

**THE REGULATION  
OF FINANCIAL PRIVACY:  
THE UNITED STATES VS EUROPE**

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**NICOLA JENTZSCH**

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The European Credit Research Institute (ECRI) is a non-profit international association established in March 1999 in partnership with the Centre for European Policy Studies (CEPS) in Brussels. Its principal goal is to promote the study of the retail financial services sector at the EU level. ECRI's activities include the creation of a database on consumer credit in the European Union, research and analysis of developments in retail financial markets and the organisation of seminars on all issues affecting the industry.

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### EXECUTIVE SUMMARY

The consumer credit market depends on the exchange of personal information among market participants. Credit bureaus are the primary repositories of this information, and in recent years they have gathered a vast amount of data on creditworthiness of individuals. Currently Europe as well as the United States are planning large-scale overhauls of their regimes of information sharing in consumer credit markets. In Europe, a new proposal for a directive on consumer credit is discussed, whereas in the US, key provisions of the Fair Credit Reporting Act are expiring by the end of 2003.

Until recently, however, there has been little independent research on the far-reaching implications of privacy regulations in consumer credit markets. There has also been little quantitative analysis of the effects of differing regulatory environments on both credit reporting agencies and the efficiency of the consumer credit market. The present study fills that gap by analysing the economic effects associated with different financial privacy regimes. The US are contrasted with the European Union (with Germany, Great Britain and France as reference countries) to analyse the differences in the privacy regimes and their effects on consumer credit markets. There are less privacy regulations in the US and credit bureaus compete on a nationwide scale. In the EU, on the other hand, data protection and credit reporting schemes differ from one country to another. Americans enjoy broad access to credit, but this is correlated with greater indebtedness, whereas in the EU, credit markets are thinner and households are in general less indebted.

One of the major research questions is whether more stringent data protection regulations inhibit the distribution of credit reports in consumer credit markets. This, in turn, could result in reduced access to credit, less integrated markets and increasing consumer credit risk (measured by the household debt-service burden). With the Financial Privacy Index (FPI) developed in this study, it is possible to quantify data protection regimes. The indices show that the US grants less data protection than the reviewed EU members. Using this index, it is possible to identify the effects of data protection on information distribution, access to credit, consumer indebtedness and consumer credit risk.

The international comparison shows that countries with higher data protection exhibit lower information allocation. However, growing data protection in individual countries is correlated with increased information allocation. It is shown that the more credit reports are sold the higher is the access to credit. This is associated with greater consumer indebtedness and higher consumer credit risk. Among other factors, the latter is due to

the fact that access is broadened and marginally less creditworthy households are entering the market.

The policy implications are the following. To increase access to credit and to expand the integration of the consumer credit markets in the EU, cross-border dissemination of credit reports should be facilitated by a standardisation of European credit reporting systems. The proposal for a new directive on consumer credit provides a chance for such harmonisation. At the same time, however, this exchange has to be transparent to consumers – this is of the utmost importance for the trust in consumer credit markets.

Moreover, the European Commission should ensure that the current Data Protection Directive is equally and quickly transposed in the member countries. A new directive directed specifically to the exchange of credit information would only increase regulatory uncertainty and introduce another round of extended and unequal transposition efforts by member countries. In addition, the European Commission should develop a transparent evaluation mechanism for reviewing the transposition and operation of the current Data Protection Directive.

In the US, where the Fair Credit Reporting Act is currently discussed, policy-makers should ensure that the national standards in credit reporting are kept in place. To some extent, the US faces the same problems as Europe. If states are allowed to design their own regulations for information sharing regimes, these regimes will almost certainly differ and therefore reduce scale and scope effects in the credit reporting industry. Credit reporting markets are based upon networks and these networks exhibit peculiarities that should be taken into consideration before applying regulations. The present study also describes the competition in such markets.

A unified system of credit reporting in Europe is likely to result in broader access to consumer credit. And cross-border credit, which is still in its infancy in Europe, may also increase. However, with the broader access seems to come increasing consumer credit risk, as the analysis of the present study suggests. Intensified competition in consumer credit markets is certainly increasing the quality of services and decreasing prices in the long run, but currently Europe does not seem to have adequate instruments in place to monitor the development of the market. Therefore, the EU also needs common definitions and procedures of bankruptcy and over-indebtedness of households to effectively monitor these developments.

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### **1. Introduction**

Credit markets have changed remarkably in the 1990s due to increasing liberalisation and the widespread adoption of information technology. The intermediating mechanisms of information-sharing in these markets, however, have largely developed without major discussion in the public realm. In recent years the information allocation mediated via credit bureaus has attracted increasing interest and currently the European Union as well as the United States plan reforms of the regulation of information sharing in their consumer credit markets. Data protection regulation of this information exchange, however, and especially its economic implications for consumer credit markets have not been analysed to date.

The present study is intended to close this gap by analysing the economic effects of different financial privacy regimes on consumer credit markets. It also provides evidence about the costs of financial data protection. In this study, the US and the EU (with Germany, Great Britain and France as reference countries) are contrasted. Broadly, the US provides less data protection than does the EU. On both sides of the Atlantic, however, major changes in data protection occurred in the 1990s due to increasing public pressure for more data protection. Moreover, in the EU the new proposal for a directive on consumer credit mandates new obligations in this respect and in the US key provisions of the Fair Credit Reporting Act are currently under review, since they expire by the end of 2003.

In this study, it is examined whether more stringent privacy regimes portend adverse effects for the distribution of consumer credit reports in credit markets. This could result in reduced access to consumer credit and increasing credit risk (measured by the household debt-service burden), since information on the characteristics of the borrower is not readily available.

First the differences in data protection regimes in the countries of interest are discussed. The Financial Privacy Index developed in this study is a quantitative measure that rates countries according to the protection of personal credit information that is distributed via credit bureaus. This index is supposed to show the differences in a more detailed way than the studies that have been conducted in this field so far. Moreover, the approach has the great strength of showing a dynamic perspective, since the countries are rated for the whole decade (1990-2001).

The index is then introduced in the statistical tests to analyse adverse effects of increased data protection on information distribution, access to credit, consumer indebtedness or consumer credit risk. The picture is completed by a discussion of the competition in credit reporting industries, which are prone to strong concentration processes. Again, large differences in the US-EU comparison can be found. Competition in the European

credit reporting industry only recently started to intensify, but credit bureaus still primarily concentrate on their national markets. Their US counterparts, on the other hand, compete on an international scale and entered the EU markets via mergers and acquisitions.

It is not the purpose of this study to choose one of the privacy regimes as a benchmark or as a first-best solution. Instead both positive and negative consequences are examined since they are associated with each of the different financial privacy regimes.

## **2. Financial Privacy Regimes and Their Evaluation**

Data protection regimes differ widely from country to country – a fact that constitutes problems not only for international data transfers, but that also led to a dispute between the US and the EU from 1998 until 2000 over what constitutes adequate protection of personal information. In what way those countries differ is largely unknown, however, because this involves an analysis and comparison of laws.

First the data protection regime of the aforementioned countries are described (US, Germany, Great Britain and France). In addition, the European level is included which constitutes the harmonisation framework. This descriptive part already hints at the existing gaps and differences, although a more thorough analysis is given in a later section.

### **2.1 The Evolution of Financial Privacy Regimes in the 1990s**

Over the last 30 years, one could observe the emergence of international agreements that include a subgroup of countries or whole regions, depending on the number of signatory countries. These regimes offer minimum standards of privacy protection on an international level and sometimes also serve as an example for national legislation. In an ideal case, a country could choose to adopt the principles of one of the three international regimes currently in operation: that of the OECD, the EEC or the EU.<sup>1</sup>

Such regimes vary in the protection they grant to the individual. An important point is that they are very different in their institutional form; some are simple voluntary guidelines, while others are binding international contracts. One may state that these regimes reveal regulatory discrepancies, in the sense that one country may apply very strict rules, while another may not have any in effect at all. Moreover, if countries have no data protection laws, nor signed any of the international agreements, this could give rise to “off-shore data havens”.

The more stringent regimes, on the other hand, are accused of acting as non-tariff trade barriers to the free flow of information, especially for service industries (Kitchenman and Teixeira, 1998, p. 104 and p. 106).

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<sup>1</sup> The 1980 OECD guidelines were intended as a recommendation for a harmonisation of national regimes. They are based on eight principles: collection limitation, data quality, purpose specification, usage limitation, security safeguards, openness, individual participation (access) and accountability. We evaluate only the EEC and the EU regime.



Table 1 presents an overview of the acts that are important for regulating the collection and distribution of creditworthiness information. It only includes the federal acts in the four countries of interest, not the regulatory measures. This simple overview already shows how often data protection regimes change. The US introduces new regulations on the federal level with greater frequency than do European countries. This, of course, not only depends on the efficiency of the legislative institutions, but also on the distribution of information technologies and the public pressure that arises with large-scale information collection and processing.

*Table 1. Financial privacy regimes in the four selected countries and in the EU*

<b>Acts</b>	
<b>United States</b>	1970 Fair Credit Reporting Act
	1974 Equal Credit Opportunity Act
	1992 Fair Credit Reporting Act (as amended)*
	1996 Consumer Credit Reporting Reform Act
	1999 Fair Credit Reporting Act (as amended)*
	1999 Gramm-Leach-Bliley Act
<b>European Union</b>	1981 CEC (Treaty 108/81) Convention for the Protection of Individuals with regards to Automatic Processing of Personal Data
	1995 95/46/EC Directive on the Protection of Individuals with regard to the Processing of Personal Data and on the Free Movement of such Data
<b>Germany</b>	1977 Federal Data Protection Act
	1990 Federal Data Protection Act
	1994 Amendment to the Federal Data Protection Act
	2001 Amendment to the Federal Data Protection Act
<b>Great Britain</b>	1974 Consumer Credit Act
	1984 Data Protection Act
	1998 Data Protection Act
<b>France</b>	1978 Act on Data Processing, Data Files and Individual Liberties
	1989 Neiertz Act

\*The 1992 Act includes earlier amendments. In 1998, the Consumer Reporting Employment Clarification Act amended the 1992 FCRA.

### ***2.1.1 The US Financial Privacy Regimes in the 1990s***

The US is generally characterised as a country that is more market-oriented than other countries. This induces the observation that the US might change its regulations more often, but in general, less obligations are posed upon companies. Historically, this might be attributed to the deeply rooted suspicion with which Americans regard government interference.

Credit reporting was not regulated at the federal level until 1970, but today this industry is among the most regulated in the US in the area of data protection. The following

assessment includes laws that establish the regulation of information flows specifically in credit reporting.<sup>2</sup>

In the United States, the regulation of consumer credit information is mainly based upon the Fair Credit Reporting Act (FCRA) of 1970 and its amendments in the 1990s. The FCRA established permissible purposes of credit information disclosure and formally codified the information flows as they had already developed in the market. The Act also introduced dispute settlement mechanisms as well as correction procedures to increase information quality. Finally, it assigned certain life cycles to derogatory and bankruptcy information. The already existent information-sharing arrangements were largely left unaffected by the Act, since a change in information flows could have caused disruptions in the consumer credit market that depends on such flows. Several other information transactions were left unregulated also, i.e. information flows among data providers and credit bureaus and affiliates as well as among non-affiliates that buy and sell credit reports. This regime was amended after 1995 in a substantive way. Further explanations of the early regime are provided by Azcuenaga (1991), Federal Trade Commission (1972), Maurer and Thomas (1997) and Waren (1993).

The regime as described has not been altered in a general way for more than 25 years. The 1990s, however, brought major reforms that were intended to close the loopholes, strengthen privacy rights and improve the data quality of credit reporting information. These acts have primarily been enacted in response to consumer complaints and an intensifying public debate about privacy erosion in the face of increasing use of information technologies. For the second part of the 1990s, the following acts were analysed: Consumer Credit Reporting Reform Act of 1996 (1996 CCRRA), the Fair Credit Reporting Act of 1999 (1999 FCRA) and the Gramm-Leach-Bliley Act of 1999 (1999 GLBA).<sup>3</sup>

The Consumer Credit Reporting Reform Act of 1996 introduced a new information network requiring a notification system among credit bureaus in the event that inaccuracies occurred. For the first time, it also introduced duties for information providers. It mandated an information flow to credit bureaus in order to correct any inaccuracies as well as a reciprocal flow from the bureaus to the furnishers for the same reason. The Act also facilitated an increase in the information flows among affiliates of the same corporate family. Those affiliates are allowed to share information, but only after they notified the consumer and provided him or her with an opportunity to opt-out. The Gramm-Leach-Bliley Act (GLBA) of 1999 completed the picture in regulating the information flows among financial institutions and non-affiliated third parties. Information may be shared after the provision of a notice and an opt-out opportunity. While flows among financial institutions and third parties can be interrupted by consumers (through opt-out), the information network with credit bureaus has been exempted from this rule – the consumer has to be informed about the sharing arrangement, but *only* in the case of an adverse decision based upon the credit report.

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<sup>2</sup> Some states in the US provide higher data protection in their state laws. For purposes of comparability, however, we only evaluated the federal acts.

<sup>3</sup> Some of these acts have been amended. For instance, the FCRA of 1999 has been amended by the CCRRA of 1996 and the Consumer Reporting Employment Clarification Act of 1998.

Reviewed within the US context, these rules may represent a stricter regulation especially in notification and correction provisions. Compared to Europe, however, the picture seems to be one of relatively free access to information and market-mediated information accumulation and distribution. For further explanations, the reader is referred to Barr and Ellis (1999), Federal Trade Commission (1997, 1999, 2000a, 2000b, 2001, 2002), Fischer and McEneney (1997), Perine (2001) and Swire (1996).

Currently, the FCRA is under review in the US. Certain key provisions of the act expire by 1 January 2004. This is the case for the national standards provision as passed in 1996, which pre-empts state legislatures from regulating specific aspects of consumer reporting (for instance, the right to share information with affiliates).

Congress, therefore, must re-authorise the state pre-emption provisions; otherwise, states could apply their own regulatory approach. In that case, problems could arise resembling those in Europe in which different regulatory regimes could affect the competition in the credit reporting industry, which would no longer be subject to a nationally unified framework. Since the competition in the credit reporting industry is based upon networks that reveal strong scale and scope effects, regulatory measures should take such effects into account. As of June 2003, a series of hearings on this issue were scheduled.<sup>4</sup>

## ***2.1.2 The EU and Member State Financial Privacy Regimes in the 1990s***

### **2.1.2.1 The EU Harmonisation Regime**

Data protection has changed enormously in the EU over the course of the 1990s. This is largely due to the increasing integration of the European member states, some of which are still in the process of transposing the Data Protection Directive. Moreover, in 2003, a proposal for a new directive on consumer credit is discussed that also has some implications for credit reporting systems (see also Jentzsch 2003a).<sup>5</sup>

The early data protection regime at the EU level is based on the Council of Europe Convention that was introduced in 1981.<sup>6</sup> It is a regime that was intended to harmonise minimum requirements in data protection and to strengthen cross-national cooperation among data protection authorities in Europe.

It does not include specific regulations for industries and therefore one cannot directly find any specific rules about credit reporting. However, since credit bureaus fall under these general provisions, the Convention is included to summarise the protection at the European level before 1995. There are also other general rules at the EU level, such as Art. 8 of the European Convention on Human Rights (ECHR) and Art. 286 EC of the Amsterdam Treaty of 1997. These rules are very basic and mainly echo the Convention.

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<sup>4</sup> Position papers and statements are available on the House Committee on Financial Services website (<http://financialservices.house.gov/hearings.asp?formmode=detail&hearing=213>).

<sup>5</sup> The full title of the proposed directive is: Directive of the European Parliament and of the Council on the Harmonisation of the Laws, Regulations and Administrative Provisions of the Member States concerning Credit for Consumers.

<sup>6</sup> The full title is: Council of Europe Convention (Treaty 108/81): Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (CEC).

It had to be implemented by the contracting parties, which included Germany, Great Britain and France.

The Convention is the first binding international instrument in the field of data protection. The signatory countries are required to take necessary steps to legislatively implement the principles. These principles protect individuals against abuses that may arise with the increasing use of information technologies and the collection and processing of personal data. At the same time, the Convention was intended to regulate the transborder flow of personal data and strengthen cooperation among data protection officers. There are several rights to information that are granted to the data subject, for example, the right to know that information is stored, and if necessary, to have it corrected. By 2002, the Convention entered into force in 27 European states (Council of Europe, 2002). Further explanations in this case are provided by Council of Europe (2001a, 2001b, 2002), Madsen (1992), Mellors and Pollitt (1984) and Reidenberg and Schwartz (1996).

In 1995, the European Data Protection Directive was enacted.<sup>7</sup> This is by far the most important regulation introduced at the EU level concerning data protection and it also is the most comprehensive one in terms of rights and obligations. Although it is commonly assumed that the directive is a minimum standard, this is not the case. The regulation is primarily supposed to harmonise the regimes, not to minimise data protection. The Directive is a major example of the increasing integration depth in the EU. The Directive was set out to establish an equivalent level of lawful data processing preconditions, data subject rights and administrative practises. It has to be noted that the Directive only regulates activities that fall under the scope of EU law. "It excludes areas within Titles V and VI of the Treaty on European Union, public safety, defence, state security (...) and the activities of the state in areas of criminal law." (Carey and Russell, 2000, p. 5). To fully understand the European regime it was necessary to include Boehmer (2000) and Brühann (1998, 2000) as well as various documents of the European Commission (1997, 1998a, 1998c, 1998d, 1998e, 1999, 2000, 2001, 2002) in the analysis.

In 2002, the proposed directive on consumer credit revealed the increased awareness of the importance of credit reporting. The proposal was initiated to achieve an optimal harmonisation level for an integrated European consumer credit market, which is still largely fragmented into national markets (see Jentzsch, 2003a). Another purpose of the Directive is to increase consumer protection, which is supposed to be achieved by a new symmetry of information and responsibility of creditor and borrower.

