is the case.

The first element of the research question is 'human rights issues'. The concept of human rights issues was chosen because these are often overlooked and provides a normative framework that allows analysis of a broader range of issues than is currently discussed in literature. This helps with identifying elements that need to be addressed in the regulatory improvements, discussed in the third question. A 'framework' including parts of the Universal Declaration of Human Rights and parts of the European Convention on Human Rights[18] will be used to examine the regulations that manage scoring systems in the EU and US. The relevant articles from the UDHR and the rights that can be derived from them are articles 1 and 2 (freedom from discrimination), article 9 (freedom from arbitrary detention), article 11 (right to presumption of innocence), article 12 (right to privacy), article 13 (freedom of movement) article 18 (freedom of religion) article 19 (right to information and representation), articles 17 and 27 (right to data ownership)[19] and article 8 of the ECHR because of its wide range of application from which the right to data protection and personal autonomy can be derived. The ECHR was drafted by the Council of Europe. In chapter 5, it will be discussed as a part of the 'EU' framework. It formally is not part of the EU framework but all EU members are also members of the Council of Europe. Therefore, and for the sake of convenience, this formulation will be used.

The regions US, Europe and China are chosen because they are arguably the economic leaders of the world. They tend to lead the way regarding technology which is an important factor for scoring systems because new technologies allow for new ways of gathering data and implementing these systems. China aims to employ an openly intrusive and wide-ranging scoring system which is a newer phenomenon of which the goals supposedly are creating a 'culture of integrity', solving economic problems and improving governance.[20] This system is an extreme example of scoring, in a country without the rule of law in which challenges are

[18] European Convention on Human Rights (Convention for the Protection of Human Rights and Fundamental Freedoms) as amended by Protocols Nos. 11 and 14, supplemented by Protocols Nos. 1, 4, 6, 7, 12, 13 and 16.
[19] Richard Heeks and Jaco Renken, 'Data Justice For Development: What Would It Mean?' (2016) SSRN Electronic Journal 7.
[20] Mareike Ohlberg, Shazeda Ahmed and Bertram Lang, 'Central Planning, Local Experiments The Complex Implementation Of China's Social Credit System' (2017) Merics 6.

not possible. The US and Europe are leading legislators (in a sense that legislation of these countries is often copied or used as inspiration for other jurisdictions). The US and some European countries have been using scoring mechanisms for a longer time and may, on first sight, have more limited goals. However, many new scoring mechanisms with wider goals or implications are also employed in these countries, albeit being less open in their goals than the Chinese system. For Europe, European legislation will be discussed as national laws do not offer substantial protection against scoring practices. Also, US federal laws will be discussed. There exist some state-level laws which have the potential to provide some more protection, but there are only a few.

1.5 Structure

This thesis consists of 6 chapters, including the introduction and conclusion. Chapter 2 attempts to answer the first sub-question. This descriptive question will be answered by analysing literature about scoring systems and ADM in different regions and by looking at primary or secondary sources. It attempts to shortly explain the developments regarding scoring systems and provides a table in the Appendices which gives an overview of the characteristics of scoring systems. These developments are relevant as they led to the situations of regulatory disconnect. The third chapter attempts to answer the second question which has a more analytical character and uses relevant law as well as secondary sources to provide an overview of the laws that regulate scoring in the regions. For the US analysis the Fair Credit Reporting Act (FCRA), Equal Credit Opportunity Act (ECOA), Federal Trade Commission Act (FTCA) and the Privacy Act of 1974 are relevant. The relevant law for Europe is the General Data Protection Regulation.[21] The Consumer Credit Directive and the Mortgage Credit Directive do not contain provisions that are scoring-specific and will therefore not be extensively discussed. Chapter 4 will answer the third question. This analytical question will be answered using own analysis as well as literature. It will discuss the human rights issues that arise with scoring practices in the three regions. This will be done using legislation as well as news sources and journal articles. The legislation is used to describe its ineffectiveness and the news articles and journal articles are used to provide examples of scoring practices which are discussed. This chapter can provide a broader overview of issues, which lacks in current research. Chapter 5 will answer the fourth question,

[21] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC [2016] OJ L 119/1.

as well as the second, and has an analytical character. In order to make recommendations for improvements, this chapter will go more in depth into what the regulatory approaches of the regions are in combination with challenges towards scoring systems, and will discuss what measures can be taken to improve these regulations. It will use the issues found in chapter 4 to aim these improvements at. Online databases as well as papers will be used to describe the challenges made to scoring systems. The Conclusion chapter will sum up the main findings and the answer to the research question.

Chapter 2 – Development of scoring systems

2.1 Defining scoring systems

This short chapter will define scoring systems, explain what they are and look at their aims. It will take a look at the developments that scoring systems have went through. The overview of developments will be guided by table 1, found in the appendices. This table provides an overview of the types of scoring systems that have been implemented in the United States and Europe. The Chinese systems will be discussed because they are an extreme implementation of scoring, and show how scoring can be used as a means of control. This chapter aims at displaying the increased magnitude of the use of scoring systems, by different organisations for different goals.

The definition of scoring systems that will be used is a slightly modified definition of 'social credit' by Larry Backer: a system that seeks to rate, score, assess, categorise or classify through a process that requires the acquisition of specific and relevant data, which may then be interpreted through the application of an algorithm to produce an assessment or a score or a measure which can be used to assess compliance with underlying objectives.[22] Categorisation and classification, in the context of this thesis, is the placement of people in groups based on similarities or common criteria, which can be based on a score. This grouping indicates the level of compliance with the underlying objective. There will always be categorisation or classification in a scoring system in some way. A score falls into a bracket of numbers which is linked to a category or class, then a decision may be made based on this category or class. There can be different types of scoring: ones that deal with types or groups, ones that deal

[22] Larry Catá Backer, 'Measurement, Assessment and Reward: The Challenges of Building Institutionalized Social Credit and Rating Systems in China and in the West' (2017) SSRN Electronic Journal 3.

with tokens or individuals, or ones that mix the two.[23] With each of the abovementioned terms, an assessment is made of the subject which is then placed in a category, after which a decision can be made. The main difference is how the assessment is made and how the categories are constituted. A scoring system can use an actual score as output, however, in our definition, a score is not indispensable; the placement into a category may also occur without the output being a score. This is included in our definition because the scoring mechanism may by itself match a score to a certain category, which means that the processing of the data may be the same, but the type of output (score or category) may be different. Ratings (or scores) are 'the product of data driven algorithm based on presumptions about expectations and values that are the basis for extracting meaning (and consequence) from data.'[24] Scores are thus able to 'summarise' large amounts of data into one score.

This section briefly displays the different aims scoring systems can have and will give an overview of some of the developments that scoring systems have went through. The table in the Appendices provides a more extensive overview of scoring systems and concrete examples with more details to give an idea about the types of scoring systems that exist. I place the aims of scoring systems in three categories: 1) Risk assessment with a predictive use, often seen with credit scoring 2) A means of control, altering behaviour, as can be seen with the Chinese social credit system 3) Identification of people, this can be the mere identity or characteristics.

2.2 Developments of scoring systems

Moving on to the developments of scoring systems in the last decades. The first developments are linked to credit scoring. The US (and some European countries to a lesser degree) has a rich history in the use of traditional credit scoring which has the aim of determining the creditworthiness of a borrower. Recently, these scores have been used in different contexts: auto insurance assessments, cell phone contracts, residential rentals and even hiring decisions.[25] Credit scores based on credit reports are used for these decisions even though e.g. insurance claims are not recorded by credit bureaus. This means that unrelated data may lead to rejections for certain products or services. So, a low credit score may lead to disadvantages

[23] For an explanation about types and tokens, *see* Luciano Floridi, 'Open data, data protection, and group privacy' (2014) Philosophy & Technology 27(1) 1-3.
[24] Larry Catá Backer, 'And An Algorithm To Entangle Them All? Social Credit, Data Driven Governance, And Legal Entanglement In Post-Law Legal Orders' (2020) SSRN Electronic Journal 12.
[25] Akos Rona-Tas, 'The Off-Label Use of Consumer Credit Ratings' (2017) 42 Historical Social Research 52-76, 52-53.

in other important decisions as well.

Where traditional credit systems mainly use credit reports and sometimes alternative data, new initiatives have arisen that use different datasets to determine creditworthiness. An example of this is UK-Based Hello Soda who use scoring based on social media language from which personality attributes can be identified. This score is then used to determine the creditworthiness of the person.[26] Tala, a firm based in the US claims to utilise up to 10,000 data points including social media and smartphone data to create a credit score that supposedly advantages lower-income customers.[27] Installation of an app supposedly allows customers to instantly receive a decision for a loan, regardless of their credit history. Furthermore, 'newer' categories of scoring have also appeared. The World Privacy Forum focussing on the United States distinguished a variety of scoring systems: financial and risk scoring, fraud scoring, identity and authentication scoring, custom business scoring, regulated credit and financial scoring, smart grid and energy scoring, tax return scoring and social scoring.[28] Scoring practices in these categories are widely used and their existence is not always public knowledge; an individual could be the subject of dozens or even hundreds of secret consumer scores.[29] An example of a 'newer' type of scoring is the employability-score by HireVue. HireVue provides systems which analyse a video interview or a game-based assessment to provide a job candidate's employability-score.[30] This system was challenged by the Electronic Privacy Information Center (EPIC) which has issued a complaint and request for investigation, injunction, and other relief based on a section 5 (unfair trade practices) violation by HireVue. According to EPIC, HireVue's systems are biased, unproveable, not replicable and violate several principles on AI which means they constitute unfair trade practices.[31] Another development is the increasing use of scoring by public bodies. This could be seen as 'citizen scoring' which is defined by Dencik et al. as 'the use of

[26] *See* <https://hellosoda.com/our-products/profileid/> accessed 25 August 2020.
[27] <https://tala.co/about/> accessed 26 August 2020.
[28] Pam Dixon and Robert Gellman, 'The Scoring Of America: How Secret Consumer Scores Threaten Your Privacy And Your Future' (World Privacy Forum 2014) <https://www.worldprivacyforum.org/2014/04/wpf-report-the-scoring-of-america-how-secret-consumer-scores-threaten-your-privacy-and-your-future/> accessed 25 August 2020.
[29] Pam Dixon and Robert Gellman, 'The Scoring Of America: How Secret Consumer Scores Threaten Your Privacy And Your Future' (World Privacy Forum 2014) <https://www.worldprivacyforum.org/2014/04/wpf-report-the-scoring-of-america-how-secret-consumer-scores-threaten-your-privacy-and-your-future/> accessed 25 August 2020.
[30] <https://epic.org/privacy/ftc/hirevue/> Accessed 26 August 2020.
[31] Drew Harwell, 'Rights Group Files Federal Complaint Against AI-Hiring Firm Hirevue, Citing 'Unfair And Deceptive' Practices' (2019) <https://www.washingtonpost.com/technology/2019/11/06/prominent-rights-group-files-federal-complaint-against-ai-hiring-firm-hirevue-citing-unfair-deceptive-practices/> accessed 14 October 2020.

data analytics in government for the purposes of categorisation, assessment and prediction at both individual and population level'.[32] An example of scoring by a public body was the Dutch SyRi (which means System Risk Indication) system. This system had the aim of preventing social security fraud by combining different datasets to produce a score that indicates the risk of fraud. A variety of data could be used, ranging from property and residence information to employment and tax information.[33] The system was found to infringe the right to private life.[34] This will be discussed in more detail in chapter 4.

2.3 The Chinese Social Credit System

The Chinese social credit systems are an extreme example of scoring systems. They are a government scoring initiative with, at first glance, a wider reach than the scoring practices we have seen in the West. As mentioned in the introduction, the system in its current state consists of experimenting with pilots and creating a nationwide framework for assessing both financial credit and moral integrity.[35] Public, private and combined pilots are initiated in different cities throughout China. As mentioned before, they are presented as a future cure-all for China's current social and governance problems, and have the aim of solving long-standing issues including insufficient ways to assess the creditworthiness of market participants, corruption, fraud, and consumer protection issues.[36] One of the more important elements of the systems are the data-sharing mechanisms, they are installed to create a network that enables the communication of data across different public and private organisations. This means that public and private bodies both collect and share data about citizens. This enables the existence of an important part of the social credit systems: the joint punishment system. This system consists of 'mechanisms for joint social credit rewards and punishments, that cross departments, fields, and regions, and is jointly participated in by administrative organs, judicial organs, and market entities; creating a creditworthy atmosphere in which the trustworthy receive benefits and the untrustworthy are restricted.'[37] In other words: this system allows citizens to be punished and rewarded in sectors in which

[32] Lina Dencik and others, 'The 'Golden View': Data-Driven Governance In The Scoring Society' (2019) 8 Internet Policy Review 2-24, 3.
[33] Article 5a.1 lid 3 of Besluit SUWI
[34] District court of The Hague C-09-550982-HA ZA 18-388 (2020).
[35] Mareike Ohlberg, Shazeda Ahmed and Bertram Lang, 'Central Planning, Local Experiments The Complex Implementation Of China's Social Credit System' (2017) Merics 9.
[36] Mareike Ohlberg, Shazeda Ahmed and Bertram Lang, 'Central Planning, Local Experiments The Complex Implementation Of China's Social Credit System' (2017) Merics 5.
[37] e.g. Article 21 of the Shanghai Municipal Social Credit Regulations

the behaviour that caused the punishment or reward did not occur. For an overview of types of behaviour, punishments and rewards, see tables 3 to 6 in the appendices. An example of an advantage is quicker access to certain services and a disadvantage could be not being allowed to purchase an airplane ticket or increased monitoring or inspections and restrictions in government support funding. These consequences could be pervasive and intrusive in the lives of citizens. Concluding, the Chinese systems are a government initiative that combines the power of public and private scoring. The system allows for monitoring of individuals and businesses, and swift and efficient sanction in case of non-compliance.[38] This forms a system in which data is shared, scoring is encouraged and citizens are, through the chilling effect and conformism (which will be discussed in chapter 4) pushed towards compliance. Instead of being individual tools implemented for a limited goal, the Chinese government sees it as a 'poster-child example' of a process of informatisation in governance.[39] It can be seen as a means of control of the Chinese government, and is one of the technology-tools to protect China's political system.[40] Furthermore, it is part of an array technology is used in responding to social unrest and the prevention of potentially destabilizing risks.[41]

2.4 Conclusion

All in all, scoring systems went through a development from the traditional credit scoring to a variety of different scoring mechanisms. The increased availability of data has allowed for algorithmic rating for different purposes. They have been implemented on a large scale by private and public entities, used to predict, nudge, verify or even control, as we saw in China. This wide implementation with possibly far-reaching consequences for individuals may pose risks to individual's rights. The discussed developments are important as they led to situations of regulatory disconnect, which will be discussed later on. The next question is: to what extent has legislation regarding scoring been adopted in the United States and Europe?

