# Enhancing access to EU law: why bother?
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Interinstitutional Agreement of 28 November 2001 on a more structured use of the recasting technique for legal acts (OJ C 077, 28.03.2002, pp. 1-3).

Susskind, R. (2019), Online Courts and the Future of Justice, Oxford University Press, Oxford.

Susskind, R. (2020), "The Future of Courts", Centre on the Legal Profession, Harvard Law School.

Zeno-Zencovich, V. and Giannone Codiglione, G. (2016), "Ten legal perspectives on the 'Big Data revolution'", Concorrenza e Mercato, Vol. 23.

Zeno-Zencovich, V., "Through a Lawyer's Eyes: Data Visualization and Legal Epistemology", in Law, Norms and Freedoms in Cyberspace, Larcier, 2018, pp. 459-470.

# Enhancing access to EU law: Why bother?

**By Dimiter Toshkov**[1]

In the past years access to EU law has been significantly enhanced via services such as EUR-Lex. This development not only allows for easy retrieval of individual legal acts, but for collecting information about the evolution of EU law in the aggregate as well. This contribution argues that by charting and analysing the evolution of the body of EU law over time, we can understand better the nature and development of the EU as a political system. The text examines the legislative productivity of the EU over the past 15 years as an illustration. Further, it showcases recent examples of the use of novel data-analytic techniques to analyse the body of EU law for the purposes of understanding the EU legal system, the institutions, and the polity that produced the legal acts. The contribution concludes by arguing that it is important to transmit basic facts and insights about the evolution of EU law and law-making to the general public as well, in order to counter the threat of Euroscepticism and perceptions of democratic deficit in the EU.

## 1 Introduction

In the past years access to EU law has been significantly enhanced. Services, such as EUR-Lex, the Legislative Observatory of the European Parliament, and the CURIA database of the Court of Justice of the European Union offer relatively easy access to thousands of legal acts, preparatory documents and case law produced by the EU institutions. EUR-Lex in particular has incorporated other databases (such as PreLex) and new classes of documents (such as national implementation measures) to build a vast and ever-so-complex library of legal and other acts related to the functioning of the EU, broadly construed as a multi-level system of governance.

These developments allow not only for easy retrieval of individual legal acts, but for collecting information about the evolution of EU law in the aggregate as well. Most of the time, as legal experts and social scientists, we tend to study individual legal acts: the processes leading to their adoption, their legal meaning and their practical implications. But law is also important in the aggregate. The evolution of the body of law in its totality can tell us a lot about politics and society. The pace of growth of legislative output is informative both about the expansion of the polity and about the health of its institutions. The varying distribution of the type of legal acts produced is indicative of broader changes of power between different institutions and levels of government. Analysing the changing density and types of linkages between different legal acts, jurisprudence and national implementing measures can provide insight about the shifting focus on legislative activities and policy actions.

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Studying the evolution of law in the aggregate is especially important when it comes to understanding a relatively young political organization, such as the European Union. Even if the first European Communities were established almost 70 years ago now, the EU as such is much younger, especially compared to its Member States. New polities face different challenges of gaining the legitimacy and trust of their citizens compared to established ones, where legitimacy comes through well-institutionalized socialization channels. Moreover, for young polities, the evolution of their law is extra relevant as an indicator of the expansion of their competences and the reach of their influence.

This contribution argues that by charting and analysing the evolution of the body of EU law over time, we can understand better the nature and development of the EU as a political system. To illustrate this, first, I examine the legislative productivity of the EU over the past 15 years in an effort to show the type of insights one can gain by considering EU law in the aggregate, as made possible by services such as EUR-Lex. Then, I review recent examples of the use of novel data-analytic techniques to analyse the body of EU law for the purposes of understanding the EU legal system, the institutions, and the polity that produced the legal acts. The contribution concludes by arguing that it is important to transmit basic facts and insights about the evolution of EU law and law-making to the general public as well, to counter the threat of Euroscepticism and perceptions of democratic deficit in the EU.