In Arts. 7 and 8, the proposal also has implications for credit reporting. It states that personal data may only be collected for the purpose of evaluating creditworthiness and that it should be destroyed immediately after. Art. 8 states that member states shall ensure the operation of a central negative credit registry and that creditors are obliged to consult the data base. It is left open for member states, if they want to go beyond such a negative registry and also establish a positive one. Creditors, however, will be required

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<sup>7</sup> In the following, we quote the official version of the Directive as published in the Official Journal (1995). The full title is: 95/46/EC Directive on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of such Data (Directive 95/46/EC).

to consult the data base before granting credit. The discussion over this proposal intensified in the first half of 2003.

### **2.1.2.2 The German Financial Privacy Regime**

Germany has been the leading country in the field of data protection; the first codified data protection law in the world was enacted in the state of Hesse in 1970. The law assigned the enforcement authority to an independent data protection commissioner and served as example for the federal law. Seven years later, in 1977, the first Federal Data Protection Act was enacted, which established the federal data protection authority (Bundesbeauftragter für Datenschutz) and granted specific rights to data subjects, such as access, rectification, blocking or erasure of data. The laws in the individual states (Bundesländer) had to be amended after 1983, the year the federal Supreme Court ruled in the census case that citizens have a right to “informational self-determination.”<sup>8</sup> This section recounts the most important German laws in this area.

In 1990, the German government adopted the Federal Data Protection Act (Bundesdatenschutzgesetz), which was amended in 1994. For the first half of the 1990s, the Federal Data Protection Act of 1990 (1990 FDPA) and the Amendment of the Federal Data Protection Act in 1994 (1994 AFDPA) are analysed.

The history of the German data protection laws has been described by Lutterbeck (1998) who states that there have been three phases. As stated, the first Federal Data Protection Act provided a common ground for the individual states. It followed a comprehensive approach in applying to the private and public entities at the same time. The second phase began in 1990, when the Data Protection Act had to be amended to bring it in line with the census case of the German Supreme Court. Finally, the third phase started with the Data Protection Directive. As secondary legislation and further literature Bundesbeauftragter für Datenschutz (1998, 1999, 2002), European Commission (1998c, pp. 30-38), Madsen (1992), Mitrou (1993) and Weber (1986) are included in the analysis.

The transposition of the EU Directive in Germany followed two steps: the first was intended to implement the essential adjustments, while the second was to establish a comprehensive overhaul of the data protection laws (European Commission, 1999, p. 6). In May 2001, the new Federal Data Protection Act of 2001 went into effect, marking the first step in the implementation of EU law. In the aftermath of the Act, six German states adopted new privacy protection laws.<sup>9</sup> Due to the harmonisation at EU level, various amendments had been introduced at the national level in the member states, which is the case in Germany. The recent modifications of the German data protection regime are also reviewed. In this respect, especially the Amendment of the Federal Data Protection Act of 2001 (2001 AFDPA) is important.<sup>10</sup>

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<sup>8</sup> This means that it is an individual’s decision whenever and to what extent he or she wants to disclose personal information.

<sup>9</sup> Brandenburg, Baden-Württemberg, Bavaria, Hesse, North Rhine-Westphalia and Schleswig-Holstein.

<sup>10</sup> The German title is Gesetz zur Änderung des Bundesdatenschutzgesetzes und anderer Gesetze.

In Germany, creditworthiness data can be used and processed only with written consent of the data subject. It is common business practice of credit-granting institutions to include a clause in contracts that enables them to transfer positive data to a credit register. This is necessary, because in the case of creditworthiness information, the “legitimate interest” of the bank covers only the transfer of negative data. For positive data, the bank has to obtain the permission of the data subject. Further explanations are provided by Bundesbeauftragter für Datenschutz (1998, 1999, 2002) and European Commission (1998c, 1999).

### **2.1.2.3 The British Financial Privacy Regime**

The debate about privacy legislation in Great Britain started in the early 1970s with a report by the Younger Committee. This committee proposed 10 guidelines that were intended to provide basic protection of the individual (Carey and Russell, 2000, p. 1). The committee proposals were not implemented, but in 1974 major legislation was enacted to regulate the consumer credit business. The Consumer Credit Act defined consumer credit business broadly and included “ancillary credit businesses,” a category that encompasses credit referencing (Goode, 1974, p. 43).

The act stated that such business activities require a licence, which is normally granted for three years and allows the owner to conduct all activities that are described in it. Any person engaging in any activities for which a licence is required without holding one commits an offence. This is explained in the sections 39.1 and 147.1 of the Consumer Credit Act. The Consumer Credit Act established the early regulation of the credit reporting business. In 1978, the Lindop Committee published a report that dealt specifically with the question of data protection (instead of general privacy as did the Younger Committee). In this report it recommended the establishment of a data protection authority. However, the British authorities did not react until the Council of Europe Convention followed in 1981. Three years later, the Data Protection Act of 1984 was passed, which transposed the minimum requirements set out in the Convention. The Act included eight very broad principles that were not enforceable in courts, but by the Data Protection Registrar and the Data Protection Tribunal (Carey and Russell, 2000, p. 4). As secondary literature, Carey and Russell (2000), European Commission (1998c, pp. 17-29), France (1995), Madsen (1992), Goode (1974) are included.

In Great Britain, there are mainly three laws that govern financial data protection: the Consumer Credit Act (1974), the Data Protection Act (1984) and the Data Protection Act (1998). The latter transposed the EU Data Protection Directive. It brought significant changes to the already very complex legislation in Great Britain. The Data Protection Act of 1998 transposes the Directive 95/46/EC by providing new regulations of the processing of information relating to individuals, including a notice of purpose of the data collection as well as the types of data that are collected (Data Protection Act of 1998, chap. 29, part II, 7 (1) a, b). This Act is considered to be the new core of privacy legislation in Great Britain (European Commission, 1999, p. 8).

The Act of 1998 also provides “principles of good practice”, in which data have to be processed fairly and lawfully and for only limited purposes. In the case of inaccuracies, the controller of this data can be mandated to rectify, erase or destroy those data (Data Protection Act of 1998, chap. 29, part II, 14 [1]). This is very much in line with the new

European Directive. Prior to the Directive, the situation in Great Britain resembled that of the US in the sense that no prior consent to data processing was required. Therefore the reform introduced new regulations in the field of individual rights, the legitimacy of data processing, regulations concerning sensitive data and international data flows.

Great Britain has a very complex system of enforcement and supervision. For the 1974 Consumer Credit Act, the Department of Trade and Industry issues regulations, while the Office of Fair Trading is obligated to supervise the enforcement. For the Data Protection Act of 1998, however, the Home Office issues regulations, while the Information Commissioner is the enforcement authority. Concerning the latter act, the Home Office, for example, released nearly 20 regulations, which add precision and clarify regulatory details (Carey and Russell, 2000, p. 7).<sup>11</sup> As secondary legislation and further literature, the Department of Trade and Industry (2000), Home Office (2000) and Carey and Russell (2000) are included. Secondary legislation on credit reference agencies in Great Britain includes the “Consumer Credit (Conduct of Business) (Credit References) Regulations 1977 No. 330” which was amended by the “Consumer Credit (Credit Reference Agency) Regulations 2000, No. 290” and the “Consumer Credit (Conduct of Business) (Credit References) (Amendment) Regulations 2000, No. 291”. The latter was released in March 2000. Other important legislative orders are the ones on fees (Nos. 187 and 188), as well as on processing of sensitive personal data (No. 417).

#### **2.1.2.4 The French Financial Privacy Regime**

France has one of the strictest privacy regimes in Europe, based on the 1978 Act on Data Processing, Data Files and Individual Liberties. This act created the National Commission for Data Processing and Liberties,<sup>12</sup> an independent agency that performs advisory and monitoring functions. Companies that process personal information are expected to register with the CNIL. The agency also has the power to deny the license for data processing (Litan and Swire, 1998, p. 23).

Regulatory power concerning bankruptcy information, on the other hand, is vested in the Banking and Financial Regulatory Committee (Comité de la Réglementation Bancaire et Financière, CRBF), a committee that is chaired by the Minister of Economic Affairs and Finance and includes the Governor of the Banque de France. This committee releases general regulations governing the establishment of data bases on credit and repayment (the system is described below in the section on “competition” in France).

By 2002, France had not implemented the Data Protection Directive. In February 1998, the administration issued a report that described the changes in the law, but by October of the same year, the Directive should have already been implemented. In 1999, a proposal of a modified legislation was sent to the National Parliament. No results emerged during the next year, which led the European Commission to initiate a case

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<sup>11</sup> Moreover, the British credit industry has established the agreement “Information-sharing – Principles of Reciprocity” that regulates the sharing of account information via credit referencing. The agreement is registered with the Office of Fair Trading. The Standing Committee on Reciprocity (SCOR) oversees the sharing arrangement. Despite requests, the author was not able to obtain this document.

<sup>12</sup> We refer to the National Commission for Data Processing and Liberties in its original French title, the Commission Nationale de l’Informatique et des Libertés (CNIL).

before the European Court against France and four other countries that had failed to transpose the Directive. The CNIL published its opinion concerning the draft bill in September 2000. The National Assembly reviewed the bill, which is intended to strengthen the CNIL and to preserve the level of protection granted by the 1978 law, and it voted in support of it. After the first reading of the bill, however, the process came to a standstill, because of the elections in France. Therefore, only the Act 78-17 of January 1978 on Data Processing, Data Files and Individual Liberties of 1978 (1978 DPDFIL)<sup>13</sup> and the Neiertz Act of 1989 (1989 NA) are included.

Rules and secondary legislation in France are included in Table 2 below. Moreover, two resolutions of the CNIL are of special interest to us: “Délibération No. 88-83” (recommendation concerning the administration of information on borrowers as well as the right to access and duration of storage) and the “Délibération No. 98-101” (Modification of the 88-83 resolution concerning the variable of nationality in scoring systems) by the Commission Nationale de l’Informatique et des Libertés (1988, 1998a, 1998b, 1999a, 1999b, 2000, 2001).

*Table 2. Regulation of the French FICP*

<b>Year</b>	<b>Title of Regulation</b>	<b>File</b>
1986	Règlement No. 86-08 du 27 février 1986 relatif à la centralisation des incidents de paiement	CPII
1989	Neiertz Act (Loi du 31 décembre 1989 relative à la prévention et au règlement des difficultés des particuliers et des familles), integrated in the Code de la Consommation, Art. L333.4, L333.6	FICP
1990	Règlement No. 90-05 du 11 avril 1990 relatif au fichier national des incidents de remboursement des crédit aux particuliers	FICP
1993	Règlement No. 93-04 du 19 mars 1993 Modified the No. 90-05 regulation	FICP
1995	Règlement No. 95-03 du 21 juillet 1995 Modified the No. 86-08 regulation	CPII
1996	Règlement No. 96-04 du 24 mai 1996 Amends the No. 90-05 regulation	FICP
1998	Loi No. 98-657 du 29 juillet 1998 d’orientation relative à la lutte contre les exclusions Modified the Code de la Consommation Art. 333.4 (Neiertz Act)	FICP
2000	Règlement No. 2000-04 du 6 septembre 2000 modifiant le règlement du 11 avril 1990 relatif au fichier national des incidents de remboursement des crédit aux particuliers Modified the No. 90-05 regulation	FICP

The French system is a centralised public credit registry; therefore, one also has to include regulations that belong to the 1989 Neiertz Act and are included in the Consumer Protection Code (Code de la Consommation). The regulations published by the CRBF have changed so many times in the 1990s that they are presented in Table 2. For further

<sup>13</sup> Original title is Loi No. 78-17 du 6 janvier 1978, relative à l’informatique, aux fichiers et aux libertés.



publications on this topic, the reader is referred to the Banque de France (1994, 1995, 1998, 2000a, 2000b, 2001a, 2001b) and Banisar (2000), Leclercq (2000) and Madsen (1992).

To summarise, all the aforementioned acts and regulations were analysed. The results constitute an in-depth analysis of data protection in the field of credit reporting. For the sake of brevity, the survey refrains from presenting the evaluation forms with the individual acts, their sections and the important sentence that constitutes the right or task. In the next section, we explain how data protection regimes might be evaluated.

## 2.2 Current Research on Privacy Evaluation

At the European level, the Commission has to evaluate data protection regimes to find out if a third country that is not a member of the European Union exhibits adequate data protection. This is a crucial precondition for data exports to the concerned country. However, research has not proceeded very far and the tools for evaluation are in their infancy and might be only seen as first approaches. Moreover, none of them provides a quantitative measure that would make comparisons easier. Without discussing the known approaches intensively, we briefly summarise them to contrast our own approach with them. Bennett (1992) states that there are five different models of privacy regulation that can be applied to data protection regimes: the Voluntary Control Model, the Subject Control Model, Licensing Model, Registration Model and the Data Commissioner Model. Each of these so-called models differs in the way data protection is regulated, if there are any registration or licensing tasks for data controllers or if there exists a data protection authority.

Pincus and Johns (1997) criticise Bennett's approach in judging data protection regimes: Bennett's Model only shows the privacy choices of a country with respect to who has the major responsibility for the protection of data, whereas no mechanism for measuring the degree or quality of privacy protections is afforded by the single choices. Therefore, the authors propose a technique for measuring the *degree* of protection afforded by a country's privacy protection scheme. The model consists of two parts, first, the so-called Privacy Protection Index; and second, the Privacy Protection Scale. Three fields are included by the authors: 1) constructive notice; 2) commission/body/guidelines; and 3) remedies, variables in these fields (e.g. data types gathered, storage duration, etc.). Each variable receives a score that is then added to the others to obtain a total.

Reidenberg and Schwartz (1996) conduct a law analysis for comparing the US and Europe. This "functional analysis" approach identifies regulations that are functionally similar to European regulations. The "multi-layered nature of US data protection" (Reidenberg and Schwartz, 1996, p. 19) excludes any approach that is based upon the search for a law in the US that is equally comprehensive as the EU laws. Therefore, the authors compare the specific context of data use (telecommunications, finance, direct marketing and employment) and examine specific treatments of information. The authors compare basic elements of European data protection with the combined result of legal obligations and established practices in the US. They include not only constitutional, statutory and common law, but also corporate practices or internal policies of companies (Reidenberg and Schwartz, 1996, p. 25). All in all, the analysis of the authors provides a comparative overview of principles that are established on both sides of the Atlantic. In

seven cases, the authors find a similar regulations, two are undecided and two are not similar.

As stated, the European Commission has the task to evaluate data protection regimes as mandated by Art. 25 of the Data Protection Directive. In the same article, it is established that the appraisal of adequate protection in a third country must take into account all circumstances that are important for a data transfer. It is a common misunderstanding that the directive implies equivalency. Moreover, the imprecision of the Directive's text allows a range of interpretations of what circumstances are meant. Several factors are mentioned by the directive itself: the nature of data, objective and duration of postings, country of origin and destination as well as general and sector rules in effect. The primary evaluation tool of the European Commission is a document from 1998 (European Commission, 1998b). However, as recognised by a group of researchers in a study for the European Commission (1998d, p. 4), the list given in the Directive is not exhaustive and no details are given that elaborate on its provisions.

According to the EU Article 29 Working Party, adequate protection "is typically achieved through a combination of rights for the data subject and obligations on those who process data (...)" (European Commission, 1998b, p. 5). The Commission finds that such rules only protect the individual's right if they are followed in practice. Against this background, the Commission not only evaluates the applicable rules (via legal analysis), but also the system to enforce the rules.

Therefore, one finds a two-sided approach: the rule's content is taken into account as well as the means for their effective implementation. This can be described as a flexible discretionary "country-by-country approach" that is more pragmatic than "juristic and abstract" (European Commission, 1998d, p. 4).

The Commission looks at principles of content as well as the enforcement of those principles. Such principles address, for example, the processing only for limited purposes, the rights of access and correction as well as technical security measures.

In 2003, there were only three countries that had been judged as providing adequate protection: Hungary, Switzerland and Canada. The US, on the other hand, is a special case. The establishment of a "safe harbour" agreement is said to create an environment of adequate protection, whereas as ad hoc solution contractual agreements between companies are also said to provide adequate protection. Since we do not elaborate on this, the interested reader is referred to the decision of the European Commission (2000).

### **2.3 Evaluation Instrument**

The herewith presented approach is based upon the dissatisfaction with the aforementioned works. Although most of them are relatively useful, none of them provides a simple comparison that is at the same time quantitative and more transparent. The presented approach differs in two important respects: more aspects are evaluated (due to the interest in credit reporting only) and federal acts are included, official decisions and regulatory rules by the appropriate departments or administration offices as well as informal directives (especially in the case of Germany). Professional rules and codes of conduct are excluded, since these rules are not established by democratically legitimised bodies.

Information flows in consumer credit markets do reveal network character. Networks interconnect several players: the right of one player may (at the same time) be the task of the other player. This is the case if the data subject exerts the right of access that is the task to disclose the information on the side of the credit bureau. Facing these interdependencies, we admit that a clear categorisation like “catalogue of data subject rights” and “duties of credit bureaus” is not always possible. This problem is reinforced by including the information stream from consumer to data-contributing player and to the credit bureau. For simplification purposes, we developed four major categories:

1. Supervisory authority (SA)
2. Property rights to information (PR)
3. Obligations by credit bureaus (OC)
4. Judicial remedies and enforcement (JR)

Data-contributing players are excluded, since this would include the whole field of banking acts or insurance legislation, for example (if they are not regulated by a comprehensive data protection law). The evaluation instrument is presented in Table A1 in the annex.

The privacy regimes are evaluated for *every year* within the timeframe 1990-2001. Therefore, our analysis constitutes one of the first dynamic ones in the field of data protection. Each time new regulations are introduced, the evaluation instrument captures their effect and the index changes accordingly. The results of the absolute values gained by the individual countries are presented in Table 3.