[38] Rogier Creemers, 'China's Social Credit System: An Evolving Practice Of Control' (2018) SSRN Electronic Journal 8.
[39] Rogier Creemers, 'China's Social Credit System: An Evolving Practice Of Control' (2018) SSRN Electronic Journal 19.
[40] *See* Yuhua Wang and Carl Minzner, 'The Rise Of The Chinese Security State' (2015) 222 The China Quarterly 339-359.
[41] Samantha Hoffman 'Programming China: The Communist Party's Autonomic Approach to Managing State Security' (PhD Thesis, University of Nottingham 2017); Qiang Wu 'Urban Grid Management and Police State in China: A Brief Overview' (2013) < https://chinachange.org/2013/08/08/the-urban-grid-management-and-police-state-in-china-a-brief-overview> accessed 25 August 2020.

Chapter 3 - Regulatory approaches to scoring

Now that we have seen the developments that scoring systems have undergone and we saw that different types of scoring practices exist in different regions, we can move on to the regulation. This chapter will discuss the content of the regulatory approaches to regulating scoring practices in the United States and Europe. It will look at the scoring-specific regulations or alternative regulations which may impact these practices. It will provide an overview of relevant regulations and most important provisions. In order to perform the human rights analysis in the next chapter, a discussion of legal instruments that govern scoring-practices is helpful. This allows for a further human rights analysis. However, chapter 5 will discuss these approaches more in-depth, as this is necessary to discuss improvements for the legal frameworks.

3.1 The United States

The federal legal scoring framework in the United States consists of different acts. As discussed in the previous chapter, credit scoring is a common practice in the United States. This has resulted in a legal framework for the credit business that contains rules for credit scoring. However, not all scoring practices mentioned in the last chapter are specifically regulated. The use of scoring potentially needs to comply with data protection provisions, dispersed through sector-specific acts, in some situations. Furthermore, the Federal Trade Commission Act will be discussed as it is a possible ground for challenging scoring implementations. First, attention will be paid to the credit scoring regulations after which the other acts will be discussed.

The first one that will be discussed is the Fair Credit Reporting Act. This act is specifically aimed at the credit reports on which the credit score is based and promotes its fairness, accuracy, impartiality, and a respect for the consumer's right to privacy.[42] Consumers are granted several rights.[43] These do provide the individual some knowledge about what information of them is collected and what information might be used. Critics have

[42] § 602. Congressional findings and statement of purpose [15 U.S.C. § 1681].
[43] 15 U.S.C. § 1681g(a)(1), and § 1681i. Consumers have the right to access their credit reports, dispute their completeness or accuracy, request corrections, and, when resolutions are not achieved, annotate their records.

argued that these rights are not sufficient. The FCRA has a limited scope; the terms 'individual'[44] and 'consumer report agency'[45] limit the scope of the act. These conditions for protection can be avoided which leaves the subject without protection of the law.[46] Furthermore, the types of information that can be used to score credit, aside from certain forms of outdated criminal records and financial records,[47] are not limited by the FCRA. The Senate of New York, however, has passed a bill that prohibits the use of information about the members of a consumer's social network to evaluate the consumer's creditworthiness.[48] Concluding, the scope of the FCRA is limited, many types of information may be used and many practices remain unregulated. The FCRA thus grants rights in limited cases.

The Fair and Accurate Credit Transactions Act (FACTA) was enacted as an amendment to the FCRA and provided additional credit scoring provisions which enabled a limited amount of transparency. Consumers can request scoring information from the credit agency.[49] However, this information does not provide the consumer with a full insight in how the score is produced and what exact factors are taken into account. Another credit related act is The Equal Credit Opportunity Act (ECOA), which forbids certain categories of data to be used: race, colour, religion, national origin, sex, marital status, age, or the receipt of public assistance.[50] These will be discussed in more detail in chapter 4. This act and its accompanying Regulation B have been the primary ground for challenge lending decisions and policies that are discriminatory, or that lead to discriminatory results.[51] The FACTA and ECOA do thus provide additional provisions that enhance transparency and prohibits the use of discriminatory categories.

Moving on from the credit scoring-specific regulation, the US does not have a federal data protection law that regulates all personal data practices. Most data protection provisions are diffused into specific regulations. For scoring practices employed by the government, the

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[44] 15 U.S.C. § 1681a(c).
[45] 15 U.S.C. § 1681a(f) (2012).
[46] For example, by collecting data at household or neighbourhood level or gathering data associated with a device or IP-address that is used by multiple individuals. And the definition of 'consumer report agency' that the act gives has the consequence that a lender that uses its own data collection and analytics mechanisms and does not sell that information for further use in the credit, insurance or employment context is not covered by the FCRA. *See* Mikella Hurley and Julius Adebayo, 'Credit Scoring in the Era of Big Data' (2017) 18 Yale J.L. & Tech 184 <https://digitalcommons.law.yale.edu/yjolt/vol18/iss1/5> accessed 26 August 2020.
[47] 15 U.S.C. § 1681c (2012).
[48] <https://www.nysenate.gov/legislation/bills/2019/s2302> accessed 26 August 2020.
[49] 15 U.S.C. § 1681 g(f). This includes: information about the most recent credit score, range of possible scores, the key factors that adversely affected the credit score, the date of creation and the name of the entity that provided the credit score.
[50] 15 U.S.C. § 1691.
[51] Mikella Hurley and Julius Adebayo, 'Credit Scoring in the Era of Big Data' (2017) 18 Yale J.L. & Tech 190 <https://digitalcommons.law.yale.edu/yjolt/vol18/iss1/5> accessed 26 August 2020.

Privacy Act of 1974 may be relevant. This federal law regulates the data processing activities of governmental bodies. It provides individuals the right to access and amendment to records.[52] Exercising the access right could potentially provide some knowledge for the subject when a scoring mechanism is used by a governmental body. Whether or not this provision is of any help depends on how the provision is interpreted.[53] Besides this privacy act, there are some sector-specific privacy acts like The Health Insurance Portability and Accountability Act (HIPAA), Gramm-Leach-Bliley Act (GLBA) and the Children's Online Privacy Protection Act (COPPA). These do not contain scoring-specific provisions. There is no federal data protection act that encompasses consumer data protection. On state level, however, some consumer data protection legislation has appeared. An example of this is the Californian Consumer Privacy Act (CCPA), which has the aim of protecting consumer data and is similar to the EU's GDPR in many aspects. Some states (e.g. New York, Maryland and Massachusetts) have followed since which means that the protection of consumer data is restricted to a number of states, and certainly has not reached all of the country.

The Federal Trade Commission has statutory authority to combat 'unfair' trade practices.[54] According to section 5 of the Federal Trade Commission Act, the FTC has the authority to combat unfair commercial practices.[55] This could provide a way to tackle situations in which scoring practices are 'unfair'. An attempt at this has been made by EPIC, which will be discussed in a later chapter.[56] Also, the FTC states that it has addressed consumer injury arising from the use of AI and automated decision-making.[57] This means that besides scoring-specific and data protection laws, a third way of protecting individuals from scoring practices is possible in the US: consumer protection law.

Concluding, the US has credit scoring-specific legislation that has many limitations regarding its scope and content. There are some data protection provisions scattered across

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[52] The Privacy act of 1974 § 552a(d).
[53] The Privacy Act literally states 'any information pertaining to him which is contained in the system', this could be interpreted as including scoring information. It could also be interpreted as information that is verifiable or factual which is often not the case with scoring outcomes. For a discussion about inferred data, *see* Sandra Wachter and Brent Mittelstadt, 'A right to reasonable inferences: re-thinking data protection law in the age of big data and AI' (2019). 494 Colum. Bus. L. Rev 494-620, 549.
[54] 15 U.S.C. § 45(n) (2012).
[55] The FTC has the authority to combat unfair commercial practices that substantially harms consumers, or threatens to substantially harm consumers, which consumers cannot reasonably avoid, and where the harm outweighs the benefits.
[56] <https://epic.org/privacy/ftc/hirevue/> Accessed 26 August 2020.
[57] Andrew Smith, 'Using Artificial Intelligence And Algorithms' (*Federal Trade Commission*, 2020) <https://www.ftc.gov/news-events/blogs/business-blog/2020/04/using-artificial-intelligence-algorithms> accessed 22 October 2020.

different regulations of which many don't, or very limitedly, impact scoring systems. The federal data protection legislation does have potential to provide some rights, as well as the FTCA that combats unfair trade practices.

3.2 Europe

Opposed to the US, the EU does not have an advanced credit scoring framework. This can be explained by the fact that the US has a long-established credit scoring tradition. This is not true for the majority of the EU countries. The EU does, however, have a general data protection regulation which the US lacks: the General Data Protection Regulation. This sub-chapter will, at the absence of scoring-specific legislation, discuss how the GDPR influences scoring practices. National laws will not be discussed as they do not offer substantial protection against scoring practices. The data protection regulation has a broad scope and provides subjects rights when personal data is processed. However, for the inferred data like the scores themselves, these rights are limited.[58] This means that the rights that will be discussed are applicable when data is being collected by a company for the purpose of using it in a scoring system, but the derived data is only subject to limited protection. Besides, the GDPR does provide the right not to be subject to ADM and profiling. This right is subject to certain requirements which makes that its applicability is limited. Furthermore, in cases of scoring with thousands of data-points, an article 9 (2) exception is likely to be necessary.

The GDPR is Europe's General Data Protection Regulation which applies to the processing of personal data.[59] This means that when an organisation uses data that is relating to an identified or identifiable person in a scoring-algorithm, this process must comply with the GDPR. This means that the non-traceable data does not fall within the scope of the GDPR. Furthermore, it is important to note that data that is 'likely to have an impact on a certain person's rights and interests' is also personal data.[60] This means that data that is derived, like scores, can sometimes be considered personal data. However, this derived data only enjoys limited protection of the rights granted by the GDPR.[61]

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[58] Sandra Wachter and Brent Mittelstadt, 'A right to reasonable inferences: re-thinking data protection law in the age of big data and AI' (2019). 494 Colum. Bus. L. Rev 494-620, 542-571.
[59] Article 2 GDPR.
[60] Article 29 Data Protection Working Party, *Opinion 4/2007 on the Concept of Personal Data* (2007) <https://ec.europa.eu/justice/article-29/documentation/opinion-recommendation/files/2007/wp136_en.pdf> accessed 25 August 2020.
[61] For an extensive discussion of these rights in relation with inferences, *see* Sandra Wachter and Brent Mittelstadt, 'A right to reasonable inferences: re-thinking data protection law in the age of big data and AI' (2019). 494 Colum. Bus. L. Rev 494-620, 542-571.

The WP29's Guidelines on profiling and automated decision-making[62] distinguishes three phases in profiling which also apply to scoring: data collection, automated analysis to identify correlations; and applying the correlation to an individual to identify characteristics of present or future. All these phases must meet the GDPR requirements.

Transparency is an important principle put forward by the GDPR,[63] which, according to Recital 39 of the regulation, entails that persons should know when and to what extent their data is being processed. This principle is further specified in articles 13 and 14 and contains disclosure obligations for the data controller.[64] This information should be communicated in a way that it is easily accessible, easy to understand, and clear and plain language should be used.[65] Information about the ADM should include the logic involved, the significance and the envisaged consequences of processing for the data subject. The controller should 'find simple ways to explain the rationale behind, or the criteria relied on in reaching the decision.'[66] A complex explanation or full disclosure of algorithm is not necessary. Besides this more technical disclosure requirement, the 'significance' and 'envisaged consequences' requirement should provide the subject information about how the automated decision may affect the subject.[67] The GDPR furthermore requires the data controller to carry out an impact assessment when processing is 'likely to result in a high risk to the rights and freedoms of natural persons' to assess the impact of the operations on the protection of personal data.[68] While this assessment may improve GDPR compliance, it does not, on itself, provide more transparency to the data subject because the assessment does not need to be published. The data subjects are also granted a right of access.[69] Furthermore, the GDPR does provide some form of control to the data subject. The subject can rectify inaccurate or incomplete

[62] Article 29 Data Protection Working Party , *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679* (2007) < https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=612053> accessed 25 August 2020.
[63] Article 5 GDPR.
[64] These include but are not limited to: the identity of the controller, purposes of processing and legal basis, period of storage, the rights of the data subject and the existence of automated decision-making.
[65] Article 12 GDPR.
[66] Article 29 Data Protection Working Party , *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679* (2007) < https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=612053> accessed 25 August 2020.
[67] Article 29 Data Protection Working Party , *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679* (2007) < https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=612053> accessed 25 August 2020.
[68] Article 35 GDPR.
[69] Article 15 GDPR. This right entails the possibility for subjects to obtain confirmation and information about: the processing of data, the purposes, categories, recipients, period, rights and the existence of automated decision-making.

information[70], oblige erasure in certain situations[71], restrict the processing[72], receive their data in a manner suitable for portability[73] and have the right to object.[74] However, as mentioned, these rights are not all applicable to scoring outcomes.