Much of what will be discussed comes at the intersection of law, social science and data science. The issues raised are similar to ones we can find under the rubrics of law and big data, natural language processing, machine learning and artificial intelligence. Even if the totality of EU law and related documents can reach into the millions of observations, the contribution avoids the term 'big data'. This is not only because the term 'big data' is getting out of fashion, as we can demonstrate with 'big data' from millions of Google searches (see Chart 1).

**Chart 1**

Popularity of internet search terms for big data, data science, and machine learning
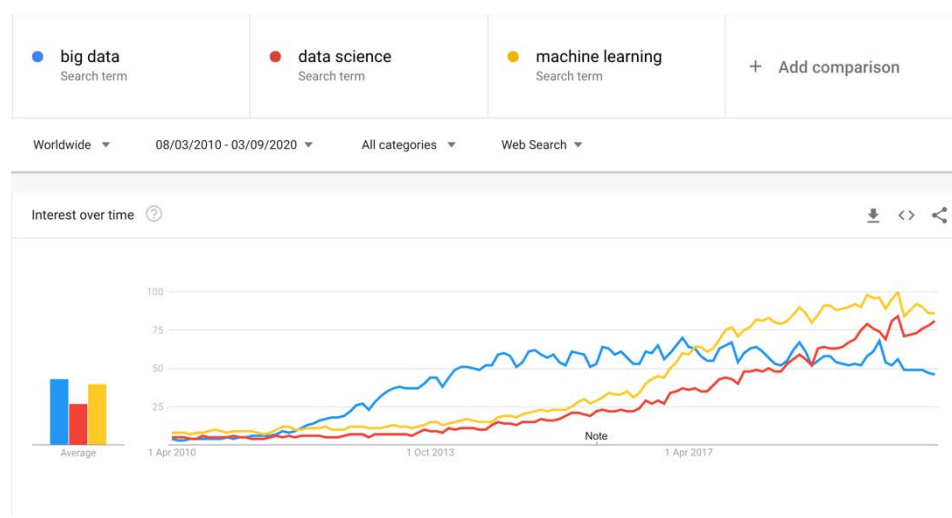


Source: Screenshot based on data from Google Trends, retrieved 10 September 2020.

More importantly, the contribution argues that much insight can be gained by relatively simple methods, such as data visualization and established techniques for causal inference, that do not need to rely on state-of-the-art big data or artificial intelligence technologies employed elsewhere.

When it comes to the law, seeing the forest is as important as examining individual trees. Due to services such as EUR-Lex, this is becoming easier than ever, and in a climate of Euroscepticism, it is rather relevant as well.

## 2 Legislative productivity in the EU

To illustrate the insights one can get from examining closely the evolution of EU law, this section looks into the trends in the number of different legislative acts produced over a period of 15 years, covering three different terms of the European Parliament (EP) and European Commissions.

The analysis aims to provide answers to simple questions, such as: How many important new laws has the EU adopted recently? Is the production of EU law ever-increasing? How is the mix of different legal acts changing?