*Table 3. Absolute numbers of regulations in four selected countries*

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>US</b>	19	19	20	20	20	20	19	23	26	26	28	28
<b>Europe</b>	17	17	17	17	17	17	17	17	33	33	33	33
<b>Germany</b>	34	34	34	34	34	34	34	35	35	36	36	38
<b>Great Britain</b>	26	26	26	26	27	27	27	27	27	35	36	36
<b>France</b>	40	40	40	40	38	38	38	38	38	39	39	39

## 2.4 Financial Privacy Index (FPI)

With an index constructed for the quantitative regulation evaluation it is possible to rate countries on a continuum of regulatory regimes. Moreover, an index allows inter-temporal comparisons and enhances the understanding of regulatory trends. The following approach uses a systematic sample (not a random one). It is clear that the results only hold for the reviewed countries. Due to our approach, we are able to produce a time-series. We briefly explain how the index is constructed and then discuss the results.

### 2.4.1 Construction of the Financial Privacy Index

Indices are numbers that summarise economic information and show relative changes. In our case, insights derived from index theory are applied to measure regulatory trends (for a discussion of methodology see Jentzsch, 2003b and Jentzsch, forthcoming). There are

several multiplicative indices available; we chose the Cobb-Douglas index that uses weights independently from its values or value shares.

This index, however, is a “theoretical curiosity” that normally serves the purpose of explaining that it is a uniqueness theorem that satisfies all five fundamental axioms.<sup>14</sup> In the context of price measurement, the index is of no real value, since it lacks an economic interpretation of its weights and the whole index (or the denominator) can become zero, i.e. determinateness is not fulfilled (for further discussion, the reader is referred to Eichhorn and Voeller, 1983; Selvanathan and Rao, 1994; Jentzsch, 2003b; Jentzsch, forthcoming; and von der Lippe, 2002). Especially the latter characteristic does not make sense in price measurement. The index is therefore not widely used in academia.

In our context of regulation measurement, however, such peculiar characteristics are appreciated. The multiplicative feature accounts for the strong interdependencies we observe due to the strong interrelation of the indicators for property rights and judicial remedies, for example

As most indices, the index is constructed through the addition of indicators based upon the same range of value (0=non-existent, 1=existent). A simple additive index, however, behaves in a way that is not appreciated here, because the score of zero in one component (SA, PR, OC or JR) can be balanced by positive values in other components. If there is no judicial remedy or punishment for privacy breaches, enforcement is non-existent. In this theoretical case all other regulations are rendered *ad absurdum* as they cannot be enforced; only the multiplicative construction accounts for this. The whole index becomes 0 as soon as the judicial remedies variable becomes 0 or in the theoretical case of no regulations ( $x_{SA}, x_{PR}, x_{OC} = 0$ ). The latter, however, is irrelevant taking the empirical reality into consideration. We can therefore conclude that the Cobb-Douglas index accounts for total ineffectiveness of data protection, if there are no judicial remedies.

While this characteristic can be appreciated, the Cobb-Douglas index does not meet the factor reversal test. However, when fixed weights are assigned, it fulfils the time reversal test and the circular test, i.e. transitivity exists (for further discussion, the reader is referred to Jentzsch, 2003b). Therefore, the index allows consistent comparisons of adjacent periods when weights are held constant (which is the case in our application).

For constructing the index, a base has to be selected. This, however, influences the behaviour of the index and – more important – it may produce biased results. If the benchmark in the base period is too high, it artificially depresses the index and vice versa. It also has to be avoided to take the number of regulations of one country as a benchmark. For instance, if the US (1990) had been chosen, this would have been a relatively low level of protection (hence an overstating of the indices for other countries).

This problem can be avoided by computing an “artificial base” at a hypothetical period  $t$ . It is the maximum score achievable in the categories SA, PR, OC and JR, divided by

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<sup>14</sup> Five fundamental axioms are monotonicity, price-dimensionality, linear homogeneity, identity and commensurability. Not all of these characteristics are important for our purposes.

factor 2. This assures that half of the index (and *not* the maximum) serves as benchmark. Moreover, we include the EU as a “country”, but direct comparisons have to be viewed carefully, since the EU is obviously not a country and provides only the *frame* of harmonisation. This explains the low level in the EU until the Data Protection Directive remarkably increased the integration depth.

In the present case, there are “quantities” of regulatory measures that are used as weights, the whole index has a “quantity character.”<sup>15</sup> This approach can be justified *ex ante* under the hypothesis that for practical purposes, approximate weights are sufficient and in our case they are already implicitly given.

$$(1) \quad \text{CDI} = \prod_{i=1}^n \left( \frac{x_i^1}{x_i^0} \right)^{a_i} \quad \text{with } a_i > 0, \sum_{i=1}^n a_i = 1$$

$$(2) \quad \text{FPI} = \left( \frac{x_{SA}^{t+1} + x_{PR}^{t+1} + x_{OC}^{t+1}}{x_{SA}^t + x_{PR}^t + x_{OC}^t} \right)^{a_1} \left( \frac{x_{JR}^{t+1}}{x_{JR}^t} \right)^{a_2}$$

Equation (1) presents a general notation of the Cobb-Douglas index (CDI). In equation (2) the weights are assigned on a quantity basis. The values as derived are 0.8261 for  $a_1$  and 0.1739 for  $a_2$ ; for simplification, we have rounded them to 0.8 and 0.2. The  $x_{SA}$  denotes values achieved in the category “supervisory authority”,  $x_{PR}$  denotes those achieved in “property rights to information”,  $x_{OC}$  in “obligations of credit bureaus” and  $x_{JR}$  in “judicial remedies”. Results are given in the Table 4 below.

Table 4. Cobb-Douglas Financial Privacy Index

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>US</b>	0.78	0.78	0.84	0.84	0.84	0.84	0.78	0.93	1.12	1.12	1.20	1.20
<b>Europe</b>	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	1.42	1.42	1.42	1.42
<b>Germany</b>	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.50	1.50	1.56	1.56	1.65
<b>Britain</b>	1.05	1.05	1.05	1.05	1.09	1.09	1.09	1.09	1.09	1.51	1.55	1.55
<b>France</b>	1.74	1.74	1.74	1.74	1.64	1.64	1.64	1.64	1.64	1.69	1.69	1.69

### 2.4.2 Results of the Financial Privacy Index

In the overall comparison, the  $FPI_1$  shows that the US in general remains below EU member states’ levels in the direct country comparison. In the inter-temporal comparison within the US, the FPIs indicate that laws and federal guidelines became stricter after 1996 due to reforms under the Clinton administration. However, even after the acts were introduced, the US did not converge with the other countries, but remained below their levels (see Table 4 above).

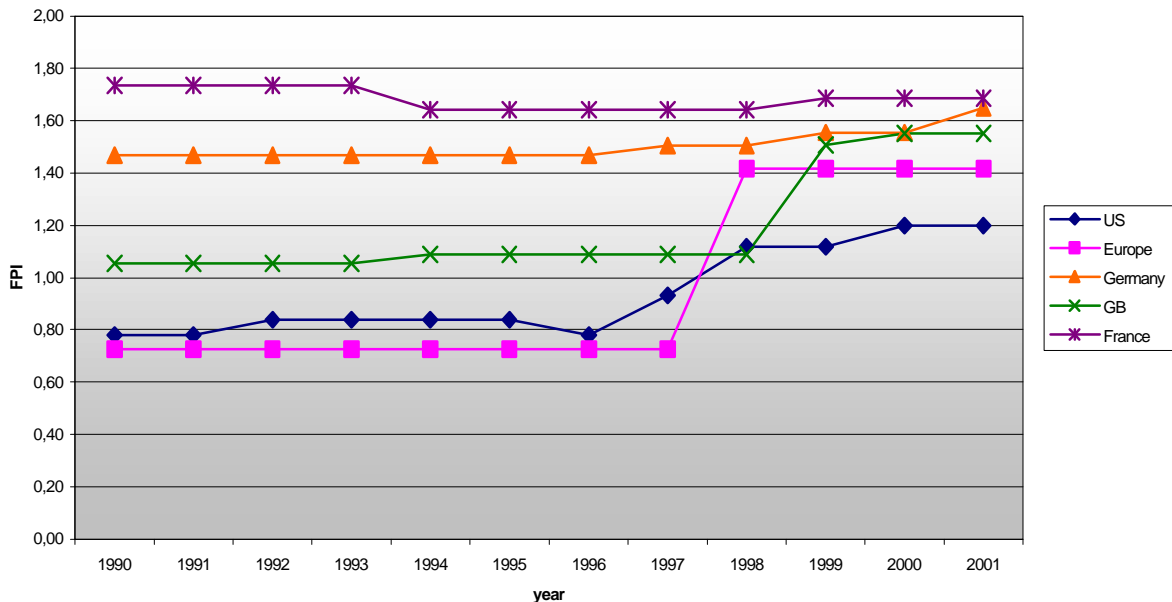
The indices are relatively robust for the results of US-EU comparisons. It is important to emphasise that these results are only valid for the very specific field of credit reporting

<sup>15</sup> It is possible to empirically estimate the weights, however, data on such variables like times a right is exerted by a data subject is not existent.

regulation, one of the strictest regulated fields in the US economy. As expected, we also observe a convergence among European regimes, the upward trend after 1998 shows this. EU member countries are generally above the EU level.

What drives the indices in the individual countries? The US showed strong gains in the category of obligations to credit bureaus (OC) as well as after 1997 in the category that counts the rights of data subjects (PR). We also observe that there have been more changes in legislation than in any of the other countries. Germany, on the other hand, gained in the same categories as the US (OC and PR), and the same was the case for Great Britain. France already had a very high level of data protection. France displays more tasks for data controllers. The development and behaviour of the indices are plotted in Figure 1.

*Figure 1. Cobb-Douglas Financial Privacy Indices (1990-2001)*



In reviewing these functions, it can be observed that some of the indices (France and the US) also decrease. This behaviour accounts for the fact that there were rights or tasks established that later have been repealed. This is for example the case for the 1992 decision of the Federal Trade Commission in the US to oblige credit bureaus to disclose credit scores, which was revised with the CCRRA of 1996. In France, periods for storage of certain data categories have been expanded. One may state that the longer the period, the less the data protection (very strict protection in this sense would not allow any storage of such data at all). We also observe a major jump in the EU FPI. This is due to the increased depth of integration and partially also because of interdependencies in the index.

What are the major qualitative differences between the US and the EU? In the supervisory bloc in the EU and unlike the practise in the US, it is the authorities' competence to administer a publicly accessible list of data controllers and the

competence of authorities to regulate international data flows.<sup>16</sup> In the bloc of property rights to information, we find differences in the opt-out system of the US as compared to the opt-in system in the EU. Moreover, there are regulations on automated decisions in the EU that do not exist in the US. In the case of the obligations on credit bureaus, we find major differences in the absence in the US of any registering or restrictions on excessive data collection, which apply in the EU, as well as any explicit security measures.

In summary, there is an international trend showing a weaker regime in the US and a more stringent one in Europe. This result holds also for the period after 1995. Viewed from a broader perspective, the indices show differences in the regulation of credit reporting agencies and gaps in data protection that may eventually divert information flows in consumer credit markets, because of the relocation of data controllers.

However, one has to be careful in interpreting the index results and especially the absolute scores of the individual countries. If a country A achieved the number of 30 regulations and country B of 15, one cannot interpret this result as “A has data protection twice as stringent as B,” which would constitute a qualitative interpretation. From the approach above one may only derive that “A has twice as much data protection regulations as B.” In the absence of other variables, we interpret that as a proxy for the quality of the data protection regimes, that is, whether the evaluated regime is a less stringent or more stringent one.

In a further step, we estimate the costs that are connected with the different data protection regimes. This however may only be seen as explorative analysis, since the set of data collected from a survey of credit bureaus is incomplete. It is very difficult to receive replies from some of the credit bureaus, which severely inhibits research in this field. We proceed as follows: first we discuss the costs that are associated with some of the surveyed regulations. Then we conduct a statistical analysis of the impact of data protection on consumer credit markets.

### **3. Credit Markets and the Costs of Privacy Regulation**

#### **3.1 Costs of Data Protection**

In all of the reviewed countries it is possible for data subjects to demand to see information that is stored by credit reporting agencies. This right to access as well as disclosure is a cost factor for the companies. We compiled data from different bureaus in the US, Germany and Great Britain. The results are averages weighted by the market share of the agencies. The results are not representative and only hold for the companies that answered the questionnaire. The figures might nevertheless still be suggestive.

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<sup>16</sup> This regulation does not necessarily have to be established under a central authority of a data protection officer. As far as judicial courts or governmental departments are involved, the author granted a positive value in the evaluation.

*Table 5. Average costs related to access and disclosure\**

Task of data controller	US (€)		Germany (€)		UK (€)	
	1995	2001	1995	2001	1995	2001
<b>ACCESS AND CORRECTION</b>						
Average total cost of a credit report directed at the data subject	0.45	0.26	9.65	10.77	21.24	15.55
Average working time (in minutes) for preparation of report	8.65 min.	5.20 min.	11.66 min.	12.39 min.	35 min.	37 min.
Fee charged to subject for disclosure of consumer report	7.90	8.61	8.28	7.14	15.67	16.38
No. of credit reports requested by data subjects (scaled by population)	n/a	4,876,270 (0.01711)	540,950 (0.00662)	715,886 (0.00897)	n/a	730,000 (0.01216)
Average total costs of correction of a credit profile	7.89	7.30	21.06	25.87	n/a	n/a
Average working time (minutes) spent on correction	7.22 min.	5.66 min.	30.30 min.	32.65 min.	n/a	n/a
<b>SUPERVISORY AUTHORITY</b>						
Time spent on negotiations with data protection authorities (hours)	325 hrs.	500 hrs.	100 hrs.	176 hrs.	n/a	81 hrs.
Time spent on data protection issues by data protection appointee	100,750 hrs./year	125,775 hrs./year	207,550 hrs./year	249,076 hrs./year	n/a	n/a
Opportunity costs produced by data protection appointee (p.a.)	n/a	n/a	6,641,511	8,304,720	n/a	n/a
GER/UK: Cost of seminars and training concerning data protection (p.a.)	n/a	n/a	58,141	74,992	n/a	1,500

\* Numbers represent weighted averages (with weights derived from markets shares of credit bureaus), except for the Great Britain (arithmetic averages). Exchange rates are as of 17 January 2003; numbers are rounded.

The direct comparison in Table 5 shows that US bureaus are cost efficient in terms of the average costs (including labour costs) of generating a credit report that is directed to the data subject. For the reviewed companies in the UK, this seems not to be the case: here the costs are relatively high compared to the US and Germany. This picture also holds for time efficiency in the case of the preparation of the reports. In Germany and the UK, the companies generally estimate that the costs of generating a report for the consumer is above the actual fees they charge. With a more comprehensive survey that is representative, those results could be verified for the whole population of credit bureaus. In general, the information distribution in the consumer credit market of the US exceeds that of the European countries. A sign of the confidence in the system might be given by the number of consumers that actually demand to see their credit report. When scaled by population, the numbers show that in Germany the consumer is least likely to demand the



report. This could be due to the fact that the public is less aware of credit reporting or that the system functions more smoothly. In UK, on the other hand, consumers seem to be more concerned and the number is the highest for the US.

The average costs of correcting a profile for the reviewed companies also differs at least for Germany and the US. Again, we view lower costs in the US and lower working time spent on correction of a profile. The differences might be due to scale economies in the US, but also due to public pressure and a more efficient use of information technologies.

The picture reverses itself when one compares the annual hours spent to negotiate with data protection authorities on the national as well as state level. It seems that there is more time involved in the US than in Germany, which could be due to negotiations but also due to the fact that there is more lobbying in general conducted in the US. However, when the time is estimated that is attributed to data protection in general, Germany takes the lead. The mandatory data protection officer in information-intensive companies in Germany is a major cost factor.

In general it could be assumed that more stringent data protection regimes that pose more obligations upon credit reporting agencies help to increase consumer awareness and reinforce the incentive of consumers to request, correct and dispute files. From the casual evidence above, however, the opposite seems to be the case: the weaker the data protection, the more complaints about privacy breaches and the higher the public awareness. This translates into pressure on companies to increase their efficiency by setting up adequate systems for consumer contact. In the US, this was demonstrated by the charges that Experian, TransUnion and Equifax had to pay in 2000 due to violations of the Fair Credit Reporting Act. Together, these agencies had to pay \$2.5 million for failing to maintain a toll-free telephone number at which their personnel are accessible for consumers during business hours. According to a Federal Trade Commission press release (Federal Trade Commission, 2000c), the agencies, “blocked millions of calls from consumers who wanted to discuss the contents and possible errors in their credit reports and kept some of those consumers on hold for unreasonably long periods of time.” Such charges obviously increase the incentive to provide more efficient access for consumers.

The disclosure fees also seem to be lower in the United States than in Great Britain and Germany. It is difficult to explain such prices (in Germany and Great Britain), since advances in computer technology should have contributed to the cost efficiency of such activities. However, working time spent on data protection issues, mainly by the appointee in a company seems to be higher in Germany (no data are available for the UK). As stated, the evidence is only casual and it is more appropriate to conduct a statistical analysis of privacy regulations and their effects on consumer credit markets. This is also a way to estimate the “economic costs” of data protection.

### **3.2 Credit Markets and Information Sharing**

The relationship between credit markets, information sharing and credit reporting has been at the centre of several studies in the past (for an overview, see Table 6). We briefly summarise the evidence to date and then present our own approach. One of the first empirical surveys of information-sharing and credit markets is that of Pagano and Jappelli (1993). The authors collected information on 14 OECD countries and divided

them into two groups: one with widespread information-sharing and one with data exchange on a smaller scale.<sup>17</sup> The authors find that countries with credit bureaus exhibit high mobility of consumers and deep consumer credit markets.