Article 22 GDPR, which provides the right not to be subject to ADM, is particularly relevant for scoring. This right exists barring situations mentioned in paragraph 2: the decision is necessary for entering into, or performance of, a contract; authorised by law; or based on the data subject's explicit consent. Special categories of data may not be used in the decisions unless explicit consent has been given or it is necessary for reasons of substantial public interest. However, the right not to be subject to ADM is weakened because of the requirement that a decision should *solely* be based on ADM, without human involvement.[75] Furthermore, the decisions must produce legal effects or must have 'similarly significant effects'. This means that even though the right is unique and goes further than other frameworks do, it is only applicable in very limited number of situations.

Article 9 GDPR provides a prohibition of the processing of special categories of data, except for when one of the exceptions applies, listed in paragraph 2 of the provision.[76] Article 9 thus provides a higher threshold for these special categories. As seen in the last chapter, scoring-algorithms are capable of using thousands of data-points and it is not unthinkable that many use these special categories of data. Within the scope of the GDPR, this would mean that one of the exceptions needs to apply in order to make the processing legal.

Furthermore, each member state has a Supervisory Authority that is responsible for monitoring and enforcing the application of the GDPR.[77] It can be observed that Supervisory Authorities (DPA's) in the EU impose fines to scoring related practices. An example is a fine imposed by the Cyprian DPA to companies that used an automated system to manage, monitor and control the absences of employers due to illness.[78] This scoring system lacked a

[70] Article 16 GDPR.
[71] Article 17 GDPR.
[72] Article 18 GDPR.
[73] Article 20 GDPR.
[74] Article 21 GDPR.
[75] Joanna Mazur, 'Right to Access Information as a Collective-Based Approach to the GDPR's Right to Explanation in European Law' (2018) 3 Erasmus Law Review 178-189, 182.
[76] These categories are: data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation.
[77] Article 51 GDPR.
[78] 'The Cypriot Supervisory Authority Banned The Processing Of An Automated Tool, Used For Scoring Sick Leaves Of Employees, Known As The "Bradford Factor'' And Subsequently Fined The Controller' (*Dataprotection.gov.cy*, 2020)

legal basis and thus the processing activities were unlawful. Not performing a data protection impact assessment while also not giving data subjects information about their rights was also a reason for a fine being imposed, as was done by the Finnish DPA.[79] So, the DPA's do actually enforce GDPR requirements in scoring situations. Furthermore, the Dutch DPA issued a statement in which it acknowledges the risks of the use of algorithms and states that it will expand its monitoring of the use of algorithms.[80] These fines, together with statements from authorities like the Dutch DPA, indicate that national authorities are aware of the risks of scoring systems and are increasingly paying attention to them. In these cases, we see that the use of scoring itself is not considered illegal if safeguards are met and impact assessments are done. Also, the EDPS has the authority to refer cases to the CJEU, in practice this has not been done yet.[81]

3.3 Conclusion

Overall, we can conclude that the there is a variety in how scoring practices are regulated. There are many scoring practices that fall outside the scope of regulation in both regions. The scoring-specific regulation may provide safeguards but not all scoring practices are within the scope of these regulations. Data protection laws can, in some situations, oblige users of scoring systems to disclose some information. This information may not be sufficient to provide the subject full insight in how the score is actually produced, and still allows scoring to happen. Some practices fall outside the scope of regulations due to non-personal information that is being used which prevents the application of data protection laws. Furthermore, inferences only enjoy limited protection under the GDPR, which has an influence on scoring outcomes. All in all, the situations of regulatory disconnect, like the lack of legislation for alternative scoring systems and the limited rights offered to scoring-subjects, lead to situation in which human rights are at stake. The next chapter will provide a human rights analysis that discusses what human rights issues may be present.

<http://www.dataprotection.gov.cy/dataprotection/dataprotection.nsf/All/638BA18A544E5DEDC22584FC0031C7C7> accessed 26 August 2020.

[79] 'Tietosuojavaltuutetun Toimiston Seuraamuskollegio Määräsi Kolme Seuraamusmaksua Tietosuojarikkomuksista -' (*Tietosuojavaltuutetun toimisto*, 2020) <https://tietosuoja.fi/-/tietosuojavaltuutetun-toimiston-seuraamuskollegio-maarasi-kolme-seuraamusmaksua-tietosuojarikkomuksista?languageId=en_US> accessed 26 August 2020.

[80] 'Toezicht Op Algoritmes' (*Autoriteitpersoonsgegevens.nl*, 2020) <https://autoriteitpersoonsgegevens.nl/nl/nieuws/toezicht-op-algoritmes> accessed 26 August 2020.

[81] *See* <https://edps.europa.eu/data-protection/data-protection/case-law-and-guidance_en> accessed 26 August 2020.

Chapter 4 – Human rights issues

The last chapter analysed the provisions which may impact scoring practices from the following regulations: the Fair and Accurate Credit Transactions Act, the Equal Credit Opportunity act, the Fair Credit reporting act of the US and the GDPR of Europe. These regulations, and scoring practices, will be analysed using a framework, consisting of the Universal Declaration of Human Rights supplemented by parts of the European Convention of Human Rights. The relevant articles from the UDHR and the rights that can be derived from them are articles 1 and 2 (freedom from discrimination), article 9 (freedom from arbitrary detention), article 11 (right to presumption of innocence), article 12 (right to privacy), article 13 (freedom of movement) article 18 (freedom of religion) article 19 (right to information), articles 17 and 27 (right to data ownership)[82] and article 8 of the ECHR because of its wide range of application from which the right to data protection and personal autonomy can be derived. These rights will be discussed in relation to scoring practices in the regions.

This chapter will argue that existing regulations are not sufficient to ensure the freedom from discrimination due to the way the scoring algorithms work and the fact that not all discriminatory categories from the UDHR are protected. Furthermore, criminal-law scoring will be discussed using the right of freedom from arbitrary detention and the right to presumption of innocence. Moreover, some cases about the freedom of religion, which is closely related to freedom from discrimination, are discussed, as well as the freedom of movement. The chapter will end with a discussion of the right to privacy, data protection, information, data ownership and autonomy. With sufficient protection of these rights, the other discussed human rights can be protected as well.

Furthermore, examples of the Chinese credit system are discussed to illustrate what kind of human rights violations can occur when a country, that has a high level of scoring-technology available and lacks the rule of law, implements scoring applications on a wide scale, operated by public and private bodies.

[82] Richard Heeks and Jaco Renken, 'Data Justice For Development: What Would It Mean?' (2016) SSRN Electronic Journal 7.

4.1 Freedom from discrimination

The first right that will be discussed is the freedom from discrimination (articles 1 and 2 UDHR). This section will firstly discuss the limitations to the collection of certain categories of data in the US and Europe. After that, a discussion about the exceptions to the prohibition of processing of special categories of data in EU's GDPR will follow as this is one of the more advanced data protection frameworks and is the only one that allows the processing of these types of data under vaguely formulated circumstances. Then, it will be argued that the mere prohibition of processing of these categories is not sufficient to respect the freedom from discrimination. One of the most mentioned issues in literature regarding scoring systems is the possible presence of discrimination.[83] One way in which the US and Europe attempt to limit discriminatory practices is restricting or prohibiting the processing of 'special' categories of data. It is important to note, once again, that laws governing these restrictions on use of types of data have a limited scope. In the US, they only apply to credit scoring and to individuals, in Europe, they only apply to personal data and processing is still allowed in certain scenarios.

The UDHR freedom from discrimination framework prohibits the distinction on the basis of: race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.[84] First of all, both the US' ECOA and EU's GDPR do miss some categories that are featured on the UDHR list.[85] On top of the UDHR list, they do implement additional categories.[86] Because not all categories are incorporated, the regulations do not prevent discrimination based on all the categories. Furthermore, the effective prevention of discrimination requires more than a full implementation of the UDHR list due to the use of proxies and discovery of non-allowed variables, as discussed later in this chapter. The result of this is the ability of public and private bodies to process these categories, steering decisions into a certain direction, based on irrelevant categories.

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[83] *See* Nizan Geslevich Packin and Yafit Lev Aretz, 'Big Data And Social Netbanks: Are You Ready To Replace Your Bank?' (2015) SSRN Electronic Journal; Nizan Geslevich Packin and Yafit Lev Aretz, 'On Social Credit And The Right To Be Unnetworked' (2016) SSRN Electronic Journal; Céline Castets-Renard, 'Accountability Of Algorithms In The GDPR And Beyond: A European Legal Framework On Automated Decision-Making' (2019) SSRN Electronic Journal.

[84] Article 2 UDHR.

[85] ECOA misses: language, political or other opinion, social origin, property, birth. GDPR misses: sex, language, national or social origin, property and birth.

[86] ECOA adds public assistance. GDPR adds trade union membership, genetic and biometric data for identifying a natural person, health data or data regarding a person's sex life or sexual orientation. (Article 9 GDPR).

4.1.1 GDPR's exceptions

Both US' ECOA allows special categories to be processed in some situations, as does the GDPR. However, the ECOA does provide a clearly defined list of situations in which some of these categories may be processed, the exceptions in the GDPR are a lot more vague.[87] This means that the GDPR deserves some more attention. Many of these exceptions need a basis in law or need to be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject in order to be a legitimate exception. This means that for many of the exceptions, the freedom from discrimination has to be take into account. It can be noted that the exceptions do not offer many companies that use scoring mechanisms in their daily business (e.g. in order to target certain potential customers) a possibility to process the special categories of data. However, exceptions as the obligations regarding employment and social security could allow the special categories of data to be used within scoring systems, if there is human involvement.

4.1.2 The limited effect of forbidden categories on the prevention of discrimination

Having in place lists that exclude categories form being processed may limit discrimination. However, discrimination is certainly not completely eliminated by excluding these categories; this could also be seen as a situation of regulatory disconnect. Discriminatory categories may be disguised behind masks and proxies, as can be seen with zip codes which may indicate a certain race.[88] Figures of the Missouri Department of Insurance have shown that, even after eliminating other factors such as income, education, or unemployment, residents of high-minority ZIP codes have significantly worse insurance scores.[89] These insurance scores are specifically developed for insurance purposes and insurers argue that they allow them to 'more accurately price risks.'[90] A higher score may lead to a significant increase in premium which could limit the possibilities of getting insurance.

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[87] Article 9(2) GDPR.
[88] *See* Anupam Datta and others, 'Proxy Discrimination In Data-Driven Systems: Theory And Experiments With Machine Learnt Programs' (2017) <https://arxiv.org/pdf/1707.08120.pdf> accessed 25 August 2020.
[89] Brent Kabler, 'Insurance-Based Credit Scores: Impact On Minority And Low Income Populations In Missouri' (Missouri Department of Insurance 2004) <https://pdfs.semanticscholar.org/cb67/2acdb42cb3506d04e876b833731a882a1eb5.pdf?_ga=2.7963762.1585788833.1598337483-2134461941.1598337483> accessed 25 August 2020.
[90] Birny Birnbaum, 'Credit scoring and insurance: costing consumers billions and perpetuating the racial divide' National Consumer Law Center (2007) 9.

Even when the initial design of a scoring algorithm has no discriminatory intent, the interpretation of data is susceptible to limitation and bias.[91] An example of this can be seen in the US, where a scoring system called COMPAS is used to determine the risk of re-offense in criminal prosecutions. Proponents argue they could provide a more objective evaluation and replace judges' intuition and bias.[92] However, a study conducted by ProPublica[93] revealed that, even though race is not a factor that is considered, black defendants were likely to be falsely flagged as future criminals, wrongly labelling them this way at almost twice the rate as white defendants.