**Chart 2**

Legislative output of the European Union, 2004-2019: Directives

**Blue bars show the number of directives adopted by the Council per semester. Red bars add directives adopted by the Council and the European Parliament (EP). The dashed horizontal lines show the averages per EP term.**
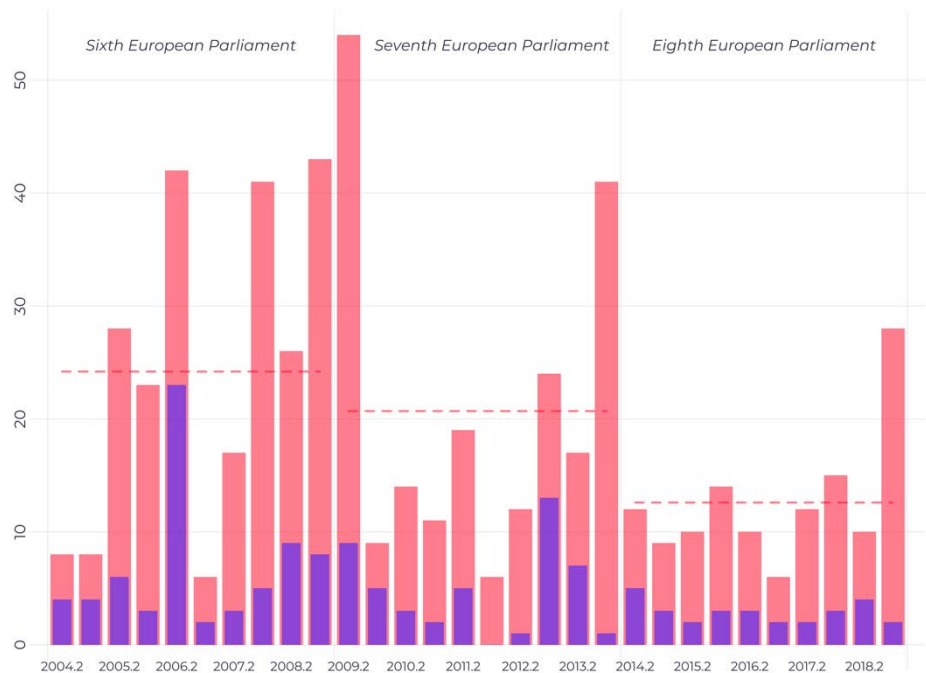


Source: Own extraction from EUR-Lex, retrieved June 2019.

As will become clear shortly, the answers to these simple questions are anything but simple – much depends on subtle definitional differences, and the answers are often counterintuitive as well.[2]

Chart 2 presents the evolution of directives between 2004 and 2019. Directives are a landmark type of legal act in the EU, which has been used before to give legal form to some of the most important initiatives of the EU in the past. The chart shows that there has been a significant drop in the number of directives adopted by the EP and/or the Council over the past 15 years. The drop had started already in 2009, but it is especially pronounced between 2014 and 2019 during the term of the 8th EP. The total number of directives adopted by the EP and the Council during the 6th EP term is 175, which drops to 161 during the 7th EP term, and to 97 for the 8th EP term.

Part of the decline in the number of adopted directives can be explained by a switch to regulations as a favoured legal form for important new legislation, which is a significant development, because directives provide EU Member States with more leeway about how exactly to implement the EU rules.

**Chart 3**

Legislative output of the European Union, 2004-2019: Regulations

**Blue bars show the number of regulations adopted by the Council per semester. Red bars add regulations adopted by the Council and the European Parliament (EP). The dashed horizontal lines show the averages per EP term.**
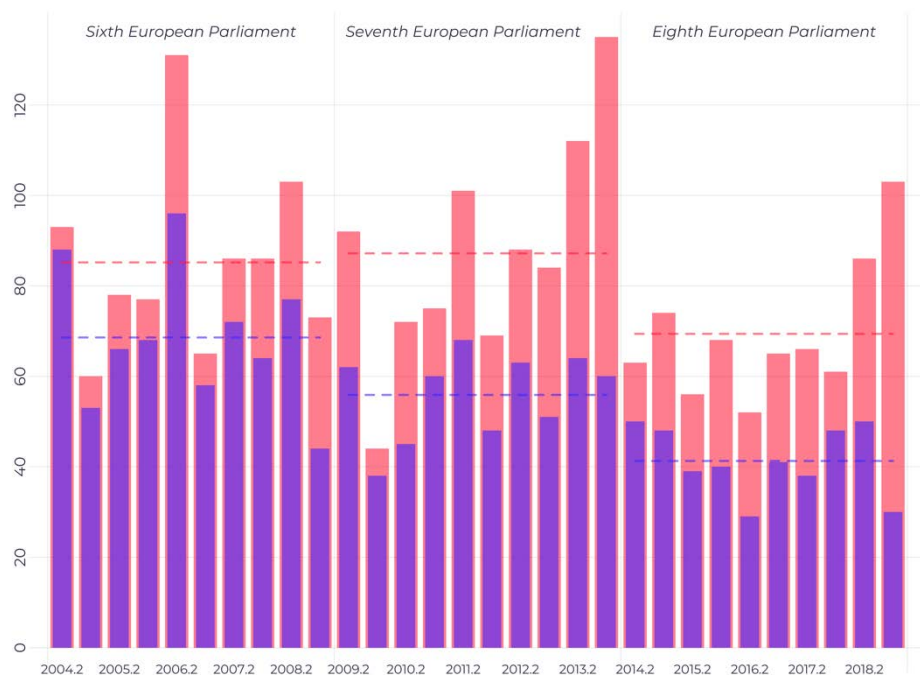


Source: Own extraction from EUR-Lex, retrieved June 2019.

