

EFFECTIVE LAW AND REGULATION OF ELECTRONIC COMMERCE



-A Comparative and Economic Analysis of Electronic Signatures Law and Regulation

电子商务的有效法律规制 ——电子签名法的比较与经济分析

汪闽燕◇著



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Abstract

With the development of electronic commerce (e-commerce), the last two decades have witnessed a large number of legal reforms relating to e-commerce. In the early stage of e-commerce, many traditional legal concepts and rules cannot fit well in the area of e-commerce. Legal reforms are called for, either by interpreting, revising or supplementing the old rules or by enacting new laws.

However, whether it is necessary for legal reforms and whether legal reforms are conducted in a right way, have been discussed more by the academic and the judicial area. Some even think that the law regarding e-commerce is not too few, but too much! Because of the uncertainty of technological development, how to “effectively regulate” e-commerce becomes the question which needs to be answered.

This book examines the effectiveness of laws and regulations relating to e-commerce. It explores this issue via electronic signatures (e-signatures) law and regulation. This is because there are many countries (over 80 countries) already enacting e-signatures law and e-signature is most regulated in the area of e-commerce.

This book employs comparative methodology to analyze e-signatures law in different countries, and then uses economic analysis to review and evaluate whether such law and regulation are effective.

The comparative methodology critically reviews existing laws regarding a signature and current e-signatures law and regulation. It studies these issues from an international and comparative perspective, and selects four countries (the UK, the U.S., Germany and China) as case studies. The comparative analysis reveals that: (i) what constitutes a legally valid

signature receives different answers in different jurisdictions, and a certain level of legal reform is needed; (ii) e-signatures law and regulation are divergent around the world, which may create a new barrier to international transactions; and (iii) despite the divergent policies, e-signatures law and regulation share the same goal to facilitate the use of e-signatures and to promote the development of e-commerce. There are also three common key issues: (i) the legal effects of an e-signature; (ii) technological innovation; and (iii) the regulation of certification authorities (CAs). However, different jurisdictions adopt completely different approaches (or rules) to address these issues.

This book uses economic analysis to evaluate e-signatures law and regulation in terms of the three issues identified above. It examines the effectiveness of the rules on the assumption that these rules are designed in such a way as to effectively achieve their goals. It suggests that different rules adopted to address these three issues are likely to have different impacts on parties' behaviour and the operation of the market. However, these impacts seem not to be 'positive' or 'effective' in achieving the proposed goals. Some may even have detrimental consequences.

Based on the analysis, this book makes recommendations for designing effective law and regulation of e-signatures in particular and of e-commerce in general.

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Chapter 1 || Introduction

With the development of advanced technology, especially the advent of the Internet, the ways in which commerce is conducted have been greatly changed. The Internet has a number of advantages, including a substantial reduction of transaction cost, lower price, enhanced productivity, increasing diversity of products and the wider tradable scope, etc.. It allows systematic, on-line, large scale and interactive communication between parties. It creates a new place—cyberspace where activities including electronic commerce (e-commerce) take place without the limitations of territorial boundaries. People do not have to meet to negotiate and the transaction could be conducted within a few seconds. It is no surprise that many businesses prefer this kind of transaction form and try to adjust their trading strategies to occupy the competitive situation.

However, the advanced technology brings benefits as well as challenges. It is predicted to fundamentally modify the global economic, market and business structure, as well as the legal system. The traditional legal concepts and rules are established in the physical world, many of which cannot fit in the electronic environment without difficulties. On the other hand, new issues are also raised from the uniqueness of this new environment, such as computer crime, electronic payment, and electronic signatures (e-signatures), etc. Legal reforms are called for, either by interpreting, revising or supplementing the old rules or by enacting new laws. In this book, the term ‘laws’ is interpreted in a broad sense, referring to any legal rules. In some circumstances, states may

choose ‘regulation’ to deal with certain issues arising from cyberspace. The term ‘regulation’, in this book, is defined as the setting of rules or standards by governments or centralised bodies in order to compel individuals and organisations to comply with prescribed behaviours and to implement policy objectives.^[1] For example, some jurisdictions use ‘regulation’, in the form of licensing or standards, to compel certification authorities (CAs) to comply with the prescribed requirements and behave in a way that policy makers think desirable. As defined, regulation is a subset of laws. Whether a particular rule is enacted as regulation or as other laws is often a matter of policymaker’s choice. When we discuss e-signatures law and regulation, we refer to the legal rules deriving from both of these sources that are applied to e-signatures.