*Table 6. Surveys of economic activity of credit bureaus*

Authors	Study design and methodology	Results
Jappelli and Pagano (2000a)	39-country comparison Population: Public and private credit bureaus Methodology: Regression analysis	Theoretical predictions are consistent with the data: Information sharing (IS) increases bank lending, reduces credit risk and is negatively correlated with default rates (weak correlation)
Jappelli and Pagano (2000b)	17-country comparison (EU plus Turkey) Population: Public and private credit bureaus Methodology: Description	Privacy protection affects the amount of information shared; CBs originate from local lenders; consolidation of the industry
Pagano and Jappelli (1993)	14-country survey (OECD) Population: Public and private credit bureaus Methodology: Regression analysis	IS is positively related to borrower mobility and heterogeneity, size of credit market and advances in IT; IS increases lending volume if adverse selection is severe

Moreover, Pagano and Jappelli (1993, p. 1693 and p. 1714) argue that the incentives of lenders to share information about borrowers (via a credit bureau) are positively correlated to the mobility and heterogeneity of borrowers and the advances in information technologies. The size of the market increases the incentive to share information, on the one hand, while the benefit of setting up a credit bureau rises with the increase in loan demand, household mobility and the decrease of operational costs of the system as well as with the uncertainty about borrower quality. Furthermore, the utility of a reporting system increases with the number of participants; therefore, credit bureaus are natural monopolies (Pagano and Jappelli, 1993, p. 1699).

In a follow-up paper, Jappelli and Pagano (2000a) collect information for a sample of 39 countries (1994-95). Those are divided in three groups: countries without a register, a negative one only or a positive register. The authors then experiment with different indicators of information-sharing and variables on credit markets.

In testing for information-sharing and bank lending, the authors rely on quality of information shared (exchange of negative information only and exchange of negative and positive information). With information-sharing, the ratio of bank lending to GDP is higher. Their test on the relationship of information-sharing and credit risk shows that countries with data exchange have lower average credit risk (the latter is the International Country Risk Guide Financial Indicator, ICRGF). Information-sharing reduces the credit risk indicator by 3 points, which may translate into a 1 percentage

<sup>17</sup> For the purpose of surveying only the consumer credit markets, the authors exclude mortgage reports (Pagano and Jappelli, 1993).

point reduction in the fraction of non-performing loans. In general, default rates are negatively correlated with information-sharing indicators.

In summary, information-sharing is associated with larger bank lending to the private sector, and mitigates credit risk (as measured by default rates). This is also the case if one controls for other economic and institutional variables like growth rate and rule of law.

Like many regression analyses, these results suffer from data problems (noisy indicators) and the reverse causality problem. The result that information-sharing leads to greater breadth and depth of consumer credit markets might very well be the other way round: since credit markets are broader and more transactions take place, information-sharing is higher.<sup>18</sup> This problem is acknowledged by the authors.

Further guidance on the relationship of credit reporting, general information-sharing and restrictions posed upon data uses might come from micro-level analysis that experiment with prediction precision of scoring models in creditworthiness tests. The latter approaches to information-sharing and risk prediction are empirical tests of the prediction precision of scorecards (for an overview of scoring development, see Thomas, 2000). Scoring models are statistical methods to evaluate the credit risk associated with the borrower. In general, these models have one assumption in common: data about past payment behaviour is useful for predicting future performance. This future performance includes voluntary and involuntary default. The first is strategic default, while the latter is involuntary, caused by unexpected unemployment or illness (see also Jentzsch and San José Riestra, 2003).<sup>19</sup>

In general, the micro-level works analyse the influences that are eroding the prediction precision of scoring models. This is mainly tested for the US. One reason for this might be the widespread use of scoring as well as the highly advanced development in the US.

In general, two sources of potential deterioration of a model can be separated: statistical insufficiencies (due to population drifts, for instance) and privacy-related restrictions of predictor availability. The latter are of special importance for the present study. The omitted-variables problem might arise when certain variables are not used due to privacy restrictions such as contained in the Equal Credit Opportunity Act (ECOA) in the US and in Europe, in the Data Protection Directive and the acts in the individual member states. This might lead to an underfitting of scoring models when predictors reveal statistically significant correlation, but are not included in a scorecard. Only lately has this problem been addressed by different authors (Barron and Staten, 2000; Boyes, Hoffman and Low, 1986; and Bostic and Calem, forthcoming).

These studies show that the prediction precision of a model deteriorates when certain variables are forbidden. Bostic and Calem (forthcoming) analyse this effect for the gender variable, and Barron and Staten (2000) test these effects for whole information-

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<sup>18</sup> This view may be underpinned by historical evidence. In the US, banks were the first to be founded (during colonial times) and credit bureaus followed nearly a century later. One of the first credit bureaus was established in 1860 in Brooklyn (Cole, 1992, p. 220).

<sup>19</sup> The latter is especially a cause for over-indebtedness in the US, due to the health system and reduced insurance coverage of households.

sharing regimes in the US and Australia. The US is a positive-negative regime – the distribution of both types of information is allowed, while Australia constitutes a negative information regime. Barron and Staten (2000) find that the restriction of information sets of market participants increases fuzzy risk predicting and decreases allocative efficiency. The authors show how the Australian information set produces higher rates of type-I and type-II errors.<sup>20</sup> Accordingly, the more precise discrimination of formerly pooled borrowers increases approval rates, whereas an information set with only negative predictor variables reduces these rates.

In summary, the presented studies show that restrictions on predictive scoring variables reduce the efficiency of credit scoring models. This also holds if the amount of information used is varied, like in the Barron-Staten approach. The potential costs of privacy regulations can be quantified economically by the deadweight loss due to reduced credit availability, but also by the reduced efficiency if type-I and type-II errors lead to a misallocation of credit.

### 3.3 Data Protection and Consumer Credit Markets

The effects of data protection on consumer credit markets are not quite clear. On the one hand, there could be positive effects due to increasing transparency of information flows, but on the other data protection acts might reduce the information available to market participants. The studies reviewed above analyse information-sharing both on the macro-level by reviewing effects on credit markets and on the micro-level by testing scoring models. In the following, we present our set of variables and our approach to the analysis of economic costs associated with different data protection regimes.

#### 3.3.1 Hypotheses

The major research question is whether a more stringent data protection regime (measured by higher FPI) inhibits information allocation in consumer credit markets. This could be postulated as the first hypothesis: the higher the FPI, the lower the information allocation. A second major interest is to find out if a lower information allocation (as approximated by the credit report sales) is associated with a higher credit risk. After reviewing the micro- and macro-level literature, it may be stated that more stringent data protection regimes are associated with lower information allocation and higher credit risk, because financial service providers have less information on consumers to evaluate their risk. This may result in misinformed credit decisions that translate into higher credit risk on the macroeconomic level. Therefore, our second hypothesis is that lower information allocation is associated with higher credit risk.

A further group of hypotheses refers to credit market characteristics. Lower information allocation is thought to result in thinner credit markets (lower percentage of consumer credit to GDP) and lower consumer indebtedness. We assume the latter since consumer indebtedness is supposed to rise in countries with more credit financing and broader credit markets.

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<sup>20</sup> Type-I errors are omission errors in denying good risks credit, whereas type-II errors are errors of commission in granting loans to bad risks (see also Barron and Staten, 2000, p. 21).

We proceed as follows. We estimate the relations between the variables by conducting a series of tests using Pearson product-moment correlations for the individual countries and for cross-country analysis. In a further step, we expand the tests by including a cross-country partial correlation analysis.<sup>21</sup>

Studies in the field of credit reporting and consumer credit markets typically suffer from problematic data sets (the present study is no exemption). The reason for this is the lack of proper official data on important variables such as credit risk and the lack of data from private sources such as credit bureaus. The typical methodology employed in this field is a large country panel and regression analysis.

The presented approach differs, however. We reviewed only four industrialised countries, but for the period 1990-2001. For the tests, we work with a new data set and with data from the European Credit Research Institute. An overview of the variables is presented in Box 1 below. Since we also requested information from credit bureaus in the US, Great Britain and Germany (there are no credit reporting agencies in France), this information was included in our estimates about information allocation and costs of data protection.

*Box 1. Overview of variables used in the study*

<b>Financial privacy indices (FPI)</b>	The set of variables is the multiplicative Cobb-Douglas index. The index is based upon a set of absolute values of data regulations in each country for the years 1990-2001. The index is a proxy for data protection regimes in the specific field of consumer credit reporting.
<b>Information allocation (RS)</b>	Information allocation is the absolute number of credit reports sold in a country on a yearly basis. Since this number cannot be observed directly, it had to be estimated by using either already published estimated or own data. The estimation procedure is not disclosed for confidentiality purposes. RS stands for reports scaled (i.e. sold to financial service providers). Source: the author.
<b>Consumer indebtedness (CI)</b>	Consumer indebtedness is a ratio expressing the volume of consumer credit outstanding relative to the disposable income of households. This ratio rises with the increase of borrowing to finance consumption. Source: ECRI.
<b>Credit-financed consumption (CCPPC)</b>	Credit-financed consumption is outstanding consumer credit as percentage of private consumption. This measures the weight of credit in private consumption transactions. Source: ECRI.
<b>Consumer credit interest rates (INT)</b>	This data set is constituted of interest rates on consumer loans to households. For the European countries these numbers are non-harmonised. Source: ECB, National Retail Interest Rates Statistics. For the US, data are taken from the Federal Reserve's G.19 consumer credit statistics (commercial banks interest rates).
<b>Real GDP growth (GDP)</b>	Real GDP growth is percentage change from previous period. The US uses chain-weighted indices to calculate real GDP and expenditure components. Numbers are available for 1990-2001; for 2001 numbers

<sup>21</sup> The author repeated the tests below with inflation-corrected terms and by controlling for GDP growth. The results, however, did not change significantly and they are not reported.

**Credit risk  
(RISK)**

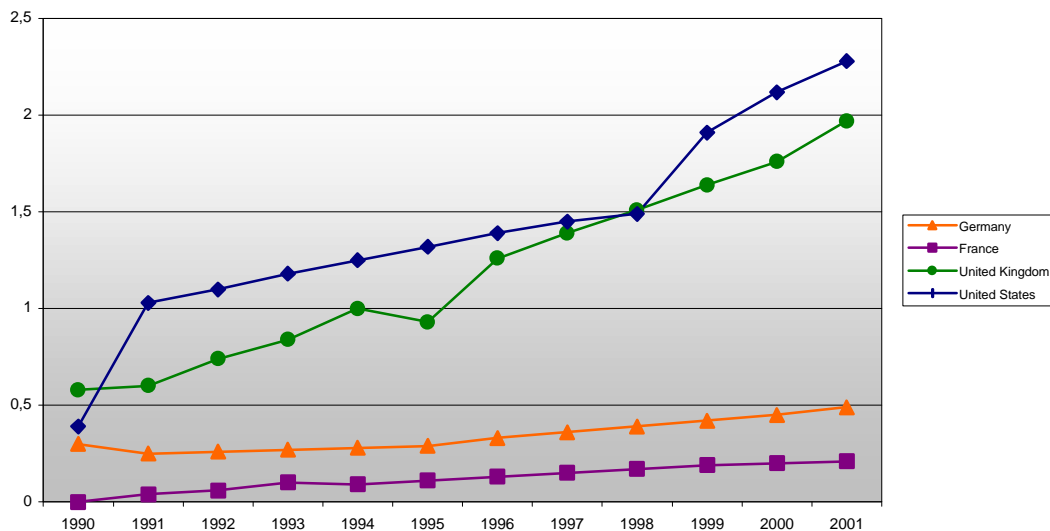
are projections. Source: OECD, Economic Outlook, 2001.

Credit risk is household-debt service burden, which is the ratio of debt payments, i.e. minimum payments and interest rate payments on consumer credit to disposable income. Source for US: Federal Reserve. Source for Europe: the authors calculations (based on data from the ECB, ECRI, national central banks and estimates of commercial financial service providers).

The first set is the FPI. As elaborated above, the index is a very specific measure that was *only* applied to credit reporting regulation. Therefore, the index is precise enough to capture the most important regulations.

The variable for information allocation (RS stands for *reports scaled*), on the other hand, is more problematic. The credit bureaus were asked to disclose their sales for the years 1995 and 2001, associated growth rates in the 1990s and the percentage of credit reports sold to financial service providers. From the data, the percentage of reports sold for consumer credit purposes could be estimated. These numbers, together with estimates from other sources (like industry publications) were compiled to serve as a rough proxy for information allocation. The number was then scaled by the population in the country. The results are plotted in Figure 2.

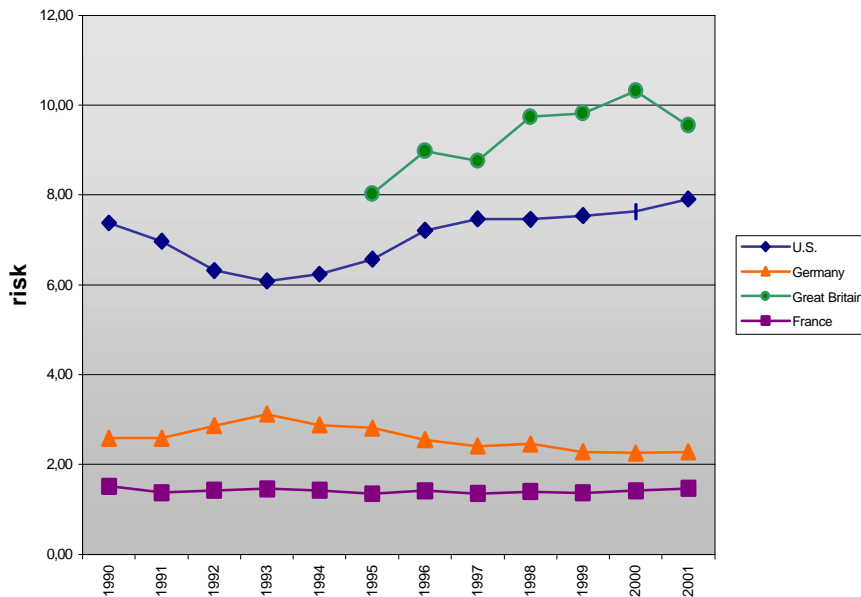
Figure 2. Information allocation in four selected countries (1990-2001)



The credit market indicators are less problematic. Consumer indebtedness (CI) is the ratio of consumer credit outstanding to disposable income of households. Credit-financed consumption is the outstanding consumer credit as a percentage of private consumption (CCPPC) and as credit market breadth or availability, we included consumer credit (excluding mortgages) as a percentage of GDP (CCGDP). On consumer credit interest rates (INT), moreover, data from the European Central Bank and the Federal Reserve Board is used. These data are available for all countries, except for the Great Britain (1990-95).

Real GDP growth rates (GDP) as proxy for business cycle fluctuations were collected from the OECD Economic Outlook (with estimates for 2001). Another somewhat problematic variable is the credit risk estimate (RISK). For the US, there are official numbers on debt-service burden of households: the service on consumer debt in relation to disposable income.<sup>22</sup> This service includes average monthly minimum payments as well as interest rate payments. European numbers are calculated by using consumer credit interest rates and disposable income. However, data on minimum payments are neither collected by the European Central Bank nor by the individual central banks. Therefore, estimates from governmental departments as well as financial service providers were used. With these estimates it was possible to construct a time-series of credit risk in the individual countries, however, some of the information is missing in the case of Great Britain.<sup>23</sup> The results are plotted in Figure 3.

Figure 3. Estimated credit risk in four selected countries (1990-2001)



We also discussed the inclusion of other possible intervening variables such as creditor rights as presented by La Porta et al. (1997). This is problematic, however, since the indicator is estimated only for one year. There is not really an statistical explanation for including it as constant quantity.

<sup>22</sup> This is regarded to be “credit risk”, because it tends to lead delinquencies and predict bankruptcies (Maki, 2000, p. 5)

<sup>23</sup> This is a better approximation of (consumer) credit risk than other indicators such as the ICRGF which includes risks unrelated to consumer credit (such as losses from exchange controls).

### 3.3.2 *Pearson's Correlations for Individual Countries*

Results for the test of interdependency of FPI and information allocation for the individual countries are given in Tables A2-A5 in the Annex. For the US, we have a strong positive correlation (.873) that is statistically significant at the 0.01 level. The same holds for Germany (.919) and Great Britain (.843), both statistically significant at the 0.01 level. Note that the signs are *positive*. The implication of this is contrary to our hypothesis that higher FPIs are associated with lower information allocation. It seems that for those countries the reverse is true: the higher the distribution of credit reports, the higher is also the FPI (that is, more data protection regulations exist). We will explain this counterintuitive result further below. France, however, displays a correlation that is statistically not significant. Growth rates of disclosures in France could be severely underestimated, producing a misleading result in this case.

The observation that in other countries sales of credit reports increase with increasing data protection regulations crucially depends on assumptions about credit report sales. As stated, we had to estimate the numbers, but from the questionnaires of our survey we got strong evidence that suggests that credit report sales increased remarkably in the 1990s, which is certainly due to increasing information technology adoption and the reduced costs of administration of such files. The results cannot, of course, be interpreted as causality. However, the strength of the relationship proposes an alternative explanation that can be further augmented by historical evidence.

It seems that increasing information allocation leads to increasing public awareness about privacy problems in general. In the 1990s, this was accompanied by the large-scale adoption of the internet that further raised such concerns. In a political economy approach, one might state that this awareness translated into increasing pressure from constituents to alter legislation and increase the rights of data subjects and the tasks for data controllers. That is something we could demonstrate by the evaluation of individual countries and the upward trend in the FPIs. Increasing data protection awareness has obviously not been on the agenda of the French data subjects – they already enjoy very high protection. Of course, it would be necessary to wait another ten years to measure how the legislative changes in the latter half of the 1990s affected the relationship of the FPI and information distribution in the long-run.

The second hypothesis stated that increasing credit report sales increase risk prediction capabilities of financial service providers and therefore should be negatively correlated with credit risk on the aggregate level. As we review the individual countries, we get mixed evidence for such a relationship (Tables A2-A5 in the Annex).

Again, we take the scaled credit report distribution, but this time, we relate it to credit risk. For the US and France, the coefficients are not statistically significant. Germany, on the other hand, displays a negative correlation (-.780) and Great Britain a positive one (.918), both statistically significant at the 0.01 level. Therefore, the tests on the level of individual countries do not show any clear relation between information distribution and credit risk.