A further risk of discrimination can be seen with the exceptions of the GDPR, for instance in Germany. SCHUFA in Germany calculates scores partly based on gender and date of birth.[94] However, even though these are seen as discriminatory categories, due to the exceptions in the GDPR, these categories can be processed. It is, however, questionable whether one of the exceptions apply and it is not unthinkable that scores are based on false data due to mistakes. This is problematic, as many important decisions (for instance: renting an apartment, credit card applications) are made using the SCHUFA score. That is why OpenSchufa, a project of AlgorithmWatch,[95] wanted to bring the (issues of the) Schufa system into publicity, as that system does not seem to be compatible with the GDPR.[96] This led to more publicity and acknowledgement. However, the Hessian State Data Protection Commissioner and the Federal Minister of Justice and Consumer Protection have not taken any action which leaves the situation unchanged. Another public debate in Poland was successful and did lead to the removal of a controversial scoring system for the unemployed after criticism by judges and an NGO. The system decided what support unemployed would get.[97]

This means that just lists of forbidden data categories is not sufficient to prevent discrimination. Besides, the provisions containing forbidden categories do not consider the

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[91] Danah Boyd and Kate Crawford, 'Six Provocations For Big Data' [2011] A Decade in Internet Time: Symposium on the Dynamics of the Internet and Society 6 <http://ssrn.com/abstract=1926431> accessed 25 August 2020.
[92] Karen Hao and Jonathan Stray, 'Can You Make AI Fairer Than A Judge?' (*MIT Technology Review*, 2019) <https://www.technologyreview.com/2019/10/17/75285/ai-fairer-than-judge-criminal-risk-assessment-algorithm/> accessed 25 August 2020.
[93] Julia Angwin and others, 'Machine Bias' (*ProPublica*, 2016) <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing> accessed 25 August 2020.
[94] <https://www.meineschufa.de/aktion/faq-daten> accessed 25 August 2020.
[95] *See* < https://algorithmwatch.org/en/> accessed 26 August 2020.
[96] *See* <https://openschufa.de/> accessed 26 August 2020.
[97] Jedrzej Niklas, 'Poland: Government To Scrap Controversial Unemployment Scoring System' (*AlgorithmWatch*, 2019) <https://algorithmwatch.org/en/story/poland-government-to-scrap-controversial-unemployment-scoring-system/> accessed 26 August 2020.

discriminatory nature of the algorithm. This is important because not only the types of data that are used may be discriminatory, also the algorithm may contain discriminatory elements or may have discriminatory effects. This can be seen in the fact that the algorithm is often designed to find trends in the data.[98] This can lead to discovery of the non-allowed variables and lead to less advantageous decisions for members of minority groups.[99] These marginalized groups can be targeted, given access to a good or service which they historically have been excluded from on unfavourable conditions. This is called predatory inclusion and, in the long term, benefits the dominant social actors while maintaining the inequality and insecurity for the marginalized group.[100]

4.2 Freedom from arbitrary detention

The second right that will be discussed is the freedom from arbitrary detention, article 9 UDHR. This has a criminal law character and will thus focus on criminal-law scoring. This can mainly be seen in the US, with Europe also having examples. Article 9 reads as follows: 'no one shall be subjected to arbitrary arrest, detention or exile'. The UN Working Group on Arbitrary Detention has established three categories of arbitrary detention: 1. no legal basis justifying the deprivation of liberty 2. the exercise of certain freedoms enshrined in the Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR) which leads to the deprivation of liberty 3. not complying to international norms related to a fair trial, resulting in 'such gravity as to give the deprivation of liberty an arbitrary character.'[101]

In the US, risk assessment scoring mechanisms like the earlier mentioned COMPAS system are used at every stage of the criminal procedure. From assigning bond amounts to decisions about the freedom of defendants.[102] For instance, scores are produced based on a number of variables which is then shown to a judge who may decide to release a defendant or

[98] *See* Peter A Flach, *Machine Learning: The Art And Science Of Algorithms That Make Sense Of Data* (Cambridge University Press 2012).
[99] Lauren Kirchner, 'When Big Data Becomes Bad Data' (*ProPublica*, 2015) <https://www.propublica.org/article/when-big-data-becomes-bad-data> accessed 25 August 2020.
[100] Louise Seamster and Raphaël Charron-Chénier, 'Predatory Inclusion And Education Debt: Rethinking The Racial Wealth Gap' (2017) 4 Social Currents 199–207.
[101] OHCHR 'Fact Sheet No. 26, The Working Group on Arbitrary Detention'(May 2000, No. 26) <https://www.refworld.org/docid/479477440.html> accessed 25 August 2020.
[102] Julia Angwin and others, 'Machine Bias' (*ProPublica*, 2016) <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing> accessed 25 August 2020.

keep them in jail.[103] In that case, a score only assists the judge, even though it may influence its decision. A step further is the use of risk assessments, which may be erroneous, to measure the risk of re-offense.[104] This can play a role in the decision of the court regarding the punishment. To say that this is arbitrary detention may go a bit too far. It may, however, be in tension with the fair trial principles which could lead to arbitrariness.

In different European countries like the UK, Finland, The Netherlands, Germany and Spain, an instrument called Structured Assessment of Violence in Youth (SAVRY) is used. This system was originally designed for forensic criminology and it was developed for assessing the risk of violence in adolescents.[105] In Spain, these are used in intervention planning, such as clinical treatment plans or release and discharge decisions.[106] These last decisions could potentially lead to arbitrary detention. This, however, does not seem to be the case as the system seems to be fair.[107]

4.2.1 The case of the Uighurs

In China, the case of the Uighurs is one of the extreme examples of several human rights violations. Reportedly hundreds of thousands to more than a million of Uighurs are detained in a re-education camp, merely because they were labelled 'untrustworthy'.[108] This leads to violations of the freedom from arbitrary detention, freedom of movement, religion and the presumption of innocence. Most people detained in the camps were never charged with offences and have no ways of legally challenging their detentions.[109] The detainment of Uighurs is not a direct consequence of the social credit system. However, it can be linked to

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[103] Stephanie Wykstra, 'Philosopher's Corner: What Is "Fair"? Algorithms In Criminal Justice | Issues In Science And Technology' (*Issues in Science and Technology*, 2020) <https://issues.org/perspective-philosophers-corner-what-is-fair-algorithms-in-criminal-justice/> accessed 25 August 2020.
[104] Matt Henry, 'Risk Assessment: Explained' (*The Appeal*, 2019) <https://theappeal.org/risk-assessment-explained/> accessed 25 August 2020.
[105] Elena Ortega-Campos, Juan García-García and Flor Zaldívar-Basurto, 'The Predictive Validity Of The Structured Assessment Of Violence Risk In Youth For Young Spanish Offenders' (2017) 8 Frontiers in Psychology article 577.
[106] 'Automating Society Taking Stock Of Automated Decision-Making In The EU' (AW AlgorithmWatch gGmbH 2019) 122 <https://algorithmwatch.org/en/automating-society/> accessed 25 August 2020.
[107] 'Automating Society Taking Stock Of Automated Decision-Making In The EU' (AW AlgorithmWatch gGmbH 2019) 122 <https://algorithmwatch.org/en/automating-society/> accessed 25 August 2020.
[108] Rosie Perper, 'Uighur Activists Say China Is Running Nearly 500 Detention Camps And Prisons In Xinjiang Based On Satellite Images' (*Business Insider*, 2019) <https://www.businessinsider.nl/uighur-activists-satellite-images-china-500-camps-prisons-in-xinjiang-2019-11?international=true&r=US> accessed 20 November 2019 and 'China Has Turned Xinjiang Into A Police State Like No Other' (*The Economist*, 2018) <https://www.economist.com/briefing/2018/05/31/china-has-turned-xinjiang-into-a-police-state-like-no-other> accessed 20 November 2019.
[109] Lindsay Maizland, 'China'S Repression Of Uighurs In Xinjiang' (*Council on Foreign Relations*, 2020) <https://www.cfr.org/backgrounder/chinas-repression-uighurs-xinjiang> accessed 25 August 2020.

scoring. As with other applications of the social credit system, data is being collected by local authorities which is then used to rank people on 'trustworthiness'. The consequences of being ranked untrustworthy are far more extreme than in the regular social credit system. This is justified by China by classifying Uighurs as terrorists which threaten national security. This means that China uses scoring, besides in the civil context, in fighting alleged terrorism.

In the case of the Uighurs, the criteria that could point to untrustworthiness are: 15 to 55 years old; Uighur; unemployed; have religious knowledge; pray five times a day; have a passport; have visited one of 26 countries; have ever overstayed a visa; have family members in a foreign country; and home school their children. These criteria contain discriminatory elements. In Xinjiang, where a 'grid management system' is implemented, each city is divided into squares consisting of about 500 people. Every square has a police station that monitors the inhabitants, and which allows for tracking of the 'untrustworthy'.[110]

One possible way of challenging these practices is via foreign courts. In the UK for example, there is a cross-party movement which proposes that redress for cases of alleged genocide could be sought in UK courts instead of at the UN.[111] This could impact trade relations between the UK and China, which could put pressure on China.

4.3 Presumption of innocence

The third right that will be discussed is the presumption of innocence of Article 11 UDHR.[112] Earlier, we saw that arbitrariness can be established based on non-compliance with principles of fair trial. The presumption of innocence is generally seen as one of those principles. The use of algorithms in criminal matters may conflict with the presumption of innocence. For example, German anti-terrorist legislation after 9/11 introduced the 'sleeping terrorist', using algorithmic identification to identify potential terrorists who did not commit a criminal act yet.[113] This did not respect the presumption of innocence; individuals were labelled as

[110] 'China Has Turned Xinjiang Into A Police State Like No Other' (*The Economist*, 2018) <https://www.economist.com/briefing/2018/05/31/china-has-turned-xinjiang-into-a-police-state-like-no-other> accessed 20 November 2019.
[111] Patrick Wintour, 'Uighurs Could Be Allowed To Seek Genocide Ruling Against China In UK' (*the Guardian*, 2020) <https://www.theguardian.com/world/2020/sep/29/uk-courts-could-be-given-power-to-rule-that-uighurs-are-facing-genocide> accessed 13 October 2020.
[112] '1.Everyone charged with a penal offence has the right to be presumed innocent until proved guilty according to law in a public trial at which he has had all the guarantees necessary for his defence. 2. No one shall be held guilty of any penal offence on account of any act or omission which did not constitute a penal offence, under national or international law, at the time when it was committed. Nor shall a heavier penalty be imposed than the one that was applicable at the time the penal offence was committed.'
[113] Aleš Završnik, 'Algorithmic Justice: Algorithms And Big Data In Criminal Justice Settings' [2019] European Journal of Criminology 1-20.

potential terrorist even though the individual could not be linked to a certain criminal act or could be labelled as a suspect in 'normal' conditions. A relatable phenomenon can be found in the US, particularly in the cities of Baltimore and Philadelphia. These cities use Berk's algorithm to predict which convicted murder parolees need the most intense supervision.[114] This might not completely contravene the presumption of innocence but does let the algorithm decide who is more or less likely to conduct unwanted behaviour.

4.4 Freedom of movement

The freedom of movement stems from Article 13.[115] The power of a widely implemented network of scoring systems becomes visible in China where public and private systems work in harmony to form a new way of governance. This also has consequences for the freedom of movement. In China, this freedom could be limited when looking at some of the consequences of being labelled untrustworthy; it could lead to not being able to buy train or airplane tickets which would limit the possibilities of leaving or travelling through the country. Due to the earlier discussed joint punishment system, misconduct in one field could lead to punishment in the other. This can mean that a totally unrelated misconduct (e.g. not performing a contractual duty) could lead to not being able to get a train ticket. This unrelated punishment might further restrict the possibilities of people who find themselves in a fragile situation, and restrict their freedom of movement. For people that are deemed trustworthy, this may lead to a greater freedom of movement. These people get priority regarding administrative dealings which could potentially lead to them moving through the country more easily. A concrete scoring application in which the internal freedom of movement is at risk is the recently implemented Alipay Health Code. This app was employed by the Chinese government to track the spread of the Coronavirus.[116] When the app shows a red or yellow colour, this could limit the person's freedom as they could be excluded from using public transport or going to work. This would be easier to justify when a red colour would only be displayed when a person is tested positive for Corona. Now, however, it is unclear what data is used and in what situations a red colour is shown. This massively impacts the freedom of

[114] 'Guilty Until Proven Innocent? | Kenneth L. Baritz & Associates, P.C. | Philadelphia, Pennsylvania' (*Kenneth L. Baritz & Associates, P.C.*) <https://www.baritzlaw.com/articles/guilty-until-proven-innocent/> accessed 25 August 2020.
[115] 'Everyone has the right to freedom of movement and residence within the borders of each State. (2) Everyone has the right to leave any country, including his own, and to return to his country.'
[116] Paul Mozur, Raymond Zhong and Aaron Krolik, 'In Coronavirus Fight, China Gives Citizens A Color Code, With Red Flags' (*Nytimes.com*, 2020) <https://www.nytimes.com/2020/03/01/business/china-coronavirus-surveillance.html> accessed 25 August 2020.

movement of these citizens, even though they might not have contracted the Coronavirus. In order to even have a discussion about the consequences and workings of the app, more transparency is necessary. Furthermore, it seems to share the users' location to law enforcement. Therefore, it may be seen as China's next surveillance instrument. Cases on the restriction of the freedom of movement by scoring mechanisms were not found in the US and the EU. However, IBM did develop a system which would be able to detect terrorists between refugees.[117] It is unclear whether or not this system was implemented.

4.5 The freedom of religion

The freedom of religion can be found in article 18 UDHR.[118] Even though, in all three regions, information on religion of a person is forbidden to collect or subject to extra safeguards, it seems that this information is sometimes collected. Or, as seen in earlier sections, proxies like zip codes are used to derive religion or social background from. This freedom of religion is strongly related with freedom from discrimination. Not respecting the freedom from discrimination could indirectly lead to interference with the freedom of religion, as individuals might feel the need to not practice their religion, as there may be consequences for doing so. Such concrete cases cannot be found in the US and Europe. However, as stated earlier, religion can be taken into account by using a proxy. So religion could sometimes be taken into account and could have a positive or negative influence on scores.

4.6 The right to privacy

The right to privacy is encoded in article 12 UDHR: 'No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.' This is related to the right to data protection which will be discussed in the next section. It is outside the scope of this thesis to go into the different types of privacies. This part will only focus on the publication of information about individuals. Concrete cases of publication were not found about the US and Europe. In China, the government uses and promotes shaming to incentivise people's compliance, which seems to be effective means for

[117] < https://www.nextgov.com/cio-briefing/2016/01/refugee-or-terrorist-ibm-thinks-its-software-has-answer/125506/> accessed 26 August 2020.
[118] 'Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.'

social control in China.[119] An example of this is the showing of mugshots of people who are blacklisted in a cinema before a movie which harms their honour and reputation.[120] This is an intrusion to the privacy of those who are blacklisted. This encouragement of publication could be anchored in law to increase people's awareness regarding the social credit system and to increase compliance. It can scare people into compliance with government-installed norms.

4.7 Right to data protection: data ownership and information rights

The right to data ownership and information could be seen as giving substance to the right to data protection. Adequate protection of these rights means that there is a higher chance that the other rights discussed in this chapter are protected as well. The extent to which these rights are protected by legislation in the US and Europe will be discussed in this section. The Chinese legislation will not be discussed, as China does not have the rule of law.