But the shift from directives to regulations is not enough to account for the overall drop in legislative productivity. When we look at regulations (Chart 3), we also see a drop.

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[2]  This section draws on my blogpost 'Is the legislative expansion of the European Union grinding to a halt?', available at EUROPP European Politics and Policy.

The total number of regulations adopted by the Council and/or the EP in the period 2004-2009 is 852, which falls to 694 in the period 2014-2019 (the drop is due mostly to the decrease in the number of regulations adopted by the Council alone).

The pattern is more complex when it comes to decisions, which comprise a very diverse set of legal instruments under the same label – some have general applicability and others have a specific addressee, many are limited in their duration, and a large part concern matters of rather narrow interest.

Chart 4 shows two diverging developments: the number of Council-only decisions increases significantly (from 1,173 to 1,546 to 1,805 over the past three EP terms), but the number of decisions adopted with the involvement of the EP decreases (from 163 in the period 2009-2014 to 115 in the period 2014-2019).

Overall, the conclusion that appears is that the 8th EP has not been very productive, in terms of legislation, having adopted 493 legal acts, for a 23% decline from the 637 adopted by the previous 7th EP. Even more importantly, over the five years of its tenure the 8th EP has adopted only 59 new, rather than amending, directives and regulations (for 2009-2014, the number is 95), as Chart 5 shows.

**Chart 4**

Legislative output of the European Union, 2004-2019: Decisions

**Blue bars show the number of decisions adopted by the Council per semester. Red bars add decisions adopted by the Council and the European Parliament (EP). The dashed horizontal lines show the averages per EP term.**
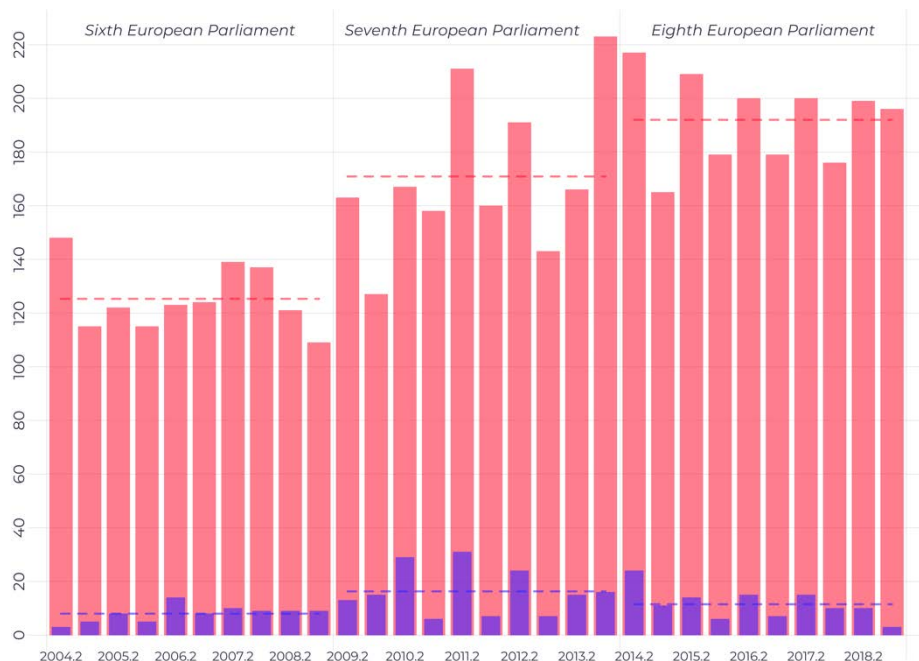
**Chart 5**