The last two decades have witnessed a large number of legal reforms relating to e-commerce. Nevertheless, it seems that the plethora of such initiatives, and the way they are being implemented, is not developing in a way that would optimise the development and use of the new technologies and promote the development of e-commerce, at least not obviously. One typical example is e-signatures law and regulation. It has been said that the legislative activities in the area of e-signatures are most active compared with other areas of law.^[2] There have been more than eighty countries that have enacted such law and regulation, and it seems that there will be more in the future. E-signatures law and regulation are supposed to contribute to the development of e-signature

[1] A more detailed discussion of the definitions of ‘regulation’ is in section 8.1 of Chapter 8, where the regulation of certification authorities (CAs) is discussed. At this stage, a simple definition of ‘regulation’ in this book is sufficient for our understanding.

[2] Lorna Brazell, *Electronic Signatures Law and Regulation*, (1st Ed, London: Sweet & Maxwell, 2004), p.1.

technologies and e-commerce.^[3] However, these goals have not been achieved as the adoption of e-signatures, especially those high-tech e-signatures, in e-commerce is still low in most countries. Even if there is high adoption of e-signatures in some jurisdictions,^[4] this results from other measures, such as governmental compulsory use of e-signatures, instead of being stimulated by e-signatures law and regulation.

Although these legal reforms do not efficiently achieve the results which policy makers expect, the activities in legal reforms continue. It seems that legal reform in this area has become a trend. For instance, e-signatures law and regulation are being proposed by many of those countries which have not previously had one. As the need for the legal reform in the area of e-commerce has been taken for granted,^[5] it is time to examine the effectiveness of such law and regulation. This is particularly important and necessary because legal initiatives taken in different jurisdictions so far demonstrate a trend that law and regulation are emphasised and regarded as a tool to promote technological and economic development.

In fact, the effectiveness of law and regulation depends on many factors. For example, that the goals of law and regulation are properly set up; that the rules are suitably designed; and that those rules are appropriately implemented, etc. In this book, we examine the effectiveness of law and regulation on the assumption that the rules are properly designed to achieve its goals. We do not question whether the

[3] Please see for example the aims of legislation stated in e-signatures law and regulation in different countries. For more details please refer to Chapter 4.

[4] See for example, in Italy, Germany and Slovenia, a large amount of certificates are issued for dealing with governments. In Estonia, a substantial volume of certificates are used due to the employment of governmental electronic ID cards.

[5] In terms of the speed that e-signatures law and regulation were adopted in so many jurisdictions.

goals are right or not and how these rules are implemented in practice. The focus is on whether the rules are designed in such a way as to effectively achieve the proposed goals.

To examine the effectiveness of law and regulation of e-commerce, the book explores this issue via e-signatures law and regulation, and employs comparative methodology and economic analysis to review and evaluate these laws and regulations. These two methodologies supplement each other and provide us with a useful way to examine e-signatures law and regulation from horizontal and vertical perspectives. The horizontal perspective is accomplished through the comparative methodology in order to understand the different approaches which are taken by national laws; the vertical aspect, by economic analysis, is to evaluate the particular rules adopted by different jurisdictions to deal with the specific issues.

The comparative methodology is chosen because e-commerce tends to be by nature transnational. Any legal reform in e-commerce without bearing in mind international initiatives and other jurisdictions' legal reforms will to some extent weaken the effectiveness of such law and regulation. The comparative analysis intends to identify:

(i) What a legally valid signature is under existing laws^[6] and whether there is a need for legal reforms; and

(ii) The current status of e-signatures law and regulation. It aims to provide a comprehensive understanding of the development and current status of e-signatures law and regulation.

It will investigate these issues from an international and comparative perspective, and selects four countries—the UK, the U.S., Germany and the People's Republic of China^[7]—as

[6] "Existing laws" here mean the laws applicable to all signatures, which do not include the laws that are specifically about e-signatures.

[7] Please note that the introduction of China in this book is on mainland China, not including Hong kong, Macao and Taiwan.

case studies. These are strong representatives of eastern and western countries, developed and developing countries, and common law and civil law countries. They are also striking examples of the different approaches adopted in e-signatures law and regulation, that is, prescriptive, two-tiered and minimalist approaches, each based on different assumptions about the legal status of e-signatures and their future.