First of all, the US laws provide the right to access the credit report.[121] It does not, however, provide full insights in what data is used. Furthermore, this only counts for the limited scope of the laws, which is credit scoring. Alternative scoring mechanisms are only sometimes regulated by some state-level privacy laws. Leaving aside the question whether or not this information is sufficient to respect the right to information and data ownership, we can conclude that the lack of regulation which leaves alternative scoring unregulated could be seen as an issue. Without the knowledge of the existence of scoring systems in concrete situations, the rights to information and data protection cannot be respected. The same goes for control, the credit related laws do provide the right to dispute the completeness or accuracy, request corrections, and, when resolutions are not achieved, annotate their records.[122] These rights can only be exercised with the information provided by the credit agencies, which will not always provide full insights. These control rights too have a limited scope and leave alternative credit scoring unregulated. The regulations do not provide the subject with a possibility to stop the processing or to restrict it. It can only request additions or corrections. This means that data ownership is limited.

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[119] Olwen Bedford and Kwang-Kuo Hwang, 'Guilt And Shame In Chinese Culture: A Cross-Cultural Framework From The Perspective Of Morality And Identity' (2003) 33 Journal for the Theory of Social Behaviour 127–144.
[120] Manya Koetse, 'Zhejiang Movie Theatre Displays Blacklisted Individuals In Avengers Movie Preview' (*Whatsonweibo.com*, 2019) <https://www.whatsonweibo.com/zhejiang-movie-theatre-displays-blacklisted-individuals-in-avengers-movie-preview/> accessed 25 August 2020.
[121] 15 U.S.C. § 1681 g(f). Information about the recent credit score, range of possible scores, the key factors that adversely affected the credit score, the date of creation and the name of the entity that provided the credit score.
[122] 15 U.S.C. § 1681g(a)(1), and § 1681i.

Secondly, the EU regulation does seem to be slightly friendlier towards the human rights which are discussed in this section and does oblige the data controller to give information.[123] Furthermore, the regulation requires the information to be easy to understand which makes sure this disclosure obligation is not just a formality but also allows the subject to understand what is done with its data.[124] This is friendly towards the right to information of the subject; not just providing the information, but also making sure it is understandable. Regarding the control, subjects can rectify inaccurate or incomplete information,[125] oblige erasure in certain situations,[126] restrict the processing,[127] receive their data in a manner suitable for portability[128] and have the right to object.[129] Overall, the regulation has more extensive control rights than the regulations in other regions. Regarding this, the regulation is quite friendly towards the data ownership right even though the subject cannot completely control what happens with the data. However, it must be noted that, as discussed in chapter 3, these control and information rights are limited when it regards inferences. So, subjects have control and information rights for data that is being collected for the purpose of using it in a scoring mechanism. However, subject can only enjoy a fraction of these rights regarding the inferences that follow from this scoring mechanism. Even though the provisions of this regulation have a wider scope than the discussed US provisions, it still is limited as it does not apply to non-personal data and only limitedly to inferred data. It is important to note that data 'likely to have an impact on a certain person's rights and interests' is also considered personal data under the GDPR.[130]

Furthermore, the SyRi system was challenged before the Dutch national court based on human rights violations.[131] The SyRi system was used to detect social welfare fraud. The court found that the legal basis for the system contained (insufficient) safeguards which meant that the system was insufficiently transparent and verifiable. This led to the decision that the regulation was non-binding. The use of the system was not, on itself, found to be illegal. The court did state that it found some choices the legislator made in the articles (providing the

[123] Article 13 and 14 GDPR. Information about the identity of the controller, purposes of processing and legal basis, period of storage, the rights of the data subject and the existence of ADM.
[124] Article 12 GDPR.
[125] Article 16 GDPR.
[126] Article 17 GDPR.
[127] Article 18 GDPR.
[128] Article 20 GDPR.
[129] Article 21 GDPR.
[130] Article 29 Data Protection Working Party, *Opinion 4/2007 on the Concept of Personal Data* (2007) <https://ec.europa.eu/justice/article-29/documentation/opinion-recommendation/files/2007/wp136_en.pdf> accessed 25 August 2020.
[131] District court of The Hague C-09-550982-HA ZA 18-388 (2020).

legal basis) reconcilable with article 8 ECHR. This case shows that safeguards are important to sufficiently protect the right to data protection.

4.8 Personal autonomy

Personal autonomy may be impacted by scoring systems and the accompanied collection of data. This can happen in multiple ways. The first one is not scoring specific but is relevant for data collection in general: the chilling effect. Behaviour of people can be impacted by the mere knowledge or suspicion that personal data is being collected.[132] There is evidence for this effect. In 2013, after the Snowden revelations, a 19,5% drop on terrorism-related Wikipedia article clicks could be seen.[133] When people know that their data is being collected and this data could impact outcomes of scores which can impact their lives significantly, they might feel the need to alter their behaviour. The issue of the use of unrelated data in decisions, as discussed in chapter 2, may increase the impact of the chilling effect. People cannot estimate what data might be used in decisions, and the collected data becomes more important and impactful to the subject, as the data may be used in a wide range of decisions. This may lead to people reducing their (online) activities.

Secondly, and more specifically related to scoring, conformism can occur. This means that people will try to act according to the norms installed by the scoring systems to obtain benefits and create opportunities.[134] The chances of this happening in China are big, where the social credit system will be widely implemented and will provide benefits to people who show desired behaviour. This can also partly be explained by the shaming culture, which the government uses and promotes to incentivise people's compliance, which seems to be effective means for social control in China.[135] However, the chilling effect and conformism can also appear in the US and Europe. Especially when considering that many scores are used for multiple purposes, like the credit scores in the US which are used for 'auto insurance assessments, cell phone contracts, residential rentals and even hiring decisions'.[136] This extended use adds more importance to having a good credit score which might lead to a more

[132] Claude Castelluccia and Daniel Le Métayer, 'Understanding Algorithmic Decision-Making: Opportunities And Challenges' (EPRS | European Parliamentary Research Service 2019) 12.
[133] Penny Jonathon, 'Chilling effects: online surveillance and Wikipedia use' (2016) Berkeley Technology Law Journal 31 1 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2769645 accessed 25 August 2020.
[134] Claude Castelluccia and Daniel Le Métayer, 'Understanding Algorithmic Decision-Making: Opportunities And Challenges' (EPRS | European Parliamentary Research Service 2019) 13.
[135] Olwen Bedford and Kwang-Kuo Hwang, 'Guilt And Shame In Chinese Culture: A Cross-Cultural Framework From The Perspective Of Morality And Identity' (2003) 33 Journal for the Theory of Social Behaviour 127–144.
[136] Akos Rona-Tas, 'The Off-Label Use of Consumer Credit Ratings' (2017) 42 Historical Social Research 52-53.

intense chilling effect and conformism. Furthermore, the chilling effect may especially be experienced because of the many data-points that are used in scoring mechanisms. For instance: UK-Based Hello Soda who use scoring based on social media language from which personality attributes can be identified to determine creditworthiness[137] or Tala, a firm based in the US claims to utilise up to 10,000 data points including social media and smartphone to create a credit score.[138] People will (partly) lose their autonomy this way, as they know that their behaviour can directly lead to advantages and disadvantages and that certain behaviour is incentivised. But as we have seen before, there often is a lack of information or even knowledge about the existence of scoring mechanisms, so this conformism, at this point, is not always present. In the near future, as many new scoring initiatives arise and the awareness of people becomes more widespread, conformism could be observed more frequently.

4.9 Conclusion

To conclude, we saw that many human rights are (threatened to be) violated in several scoring applications. Discrimination cannot effectively be prevented by only having lists of categories of data that cannot be processed. Also, we saw that there are several cases in the US, EU and China in which the freedom from arbitrary detention potentially is violated, with the case of the Uighurs being to most extreme. The freedom of movement and religion are also violated, especially in China with the social credit system and the Coronavirus app. Furthermore, the right to privacy, data protection and personal autonomy were discussed. Following these discussions, the next chapter will discuss challenges against scoring systems and will discuss what measures for improvement might be desirable.

Chapter 5 – Improvements to the legal frameworks

[137] *See* <https://hellosoda.com/our-products/profileid/> accessed 25 August 2020.
[138] Catherine Cheney, 'How Alternative Credit Scoring Is Transforming Lending In The Developing World' (*Devex*, 2016) <https://www.devex.com/news/how-alternative-credit-scoring-is-transforming-lending-in-the-developing-world-88487> accessed 25 August 2020.

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The last chapter established that legislation and many scoring practices do not respect human rights in the United States, Europe and China. This chapter will discuss what improvements can be made to the existing legal frameworks. In order to do this, it will continue on some of the findings of earlier chapters, analyse the regulations and challenges towards scoring systems and then discuss measures to improve the regulatory frameworks. Firstly, this chapter highlights the ways that scoring systems and legislation in the US and Europe are challenged by individuals, NGO's and authorities. It will then explain the situation in China as an extreme outlier. After that, the improvements to the frameworks in the US and EU will be discussed. For China, no improvements will be discussed as it does not have the rule of law as the West has it.

5.1 Challenges in the US

This section will firstly discuss the challenges against scoring systems used by public bodies, followed by a discussion of challenges against scoring systems used by private bodies in the US. After that, several comments will be made. In the past years, with the first one appearing in 2014 and several more following in 2017 and 2018, cases about algorithmic decision making have been brought to court in the US.[139] Automated decision systems have been around for several decades,[140] however, recently, they have been employed in ways that have more effect on people. In the past, these systems were simpler and the data used was more connected to the goal of the system. Now, with more complex and intrusive systems, these systems are more difficult to understand and have bigger impacts. This can explain the rise of challenges in the last decade.

First of all, most challenges against scoring systems were aimed at scoring systems used by public bodies. These range from scoring systems that determine what amount of government benefits individuals would receive,[141] scoring systems that evaluate the performance of public employees[142] to scoring systems in the criminal sentencing process, [143]

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[139] Litigating Algorithms 2018 US Report: Challenging Government use of Algorithmic Decision Systems' (AI Now Institute 2018) < https://ainowinstitute.org/litigatingalgorithms.pdf> accessed 26 August 2020, Rashida Richardson, Jason Schultz and Vincent Southerland, 'Litigating Algorithms 2019 US Report: New Challenges To Government Use Of Algorithmic Decision Systems' (AI Now Institute 2019) <https://ainowinstitute.org/litigatingalgorithms-2019-us.html> accessed 26 August 2020.

[140] Thomas Davenport and Jeanne Harris, 'Automated Decision Making Comes of Age' (2005) 46 MIT Sloan Management Review 83.

[141] C.S. et al v. Saiki et al US District Court for the District of Oregon, K.W. ex rel. D.W. v. Armstrong, 298 F.R.D. 479 (D. Idaho 2014), Bauserman v. Unemployment Ins. Agency, 503 Mich. 169 (2019).

[142] Houston Federation of Teachers v. Houston Independent School District, 51 F. Supp. 3d 1168 (S.D. Tex. 2017).

[143] Ewert *v.* Canada, 2018 SCC 30 2 S.C.R. 165 (2018).

like the earlier mentioned SAVRY system that is used to assess the risk of violence in adolescents. When taking a look at what the (successful) claims are based on, we see that many are due process claims based on the 14th amendment. The 14th amendment grants citizenship to all persons born or naturalised in the US, forbids states from denying any person 'life, liberty or property, without due process of law' and grants all citizens 'equal protection of the laws'.

Besides the challenges made to public scoring, also private companies' scoring systems were challenged. A ground for challenging these systems is the earlier mentioned section 5 of the Federal Trade Commission Act.[144] An example is EPIC, which has issued a complaint and request for investigation, injunction, and other relief based on a section 5 violation by HireVue, which was discussed in chapter 2. Another example is the settlement between Countrywide Financial Corporation and 200,000 African-American and Hispanic borrowers. The corporation engaged in discrimination which led to borrowers having to pay higher fees and being placed into subprime loans.[145]

These challenges were based on very general laws; the Constitution and a general consumer law rule. This can be explained because of the lack of specific scoring regulations for alternative scoring. The specific scoring regulations that exist are discussed in chapter 2, they only regulate credit scoring. Besides, the 14th amendment has only been useful in public-body scoring applications. For citizens in general, there are no protections against scoring by private bodies because the data protection framework, as is discussed in chapter 2, is underdeveloped which means that many companies can collect data unhindered. One reason for the underdevelopment of the data protection framework could be the fact that the credit scoring framework (and other specific laws in other sectors) ought to protect the consumer, and provide some data protection rights to consumers. Furthermore, it was seen that many of the challenges only appeared after changes of the scoring system.[146] This means that only after 'differences' in outcomes were noticed between the system before and after the change, the issues were spotted.

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[144] This act provides the FTC the authority to combat unfair commercial practices that substantially harms consumers, or threatens to substantially harm consumers, which consumers cannot reasonably avoid, and where the harm outweighs the benefits.

[145] 'DOJ/Countrywide Settlement Information' (*Justice.gov*, 2015) <https://www.justice.gov/usao-cdca/dojcountrywide-settlement-information> accessed 26 August 2020.

[146] Litigating Algorithms 2018 US Report: Challenging Government use of Algorithmic Decision Systems' (AI Now Institute 2018) < https://ainowinstitute.org/litigatingalgorithms.pdf> accessed 26 August 2020, Rashida Richardson, Jason Schultz and Vincent Southerland, 'Litigating Algorithms 2019 US Report: New Challenges To Government Use Of Algorithmic Decision Systems' (AI Now Institute 2019) <https://ainowinstitute.org/litigatingalgorithms-2019-us.html> accessed 26 August 2020.