Legislative output of the European Union, 2004-2019: New and amending main acts

**Red bars show the number of directives and regulations adopted by the EP and/or the Council. Blue bars show only new (non-amending) acts. The dashed horizontal lines show the averages per EP term.**
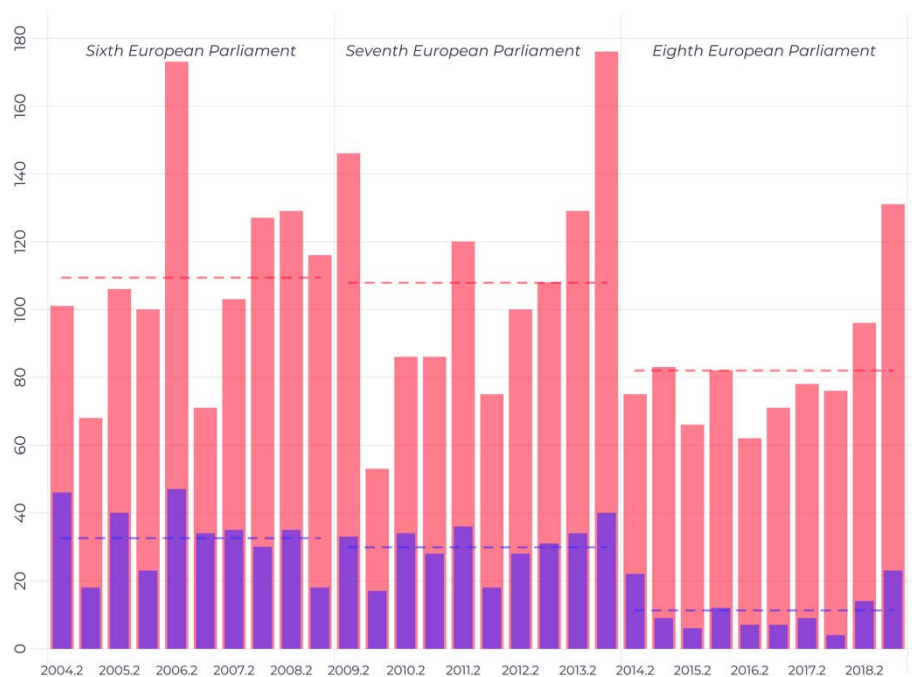
A new legal act indicates that the EU is legislating in a new area, while amending legislation only modifies rules in areas where the EU already has established its presence. In other words, the great deal of legislative activity in the past five years has gone into maintaining and updating existing legislation rather than expanding the reach of the EU into new areas and issues.

We can sum up the results of the exploration of legislative production in the EU so far: (1) overall, legislative productivity in the EU is declining over the past decade; (2) directives, as an important legal act unique to the EU, are used much less often than before, (3) there are very few new (non-amending) acts adopted, which indicates a slowdown if not a halt of the expansion of the EU into new areas of regulatory activity.

These are important results that shed the recent evolution of the EU in new light, but some caveats are necessary. First, the quantity of legislation is not necessarily an indication of importance. That's why it is important to consider different types of legislation separately. In the social scientific literature there are also attempts to quantify the importance of legislation, for example by reference to the recitals preceding the legal text or to the prominence of the legal act in the media. But none of these attempts are entirely successful in measuring such a slippery concept.

Second, the reduction in legislation produced can be considered a conscious strategy on behalf of the European institutions to decrease regulatory red tape. Such a

development is in fact in line with the proclaimed goals of the Better Regulation programme of the European Commission, which aims to reduce the regulatory burden and simplify legislation. However, the number of legislative proposals that have been scrapped as a direct result of the programme is very small, and even these might have been blocked for political reasons before being abandoned in the name of better regulation. Moreover, regulatory simplification often *demands* legislative action in order to amend existing acts or adopt new legislation.

More generally, the numbers and trends presented above invite questions about what explains the changes in legislative output of the EU over time. There is no shortage of potential answers, in addition to the deregulation initiatives of the Commission, such as (a) less effective political gamesmanship of the Commission in shepherding legislative proposals through the inter-institutional decision-making procedures in the EU; (b) political gridlock in the Council of Ministers, which now brings ministers from countries and political parties with ever more diverse preferences; or (c) the increasing (until recently) Euroscepticism of the general public in many EU Member States.