The comparative study reveals that (i) what constitutes a legally valid signature receives different answers in different jurisdictions, and a certain level of legal reform is needed to provide more certainty; (ii) e-signatures law and regulation are divergent around the world, which may create a new barrier to international e-commerce and to some extent weakens the effectiveness of such rules; and (iii) despite the divergent policies, e-signatures law and regulation share the same goal to facilitate the use of e-signatures and to promote the development of e-commerce. There are also three common key issues. These are (a) the legal effects of e-signatures; (b) technological innovation, and (c) the regulation of CAs. However, different jurisdictions adopt completely different approaches (or rules) to address these issues.

Based on the findings of the comparative analysis, the book proceeds to employ economic theory to evaluate e-signatures law and regulation in terms of the three issues identified above. It examines the effectiveness of the rules on the assumption that these rules are designed in such a way as to effectively achieve their goal to facilitate the use of e-signatures and to promote the development of e-commerce. In the last few decades, economics has developed an approach to the evaluation of law, which differs from traditional legal methodologies of thinking about social life and legal institutions. There has been little research applying economic theory to law and regulation of e-signatures and other e-

commerce except those relating to intellectual property.^[8] The book will thus provide fresh insight into the examination of law and regulation in the area of e-signatures in particular and in e-commerce in general. It will be of practical significance to the improvement of e-commerce law and regulations everywhere as the same tendencies to make legal reforms relating to e-commerce are being shown around the world today and it is always desirable to achieve the result effectively.

The economic analysis employs positive and normative approaches to analyse e-signatures law and regulation, and suggests that different approaches or rules adopted in addressing these three issues seem to have different impacts on parties' behaviour and the operation of the market. However, these impacts seem not 'positive' or 'effective' in achieving the results expected by policy makers. Some may even have detrimental consequences. Based on the comparative and economic analysis, this book makes some recommendations for designing effective law and regulation of e-signatures in particular and of e-commerce in general.

This book will be structured into three parts. The first part will be a literature review of existing laws regarding a signature and current e-signatures law and regulation through comparative methodology. It consists of three chapters, containing a brief introduction of technical issues involved in e-signatures. The second part will be the economic analysis of e-signatures law and regulation, evaluating their effectiveness in terms of the three key issues identified in the first part. It is made up of four chapters, including a brief introduction of economic analysis of law. The last part will be an epilogue,

[8] There are, however, a few interesting discussions on economic analysis of other e-commerce law. See for example, Dennis Khong, "An economic analysis of spam law." (2004) 1(1) *Erasmus Law & Economics Review* 23-45.

concluding the book and making some recommendations. In the following, each chapter will be briefly introduced.

Chapter 2 is a general introduction to e-signature technologies. Since e-signatures involve some degree of technologies that have an impact on law and regulation, it is helpful to have a basic understanding of what e-signatures are before discussion.

Chapter 3 will discuss existing laws regarding a signature, if any. It is essential to have some knowledge of the past legal status of a signature because consideration of any legal reform is always based on the assumption that the existing legal system is incapable of achieving the expected result.

Chapter 4 will investigate e-signatures law and regulations around the world. It critically reviews the three approaches (i.e. minimalist, prescriptive and two-tiered) adopted in e-signatures law and regulation and discusses those laws and regulations from the international and national levels. It will provide a comprehensive and detailed understanding of how e-signatures and their related markets are addressed by policy makers at the international level and in the four selected countries.

Chapter 5 will briefly review the theoretical framework of economic analysis of law. The review will be general to have a basic understanding of the theoretical basis of this methodology and clarify some fundamental assumptions and concepts.

Chapter 6 uses the economic approach to examine the effectiveness of the provisions relating to the legal effects of e-signatures in relation to two scenarios. One is during transactions; the other is during civil litigations. It explores how the different rules affect the behaviour of the parties in these two scenarios and what is their social desirability.

Chapter 7 examines how the different three approaches affect the rate and direction of technological innovation. It explores this issue by examining how these approaches

influence the decision of those firms in research and development investment of innovating e-signature technologies and their social desirability.

Chapter 8 studies how CAs should be regulated. It addresses such issues as whether the operation of CAs needs governmental intervention and if so, what regulatory strategy is most efficient to regulate CAs in the certification service market.

Chapter 9 concludes the book and provides some recommendations.