5.2 Challenging scoring systems in the EU

Challenges against scoring systems used by public and private bodies in the EU will be discussed in this section, followed by several comments. In the EU, challenges against the use of scoring systems or legislation regarding scoring systems have been based on the GDPR (private sector) and on the ECHR (public sector).

Until recently, scoring systems used by public bodies were never challenged based on human rights grounds. The SyRi system, which was discussed in the last chapter, is the first case in which a human rights infringement was found. This, as stated by the UN special rapporteur on extreme poverty and human rights, Philip Alston, was "a clear victory for all those who are justifiably concerned about the serious threats digital welfare systems pose for human rights."[147] A human rights challenge could have been expected, as the EU has a rich history of human rights-jurisprudence. However, the importance of article 8 ECHR for future challenges of scoring must be nuanced as it only regulates vertical relationships. It thus cannot be used as a basis for challenging private companies' scoring.

Besides the ECHR ground which allows scoring from public bodies to be limited, the GDPR influences scoring practices by private bodies. The GDPR is a general framework which means that it is applicable to a broad range of processes, and that challenging some systems on this basis is possible. Opposed to the US framework, it protects the rights of all people whose data is processed, not only consumers, and provides a challenging possibility that is not seen in the US. In chapter 3, we saw that Data Protection Authorities do impose fines on scoring practices by businesses which do not comply with GDPR norms. As the regulation is a general regulation which is not specifically aimed at scoring, there are some flaws in the regulation of scoring practices. The first one is that it has a limited scope due to the requirement of data pertaining to an individual. This means that groups are outside its scope. Also, we saw that that inferred data, like scores, only have limited protection under the GDPR, less than 'normal' personal data has. Furthermore, we saw that lists of categories of data that may not be processed are not effective at preventing discrimination, due to use of proxies. Besides, the nature of algorithms is to find trends in data, this means that forbidden categories alone are not enough to prevent discrimination. These observations mean that,

[147] 'OHCHR | Landmark Ruling By Dutch Court Stops Government Attempts To Spy On The Poor – UN Expert' (*Ohchr.org*, 2020) <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25522&LangID=E> accessed 26 August 2020.

while the GDPR does attempt to protect data subjects from scoring by private bodies, it only does so limitedly.

5.3 Challenging scoring systems in China

Before making suggestions as to how to improve the scoring-frameworks, it is useful to look at the Chinese systems again to see how an extreme example of scoring systems may impact human rights. This section will discuss the lack of rule of law in China as the West has, the missing possibility of challenging scoring systems and the consequences thereof. In China, there are several obstacles to enforcing human rights, and challenging scoring systems.

The first obstacle that will be discussed is the fact that challenging systems that fall within the rules and jurisdiction of the administration means that those rules are not enforced by the court, but by the ministry themselves.[148] There is no independent judiciary, and judicial review of government infringements of individual rights guaranteed by the Chinese Constitution is absent.[149] This means that enforcement of rules does not take place by an independent party, which increases the disbalance between the government and the individual. The government can interpret rules as they see fit, potentially ignoring the Chinese Constitution or Human Rights. Also, ineffective enforcement and prolonged procedures are common, and there are no effective measures to take to change the passive and indifferent attitude of the Administrative organisations.[150]

The second obstacle is that, even if the use of scoring systems could be taken to court, China's legal system does not adhere to the precedent principle. Furthermore, only in the last 10 years, China started implemented Guiding Cases.[151] These cases are treated as legal precedents by judges. However, there is only a limited amount of these cases. This means that only a limited amount of court rulings constitute change of rules which leaves rules that lead to potential infringement of human rights intact. The fact that judicial precedent is not completely accepted in China results in a lack of legal certainty, as the rules can be interpreted differently and previous court rulings do not offer any legal value to others. This

[148] Su Lin Han, 'Administrative Enforcement In China - Yale Law School' (*Law.yale.edu*, 2017) <https://law.yale.edu/china-center/resources/administrative-enforcement-china> accessed 26 August 2020.
[149] Su Lin Han, 'Administrative Enforcement In China - Yale Law School' (*Law.yale.edu*, 2017) <https://law.yale.edu/china-center/resources/administrative-enforcement-china> accessed 26 August 2020.
[150] Kai Gao, 'Discussion On The Effectiveness Of Chinese Administrative Relief System: A Status Analysis And Rational Proposal' (Master Thesis, University of Oslo 2013) 39.
[151] Runhua Wang, 'Decoding Judicial Reasoning in China: A Comparative Empirical Analysis of Guiding Cases' (2020) 68 Clev. St. L. Rev. 521-580.

lack of legal certainty has an effect on the personal autonomy, as having some form of legal certainty is essential to individual autonomy.[152]

After having discussed these obstacles, it is clear that Chinese government-installed regulations can hardly be challenged. This has led to the implementation of systems of scoring and technology on another level. The Chinese government increasingly uses technology to protect China's political system, in responding to social unrest and the prevention of potentially destabilizing risks,[153] which has led to an increasingly powerful security state.[154] These technological measures are thus not taken in the interest of the citizen. Being able to challenge systems or legislation is important to respect citizen's rights and, partly, restore the balance between the citizen and the government. The Chinese social credit system is to become a means of control of the Chinese government, and is one of the technology-tools to protect China's political system.[155] This could be seen as an issue in a country that is a one-party state. The system allows, and promotes, the cross-sector sharing of data and implementation of scoring. This leads to situations in which citizens' rights are sacrificed in order to maintain stability, and citizens are not able to make their voice heard and make changes. As the system is only in its pilot-stage, it is not yet one nation-level coordinated system. However, this could still happen if the government decides that the pilots are a success.

Some of the consequences of scoring in China have been discussed in the last chapter, which discussed the restrictions on the freedom of movement by the Coronavirus application, which involves scoring. Also, China started using scoring outside the civil sector in the context of anti-terrorism. This can be seen in the case of the Uighurs, discussed in the last chapter. This extreme example shows that scoring applications can lead to severe violations of human rights on a large scale.

Despite the threats these systems pose to individual's rights, the social credit system seems to have a high rate of public acceptance.[156] Especially the wealthier, more educated

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[152] Andreas von Arnauld, *Rechtssichterheit: Perspektivische Annäaherungen An Eine Idée Directrice Des Rechts* (Mohr Siebeck 2006).
[153] Samantha Hoffman 'Programming China: The Communist Party's Autonomic Approach to Managing State Security' (PhD Thesis, University of Nottingham 2017); Qiang Wu 'Urban Grid Management and Police State in China: A Brief Overview' (2013) < https://chinachange.org/2013/08/08/the-urban-grid-management-and-police-state-in-china-a-brief-overview> accessed 25 August 2020.
[154] Yuhua Wang and Carl Minzner, 'The Rise Of The Chinese Security State' (2015) 222 The China Quarterly 339-359.
[155] *See* Yuhua Wang and Carl Minzner, 'The Rise Of The Chinese Security State' (2015) 222 The China Quarterly 339-359.
[156] Genia Kostka, 'China's Social Credit Systems And Public Opinion: Explaining High Levels Of Approval' (2018) SSRN Electronic Journal.

citizens seem to support the systems. This seems to be the case because these people potentially have the most advantages of a reputation-based system and perceive the system through other frames than data privacy.[157]

5.4 Analysis of the legal frameworks and challenges

In order to discuss improvements to the frameworks, it is necessary to dive deeper into the regulations and challenges, and to discuss their backgrounds. In order to do this, we have to make a distinction between scoring by public bodies and private bodies.

5.4.1 Public bodies

First of all, we can conclude that scoring systems by public bodies are challenged based on the constitution or human rights in, respectively, the US and the EU. In the US, we saw that, mainly, the 14th amendment has been useful in the case of scoring by public bodies. For the EU, these are fundamental rights, with the SyRi case being the first of them, because the ECHR protects fundamental rights of citizens against government interferences. It is interesting to note that the challenges in the US were based on the constitution because they provide 'due process' rights, these were mainly used to dismantle the scoring algorithm (protected under trade secrecy) and reach transparency. Opposed to these challenges in the US, SyRi in the EU was found to be infringing the right to private life, which on itself does not provide any kind of process rights. The court found that the system did not strike a right balance between a societal interest and an individual's right, which is necessary to warrant a sufficiently justified violation of private life. Even though the scopes of the legal bases are different, a similar element was involved; transparency. Where in the US cases, this was the main goal as the due process rights could prevent the trade secrecy from keeping the algorithm secret, in the EU, transparency was one of the conditions of protecting the right to private life which was not met. This points towards a difference in the regulations. The EU specifically protects individuals' rights in the ECHR; limitations of the right to private life in article 8 by governments are only allowed if it is necessary in a democratic society, meaning that it should be necessary, proportionate and subsidiary in relation to the intended purpose. This means that in order for scoring by governments to be allowed, these requirements are to be met, as scoring will often fall within the scope of the right to private life because of the

[157] Genia Kostka, 'China's Social Credit Systems And Public Opinion: Explaining High Levels Of Approval' (2018) SSRN Electronic Journal 23.

broad interpretation of article 8. In the US, however, the 14th amendment right includes a due process right as well as the right to privacy in the US.[158] This right to privacy is not as broad as the European right to private life, and challenges are not based on this. The 14th amendment is often used because of the due process right that is granted in the amendment in order to increase transparency of the algorithm.

We can conclude that there is a stronger basis for protection under EU law against privacy violations, and thus the use of scoring systems by public bodies because the starting point is that scoring by public bodies is not allowed. Because there are no explicit conditions included in the law when the right to privacy may be violated by the government in the US, the courts cannot just 'apply' the law in a case. This means that the court has more room for discretion, and the protection of the right is in the hands of the court. This results in an important role of courts against privacy issues. This important role was proved after the Edward Snowden regulations, which gave the public knowledge about the practices of the US (and UK) government, which violated the public's privacy by mass surveillance. The revelations provided the public evidence that was used in courts to declare the PRISM system illegal.

5.4.2 Private bodies

After having discussed the challenges and frameworks regarding public-body scoring, it is important to look at private-body scoring. Important to note is that no challenges brought before courts in the EU and US against private-body scoring could be found. Compliance with regulations was enforced by supervisory authorities in both regions. In this chapter, and chapter 3, we discussed that the scoring framework in the US consists of the credit scoring framework (which will not be included in the discussion due to its limited scope) and potentially section 5 of the FTCA. The underdeveloped data protection framework offers no substantial protection. When we compare this with the EU with its data protection framework, we can make several observations.

The first difference is the nature of the legislations: the US framework, as a framework focussing on consumers, protects consumers from unfair practices, which comes down to protection of financial interests and prevention of deceptive practices. This is different from the EU data protection framework which protects the right to privacy, as well as the right to data protection and, in the process, several other fundamental rights of all citizens. This

[158] Alongside the first and the fourth amendment.

difference is also noticeable when looking at the challenges: challenging scoring on the basis of data protection law is different from challenging based on consumer protection law. Challenging based on data protection could result in a scoring system being found illegal even though the outcome of the scoring system is not seen as unfair. There, the emphasis is on the data processing activities, and less on the outcome. However, with consumer law, you could say that the outcome of the scoring system is the most important component when determining whether or not the system is compliant with the law as the outcome decides whether or not the consumer is disadvantaged, and not the process of collecting data.

The second difference is who they protect. The US framework mainly protects consumer interest where the EU data protection framework protects all natural persons whose data is processed. As discussed, this does not include groups or data that is not traceable to a natural person. The GDPR does not adequately and sufficiently protect individual's rights against the risks of scoring systems as has been discussed earlier in this chapter. With the US, there is a bigger hole in the framework as there is not even a consumer data protection framework, and the unfair trade practices provision only has a limited scope. While there are ways of challenging public-body scoring, the private sector has hardly any restrictions regarding data collection and use. This is remarkable because many companies have gotten more powerful in the last decades and on some terrains may de facto have more power to influence behaviour than governments. This means that an industry which has the biggest and most powerful companies in the world (Google, Facebook etc.) is able to implement scoring systems, but even more relevant, can unlimitedly collect and sell data which other companies can use in their scoring applications.

Both frameworks have in common that discrimination is not prevented completely, as lists of forbidden data categories is not sufficient to prevent discrimination. However, the difference in the frameworks is that unfair trade practices could potentially be a ground to challenge a scoring system that has a discriminatory effect when this effect caused harm to a consumer while this is not the case with a data protection framework. So, where it is hard to challenge a scoring system in the EU when GDPR norms are fulfilled and there still is a discriminatory outcome (for example, by using proxies), the unfair trade practice ground could still provide a solution for challenging in the US.