Using aggregate data on EU law, some of these hypotheses have been explored, and intriguing relationships have been found between, for example, public opinion and legislative productivity in the EU. The next paragraph will briefly review some of these studies to illustrate how insights provided by data visualization and exploration generate more formal work examining the causal relationships behind the trends.

For example, there is by now a large literature in political science that studies policy responsiveness in the EU: the relationship between public support for (further) integration and legislative output, as an indicator of the expansion of EU competences and activities. Using vector autoregression (VAR) models, Toshkov (2011) finds that up until the mid-1990s there was a rather close correspondence between the shifts in public support for European integration and the amount of new important legislative acts produced by the European institutions. Importantly, shifts in public opinion were predictive of shifts in legislative production, but not the other way round. And the relationship becomes much weaker in the 2000s. These results have been confirmed by additional studies by Bølstad (2015) and others, who have looked into the responsiveness to public opinion of particular institutions, such as the Council (Hagemann et al. 2017) or the Commission (Häge & Toshkov 2011, Williams and Bevan 2019) or in individual policy areas (Rauh 2019, Rauh 2020).

A related literature examines the factors that explain agenda setting – the process of societal problems gaining the attention of policy-makers before they can be addressed with legislative and other policy measures. Data used for studies of agenda setting look into the proposals for legal acts made by the European Commission or the content of the conclusions of the European Council (Alexandrova et al. 2016). Using statistical methods, these studies find that both structural factors (such as rising inflation, unemployment or immigration pressures) as well as public perceptions of the importance of different problems influence the agenda of the European institutions.

The legislative and other activities of the European Central Bank (ECB) have not been examined in such analyses of agenda setting, public responsiveness, and legislative

productivity, but given the trends in trust in the ECB (Bergbauer et al. 2020), it would be intriguing to see what the analyses will show.

# 3    Analysing the body of (EU) law with new data-analytic techniques

The studies discussed in the previous section make use of the data on EU legislation and other documents, such as European Council conclusions, and they rely on the opportunities offered by EUR-Lex and other databases to create time-series of particular types of legal acts that operationalize appropriately the theoretical constructs of interest (e.g. important new laws). But increasing ease of access to the body of EU law, including the texts of the legal acts, allows for more complex analyses as well, which make use of novel data-analytic techniques for network analysis, natural language processing (NLP), automated classification, and others. In this section of the contribution, I will briefly present examples of such analyses, with the aim to showcase what is already possible to do with data on EU law and to indicate promising avenues for future research.

In a recent article in European Union Politics, Fjelstul (2019) introduces a dataset of EU legislation retrieved from EUR-Lex and other sources that contains over 365,000 documents with more than 900,000 connections between them. He models the body of EU law as a network and examines connections between primary law, secondary law, EU and national case law, and national implementing measures. Koniaris et al. (2018) present a different way of using network analysis in the legal domain by building a model based on EU legal sources.[3]

In another application of network analysis, Senninger et al. (2020) study the coordination patterns inside the European Commission by looking at the interrelationships between DGs based on the coordination of legislative proposals. They find that in some cases, the role distribution in coordination tasks is highly skewed (e.g. between DG SANTE and DG GROW), while in other cases it is more evenly balanced (e.g. between DG CNECT and DG MOVE).

One important area of research in EU studies is the study of implementation of EU law. Legal transposition is a step in the process of implementing EU directives, which has created significant difficulties for national administrations to conduct and for the European Commission to monitor. One of the challenges is related to identifying national legislation that is relevant to the transposition acts and to compare the texts of the EU legislation and the national transposition acts. Nanda et al. (2019) use unsupervised and supervised text similarity systems for automated identification of national implementing measures of European directives. The results are far from perfect but indicate some promise.

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[3]    Some of the efforts to connect different parts of the EU universe of legal and other documents do not seem to be functional or updated anymore, e.g. the ones described in Agnoloni et al. 2017 and Winkels 2019 (last checked September 2020).