Another interesting question is whether reduced sales of credit reports result in less access to consumer credit (as a percentage of GDP) and lower levels of consumer indebtedness. The connection between sales of credit reports and consumer credit as a



percentage of GDP is the following. In the US (.777), the Great Britain (.899) and France (.939), the relationship is positive and significant. That means that higher sales of reports are associated with a higher ratio of consumer credit and GDP. Access, if we interpret the variable in this way, is then increased by higher information allocation. Germany, however, does not fit this picture, for here we discern no statistically significant relationship. The same kind of association also holds for consumer indebtedness in the US (.790), the Great Britain (.890) and France (.925). Here too, Germany displays no relationship. Along with the broadened access to consumer credit (facilitated by the increasing distribution of information about potential borrowers) comes the increase of consumer indebtedness. The latter is highly associated with this expanded access.

We originally assumed that stringent data protection rules reduce information allocation. This relationship cannot be observed in the individual countries, instead the contrary holds. If we directly test for the association of the FPI with credit access and consumer indebtedness, the following picture emerges: in the first case a positive correlation exists only for the US and Great Britain as English common law countries. The correlations for Germany and France are again not significant in both tests. Therefore, we find no general relationship that would hold for all of our countries. In a next step, we turn to cross-country evidence.

### 3.3.3 *Pearson's Correlations and Cross-Country Evidence*

Due to the very little numbers of observations in each country, we expand the tests by conducting a cross-country analysis. On the background of the initial tests, we now modify the first hypothesis by stating that a higher FPI is correlated with higher information allocation. The results of the analysis are presented in Table A6 in the annex.

This time, however, the association of both indicators is statistically significant correlated with a negative sign (-.622) – the one we would have expected in the analysis above. In cross-country comparisons, a higher FPI is obviously associated with *lower* credit report sales. This reinforces our initial assumption that the US, for example, has lower data protection and more credit report sales, whereas the opposite holds for more stringent data protection regimes like France.

Within the individual countries, however, the relation seems to be positive due to the reasons explained above. The political economy approach, however, does not work on the international level, since there is no international data protection authority to which complaints could be directed (note that we have not included an EU aggregate). Note also that we did not rely upon absolute indicators of consumer credit markets, but on percentages of GDP.

Concerning information allocation and credit risk, we did not receive a strong result that credit report sales decrease credit risk. Therefore, we reiterate our assumption that the variables must be intuitively correlated in a negative way, i.e. higher information allocation is associated with lower credit risk.

This time, we find a *positive* relation (.592). This is as counterintuitive as the weak results in the individual countries. It was stated that risk prediction capabilities should increase and as a consequence, credit risk should be lowered. If a household already has

a relatively high debt-service burden as a consequence of indebtedness, the marginal propensity to grant credit should decrease.

We initially assumed that this translates into lower credit risk on the aggregate level. The result is statistically significant on the 0.01 level, as well as the *positive* relations of credit report sales with the variables for consumer indebtedness (.585) and consumer credit as a percentage of GDP (.724). On the international level, a higher distribution of credit reports is obviously associated with increased consumer indebtedness and broader credit markets. Such a positive relationship also holds for credit risk.

One explanation for this is that with increasing consumer indebtedness, a higher part of consumption will be financed by credit and more credit reports are sold as a consequence. Less surprising is that credit risk is highly associated with consumer indebtedness (.762) and consumer credit as percentage of GDP (.778). When we repeat the tests directly with the FPI, we find that it is significantly negatively correlated with consumer indebtedness (-.477), consumer credit as percentage of GDP (-.632) as well as consumption financed by credit (-.318).

The following relationships can now be established: the more stringent are data protection regimes in cross-country comparisons, the lower are credit report sales. With increasing information allocation, both consumer indebtedness as well as consumer credit as a percentage of GDP *rise*. Both go hand in hand it was stated. The more credit reports are sold, the more credit risk will increase, since both variables are *positively* correlated. If we exclude the reports and conduct the tests directly with the FPI, we find that countries with higher FPIs have lower credit access, credit risk and consumer indebtedness.

How can these results be explained? First, we have to state that the analysis above involves only simple Pearson correlations for a few countries, but they might provide some first indications. Such an analysis always suffers from problems of omitted variables and we are not able to draw any conclusions about causal relations. Moreover, rising credit risk as well as consumer indebtedness are certainly a function of economic conditions. Households will borrow more if wages rise or job prospects look good. Wage income is still the major income source of the average US household, so the job market and the stability of the income stream – both of which are related to the business cycle – will be of the utmost importance. We now turn to partial correlation coefficients.

### **3.3.4 Partial Correlation Coefficients: Cross-Country Evidence**

We start to control for variables in the following way: first, the interdependency of the FPI and information allocation will be checked by controlling for economic growth. Table 7 presents the results. The negative relationship as we observed in cross-country comparisons remains statistically significant, but to a somewhat weaker extent. However, the statistical significance vanishes when we control for consumer market breadth or for the latter and consumer indebtedness in a second-order partial correlation.

The interdependency of information allocation and credit risk, on the other hand, remains statistically significant in first-order test with controlling for GDP. In the other cases, the relationship vanishes. In the relation of the FPI with the risk proxy, we also get statistical significance, the sign remains the same: *negative*, and this is the case in first-order partial

analysis (controlling for GDP growth) and in the second-order analysis controlling for consumer indebtedness and consumer credit.

*Table 7. Cross-country partial correlation coefficients*

Control variables (2-tailed significance)	FPI – RS	RS – RISK	FPI – RISK
<b>First-order partial correlations</b>			
<b>GDP growth</b>	-.6156**	.5480**	-.6514**
<b>Consumer credit % GDP</b>	-.3069	.0747	-.2924
<b>Second-order partial correlations</b>			
<b>Consumer indebtedness, consumer credit % GDP</b>	-.2048	.1509	-.5140**

\*\* Correlation is significant at the 0.01 level (2-tailed).

Especially GDP growth appeared to be a candidate for intervening influence, but the interdependencies of the FPI with information allocation or credit risk or information allocation and risk remain statistically significant on the 0.01 level. Due to the small data set, the model should not be over-fitting. Therefore, we refrain from including further variables (household saving or consumer expenditure, for example) and we refrain from conducting a regression analysis.

In sum, we observe that across countries, a rising number of data protection regulations is associated with lower information allocation, *lower* credit risk and *decreased* consumer indebtedness. However, with decreasing FPIs (and hence increasing information allocation), consumer indebtedness increases as well as the other variables that served as indicators for the consumer credit market. In addition, credit risk will *rise*.

In the following, another explanation of the observations is proposed. As stated, in the individual countries, higher information allocation is associated with higher FPIs, whereas countries with high FPIs in comparison to those with lower ones do exhibit lower information allocation. However, if credit markets are broader, more transactions take place and more credit reports will be sold. The expansion of the consumer credit market increases marginal risk associated with less creditworthy households – this is the reason why credit risk increases on the aggregate level.<sup>24</sup>

Current statements from the credit reporting business (see e.g. Experian, 1996, p. 12) might help to further reinforce these assumptions: “In general, the usage of credit profiles (and related services) is driven by consumer demand for credit (via new credit cards, automobile loans, home mortgages and refinancing and other consumer loans) and lenders’ efforts to develop new, and monitor existing, credit relationships.” Hence, the broader the credit market, the higher the information allocation and the higher the credit risk.

<sup>24</sup> Note that this aggregate level is not the overall credit market in the economy, but the consumer credit market.

## 4. Competition and Market Structure in Credit Reporting Industries

### 4.1 Competition in Information Markets

One of the major questions that arises in the context of efficiently working consumer credit markets is what kind of industrial organisation exists in the credit reporting industry. It could be very well the case that competition in such markets increases information allocation and leads to a more efficient distribution of consumer credit. However, information markets differ in certain important respects from traditional markets, and the credit reporting industry in Europe in particular underwent major changes in the 1990s.

The competition in the credit reporting industry constitutes an example of competition in information markets par excellence. Such markets differ from traditional markets in several specific characteristics, because they are dependent on network structures within which information goods are traded. We will first elaborate on the general characteristics of information markets and then describe the trends in credit reporting.

Networks are a form of industrial organisation and market governance. As coordination mechanism, networks influence market structures as well as aggregate economic results. Different authors have modelled networks among economic agents employing influence matrices (Steyer and Zimmermann, 1998), cascade models or poly urn schemes (Willinger and Ziegelmeyer, 1998). Others have employed spatial models that locate agents on lattices (Jonard and Yildizoglu, 1998, and Nelson and Winter, 1982). These models are mainly concerned with technology adoption, localised learning and network externalities; few of them explicitly focus on information networks.

Network structures, however, reveal some economically significant characteristics that cannot be neglected. With the aforementioned approaches, it is possible to explore economically relevant problems such as dependence on initial conditions (Arthur, 1990 and 1994), path-dependence (David, 1985), critical mass, bandwagon effects, positive feedback (Economides, 1993 and 1996), as well as standardisation problems (Besen and Farrell, 1994). These features generate concentration processes that transform a polypoly to an oligopoly or even a monopoly (so-called *winner-takes-most markets*; see Economides, 2001).

The technological complementarities of network components generate network externalities and positive feedback (in some cases also negative feedback) on the demand or supply side. While these characteristics are normally observed in telecommunications infrastructures, some of them can also be applied to information networks. These kinds of networks abstract from technological infrastructures, since participants that share the same information constitute such a network. These agents can be described as nodes in the network, whereas the links between them depend on a probability that varies intertemporally (for a broader example, see Kirman, 1997).

The architecture of the network is constituted of the number of participants as well as the symmetry (or asymmetry) of data flows between them and the system of information flows. This is the problem of star networks with a monopolist information producer vs. multiple point networks with several information producers constituting an information oligopoly, for instance. Information diffusion and its efficiency are influenced by the

network architecture and the channels; hence architecture influences economic outcomes. In this context, information is at the same time integrated in vertical networks (as part of the value chain) as well as in horizontal networks (exchanges among different firms of the same industry). Despite the fact that there is little economic literature on the specific efficiency problems, one can apply certain network characteristics to credit reporting as discussed below.

In credit reporting markets, the information flows among agencies, information suppliers and consumers constitute such a network of information which reveals strong feedback effects: its value increases as more creditors are connected to it. An increasing number of data sources produces a more detailed profile of the data subject and in turn enhances the risk prediction capabilities of the interconnected participants. The contributions of an increasing number of data sources will almost inevitably (regulatory architecture *ceteris paribus*) increase the flow of information among the agents.

Information exchange, however, has to be standardised (as well as the meaning of terms such as bankruptcy) to ensure an effective flow among network participants. Moreover, the more a network of one agency increases, the more attractive it will be for potential participants leading to considerable bandwagon effects and network externalities. As far as financial service providers deliver information to one of the agencies, excess inertia may be generated from the costs that arise from switching to another network. This has not been discussed in the literature so far. Instead, there is only anecdotal evidence. Experian, for example, claims that it has long-standing customer relationships with the top 25 customers for over a decade (Experian, 1996, p. 44).

Credit reporting competition reveals specific demand- and supply-side characteristics. The information furnisher is the bank, insurance or any other credit-granting company. However, this party is also the demander of the information as codified in reciprocity contracts in credit reporting arrangements. These contracts have to establish incentive alignments (the disclosure of truthful information) to ensure the efficiency of the reputation system. All information suppliers are granted access to the data base, while non-disclosure is sanctioned. This has not always been without problems, since it produces significant effects on competition.

Market dynamics are to a crucial extent dependent on the consumer demand for credit. This demand for credit cards, mortgages, automobile loans or other consumer loans expands the demand for consumer profiles and related services:

Consumer demand for credit tends to increase during periods of economic expansion, and lenders' efforts to monitor credit relationships tend to increase during periods of economic contraction. Consequently, revenue from consumer credit information products is influenced by cyclical economic trends related to consumer debt (Experian, 1996, p. 12).<sup>25</sup>

Market barriers in this competitive surrounding are created by the already existent network of the triopoly as found in the US, for example, and the high costs establishing

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<sup>25</sup> Note that this is turning the logic around, as discussed in the section on empirical surveys. Information-sharing is higher, because consumer credit markets are broader and deeper in times of economic expansion.

such a network. Companies will only enter the market if benefits are greater than the costs of market entry and if it is expected that the market will further expand in the future. As long as profit margins are high enough, other players will be attracted. In the US as well as Great Britain, a triopoly developed. The intense pricing competition as well as the established networks in the US may operate like private barriers to market entry.

Credit reports as information goods exhibit problems that may deteriorate the allocative efficiency of competitive market mechanisms. These characteristics are: non-excludability as in the case of public goods, non-rivalry, indivisibility, immateriality and experience character (Allen, 1990, and Romer, 1990). In the commodification process some of the natural characteristics of information have to be transformed to achieve tradability. This is for example done via the definition of a property rights structure. The thinner property rights are, the more likely are externalities that may eventually produce market failure (Coase, 1960). Specifically relating to privacy, problems of externalities and the definition of property rights have been discussed by Varian (1996) and Laudon (1996).

One has to distinguish three kinds of transactions: (1) the primary transaction between the consumer and the bank with aligned incentives; (2) the secondary transaction between the bank and the credit reporting agency; and (3) tertiary transaction between the credit reporting agency and third parties. In the secondary and tertiary transactions, externalities can arise, since incentives of consumers and credit reporting agencies are no longer aligned; moreover, if information transactions are not transparent, consumers cannot exert their rights of blocking access which may result in information misallocation. The general characteristics of information goods, as well as their associated scale and scope economies lead to product diversification through differentiation strategies, something that is observable in the credit reporting market. Property rights for information are split among furnisher and information intermediary (the credit bureau). The value added by the information intermediary is the accumulation of the information from different sources that are depersonalised and the analysis of the data.

In summary, one can observe network structures, while on the other hand there are certain characteristics of information goods (similar to those of public goods) and externalities that are typical of information markets. Another problem arises from the strong concentration processes. However, they do not naturally result in weak competition (depending on the strength of competition supervision). Upstream market inefficiencies, it has to be noted, may reveal effects on downstream industries that depend on such information goods (for example, the banking or insurance industry). Upstream inefficient information allocation, may inhibit the competition in downstream industries.

Apart from the aforementioned general economic insights, there are certain trends that can be observed especially in the 1990s. First, the traditional core business of credit reporting has changed enormously in the 1990s due to the progress in information technologies and the increasing competition pressure in the mature information market of the US. Today's credit reporting bureaus – information service providers – not only provide profiles, but all kinds of risk management products (e.g. scoring or screening services) and increasingly also products and services for consumers such as score

simulators and advice on consumer credit habits. TransUnion and Experian only lately started to expand their business into the consulting field, advising their clients on data assessment and modelling as well as on fraud reduction (Lee, 2002a, p. 8). The reason for this is the high pressure on consumer reporting agencies in pricing as well in servicing. While one observes an expansion into new areas on the one hand, there is the reduction of some traditional activities like the collection business on the other.

Second, there are convergence processes in respect to segments of the information market (for example, marketing information and creditworthiness information). This seems to be especially the case in e-commerce with the emergence of vast collections of personal data that are intended for marketing purposes (Groupement Français de l'Industrie de l'Information, 2000). The reporting agencies also hold vast direct marketing data bases that contain lifestyle and demographic information (Lee, 2002a, p. 8); moreover, in the US, the major credit bureaus have cooperation arrangements with the information services and data mining company Acxiom to provide packages that combine demographic and credit information (Fickenscher 1999).

Third, there are signs that new competitors are also entering the market from the side of scoring services or business reporting services. For example, Fair, Isaac, the major US provider of scoring products, intends to establish a service for consumers to notify them if their scores have changed and to provide consolidated consumer reports (that is, reports merged from all three credit bureaus). This would actually put the company in more direct competition with the credit bureaus (Lee, 2002b). In Germany and the UK, we have found examples of business reporting companies (Creditreform as well as D&B) expanding their operations into the field of consumer reporting.

And fourth, there is the trend of integration of certain parts of the value chain, e.g. the convergence of information and software applications (Groupement Français de l'Industrie de l'Information, 2001).

We briefly review in the next section the competition trends in the relevant countries. Due to severe problems with limited data availability on this issue, it is not possible to construct a concentration index like CR4, CR8 or the Herfindahl-Hirschman index for the European countries. There are, however, official indices for the US. It is only possible to roughly describe the competition in the individual EU countries and to add anecdotal evidence on important merger and acquisition activities. This is sufficient, however, to gain an overview of the latest developments.

## **4.2 Competition in the US Credit Reporting Industry**

Credit bureaus developed in the United States with the increased household mobility and mass urbanisation in the second half of the 19<sup>th</sup> century, as Pagano and Jappelli (1993, p. 1711) note. Due to these socio-economic developments, informational asymmetries between creditors and borrowers worsened – a problem that could be ameliorated by the information collection of credit bureaus. In the US, banking regulation contributed to the establishment of information-sharing arrangements, because it created barriers of entry by establishing the dual banking system (National Bank Acts of 1863 and 1864) and restrictions on branching (McFadden Act of 1927). The latter resulted in state-wide and

limited area branching as well as unit banking.<sup>26</sup> This segmented market structure allowed potential competitors to share valuable information via credit bureaus.

In fact, business reporting developed earlier than consumer credit reporting. Early credit reports date back to 1841, an historical hand-written collection of them from the period 1841-1891 is owned by Harvard University.<sup>27</sup> Over time, companies also started to collect information on consumers. Cole (1992, p. 220) reports that one of the first credit bureaus was established in Brooklyn in 1860. In the 1890s, J.E.R. Chilton, which later became one of the leading companies, started to collect information on customers in Dallas, Texas.

In 1906, the first national organisation of credit bureaus was founded – the National Association of Retail Credit Agencies (later Associated Credit Bureaus, ACB, and now the Consumer Data Industry Association, CDIA). This organisation was set up as a network of six small credit reporting agencies. The founding of credit bureaus increased remarkably in the 1920s as well as the 1950s with the introduction of credit instruments such as instalment credit and credit cards. During that period, the credit reporting market was local: information was collected from local lenders and distributed locally.