5.4.3 General differences

We continue by taking a look at some general differences between the regulatory approaches. When we look at what is at the core of the challenges and regulations, we see that the US is

more about tackling unfairness in cases of scoring by private bodies, and the issues of due process and lack of notice when using scoring applications by public bodies. The challenges are not concentrated at the question whether scoring is allowed, they are focussed on formal requirements. Within the EU, the starting point is that scoring by public bodies is not allowed, due to the interference with private life, article 8 of the ECHR. An exception is only allowed in certain circumstances, as discussed before. This, by default, provides more protection as there is a high threshold for when scoring can be allowed. With scoring by private bodies, the GDPR is in place to protect the right to protection of personal data, which is viewed as a modern and active right putting in place a system of checks and balances to protect individuals whenever their personal data are processed.[159] So, the EU framework has its focus on the protection of fundamental rights, opposed to the US in which mainly procedural rights and unfairness are at the core of legislation and disputes. This can be seen when we look at the aims of the regulations we have discussed in chapter 3: the protection of consumers from unfair trade practices (FTCA), the promotion of accuracy, fairness, and privacy of consumer information in the credit reporting business (FCRA), prevention of discrimination in the credit-business (ECOA). In other words and rather simplified: for scoring in the EU to be legal, an explicit justification is necessary in the form of an exception (public body scoring) or an aim for processing data including several safeguards and rights for subjects (private body scoring). For the US, scoring is allowed but procedural rights and fairness can reveal information about scoring systems. Furthermore, the US legislative system has its focus on more specific instruments, which regulate certain industries rather than protecting fundamental rights. This is noticeable with the credit-specific laws discussed in chapter 3, or the privacy related laws being scattered across sector-specific regulations. This is relevant as measures for improvement must fit in the legal system and its background. Besides, when taking a look at the challenges, we see that in the US, there are challenges towards public-body scoring, while cases (by courts or supervisory authorities) against private bodies could not be found. This contributes to the image that the main perceived threats against individual's rights in the US, opposed to the EU, comes from government interference, in line with the Snowden revelations. In the EU, we have seen several actions by DPA's and NGO's that wanted to open up private systems (like OpenSchufa), and only one case against public-body scoring. Companies are getting increasingly more powerful and while it is important to

[159] EU Agency for Fundamental Rights, the Council of Europe, European Data Protection Supervisor, *Handbook On European Data Protection Law* (Publications Office of the European Union 2018).

maintain a balance between the government and the individual, the same could be said for the power balance between certain companies and individuals. In this light, it is important to mention the 'Ethics Guidelines For Trustworthy AI[160] again, as it was mostly drawn up by industry representatives. The guidelines are the best in the world on the topic of Ethics and AI, according to a member of the group that drew up the guidelines. However, the member furthermore states that it is a 'marketing narrative invented by industry' to 'buy time' in order to 'delay effective regulation and policy-making'.[161] This means that even though the EU are leaders in regulating technology and protecting individual's rights, the regulations are not where they need to be and the industry tries to counteract the regulatory development.

5.5 Improvements to the frameworks

After this discussion, we can look at what measures could be taken to improve protection against scoring systems. We came to the conclusion that the US and the EU have laws and histories of challenging that differ greatly in content, and differ fundamentally. This means that it is hard to formulate one normative approach to improve the regulatory frameworks for scoring in both regions. However, both regions need improvements to its private-body scoring framework. For the EU, with its focus on the protection on human rights, the instruments discussed protect the right to private life and the right to data protection. By improving protection of these rights, protection of other rights, like the right to personal autonomy and the right to freedom from discrimination, is also improved. The improvements for the EU will be focussed on scoring by private bodies, as the ECHR already provides a prohibition with an explicit exception to the right to private life in article 8(2) ECHR.

For the EU, it would seem obvious that the alterations discussed below would be implemented in the GPDR, because they fit in its scope. Before introducing new rights, an important change to be made could be the extension of the current rights and safeguards for 'regular data', to inferred data like scoring outcomes. This would ensure that the current array of rights and safeguards are also applicable to data that is 'made' by companies, on which decisions are often based.

One of the new additions could be an opt-out right for scoring in the GDPR in situations in which decisions may have a legal effect, which could be an extended version of

[160] High-Level Expert Group on Artificial Intelligence set up by the European Commission, 'Ethics Guidelines For Trustworthy AI' (2019).
[161] 'Ethics Washing Made In Europe' (*Tagesspiegel.de*, 2019) <https://www.tagesspiegel.de/politik/eu-guidelines-ethics-washing-made-in-europe/24195496.html> accessed 26 October 2020.

article 22 GDPR. This would decrease the occurrence of mistakes in inferences. After the exercise of this right, a manual, human decision must be made, not based on a score. As a consequence, it becomes harder to incorporate and value many data points which could lead to a reduction of data points used. This would also decrease the risk of discrimination. However, discrimination cannot be completely ruled out because human decision-making may also result in discrimination. This is one of the limitations of the solution and is an issue which is broader than only scoring systems. The difference of discrimination in scoring systems versus discrimination by human decision-making is that a scoring system can lead to more systematic discrimination on a larger scale. Furthermore, as we saw in chapter 4, many human rights can be negatively impacted as a consequence of the use of scoring. With an opt-out possibility, these violations can be limited. This right can only be effective if a notification is provided to the subject that a decision will be taken based on a scoring mechanism after which the subject could opt-out. Also, it can be argued that a right to opt-out already exists in commercial practices by not using the service at all. However, this would mean that, as the use of scoring increases, the options for customers that do not want to be scored will decrease and in some cases may become non-existent. It also means that customers may use services only at the cost of violation of human rights. This might be detrimental for minorities (who already suffer the most from the discrimination issues of scoring), who may be prevented from using many services. Implementing this opt-out right in a law would ensure equal protection and equal opportunities of using services for all.

Another option would be a right which grants a data subject the possibility of challenging data, assumptions (inferences) or scoring outcomes, before a decision is taken. This would mean that scoring can still happen, but the risk of mistakes in data or discrimination could be reduced. The chilling effect could also be reduced this way, as people know that they can contest inferences. This right could entail the possibility of subjects to review the outcomes of a scoring mechanism after which counter-evidence is possible. This would require an explanation of the way the outcome is reached. This means that information about the data used, the algorithm and the outcome must be communicated to the subject in an understandable way. So besides a right to challenge, this would also include a substantial information right. In some cases, this would mean that decisions cannot be taken quickly or on a large scale because it could occur that many people dispute inferences or outcomes. However, in my opinion, this is the burden that companies that want to use big data analytics tools at the risk of individuals' rights need to bear. This right to contest would increase the

protection of inferred data, as currently, inferred data enjoys less protection under the GDPR than ‘regular data’.

For the US, as discussed, there are many sector-specific laws. One could argue that a federal data protection law could be necessary. This would provide a layer of protection for citizens and increase transparency of the scoring practice towards the subject. This might lead to discovery of more issues as the systems have to open up. As mentioned in chapter 3, some states have started to implement data protection regulations, so it is possible that this will happen. However, we saw that the main focus of the US has been to prevent unfair practices, and not protect the right to privacy. The few data protection rights that are present, have also been scattered across many sector-specific laws, which means that there is no general application of privacy laws towards all data subjects. Also, as discussed in the EU part, data protection regulations as we see in the EU are not sufficient. A data protection regulation would need to contain one of the first two approaches which are discussed in the EU paragraph in order to provide better protection against scoring practices. However, the implementation of a data protection framework is desirable due to the power of some big companies, as discussed before.

As just discussed, while privacy is mentioned in one of them, it is clear that ensuring fairness is the main focus of the regulations. It would be possible to follow the line in which the challenges have arisen in the US, which means that there won’t be a focus on preventing scoring from happening in the form of an opt-out option, but ensuring sufficient safeguards when using scoring and preventing unfair outcomes from scoring practices by private and public bodies. One of the options could be to implement a right to challenge and provide counter-evidence as discussed in the EU section. This would not completely prevent scoring from happening, but could help in limiting unfair scoring practices. In the US, it is likely that additional measures would result in additions to existing sector-specific laws, due to US’s tendency to create sector-specific laws. This would mean there will not be one general regulation that protects all citizens subject to scoring, but that scoring provisions will be implemented in existing acts. This can be particularly important for credit-scoring regulations, due to the fact that credit scores are used in many types of decisions, as discussed in chapter 2. However, in order to ensure protection for all citizens, a general law, or scoring specific law that applies to all scoring mechanisms, would be desirable.

Concluding, the proposed solutions may prevent the issue of the use of ‘unrelated data’, as discussed in chapter 2 and 4. An opt-out right means that less data can be used/analysed which reduces the chances of unrelated data being used. A right to challenge

data, inferences or scoring outcomes would allow the subject to challenge the use of data. This decreases the autonomy issues: the chilling effect and conformism. People would know that they can opt-out from scoring or contest inferences. Both solutions also take into account the earlier discussed discriminatory nature of algorithms. The solutions both cover discriminatory categories (or proxies) and discriminatory algorithms. A right to opt-out leads to a human decisions based on less data-points and no (discriminatory) algorithm. A right to challenge can prevent discriminatory data from being used or the discriminatory nature of the algorithm which results in a discriminatory outcome from happening. A limitation of the right to contest is that it might be possible that the subject cannot sufficiently prove the discriminatory outcome/data. Because the user of the scoring system controls the process and the data, the user has all the information. A solution could be that the user of the scoring system has to prove that it is not discriminatory when the subject suspects that it is. However, it is important to note that discrimination cannot be completely ruled out because human decision-making may also result in discrimination. The difference of discrimination in scoring systems versus discrimination by human decision-making is that a scoring system can lead to more systematic discrimination on a larger scale. Furthermore, the solutions both decrease the occurrence of risk of mistakes in data or inferences happening.

Chapter 6 - Conclusion

At the start of this thesis, we identified that scoring systems are often analysed from a privacy or data protection perspective, but a broader, systematic analysis was lacking. Scoring systems are globally increasingly used and have an increasing influence on many decisions, which results in other human rights being often at risk. These risks are not sufficiently dealt with by current legislation. In order to make recommendations for improvements, a human rights analysis may point towards areas that need to be addressed. Furthermore, an overview on how systems are challenged was helpful in exploring what routes can be taken to impact the future of scoring systems. This, together with the background and history of the current regulatory approaches, was necessary to formulate improvements to the regulations. In order to address the problem, the following research question was posed:

What human rights issues can be identified when comparing regulation regarding scoring and scoring systems in China, Europe and the United States using a human rights framework and what are possible regulatory responses?

The research shows that the current legal frameworks that impact scoring practices differ a lot in the regions, and that different histories lead to different approaches. For example, the US has an extensive framework that governs credit scoring, due to their history of credit scoring. This is consistent with the tendency of the US to introduce acts that govern specific-sectors, instead of focussing on human rights. Besides this, the US has a consumer protection regulation which prevents unfair trade practices, this means that 'unfair' scoring systems may be challenged. US' data protection framework is very limited, and does not provide substantial protection against scoring. The EU does not have this rich history of credit scoring, and thus does not have such an extensive credit scoring framework like the US. Instead, the EU focusses more on human rights and has a general data protection framework is the main instrument that regulates scoring practices by private bodies. Scoring by public bodies is restricted by article 8 ECHR, the right to private life. The Chinese government chose for a different approach and instead of just restricting certain practices, laws were implemented that establish institutions and data sharing mechanisms. By creating these institutions and mechanisms and by encouraging the sharing of data, a comprehensive data network was established which does only protect the interests of the individual to a limited extent. The Chinese government increasingly uses technology to protect China's political system which led to an increasingly powerful security state.[162] This leads to situations in which citizens' rights are sacrificed in order to maintain stability. The costs of this are at the individual level: the discussed human rights and personal autonomy.

On top of that, the research shows that besides the right to privacy and data protection, many other human rights are infringed in modern-day scoring practices. For some rights as the presumption of innocence, freedom of movement and religion, cases of violation of these rights could be found, but not in all three regions. For the other rights, the freedom from discrimination, right to information, data ownership, data protection and personal autonomy, violations were found in all regions. This means that current regulatory approaches do not sufficiently protect human rights.

[162] Yuhua Wang and Carl Minzner, 'The Rise Of The Chinese Security State' (2015) 222 The China Quarterly 339-359.

Furthermore, we saw that in recent years, several scoring systems in the US were challenged. Scoring by government bodies was often challenged based on the 14th amendment. Consumer protection law against unfair trade practices was useful in challenging scoring in private relationships. In the EU, data protection authorities have imposed fines on companies that used scoring in a manner not accepted by the GDPR. Moreover, a government scoring system was challenged based on article 8 ECHR, which was the first human rights-based challenge in Europe. The GDPR will likely still be the tool to challenge private-body scoring systems in the EU, but in its current state, due to its limited scope and the many exceptions, it does not seem to be tool which will solve all issues. Furthermore, the US framework only protects consumers, and a data protection framework is missing.

As we saw, current regulatory approaches do not sufficiently protect human rights. In order to improve the current frameworks, a right to opt-out from decisions (partly) based on scoring could be implemented. Another option could be to implement a right to challenge data, assumptions (or inferences) or scoring outcomes, before a decision is taken. These rights would provide more protection to scoring subjects and would reduce some of the risks that have been discussed. The implementation of these rights would differ in both the EU and US. For the EU, extension of the current rights and safeguards towards inferred data could be desirable. On top of this, one of abovementioned new rights could be implemented into the GDPR. For the US, implementation into sector-specific laws seems appropriate although general coverage for all citizens should be ensured and a general data protection framework would also be desirable.

The findings of this research show that, besides the regular privacy and data protection critiques, there are more human rights issues that arise with the current use of scoring applications and legislation. This has shown that, in order to respect these rights, alterations need to be made. Which is especially important to individuals from minority groups, as they suffer the most from the regulatory disconnect. An attempt was made to formulate improvements to the regulatory frameworks. These improvements may limit the human rights infringements, but do not completely take them away. This research only focussed on the main elements that could be included. Therefore, further research could focus on the implementation of these measures: what exact wording could be used, and how they should be implemented to cover all the actors involved. While possible regulatory improvements were suggested, the exact wording of these provisions were not given.

To end with a positive note: even though protection without these additions is limited, there are different instruments to challenge scoring implementations, and with the first

human-rights case prohibiting a scoring system in the EU and with the first consumer data protection acts appearing on state-level in the US, more doors for challenging scoring systems are opened.