Scholars have developed measures for text similarity between documents and have devised methods for automatically scoring large collections of texts based on their similarity. These have been applied to the study of jurisprudence changes, for example in analysing the German Constitutional Court's opinions on Europe (Dyevre 2020). Some of these methods provide relatively high correlations with expert scores assessing the same phenomena of interest. Text similarity can also be compared to the similarity of citation networks of the different legal acts to assess the 'distance' between them (Moodley et al. 2019).

One important area of ongoing research at the intersection of law and data science is the automatic classification of legal acts into substantive (policy) categories and classes (Filtz et al. 2019, Chalkidis et al. 2019). The rich meta-data contained in EUR-Lex, as well as the use of LEI (legislative identifiers, see Francart et al. 2019), provide a useful testing ground for the development and assessment of such methods. Again, results are promising, although in absolute terms these methods still do not provide very reliable output.

Another area of interest supported by NLP is the analysis of sentiment of (transcribed) speeches and other texts. For example, Schumacher et al. (2016) analyse the positive and negative emotions contained in speeches of European political elites, including the presidents of the ECB and the European Council. They also examine whether structural factors, such as economic growth impact (in different ways) the sentiment expressed in speeches of leaders of different institutions. Baerg (2020) examines in a recent book how and why central bankers change their speech, and the effects of these on economic phenomena.

Sentiment analysis has also been used to study the rhetoric of European executives with regard to European integration (Rauh et al. 2019). The findings are that European Commissioners on average employ more positive language than national leaders. The language used by national leaders, but not of Commissioners gets more negative as public Euroscepticism increases during the Euro Crisis. With regard to the complexity of messages, however, over the course of the Euro Crisis the messages of national leaders have become much clearer, while those of the EU Commissioners have not.

Another challenge for empirical research at the intersection of law and political science is the measurement of discretion, or the amount of leeway contained in the provisions of different legal acts. While scholars have developed measures of discretion and applied these to the manual scoring of legal documents, there are recent efforts to use NLP for the same goal (Hurka and Steinebach 2020). In a related effort, Anastasopoulos et al. (2020) use a supervised machine learning (ML) framework to identify legal provisions that delegate authority or impose constraints on national administrations and the EC. NLP has also been explored as an option facilitating the analysis of compliance with financial reporting regulation by automated analysis of financial texts (Lewis and Young 2019).

Machine learning has also been used to predict court decisions, so far with rather limited success, for example when it comes to decisions of the European Court of Human Rights (Medvedeva et al. 2020).

While EUR-Lex provides excellent built-in search functions, it is still difficult to access the database programmatically (with scripts rather than manually) to retrieve search results. A recent, new package for the popular software for statistical computing and data analysis R aims to change this by providing access to EUR-Lex from within R (Ovádek 2020). This is a promising development because it can save researchers efforts to export search results from EUR-Lex before having to import them in R (or other software for analysis and visualization), with the associated risks of errors. Provided that the functions in this package offer complete and reliable access to the data in EUR-Lex, it can speed up considerably the process from research idea involving the analysis of EU law to the final research output.

An example of the possibilities to engage with the body of EU law from within R, I have developed a prototype interactive data visualization of EU law with the help of Shiny: another R package for building interactive web apps. Chart 6 shows a screenshot from the app, which is available at https://dimiter.shinyapps.io/eurlex/. The user can specify the time period of interest (for now between 2003 and 2019), the form of the legal act to show (directive, regulation or decision), the author (Commission, Council, or Council and EP acting together), as well as the novelty (new or amending). In the future, more functionality will be added (for example, filtering by subject area of the legal act) and the scope of the data will be extended to cover a longer time period and acts produced by other institutions, such as the European Central Bank.