In the 1970s, however, the industry started to employ IT on a larger scale. Such investments and the following database concentration precipitated consolidation and concentration processes in the industry. The larger market-players began to bring smaller bureaus into their computer systems to benefit from their information collection. And the smaller agencies, on the other hand, used the computer processing power and network of the larger companies. Local credit bureaus either became affiliates of one of the computer systems that profited from cheaper inter-bureau pricing schemes or remained independent as resellers of credit reports (explained further below). Both the repositories and their local affiliates that delivered information co-owned the information.

The profits attracted several companies; for instance the ACB founded ACB Services by 1970.<sup>28</sup> In the 1980s, there were five credit reporting systems in the market: TransUnion, TRW (that became Experian), Equifax, Chilton Corporation and Pinger Systems. The Chilton Corporation eventually merged with TRW, whereas Pinger was sold to the Computer Science Corporation. To complete national coverage, the companies established a network of affiliates.

The concentration tendency was reinforced by the tendency towards natural monopoly, which in turn had resulted from credit bureaus achieving economies of scale and scope, allowing them to capture an ever-larger market share.<sup>29</sup> Moreover, since industries like retailers or financial services also consolidated, they demanded national service. In the

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<sup>26</sup> These acts as well as the Bank Holding Act of 1956 and the Bank Merger Act of 1966 have been revised in the major reform of the financial services industry: the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 and the Gramm-Leach-Bliley Act of 1999.

<sup>27</sup> It was donated to the university by R.G. Dun & Company (which later became D&B).

<sup>28</sup> In 1989, this company was bought by Consumer Credit Associates, and a few years later bought and sold again by the First Data Corporation, which renamed the division Innovis Data Solutions.

<sup>29</sup> In addition, credit bureaus try to receive information from as many sources as possible (Cole, 1992, p. 224).



1970s, there were 2,250 credit bureaus in the market. This number has been reduced to 1,833 bureaus in 1997 (US Census Bureau, 2000). Due to network externalities and the special competition surrounding information industries, an oligopolistic market structure emerged.

This structure is three-tiered. At the very top is the triopoly Experian, Equifax and TransUnion (Top-3). These three companies are called repositories, since they provided the computer systems that small credit bureaus could not afford. Industry officials estimate that those companies serve 95% of the consumer credit reporting market. Officially it is claimed that all three of them have approximately the same market share and together maintain files on about 190 million Americans (Consumer Data Industry Association, 2002). In 1996, however, Experian (1996, p. 3) claimed: “The Company believes that it is one of the two largest providers of consumer credit information and the second largest provider of business credit information in the United States.”

In the lower medium range, we find some larger affiliates like CBC Companies. And at the end of the spectrum, there are about 1,800 small credit bureaus. The latter are either affiliates of one of the Top-3 or independent, as noted. As an affiliate, information is delivered reciprocally. The small credit bureaus are mainly concentrated on their local markets and supply enhanced reports, whether they merge reports from the three big companies or enhance reports by adding own information collected from local information sources such as courthouse records or local lenders. This extra information provided the incentive for the big agencies to sign contracts with the small bureaus, but this is changing as more and more nationally active retailers deal directly with one of the Top-3.

Independent resellers, on the other hand, do not carry out information collection on their own (the term “independent” is misleading). Instead, they also buy credit reports from the repositories and merge them. The smaller bureaus are mainly occupying niche markets, e.g. tenant screening, employment or mortgage reporting. This is mainly due to the competitive advantage enjoyed by the Top-3 in national credit reporting for financial services.

In the 1990s, the repositories followed an active acquisition strategy in buying their affiliates. In 2002, Experian announced that it bought three affiliate credit bureaus (the company has 38 affiliates in the US) and that it intended to buy additional affiliated bureaus. The series of acquisitions is supposed to be completed in the next three years (Experian, 2002c). TransUnion only has one affiliate left, and Equifax has an estimated 15 affiliates. Industry officials estimate that there will be no affiliates left in the next five years.

The information pooled by a credit reporting agency is provided by various sources, for example, banks, credit card companies, retailers, insurance companies, leasing companies, employers or various public sources.<sup>30</sup> The disclosure incentive of creditors is ensured by the reciprocity principle, as noted. In general, the credit bureau serves as a

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<sup>30</sup> Public records reviewed for data collection purposes are criminal records, property lien records and bankruptcy filings (Schwartz and Reidenberg, 1996, p. 288).

conduit that secures precipitated information accumulation and channelling. In addition to credit reports, it also provides scoring and other services.

As Cole (1992, p. 231) states, credit bureaus usually charge a base fee for their services and an additional amount that depends on the volume of transmitted reports. Through the aforementioned inter-bureau reporting schemes, the movements of individuals can be traced throughout the US while at the same time creditors in various locations have access to the databases of the major bureaus.

The Top-3 agencies individually negotiate contracts with large customers. They pay an estimated \$0.40 per credit report; small users that only demand several hundred reports per month are charged an estimated \$1.50-\$2.00 (2002).

Scale and scope effects also affect coverage, which has the propensity to universality. The more sources are connected to the network, the more detailed becomes the credit report and the more precise may become the risk prediction.

Credit bureaus compete in several dimensions: price, coverage rates, data quality, scoring services and coverage of information segments. The latter includes demographic and marketing information on behaviour and lifestyles or business information. The industrial organisation differs from segment to segment. For instance, Experian competes with D&B in business reporting, but with Equifax and TransUnion in consumer credit reporting and a range of other companies in marketing (Abacus Direct, Acxiom Corporation, etc.).

In the US, coverage of the consumer credit market approached universality in the 1960s (Pagano and Jappelli, 1993, p. 1712). Nowadays, approximately 1 billion credit profiles are sold per year (Masons, 2002, p. 3).

The US market is a mature business that has developed over decades. Credit bureaus are facing high pressure in the pricing as well as in the servicing dimension. Financial institutions now seek to shop for reports from only one bureau instead of all three (Lee, 2002a). All three are supposed to provide credit reports based upon differing data on the same individual (Lee, 2002a), but in fact it is not quite clear if the credit reports are substitutes in their information content or concerning their score.<sup>31</sup> They also differ in the methods of data and risk analysis. The five leading online credit information providers (according to their aggregated sales) are presented in Table 8.

The above-mentioned network of big and small credit bureaus is not shown by the statistical numbers quoted from the US Census Bureau (2000). It appears that the credit reporting industry is largely an industry of rather small, regional players with less than 100 employees and no or only one other establishment.<sup>32</sup> The majority of consumer reporting agencies in the US are single-unit firms compared to only six agencies with ten or more establishments. Table 9 presents the official concentration ratios for 1992 and 1997.

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<sup>31</sup> This is certainly an area of future research.

<sup>32</sup> Before 1987, consumer reporting agencies were published as part of a broader category (SIC 7321) in the official US statistics; therefore, one cannot really compare the cited numbers with the earlier statistics.

*Table 8. US market leaders in credit information provision*

<b>Year</b>	<b>Position</b>	<b>Company</b>	<b>Revenues</b>
<b>1998</b>	1.	Equifax	\$1.1 billion
	2.	D&B	\$985 million
	3.	Experian	\$576 million (for 1999)
	4.	TransUnion	\$536 million
	5.	CSC Credit Services	\$257 million
<b>2001</b>	1.	Experian	\$1.5 billion
	2.	D&B	\$1.4 billion
	3.	Equifax	\$1.1 billion
	4.	TransUnion	\$1 billion
	n/a	CSC Credit Services	n/a

*Sources:* Numbers for 1998 are taken from the Electronic Information Report (1999). The sales of these five companies represent 92% of the market. Estimate for TransUnion (2001) is based on CoolSavings, Inc. (2001). The other numbers are compiled from press and industry publications.

*Table 9. Concentration by the largest credit reporting agencies (receipts)*

<b>Year</b>	<b>Concentration ratio</b>	<b>Receipts (percent)</b>
<b>1992</b>	CR4	21.5
	CR8	28.2
	CR20	36.5
<b>1997</b>	CR4	53.2
	CR8	68.0
	CR20	75.9

*Source:* US Census Bureau (1995, 2000).

### **4.3 Competition in the European Credit Reporting Industry**

The markets for credit reporting are not only differently structured in the US compared to Europe, but also within European member states. We briefly review the history of credit bureaus in Europe and then survey the market structure and competition as it evolved in the 1990s. In contrast to their US counterparts, European credit bureaus have so far mainly focused on national markets. However, due to the deepening economic integration and technological advances, Europeans witnessed an intensification of competition in the second half of the 1990s, as well as an increasing merger and acquisition activity accompanying the market entry of the major US companies.

The earliest private credit bureaus were established in Europe at about the same time as in the US. In Austria, a bureau was founded in the 1860s, followed by Sweden in the 1890s (Jappelli and Pagano, 2000b). However, where banks competed in a national market, credit reporting agencies developed later and on a smaller scale. In Europe, most private credit bureaus were founded in the 1960s and 1980s. The European system of credit information-sharing is also characterised by public credit registers that are mainly operated by national central banks. These registers are mandatory reporting systems that operate like credit bureaus, but *all* financial institutions under the supervision of the

central bank have to report to it. Most of the public credit bureaus have been set up in the second half of the 20<sup>th</sup> century. These systems set a reporting threshold on loans that varies from country to country and from a several hundred dollars to over one million dollars (for a more detailed survey, see Estrella et al., 2000, pp. 77-86). Especially the high thresholds cut off data on household loans. The registers will also be reviewed briefly due to their importance.

The operations of private credit bureaus in Europe range from an exchange of great amounts of positive and negative data (Great Britain, Germany and Sweden) to exchange on a medium scale (Finland and the Netherlands), and finally to only rudimentary exchange in its infancy (Portugal and Greece). In France, however, there exists only a negative information exchange.

As acknowledged, it is important to notice that the European credit reporting business has primarily focused on national markets until the mid-1990s. This, however, is changing rapidly. The industry now experiences the intensification of competition related to the market entries of the Top-3: Experian has bought or cooperates with a number of agencies in Germany, Belgium, Spain, Great Britain or Monaco; TransUnion competes in the Italian market and Equifax in the markets of Spain and Portugal (Kitchenman, 1999). Despite this competitive surrounding, the same concentration processes will be observable just as occurred in the US market. Jappelli and Pagano (2000a) expect a continental credit reporting system within the next five to ten years with two or three large credit bureaus operating on the European level.

In Europe, the population coverage rates of private credit bureaus differ from about 100% in Great Britain and Belgium to 78.6% (Ireland) to 62% (Germany) and, remarkably, to virtually no coverage in France (Jappelli and Pagano, 2000b, p. 29). The intensified competition in European credit reporting industries will lead to a higher coverage of population in the European credit markets and reveal considerable effects on the credit-granting industry.

In the future, there will be the tendency to an oligopolistic market structure in Europe and to transnational reporting schemes, while at the same time the coverage rates will increase. If scoring services are also seen as a competitive advantage, we may observe a tendency to more detailed credit profiles, as far as the collection of positive information is allowed. Table 10 presents an overview of coverage rates.

*Table 10. Coverage rates of private credit bureaus*

Country	Year	Population*	Credit reports stored (millions)	Coverage rate, (rounded)
<b>United States</b>	2000	275,423,000	270	100%
<b>Germany</b>	2000	81,168,000	55	67%
<b>France</b>	2000	60,431,000	n/a	n/a
<b>Great Britain</b>	2000	59,756,000	60	100%

\* Population numbers are rounded and taken from the OECD (2002).

### 4.3.1 Germany

In Germany, there is a central public credit register (Evidenzzentrale) administered by the central bank, Deutsche Bundesbank. This register was founded in 1934 after the Great Depression revealed the serious threats posed by systemic risk and the incomplete information of the creditors with respect to their borrowers. The exchange via the Evidenzzentrale is based on three acts: Gesetz über das Kreditwesen (KWG), Federal Data Protection Act and the guideline Verordnung über die Erfassung, Bemessung, Gewichtung und Anzeige von Krediten im Bereich der Großkredit- und Millionenkreditvorschriften des Gesetzes über das Kreditwesen (GroMiKV). Table 11 below presents coverage rates for Germany and France.

*Table 11. Coverage rates of public credit registers (Germany and France)\**

Country	Year	Population	Persons stored	Coverage rate (% , rounded)
<b>Germany</b>	1990	79,364,000	367,000	n/a
	1991	79,984,000	413,000	n/a
	1992	80,594,000	464,000	n/a
	1993	81,179,000	200,000	n/a
	1994	81,422,000	210,000	n/a
	1995	81,661,000	233,000	n/a
	1996	81,896,000	269,000	n/a
	1997	82,052,000	295,000	n/a
	1998	82,029,000	32,104	0.04
	1999	82,087,000	42,888	0.05
	2000	82,168,000	47,776	0.06
<b>France</b>	1990	58,026,000	n/a	n/a
	1991	58,315,000	633,686	1.09
	1992	58,612,000	1,073,942	1.83
	1993	58,896,000	1,360,000	2.31
	1994	59,115,000	1,305,000	2.21
	1995	59,326,000	1,198,318	2.07
	1996	59,533,000	1,180,162	1.98
	1997	59,735,000	1,184,447	1.98
	1998	59,942,000	1,215,230	2.03
	1999	60,156,000	1,376,520	2.29
	2000	60,431,000	1,658,649	2.74

\* No public registries exist in the US or Great Britain. For Germany, persons stored refers to all borrowers (including firms) for 1990-98, from that year onwards only to private households. Data on private households before the year 1998 are not available.

Sources: Population numbers are taken from OECD (2002), persons stored are from the Banque de France and the Deutsche Bundesbank

All credit institutions and even some public administration offices in Germany are obliged to report borrowers who are indebted exceeding €1.5 million at any point in time during

the last quarter. Originally this threshold was 1 million DM (€0.5 million),<sup>33</sup> but to account for price increases and developments in the financial services industry, it was increased in 1993 by the fourth amendment to the KWG to 3 million DM and the number of companies that have to report also increased. In 2002, the threshold was altered to accommodate the Euro. Quarterly, all credit-granting institutions receive automatically references relating to the overall indebtedness of their clients. Private credit bureaus do not have access to the database, moreover, the Bundesbank states: “*Wegen der hohen Meldegrenze und der im Vergleich zu privaten Kreditauskunfteien unterschiedlichen Zweckbestimmung steht die Evidenzzentrale der Deutschen Bundesbank nicht in Konkurrenz zu privaten Kreditauskunfteien (z.B. Schufa).*” (Deutsche Bundesbank, 2002). Due to the high threshold for reporting, there is no direct competition with private credit bureaus. In Germany, we do not analyse the public credit register, since there are private credit bureaus in the market. The interested reader is referred to Deutsche Bundesbank (1998, 2001) and Estrella at al. (2000).

Germany is dominated by one major private credit bureau, the Schufa Holding AG. Originally, the former Bundes-Schufa was an association with eight regional bureaus. In 2000, the 61 Bundes-Schufa partners, mainly companies from the banking industry as well as the retail and mail order industry, decided to restructure the non-profit association as Schufa Holding AG (a for-profit company). The new legal entity is an answer to the increasing competition pressures. According to its 2000 business report, the company holds information on 55 million persons (Schufa Holding AG, 2001). In 1997, it had a partnership with the Italian credit bureau CRIF in order to develop scoring solutions. The company has cross-border data exchange arrangements with three countries (Italy, Austria and the Netherlands).

Another major player in the market is the Vereine Creditreform e.V. primarily providing business information.<sup>34</sup> In 1998, however, Creditreform founded a joint venture with Experian, the Creditreform Experian GmbH (CEG). This brought the company into direct competition with the Schufa Holding AG (Focus, 1998). Experian has been active in Germany for nearly ten years. In 1998, Experian also bought the Directmarketing GmbH (a data base of 28 million addresses). The latest acquisition of a company was Cards Direkt, a private label card processor in Germany which makes Experian the market leader in the processing of customer cards in Germany.

Medium players in the markets are Bürgel Wirtschaftsinformationen (11 million private persons stored), Infoscore, and the Karstadt Quelle Infoservices, founded in 2000. Despite the dominant market player, there are also still small companies providing credit reporting services.

#### **4.3.2 Great Britain**

Great Britain’s market resembles that of the United States in that there is no public credit register administered by the central bank. However, the Registry Trust Ltd, an independent organisation that was established by the Lord Chancellor’s Department,

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<sup>33</sup> Reference exchange rates of 22 May 2002 (1€ = \$0.926).

<sup>34</sup> In 1990, about 25% of their data sets were private borrowers (Ganßauge, 1995, p. 75).

holds the statutory register for all County Court judgements. The major credit bureaus are informed of judgements as well as of satisfactions and cancellations on a weekly basis. In Great Britain, the sharing of positive and negative data is also allowed as long as the consumer has provided his or her informed consent.

As we will see, even within the European context, there are major differences in the attitude towards the collection of negative and positive data. The British Task Force on Tackling Overindebtedness (located at the Department of Trade and Industry) proposes: "Lenders should seek to share all currently permissible data, both positive and negative, with other lenders. This should include outstanding credit balances, credit limits, open credit lines, history of repayments and amounts borrowed" (Department of Trade and Industry, 2001, p. 35). At the same time, the Task Force encourages all non-credit organisations which regularly take payments from consumers to register those (as well as the defaults) with the credit reference agencies.

Concerning competition, it seems like there is much more merger and acquisition activity in Great Britain, than in Germany, for example. Since the beginning of the 1990s, a number of takeovers have taken place. Just like in the US, there is an oligopolistic market structure with three dominant players, Callcredit Plc, Equifax Plc and Experian Ltd.

In 2001, the industry witnessed the creation of a new, web-based credit reference agency, a partnership between the American D&B and the British Skipton Building Society (Callcredit Plc). At the beginning of its operations, this company held credit files on 44 million customers in Great Britain (Callcredit, 2002), and the company intended to achieve 60 million records by the end of 2001 (Callcredit, 2001, p. 5).

Another US-based company, Equifax, was also very active in the British market. The company not only bought four other firms (UATP Infolink, Grattan, Check-a-Cheque and CCI Group Plc), it also invested in founding Equifax Card Solutions. In 1994, Equifax won the bidding war for UATP Infolink against TransUnion which was also interested in buying this company. In 1999, the Office of Fair Trading gave the green light to the acquisition of a minority stake in the company Choicepoint.