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Appendices

Table 1: Scoring systems				
Location	Aim	Public/Private user	Data used	Example of system or company that develops system
‘Traditional’ scoring systems				
US Germany Denmark UK	Assessing creditworthiness	Private	Payment history, amounts owed, length of credit history, new credit and credit mix for FICO. [163] General data (e.g. date of birth, gender or number of addresses used in business transactions), previous payment problems, credit activity last year, credit use, length of credit history and address data for SCHUFA.[164] Credit history over the last 6 years. This credit report consists of public data (public financial records including court judgments and insolvencies), industry created data (services and products used, such as bank accounts, credit cards, utilities, mobile phones, loans and mortgages, including age of account, payment history and current balances), consumer contributed data and derived data (created by Experian or the other credit reference agency behind the report, this logs all regular	Fair, Isaac & Co.’s FICO (US) SCHUFA’s Schufa score (Germany) Experian’s Consumer Delphi (e.g. Denmark, UK)

[163] <https://www.myfico.com/credit-education/whats-in-your-credit-score> accessed 26 August 2020.
[164] <https://www.schufa.de/en/schufa-information/schufa-information_en.jsp> accessed 26 August 2020.

			access to credit report data, such as credit applications, addresses financially linked and lived in the last 6 years.[165]	
‘Modern’ scoring systems				
UK US Asia	Verification of Identity, assessing likelihood of fraud etc.	Private	All available data from a customer’s digital footprint.	Hello Soda’s Profile ID[166]
US	Determining creditworthiness	Private	Up to 10,000 data points including social media and smartphone to create a credit score	Tala[167]
US	Health risk assessment		No patient records need to be used, only demographic data. [168]	
US*	Identification of terrorists between refugees		Data from the Dark Web, data related to the black market for passports, metadata available to border guards.[169]	IBM’s i2 Enterprise Insight Analysis software
The Netherlands**	Fraud detection	Public	A variety of data could be used, ranging from property and residence information to employment and tax information .[170]	SyRi (System risk Indication)
Denmark**	Detection of children with special needs	Public	Combination of information from public sources.	Gladsaxe plan

[165] <https://www.experian.co.uk/consumer/your-data/> accessed 26 August 2020.

[166] <https://hellosoda.com/our-products/profileid/> accessed 26 August 2020.

[167] <https://tala.co/about/> accessed 26 August 2020.

[168] Pam Dixon and Robert Gellman, 'The Scoring Of America: How Secret Consumer Scores Threaten Your Privacy And Your Future' (World Privacy Forum 2014) <https://www.worldprivacyforum.org/2014/04/wpf-report-the-scoring-of-america-how-secret-consumer-scores-threaten-your-privacy-and-your-future/> accessed 25 August 2020.

[169] < https://www.nextgov.com/cio-briefing/2016/01/refugee-or-terrorist-ibm-thinks-its-software-has-answer/125506/> accessed 26 August 2020.

[170] See Article 5a.1 lid 3 of Besluit SUWI for the complete list.

US	Consumer spending/commercial activity prediction	Private	Commercial data.	Acxiom's Consumer Prominence Indicator Score Equifax' Discretionary Spending Index
US	Fraud detection	Private	For FICO's Insurance Manager and Kount Score, no types of data were found. Fraudpoint uses public records. The volusion fraud score uses transaction details, including a geolocation analysis, IP & email risk assessment, bank information checks, verification of identity, street address & IP, along with physical address comparison, device tracking that have been used in previous fraudulent transactions	FICO Insurance Fraud Manager[171] LexisNexis FraudPoint (applicant fraud prevention)[172] Volusion credit card fraud score[173] Kount Score (Prevention of fraudulent web purchases)[174]
US	Identification of a patient's propensity to adhere to a medication prescription plan	Private	Data regarding: Employment, Homeownership, Living situations, Age, Gender, Family size, Asset information.	FICO Medication Adherence Score[175]

[171] <https://www.fico.com/en/latest-thinking/product-sheet/fico-insurance-fraud-manager-health-care-edition> accessed 26 August 2020.
[172] <https://risk.lexisnexis.com/products/fraudpoint> accessed 26 August 2020.
[173] <https://www.volusion.com/v1/fraud-score> accessed 26 August 2020.
[174] <https://kount.com/ecommerce-fraud-prevention-software/kount-command> accessed 26 August 2020.
[175] <https://www.fico.com/en/products/fico-medication-adherence-score> accessed 26 August 2020.

US	Assessing tax payers for audit selection.	Public	DIF based on past IRS data.	IRA's The Discriminant Function System (DIF) score Unreported Income DIF (UIDIF) score
UK Finland The Netherlands Germany Spain US Australia Singapore	Assessing the risk of violence in adolescents.	Public	30 items, grouped into 3 risk domains (historical, social/contextual and individual) and one protective domain.[176]	Structured Assessment of Violence in Youth (SAVRY)
US	Assessing recidivism risk	Public	History of Noncompliance Scale, Vocational Education Scale, Current age, Age-at-first-arrest, History of Violence Scale.[177]	Northpointe's COMPAS
China	The Chinese social credit systems consist of many small pilots and is wide-ranging. It is also encoded in law as it is a government initiative. Therefore, it is quite detailed. See the other tables for relevant information regarding these systems.			

*Unclear whether it has been implemented at all.

** Used to be implemented but are removed.

[176] Elena Ortega-Campos, Juan García-García and Flor Zaldívar-Basurto, 'The Predictive Validity Of The Structured Assessment Of Violence Risk In Youth For Young Spanish Offenders' (2017) 8 Frontiers in Psychology.

[177] <https://assets.documentcloud.org/documents/2840784/Practitioner-s-Guide-to-COMPAS-Core.pdf> accessed 26 August 2020.

Table 2: Negative information gathered and included[178]			
Shanghai	Hebei	Hubei	Zhejiang
{article 9)	(article 12)	(article 10)	(article 11)
(1) nonpayment of taxes, social insurance fees, fees for administrative operations, or government funds that should be paid over in accordance with law; fraud or bribery;			(1} Information on administrative permits, administrative confirmations, administrative rewards acquired through improper methods such as fraud or bribery;
(2)Provision of false materials, concealing the true situation, harming the order of social management and the common social interests;			
(3) Refusal to perform on effective legal documents;	(3) Information on refusals to perform on effective legal documents;	(3) Information on refusals to perform on effective legal documents;	(5} Information on non-performance on effective legal documents such as judgments or rulings;
(4) Information on administrative punishments given in accordance with the ordinary procedures, except where the unlawful conduct was slight or where the harms resulting from the unlawful conduct were proactively eliminated or abated;	(2) Information on administrative permits, administrative punishment, administrative compulsion, administrative designations, administrative inspections, administrative collections, administrative commendations,	(2) Information on administrative permits, administrative punishment, administrative compulsion, administrative designations, administrative inspections,	(2)Information on administrative punishments for which an administrative reconsideration or administrative lawsuit was not raised in the legally-prescribed time period,

	administrative payments received, and other administrative acts that reflect the credit subject's credit status;	administrative collections, administrative commendations, administrative payments received, and other administrative acts that reflect the credit subject's credit status;	or which were ultimately sustained through administrative reconsideration or administrative litigation, except for those made through the simplified procedures; (3) Information on crimes held to be established in an effective judicial verdict. (4) Information on administrative compulsory enforcement for non-performance on administrative decisions;
(5) Prohibitions on market entry or entry into industries given by supervisory and management departments;			
(6) Other matters provided by laws, regulations and State provisions.	(5) Other Information that shall lawfully be included in the catalog management.	(5) Other Information that shall lawfully be included in the catalog management.	(6) Other negative information lawfully identified as violations of

[178] 'Giving Credit 2: Carrots And Sticks' (*China Law Translate*, 2015) <https://www.chinalawtranslate.com/en/giving-credit-2-carrots-and-sticks/> accessed 26 August 2020.

			laws, regulations, or rules.

Table 3: Punishments for untrustworthy[179]			
Shanghai (article 30)	Hebei (article 32)	Hubei(article 28)	Zhejiang (23)
(1) List them as subjects for key review in carrying out administrative permitting, and don't apply simplified procedures such as information and assurances;	(1) listing them as key management targets in routine management, increasing the frequency of inspections, and strengthening on-site examinations;	(1) listing as a target for key reviews in administrative supervision and management;	(1) List them as subjects for key review in carrying out administrative permitting:
(2] Make corresponding restrictions in government funding assistance and other policy supports;	(2) restricting the enjoyment of government capital arrangements and other policy supports;	(2) revoking currently enjoyed administrative facilitation measures;	(2) revoke currently enjoyed administrative facilitation measures in administrative management;
(3) Restrict enjoyment of facilitation measures in administrative management;	(3) Cancel facilitation measures already enjoyed in administrative management;	(3) Restricting applications for financial subsidies or policy support;	(3) list them as key subjects for oversight and inspections and strengthen site inspections, in routine oversight and management;
(4) Subtract credit points and reduce credit levels in exchanges	(4) Measures such as reducing	(4) Other disciplinary measures as provided by	(4) Other oversight and management measures that

[179] 'Giving Credit 2: Carrots And Sticks' (*China Law Translate*, 2015) <https://www.chinalawtranslate.com/en/giving-credit-2-carrots-and-sticks/> accessed 26 August 2020.

of public resources;	credit points in public resource transactions;	the State.	the State and Province provide may be employed
(5) list them as key management targets in routine management, and increase the frequency of monitoring, and strengthen on-site inspections;	(5) restricting participation in government-organized commendations and awards;		
(6) Other measures provided for by the Nation or city. provide may be employed.	(6) Other measures that laws and administrative regulations		

Table 4: Incentive measures[180]			
Shanghai	Hebei	Hubei	Zhejiang
(1) Give facilitated services in the course of carrying out administrative permits, such as priority handling or simplified procedures, on the basis of actual conditions;	(1) Giving preferential handling and conveniences in administrative management and public services;	(1) Giving support and conveniences in administrative management and public services;	All levels of government organ may follow state provisions in carrying out incentives for trustworthy entities in administrative permitting, finance capital and project support, public resource trading and other suchareas.

[180] 'Giving Credit 2: Carrots And Sticks' (*China Law Translate*, 2015) <https://www.chinalawtranslate.com/en/giving-credit-2-carrots-and-sticks/> accessed 26 August 2020.

(2) Where other requirements are equal, make them priority choices for public financing and project support;	(2) Listing for preferential selection in governmental capital arrangements and project support;	(2) Listing as a preferred choice in activities such as financial support, government procurement, bidding on government investment projects, transfer of state-owned land, financing, media promotions, and selection for honours;	Financial institutions are encouraged to give preference or facilitation to information subjects they have identified as having a positive credit status, in areas such as borrowing, fees and interest rates, and methods of repaying loans.
(3) Give credit points and credit level promotions in exchanges of public resources;	(3) Measures such as adding credit points in public resource transactions;	(3) Other reward measures as provided by the State. f	Other market entities are encouraged to give preference or facilitation to information subjects they identify as having a positive credit status.
(4) Optimize inspection frequencies in routine supervision for trustworthy entities;	(4) Optimizing random sampling inspections and inspection frequencies in routine supervision;		
(5) Granting the relevant honorary titles in accordance with the relevant State and provincial provisions;			

(5) Other measures that the State and city provide may be employed;	(6) Other measures that laws and administrative regulations provide may be employed.		

Table 5: Factors for Inclusion in Serious Negative List[181]			
Shanghai 25	Hebei	Hubei 29	Zhejiang 24
(1)Conduct seriously endangering natural persons' physical health or security in their lives;		(1) Acts that seriously endanger the public's physical health, or security in their lives; with law;	(1) Information on administrative permits that impact physical health and safety being acquired by improper means such as fraud or bribery and being revoked in accordance;
(2) Acts that seriously disrupt the order of fair market competition and normal social order;		(2) Acts that seriously disrupt the order of fair market competition and normal social order;	2) Information provided for in article 11 items 2 and 3 of these Regulations, produced by conduct that caused harm to physical health and safety, seriously disrupted market economic order, and social management order, or conduct endangering national defence interests;
(3)Refusing to perform or escaping performance of legally- prescribed obligations, where the circumstances are serious;		(3) Having the ability to perform obligations set forth in effective	(3) Information on refusals to perform on effective legal documents;

[181] 'Giving Credit 2: Carrots And Sticks' (*China Law Translate*, 2015) <https://www.chinalawtranslate.com/en/giving-credit-2-carrots-and-sticks/> accessed 26 August 2020.

		legal documents, but refusing to do do or escaping performance;	
(4) Refusing to perform State obligations, endangering national defense interests, or destroying national defense facilities		(4) Refusing to perform State obligations, endangering national defense interests;	
		(5) Other seriously untrustworthy conduct provided for by the State.	(4) Other relevant information that laws and regulations provide shall have the information subject entered onto the list of the seriously untrustworthy.

Table 6: Punishments for Serious Untrustworthy[182]			
Shanghai 31	Hubei 30	Hebei	Zhejiang 26
(1) Restrict entry into relevant markets;	(1) Restrictions on engaging in particular industries or projects		(1) Limiting participation in government purchasing, government investment program bidding, state-owned land bidding, auctions, or listings, or other public resource trading activities;
(2) Restrict entry into relevant industries;	(2) restrictions of qualifications for positions;		(2) Implementing measures to exclude (expel) them from markets or industries;
(3) Restrict relevant professional qualifications;	(3) Restrictions on engaging in special market trading;		(3) Limiting participation in infrastructure and public utility operations activities;
(4) Restrict carrying out relevant financial operations;	(4) Restrictions on		(4) Restricting high-spending;

[182] 'Giving Credit 2: Carrots And Sticks' (*China Law Translate*, 2015) <https://www.chinalawtranslate.com/en/giving-credit-2-carrots-and-sticks/> accessed 26 August 2020.

	receiving honors and financial credit loans;		
(5) Restrict enjoyment of relevant public policies;	(5) Restrictions on high-spending and related consumption;		(5) restricting qualifications to hold positions;
			(6) Restricting enjoyment of financial subsidies and other policy supports;
			(7) Restricting participation in all kinds of commendation and award activities organized by state organs;