Experian, originally the US-based TRW Information Systems and Services that merged in 1996 with the American Direct Marketing Technology and the British CCN Group to become Experian. Shortly after the merger, this company was bought by British retail conglomerate Great Universal Stores Plc (GUS), a holding company that includes home shopping, retail, property investment finance and information services. GUS spent \$1.7 billion for this acquisition. In the following year, Experian remained on an expansion course by acquiring the companies ICD and CCN Group as well as other companies. Experian has its headquarters in both Great Britain and the US.

### **4.3.3 France**

France is a special case. It stands in stark contrast to the other surveyed countries, because France has developed a different system of reporting that is presumably influenced by a more centralist approach. The major player in the credit reporting

industry is the Banque de France which hosts different kinds of national databases (FNCI, FICP, FCC and FIBEN), which serve various purposes.<sup>35</sup> In the context of our study, the data base called National Register of Household Credit Repayment Incidents (Fichier National des Incidents de Remboursement des Crédits aux Particuliers, FICP) is particularly relevant. The FICP was created by the Neiertz Act (Act on Preventing and Resolving Personal Debt Problems) in 1989, whose details are described in the regulation 90-05 of 11 April 1990. Moreover, the FICP is governed by the 1978 Act on Data Processing, Data Files and Individual Liberties.<sup>36</sup>

The 1989 act expanded the authority of the CRBF by mandating the creation and regulation of a national data base on repayment incidents by households. It has the purpose of centralising as well as distributing two kinds of “reports”: 1) effective incidents in connection with credits granted to individuals for non-professional purposes; and 2) repayment schedules drawn up by the French overindebtedness commissions outside court-settlement procedures as well as recommendations after judicial review (Banque de France, 2001b, p. 6). The credit institutions are free to consult the FICP, but access is granted only to credit institutions, the financial service business of the La Poste,<sup>37</sup> overindebtedness commissions and the judicial authorities (Banque de France, 1994, p. 102). In turn, it is obligatory for the financial institutions to report the information to the central register (Banque de France, 1994, p. 101). This means that the French system can be characterised as an exclusive reporting scheme that allows only the aforementioned institutions to use the information (Code de Consommation, Art. L. 333-4). Moreover, the financial institutions are not allowed to transfer the reports in any form whatsoever (Banque de France, 2002a, p. 5). Table 11 presents the coverage rates.

What kind of data is collected? The files contain the identity of the borrowers (i.e. private persons), incidents on all types of credit granted (for non-professional purposes), including overdrafts and repayment schedules drawn up by overindebtedness commissions in out-of-court settlements (Banque de France, 2001b, p. 6). The Banque de France has the sole right of collecting information on judicial measures, except for cases in which the financial institution is directly involved in the case.

The threshold for incidents and overdrafts is about €457 (Banque de France, 2002b). It was changed in 1996, when the Banque de France increased it from 1,000 FF to 3,000 FF. An incident is not reported to the Banque de France until one month has passed, since this period could allow the borrower to rectify his or her situation. If no solution is found or if the liability remains unpaid, then it is mandatory to report the incident to the Banque de France. However, the subject of the report is informed of this inscription by the reporting institution (Banque de France, 2002a, p. 3).

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<sup>35</sup> These abbreviations stand for the following: Fichier National des Chèques Irréguliers (FNCI), Fichier National des Incidents de Remboursement des Crédits aux Particuliers (FICP), Fichier Centrales des Chèques (FCC) and Fichier Bancaire des Entreprises (FIBEN). The data base of interest is the FICP.

<sup>36</sup> The predecessor of FICP was the Centrale Professionnelle d’Information sur les Impayés (CPII), administrated by the Association des Sociétés Financières (ASF). It was the subject of a declaration before the CNIL in 1989, but it is not used anymore. This exchange ended in the mid-1990s.

<sup>37</sup> La Poste is a postal service provider in France, which also provides financial services.



The information is listed for different time spans. In the past, these periods have changed several times. Originally, judicial measures and repayment plans were stored for three years without erasure in case of repayment (Banque de France, 1994, p. 102). In 1993, The CRBF decided to extend that period to five years (Banque de France, 2002a, p. 3). In 2000, the CRBF issued a new regulation that expanded the period once more, now repayment plans are stored for eight years (Règlement no. 2000-04 du septembre 2000).

In 2001, 6% of the stored incidents were mortgage credit incidents, while 94% were incidents concerning consumer credit (Banque de France, 2002b). There are five characteristics of the registered FICP reports that are described more precisely by the Banque de France (1994). The file is *legal*, since it establishes a homogenous system of access. It is presumably *non-monopolistic*, since the individual creditors can hold their own internal files, but the FICP database is national and administrated officially. The reason for this is explained as follows: “*Cet ancrage public se justifie par les garanties d’objectivité et d’impartialité de l’Institut d’émission et par son expérience en matière de gestion de grands fichiers nationaux (...)*” (Banque de France, 1994, p. 99). Another central characteristic is the exclusive collection of negative data – only payment incidents are stored. Concerning the system, the Banque de France states: “*Il ne fonctionne donc pas, à la différence de ce qui est observés dans la plupart des pays européens, comme une centrale de risques recensant l’endettement général des particuliers mais comme une centrale d’incidents*” (Banque de France, 1994, p. 99).

It is important to note that there is no direct legal prohibition of positive information-sharing, but there exists the principle that positive files were not included in the 1989 act. Only if the law explicitly authorised the collection and distribution would this be allowed. The Banque the France writes: “*Le législateur, lors du vote de la loi No. 98-1010 du 31 décembre 1989 relative à la prévention et au règlement des difficultés liées au surendettement des particuliers et des familles, n’a pas souhaité constituer un fichier positif recensant les crédits. Il a préféré créer le FICP qui est un fichier négatif et de confier la gestion à la Banque de France.*” (Banque de France, 2002b). Another important aspect explains the French system. The CNIL is also convinced that positive information is more susceptible to being diverted from its original purpose than is negative information, since the richness of the information tempts the collector to use it for purposes other than the ones originally stated. It may not be so important whether positive information is collected, but what is important is the fact that once it is collected, it is quite difficult to return to a negative-only system (Leclercq, 2000, p. 20).

Another problem is that of legitimate access to positive information, since the borrower is normally not defaulting and does not produce an incident. And in comparison to Great Britain, the CNIL writes: “*Ainsi le taux d’impayés au Royaume-Uni qui dispose pourtant de deux centrales ‘positives’ est de même niveau qu’en France*” (Leclercq, 2000, p. 20). This argument also holds in case of the United States, as explicitly stated by the CNIL: it is 1.5% in France compared to 4-5% in the United States (Leclercq, 2000, p. 3).

A working group in the French Senat expressed consent in refusing positive information. However, the same group states that it is important to improve the FICP (Senat, 1997). The group states that FICP files could be enlarged to include unpaid taxes, unpaid bills registered by French telecommunication providers and unpaid premiums registered by

the French insurance industry. “*Le groupe de travail est convaincu qu’ainsi enrichi, le fichier actuel gagnerait en efficacité*” (Senat, 1997).

In the case of an enlargement of files, however, there would be the question of access authorisation for other information providers than the credit institutions.

And yet another question is how to finance the system. “*Le coût du fichier actuel, soit 16.5 millions de francs par an, est réparti par la Banque de France entre les établissements de crédits en fonction de leur part dans les encours de crédits*” (Senat, 1997). If other parties participate in the system, these industries would also bear a part of the costs.

Private companies collecting data in France belong to the marketing industry (Claritas, Consodata and Cofinoga) or the business reporting industry (Bürgel, D&B, Graydon). There are three credit reporting agencies in the market (Experian, Equifax and CRIF), but they do not provide credit reporting services. These companies are active in the field of cheque-processing or provide risk-management products to the financial industry. It is important to note that the outsourcing of file management is allowed, but only for internal uses (Commission Nationale de l’Informatique et des Libertés, 2002).

Nevertheless, there is some activity in the French market. For instance, in 1998, Experian bought the card and cheque processing firm SG2 from the Société Générale. A year later, the company also bought DMC Informatique, another check processing firm. Experian collects information on individuals as well as on companies and sells scoring services as well as other risk-management products to the financial industry in France (Experian, 2001, p. 5). Concerning credit reporting, the company verifies credit demands of individuals by analysing their annual telephone bills, the files of the postal service (in case of a move) and the files of its clients. Experian states: “*Experian héberge le système d’information ‘bases des impayés’ constitué par les sociétés commerciales et les opérateurs de téléphonie mobile français*” (Experian, 2002b).

In 2001, Experian bought a minority stake in CNTP, a check-processing subsidiary of the company Setip (which is the IT service operation of the France Telecom). The company now operates under the name CNTP Experian. As mentioned, positive information-reporting is not *directly* forbidden by law in France, but since positive files are excluded from the aforementioned legislation, it is assumed that their collection is *not allowed*. Therefore, the CNIL does not authorise such information collection. This is the reason why there is no privately organised credit reporting service in France. The FICP coverage rates tended to be rather small in the second half of the 1990s, about 2.2% of the total population.

#### **4.4 International Cooperation**

The credit reporting industry is increasingly cooperating on a national as well as on an international level. The major organisation in the US is the Consumer Data Industry Association (CDIA) (the former ACB) founded in 1906, which has 500 members (credit reporting companies, but also mortgage reporting, employment reporting or collection service companies). In 1992, the independent credit reporting agencies founded the National Credit Reporting Association (NCRA) in Illinois. The intention of this organisation of more than 100 members is to “achieve a reasonable balance within the

industry” (National Credit Reporting Association, 1999). In Europe, the first international association is the European Association of Consumer Credit Information Suppliers (ACCIS), representing 21 consumer credit reference agencies from 14 different European countries.

The public credit registers, on the other hand, work together in the Working Group on Credit Registers (WGCR), which brings together representatives from the central registers in Europe, including Belgium, Germany, France, Italy, Austria, Portugal and Spain and representatives of the European Central Bank. This Working Group is chaired by Germany and belongs to the Banking Supervision Committee of the European System of Central Banks.

The group is charged with preparing the organisation and technical procedures for transnational data exchange between the public registers. In February 2003, the group finalised a Memorandum of Understanding that constitutes the foundation of pan-European data exchange between public registries. It is intended to create a reporting system that allows data exchange on a regular basis. The credit register of country A would receive information from the registers in other participating countries on each of its borrowers who also has debt in other European countries (Deutsche Bundesbank, 2002). National financial institutions, on the other hand, are supposed to gain access to borrower information of other countries via their home credit register.

It is important to note that even in mid-2002, only a few countries (Belgium, Italy, Portugal and Germany) had laws in effect that allow the transnational exchange among public credit registers (Deutsche Bank, 2002). Bilateral agreements allowing regular information exchange among the public European credit registers did not exist at that time. In a first step, the registers agreed on exchanging information in single cases, but for supervision purposes only. Therefore, the data are not transferred to financial institutions (Deutsche Bundesbank, 2002).

In 1998, ACCIS and CDIA (then ACB) founded the Consumer Credit Reporting World Committee (CCRWC) during the first Consumer Credit Reporting World Conference in Rome. This forum is intended to monitor critical developments in the countries and to organise formal meetings. In this association, European and American credit bureaus are joined by bureaus from Asia and Africa. Transnational reporting in Europe is at the beginning of its development and is organised via different information networks, for example the BIGNet (users exchange business information), Eurogate (an information network of reporting companies in Austria, Belgium, Germany, Spain and Great Britain) and EurisConnect (a network among several European credit bureaus that provide a European standard report on consumer credit profiles). Behind the latter stand Schufa Holding AG and CRIF, which have jointly developed a “key factor system” that is intended to translate the different reporting standards in a universal language.

It has to be noted that cross-border data exchange is largely underdeveloped among member states. Only Anglo-Saxon companies have established international networks (their “intranets”). The underdeveloped cross-border exchange in Europe can be explained by supply- and demand-side restraints: on the supply side, the national focus of credit reporting agencies hinders a quicker development of cross-border reporting, but on the demand side, there seems to be a lack of demand from banks for credit reports on

foreign borrowers. The latter is a reason why credit reporting agencies have primarily not developed transnational reporting schemes to date.

## 5. Conclusions

On both sides of the Atlantic, information sharing regimes in consumer credit markets are currently under review. In Europe, policy-makers are discussing a new proposal of a directive for consumer credit that mandates member states to operate negative registries, among other provisions. In the United States, key provisions of the Fair Credit Reporting Act are under scrutiny, since they expire by the end of 2003. These legislative changes will have large-scale effects on consumer credit markets and the information structure in these markets. For these reasons, the economic dimension of financial privacy has to be understood in a more comprehensive way.

With the approach presented in this study, it is possible to show the differences between data protection regimes in the US and Europe (with the reference countries Germany, Great Britain and France) and to analyse the correlations of broader access to consumer credit and increasing consumer indebtedness on both sides of the Atlantic. The Financial Privacy Index was applied in order to rate the US and the EU according to their regulatory regimes. Four fields were examined: supervisory authority, the rights of data subjects, the obligations of credit bureaus and judicial remedies and enforcement. The legal analysis of functional similarities showed that the US remains below EU levels in terms of data protection regulations, and that within the EU, France provides the highest number of such regulations. In addition, the changing values of the index in our time series indicate the dynamic convergence of European regimes to a higher level of data protection.

The author also conducted statistical tests to analyse the economic effects that are associated with different data protection regimes. As stated, the purpose of the study was not to choose one of the privacy regimes as a first-best solution. Only a more differentiated view allows policy-makers to take the positive as well as the negative economic consequences of data protection into account.

The statistical tests of the economic effects of more stringent data protection regimes revealed interesting insights, some of which were even counter-intuitive. In the individual countries, an increasing Financial Privacy Index is *not* associated with lower information allocation, but rather with higher allocation. However, the international comparison showed that countries with higher data protection are in general associated with lower information allocation when compared to other countries. It holds that the more credit reports are sold, the higher the access is to credit. This is certainly a positive effect. However, increased access to credit is also correlated with increased consumer indebtedness and in addition, consumer credit risk rises. This was explained by stating that credit may be extended to households that are marginally a higher credit risk.

Our discussion of competition in the credit reporting industry focused on the characteristics of networked information markets and the inherent concentration processes. The review of the latest developments showed that there is significant merger and acquisition activity in Europe, primarily driven by Anglo-Saxon companies. This will lead to only three or four transnational credit bureaus or reporting networks with

associated companies. This intensification will have a positive effect on the efficient provision of information to the financial service providers. However, the EU still lacks cross-border data exchange, which will be one of the crucial preconditions of an integrated consumer credit market. The proposed directive on consumer credit should therefore pursue the standardisation of European credit reporting systems. Since there are large scale and scope effects existent in credit reporting markets, increased efficiency can be achieved via national, unified standards. This also holds for the US market, where it is currently discussed if certain provisions of the Fair Credit Reporting Act should be left to state legislators.

Moreover, in the EU, the Commission should refrain from drawing up another directive that explicitly deals with consumer credit information. The Financial Privacy Indices imply that the process and speed of transposition is unequal, leading to increased uncertainty for consumers and the industry.

European policy-makers need to find an economically reasonable balance between the positive and negative effects of increasing exchange of personal information about borrowers. This study shows that this exchange is not really inhibited by privacy regulations in the individual countries. However, if access to credit is expanded across borders, European policy-makers also need instruments to constantly monitor the market. For this crucial surveillance Europe needs common definitions and procedures of bankruptcy and over-indebtedness. If cross-border exchange is to be facilitated, European policy-makers should ensure the transparency of this exchange for consumers. This will be of utmost importance to increase confidence in a common European consumer credit market.

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## ANNEX

*Table A1. Evaluation instrument\**

<b>1. Supervisory authority</b>	
1.1 Existence	Existence means that a supervisory authority is established. Its status concerning independence status is irrelevant.
1.2 Regulatory oversight (credit reporting)	Oversight means that the authority is assigned the enforcement of the act in the financial sector or especially for the industry of credit reporting.
1.3 Issuance of binding guidelines	This requirement means that the authority (or several authorities) has the power to draw up regulatory guidelines and administrative measures that are mandatory for the companies under supervision of the authority and that are enforceable in courts. This point excludes the publication of voluntary guidelines.
1.4 Investigative competences	The authority is allowed to access and inspect data processing activities and to collect all information necessary.
1.5 Legal engagement	The authority has the power to impose sudden or temporary stops of supposedly unlawful data processing operations. This point also includes the right to engage in legal proceedings (for example to sue) or to refer violations to judicial authorities.
1.6 Disclosure of company list	The authority is obligated to publish or otherwise disclose the list of registered/licensed data processors.
1.7 Regulation of international data transmissions	This point involves the task of an assessment of data exports to other data protections regimes and regulations of international data flows. This is especially the case where the authority may even interrupt such data flows.
<b>2. Property rights to information</b>	
2.1 Right to opt-in	This point means that the data subject has to give her consent to the processing of data concerning her. This is normally done by informing the individual about data processing and sharing practices and some schemes via contractual clauses.
2.2 Notice in advance	This requires some formal or informal notice in advance that explains that data is collected and that also might contain further details on how data are processed and to whom it may be disclosed.
2.3 Right to access	Here, the data subject is granted the right to approach any company (and especially credit bureaus) to ask whether data are processed and to gain access to the data about her.
2.4 Right to stop unlawful data processing	The data subject has the right to completely stop the processing of data, when this data processing activity is unlawful as considered by the act.
2.5 Right to correction	The data subject has the right to rectify data concerning her as far as they are incorrect. We have not included any interpretations of how this correction is achieved.
2.6 Right to erasure of incorrect data	This right allows the data subject to approach any data controller and to order the complete erasure or destruction of incorrect personal data stored.
2.7 Right to updated data	We have specified this right to single out the problem that data does not necessarily have to be wrong; it just can be outdated. Therefore, the right to updated information receives an extra value in our scheme.
2.8 Blocking rights in disputes	This category includes the right of blocking any data transmission in a (ongoing) dispute settlement between the data controller and the data subject. A data subject that is allowed to attach a note of correction does not stop further transfers of such data.
2.9 Restrictions on the use of sensitive data	Sensitive data categories generally include racial or ethnic origin, political opinions, trade union membership, religious and philosophical beliefs and also data concerning health and sex life. If these kinds of data categories receive further protection, we have denoted 1.
2.10 Right to depersonalisation and the use of a pseudonym	These measures seem to be a German particularity. The category means that data controllers should ensure that personal data are stored anonymously or with a pseudonym if possible.
2.11 Regulation of automated decisions	This regulation provides the data subject the right to object to any decision that was obtained by an automated decision-supporting system (as is the case

	in credit scoring).
2.12 Right to know score	This is more precise than the indicator 2.12. It constitutes the right of the data subject to ask for the specific score achieved in a certain situation.
2.13 Bankruptcies disclosed 3 years	The longer information can be stored, the weaker data protection might become. Therefore, we included the obligation to erase adverse data after 3 years at the latest.
2.14 Delinquencies disclosed 3 years	The same holds for this indicator: if information has to be erased within a time frame up to or equal to 3 years, we granted a one. If not due to longer storage times, we granted a zero.
2.15 Judgements, judicial measures 3 years	This indicator follows the logic of the two aforementioned ones. If information has to be erased within a time frame up to or equal to 3 years, we granted a one. If not due to longer storage times, we granted a zero.
<b>3. Obligations of credit bureaus</b>	
3.1 Mandatory licensing or registration	This includes the mandatory licensing or registration of data processing activities that involve personal data. Without the mandatory registration or licensing by the authority, personal data processing is considered unlawful.
3.2 Purpose specification	The purpose specification includes every regulation that establishes the obligation to specify the purposes for which data are collected and processed.
3.3 Limits on marketing uses	This point actually belongs to the “purpose specification.” We have singled it out to include the fact that some regimes also regulate marketing uses.
3.4. Restrictions on excessive data collection	Restrictions on excessive data collections do not allow the processing of more data than are actually necessary to manage a contract, for example.
3.5 Prohibition to collect positive data	In some regimes, it is forbidden to collect positive data, that is, data about assets and liabilities, guarantees, debt structure, repayment patterns or employment status.
3.6 Disclosure specification	This aspect involves any limits that are posed upon data disclosures to third parties. This is typically found as “permissible purposes” of disclosure to third persons, although most of these regulations are very general, we still have denoted the value 1.
3.7 Disclosure of data transmissions to third parties	This regulation obligates credit bureaus to disclose information on data transmission to third parties, i.e. other parties than the data subject. The information has to be disclosed to the data subject interested in this information.
3.8 Time limits on data disclosure to the data subject	Certain regimes obligate credit bureaus to react to consumer requests within certain time frames. If the act regulates this aspect, we denote the value 1.
3.9 Limits on fees for disclosure to data subjects	If the law determines an upper limit of fees in case of a data disclosure, we denote the value 1. If it is forbidden to take a fee, then the upper limit is 0; we also denote the value 1.
3.10 Time limits for dispute settlement	If there are any time limits in the case of a dispute settlement that are mandatory for credit bureaus, we also denote the value 1.
3.11 Information of the data subject after modifications	If the credit bureau is mandated to inform the consumer after a modification of the report has taken place (especially after disputes), we denote a value of 1.
3.12 Security measures	The data controller (in our case the credit bureau) has to implement special security measures to prevent access by unauthorised persons.
3.13 Time limits for special data categories	This category includes any limits on storage of certain data categories (for example convictions or bankruptcies). However, we have also assigned a value of 1 where we have found the general form of the allowance of a storage “no longer as needed” for that purpose.
3.14 Information task (of data controllers)	This obligates data controllers to notify other data controllers about data that are incorrect but have been transferred to them.
3.15 Prohibition concerning scoring variables	This indicator is not equal with the aforementioned restrictions on sensitive data (2.9). Gender, for example, is generally not labelled as sensitive information. However, the Equal Credit Opportunity Act places restriction on the use of the variable for scoring purposes.
3.16 Non-existence of exemptions from time limits (3.13)	This indicator is more difficult to understand. Special data categories have to be erased after a certain time limit (3.13), but if there are exemptions (as



is the case in the US), data protection is undermined. Therefore, we grant a 0 if there are exemptions and 1 otherwise.

**4. Enforcement possibilities and remedies**

4.1 Penalties of non-registration	This category emphasises the fact that registration may only be enforced via the introduction and use of legal powers to achieve a compliance with the law on the side of data controllers.
4.2 Existence of penalties for unauthorised receiving of personal information	This category emphasises that there must be an explicit penalty for receiving personal information in an unauthorised way (like misrepresenting the own identity).
4.3 Existence of penalties for unauthorised storage	This category emphasises that there must be an explicit penalty for unauthorised storage of personal information.
4.4 Existence of penalties for unauthorised communication of personal information	This category states that there must be an explicit penalty for an unlawful disclosure of any personal information.
4.5 Existence of penalties for communication of incorrect information	This category emphasises that there must be an explicit penalty for the knowing communication of false information on the side of credit bureaus or information furnishers.
4.6 Existence of penalties for unauthorised data modification	This category indicates that there are explicit penalties for the unauthorised modification of personal information.
4.7 Existence of penalty in the form of a (monetary) fine	This category further differentiates in stating the kind of penalty received by a responsible subject. If there is a penalty in the form of a fine, we denote a 1.
4.8 Existence of penalty in the form of imprisonment	Strict regimes should imply that there is also a high penalty in the form of imprisonment in case of the infringement of the rights of a data subject.

Table A2. Pearson correlation coefficients: The US

		<b>CI</b>	<b>CCGDP</b>	<b>CCPPC</b>	<b>GDP</b>	<b>FPI</b>	<b>INT</b>	<b>RISK</b>	<b>RS</b>
<b>CI</b>	<b>Pearson Correlation</b>	1.000	.992**	.988**	.425	.753**	-.423	.789**	.790**
	<b>Sig. (2-tailed)</b>		.000	.000	.168	.005	.171	.002	.002
<b>CCGDP</b>	<b>Pearson Correlation</b>	.992**	1,000	.987**	.331	.725**	-.361	.795	.777**
	<b>Sig. (2-tailed)</b>	.000		.000	.293	.008	.249	.002	.003
<b>CCPPC</b>	<b>Pearson Correlation</b>	.988**	.987**	1,000	.382	.663**	-.367	.785	.703*
	<b>Sig. (2-tailed)</b>	.000	.000		.220	.019	.240	.002	.011
<b>GDP</b>	<b>Pearson Correlation</b>	.425	.331	.382	1,000	.432	-.727**	.125	.390
	<b>Sig. (2-tailed)</b>	.168	.293	.220		.161	.007	.698	.210
<b>FPI</b>	<b>Pearson Correlation</b>	.753**	.725**	.663**	.432	1,000	-.355	.712	.873**
	<b>Sig. (2-tailed)</b>	.005	.008	.019	.161		.257	.009	.000
<b>INT</b>	<b>Pearson Correlation</b>	-.423	-.361	-.367	-.727**	-.355	1,000	.066	-.559
	<b>Sig. (2-tailed)</b>	.171	.249	.240	.007	.257		.839	.059
<b>RISK</b>	<b>Pearson Correlation</b>	.789**	.795**	.785**	.125	.712**	.066	1,000	.545
	<b>Sig. (2-tailed)</b>	.002	.002	.002	.698	.009	.839		.067
<b>RS</b>	<b>Pearson Correlation</b>	.790**	.777**	.703**	.390	.873**	-.559	.545	1,000
	<b>Sig. (2-tailed)</b>	.002	.003	.011	.210	.000	.059	.067	
<b>OBS.</b>	<b>N</b>	12	12	12	12	12	12	12	12

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Table A3. Pearson correlation coefficients: Germany

		CI	CCGDP	CCPPC	GDP	FPI	RS	INT	RISK
<b>CI</b>	<b>Pearson Correlation</b>	1,000	.877**	-.137	-.348	.078	.324	-.348	-.085
	<b>Sig. (2-tailed)</b>		.000	.672	.268	.809	.304	.267	.792
<b>CCGDP</b>	<b>Pearson Correlation</b>	.877**	1,000	-.180	-.694*	-.091	.169	-.004	.248
	<b>Sig. (2-tailed)</b>	.000		.576	.012	.779	.600	.991	.436
<b>CCPPC</b>	<b>Pearson Correlation</b>	-.137	-.180	1,000	-.019	.789**	.574	-.312	-.358
	<b>Sig. (2-tailed)</b>	.672	.576		.952	.002	.051	.323	.253
<b>GDP</b>	<b>Pearson Correlation</b>	-.348	-.694*	-.019	1,000	-.041	-.206	-.199	-.314
	<b>Sig. (2-tailed)</b>	.268	.012	.952		.899	.520	.535	.320
<b>FPI</b>	<b>Pearson Correlation</b>	.078	-.091	.789**	-.041	1,000	.919**	-.727**	-.744**
	<b>Sig. (2-tailed)</b>	.809	.779	.002	.899		.000	.007	.006
<b>RS</b>	<b>Pearson Correlation</b>	.324	.169	.574	-.206	.919**	1,000	-.823**	-.780**
	<b>Sig. (2-tailed)</b>	.304	.600	.051	.520	.000		.001	.003
<b>INT</b>	<b>Pearson Correlation</b>	-.348	-.004	-.312	-.199	-.727**	-.823**	1,000	.963**
	<b>Sig. (2-tailed)</b>	.267	.991	.323	.535	.007	.001		.000
<b>RISK</b>	<b>Pearson Correlation</b>	-.085	.248	-.358	-.314	-.744**	-.780**	.963**	1,000
	<b>Sig. (2-tailed)</b>	.792	.436	.253	.320	.006	.003	.000	
<b>OBS. (each)</b>	<b>N</b>	12	12	12	12	12	12	12	12

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

*Table A4. Pearson correlation coefficients: The UK*

		CI	CCGDP	CCPPC	GDP	FPI	RS	INT	RISK
<b>CI</b>	<b>Pearson Correlation</b>	1,000	.975**	.965**	.214	.903**	.890**	-.914**	.881**
	<b>Sig. (2-tailed)</b>		.000	.000	.505	.000	.000	.004	.009
<b>CCGDP</b>	<b>Pearson Correlation</b>	.975**	1,000	.997**	.257	.907**	.899**	-.966**	.938**
	<b>Sig. (2-tailed)</b>	.000		.000	.420	.000	.000	.000	.002
<b>CCPPC</b>	<b>Pearson Correlation</b>	.965**	.997**	1,000	.239	.888**	.875**	-.965**	.932**
	<b>Sig. (2-tailed)</b>	.000	.000		.455	.000	.000	.000	.002
<b>GDP</b>	<b>Pearson Correlation</b>	.214	.257	.239	1,000	.286	.548	.096	-.335
	<b>Sig. (2-tailed)</b>	.505	.420	.455		.368	.065	.837	.463
<b>FPI</b>	<b>Pearson Correlation</b>	.903**	.907**	.888**	.286	1,000	.843**	-.895**	.775*
	<b>Sig. (2-tailed)</b>	.000	.000	.000	.368		.001	.007	.041
<b>RS</b>	<b>Pearson Correlation</b>	.890**	.899**	.875**	.548	.843**	1,000	-.872*	.918**
	<b>Sig. (2-tailed)</b>	.000	.000	.000	.065	.001		.011	.004
<b>INT</b>	<b>Pearson Correlation</b>	-.914**	-.966**	-.965**	.096	-.895**	-.872*	1,000	-.844*
	<b>Sig. (2-tailed)</b>	.004	.000	.000	.837	.007	.011		.017
<b>RISK</b>	<b>Pearson Correlation</b>	.881**	.938**	.932**	-.335	.775*	.918**	-.844*	1,000
	<b>Sig. (2-tailed)</b>	.009	.002	.002	.463	.041	.004	.017	
<b>OBS. (each)</b>	<b>N</b>	7	7	7	7	7	7	7	7

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Table A5. Pearson correlation coefficients: France

		CI	CCGDP	CCPPC	GDP	FPI	RS	INT	RISK
<b>CI</b>	<b>Pearson Correlation</b>	1,000	.995**	.994**	.720**	-.441	.925**	-.969**	-.125
	<b>Sig. (2-tailed)</b>		.000	.000	.008	.152	.000	.000	.699
<b>CCGDP</b>	<b>Pearson Correlation</b>	.995**	1,000	.992**	.679*	-.443	.936**	-.959**	-.096
	<b>Sig. (2-tailed)</b>	.000		.000	.015	.149	.000	.000	.766
<b>CCPPC</b>	<b>Pearson Correlation</b>	.994**	.992**	1,000	.672*	-.493	.951**	-.978**	-.168
	<b>Sig. (2-tailed)</b>	.000	.000		.017	.103	.000	.000	.602
<b>GDP</b>	<b>Pearson Correlation</b>	.720**	.679*	.672*	1,000	-.333	.449	-.695**	-.072
	<b>Sig. (2-tailed)</b>	.008	.015	.017		.291	.143	.012	.823
<b>FPI</b>	<b>Pearson Correlation</b>	-.441	-.443	-.493	-.333	1,000	-.502	.605**	.461
	<b>Sig. (2-tailed)</b>	.152	.149	.103	.291		.096	.037	.131
<b>RS</b>	<b>Pearson Correlation</b>	.925**	.936**	.951**	.449	-.502	1,000	-.935**	-.273
	<b>Sig. (2-tailed)</b>	.000	.000	.000	.143	.096		.000	.391
<b>INT</b>	<b>Pearson Correlation</b>	-.969**	-.959**	-.978**	-.695*	.605*	-.935**	1,000	.342
	<b>Sig. (2-tailed)</b>	.000	.000	.000	.012	.037	.000		.277
<b>RISK</b>	<b>Pearson Correlation</b>	-.125	-.096	-.168	-.072	.461	-.273	.342	1,000
	<b>Sig. (2-tailed)</b>	.699	.766	.602	.823	.131	.391	.277	
<b>OBS. (each)</b>	<b>N</b>	12	12	12	12	12	12	12	12

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Table A6. Cross-country evidence

		CI	CCGDP	CCPPC	GDP	FPI	INT	RS	RISK
<b>CI</b>	<b>Pearson Correlation</b>	1,000	.966**	.807**	.314*	-.477**	.236	.585**	.762**
	<b>Sig. (2-tailed)</b>		.000	.000	.030	.001	.128	.000	.000
	<b>N</b>	48	48	48	48	48	43	48	43
<b>CCGDP</b>	<b>Pearson Correlation</b>	.966**	1,000	.798**	.325*	-.632**	.249	.724**	.778**
	<b>Sig. (2-tailed)</b>	.000		.000	.024	.000	.107	.000	.000
	<b>N</b>	48	48	48	48	48	43	48	43
<b>CCPPC</b>	<b>Pearson Correlation</b>	.807**	.798**	1,000	.273	-.318*	-.002	.445**	.459**
	<b>Sig. (2-tailed)</b>	.000	.000		.060	.028	.991	.002	.002
	<b>N</b>	48	48	48	48	48	43	48	43
<b>GDP</b>	<b>Pearson Correlation</b>	.314*	.325*	.273	1,000	-.148	-.092	.356*	.283
	<b>Sig. (2-tailed)</b>	.030	.024	.060		.316	.557	.013	.066
	<b>N</b>	48	48	48	48	48	43	48	43
<b>FPI</b>	<b>Pearson Correlation</b>	-.477**	-.632**	-.318*	-.148	1,000	-.401**	-.622**	-.677**
	<b>Sig. (2-tailed)</b>	.001	.000	.028	.316		.008	.000	.000
	<b>N</b>	48	48	48	48	48	43	48	43
<b>INT</b>	<b>Pearson Correlation</b>	.236	.249	-.002	-.092	-.401**	1,000	.141	.664**
	<b>Sig. (2-tailed)</b>	.128	.107	.991	.557	.008		.366	.000
	<b>N</b>	43	43	43	43	43	43	43	43
<b>RS</b>	<b>Pearson Correlation</b>	.585**	.724**	.445**	.356*	-.622**	.141	1,000	.592**
	<b>Sig. (2-tailed)</b>	.000	.000	.002	.013	.000	.366		.000
	<b>N</b>	48	48	48	48	48	43	48	43
<b>RISK</b>	<b>Pearson Correlation</b>	.762**	.778**	.459**	.283	-.677**	.664**	.592**	1,000
	<b>Sig. (2-tailed)</b>	.000	.000	.002	.066	.000	.000	.000	
	<b>N</b>	43	43	43	43	43	43	43	43

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

## EUROPEAN CREDIT RESEARCH INSTITUTE (ECRI)

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The growth of consumer credit, spurred by the development of disposable household income, is an important element in the financial habits of families today. Consumer credit is regulated at EU level, but national differences in the size and developments of consumer credit markets are considerable. Furthermore, cross-border provision of consumer credit is almost non-existent. ECRI is the creation of a farseeing consortium of European credit institutions that perceived a need for independent analysis of the retail financial services sector at the EU level. They therefore established in 1999 ECRI as a non-profit international research association, in partnership with CEPS. It aims to:

- Carry out systematic research and analysis of developments in the retail finance sector with a view to developing a comprehensive picture of the situation at European level.
- Construct a comprehensive data base of relevant and current statistics in order to fill important information and analytical gaps in the study of the field.
- Bring to the attention of policy-makers national differences in the regulation of retail financial markets that inhibit the completion of a truly pan-European single market.

### Activities

- Seminars and conferences cover all issues affecting the industry. In-depth research by specialised researchers, its quality guaranteed by the experts forming the Scientific Committee. Current topics include:
  - Consumer credit in the European Union
  - Regulating e-commerce in financial services
  - Consumer credit rates in the eurozone: Evidence on the emergence of a single eurozone banking market
  - Consumer credit regulation and practice in the CEECs
  - Completing the single market for retail financial services
  - Credit bureaus in Europe
  - European consumer finance: the rise of revolving credit
- Monitoring EU developments and maintenance of a database on retail finance issues.
- A quarterly newsletter is sent to all subscribers, and relevant publications can be downloaded from the ECRI website.

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