**Chart 6**

An interactive web app for exploring the evolution of EU law
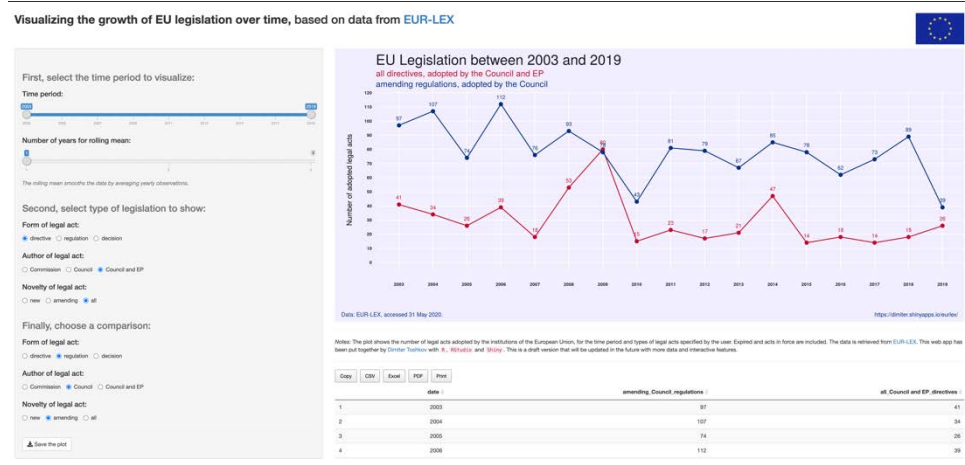


Source: Based on data extracted from EUR-Lex, retrieved June 2019.
Note: This is a screenshot from the interactive app, which is available at https://dimiter.shinyapps.io/eurlex/

# 4    Conclusion

In the legal profession, there is a deep and, overall, well-justified distrust of big data applied to Law. In an influential article, Devins et al. (2017) state: 'What Big Data offers is, in many ways, opposed to rule of law traditions' (p. 360). This verdict is indeed quite appropriate for many hasty applications of big data or machine learning methods to areas of interest to the Law, such as for predicting sentencing in the US. However, it should not be taken to mean that analysing the body of law in the aggregate cannot

deliver inferences about the political systems that produce the laws and the societies that need to apply them. To the contrary, we can, and should, use responsibly new open data and data-analytic techniques to gain insights about the law. Hopefully, this contribution provided convincing demonstrations of the potential of such applications.

When it comes to the case of the EU, it is even more important that we communicate the basic facts about the nature and evolution of EU laws and policies to the broader public, and not only to the audience of legal experts, policy-makers and social scientists.

Whatever we think about the causes and solutions to the perceived lack of legitimacy of the EU and its institutions among broad segments of the European population, it is undeniable that this perceived democratic deficit constrains in important ways the future of European integration. Regular people (including young people and students) know very little about the EU, as surveys of public opinion such as Eurobarometer, regularly show. Citizens lack basic knowledge about the institutions, about how EU rules are made (and by whom), and it can only be expected that they know even less about the evolution of EU legislative output over time. Yet, lack of knowledge leads to widespread stereotypes, for example that the EU is run by faceless bureaucrats in Brussels, and misperceptions, for example that the number of EU rules is growing all the time.

Such misperceptions fuel Euroscepticism and distrust in the EU, undermining the process of European integration. In this respect, providing easier access to EU law is an important step in a process that can make the EU and its activities more familiar to experts and to citizens as well. New applications of data-analytic techniques such as network analysis, automated natural language processing, and AI-powered classification can provide knowledge about the inter-connectedness of the universe of legal documents and how its evolution interacts with the broader social and political contexts. But simpler things, such as data visualization, can provide a fresh look onto the EU as well, especially if provided in an engaging way.

## Bibliography

Agnoloni, T., Bacci, L., Peruginelli, G., van Opijnen, M., van den Oever, J., Palmirani, M., Cervone, L., Bujor, O., Lecuona A. A., García, A.B., Di Caro, L. and Siragusa, G. (2017), "Linking European Case Law: BO-ECLI Parser, an Open Framework for the Automatic Extraction of Legal Links", *Jurix*, pp. 113-118.

Anastasopoulos, L. Jason, & Bertelli, Anthony M. (2020), "Understanding Delegation Through Machine Learning: A Method and Application to the European Union", *The American Political Science Review*, Vol. 114, No 1, pp.291-301.

Alexandrova, P., Rasmussen, A., & Toshkov, D. (2016), "Agenda responsiveness in the European Council: Public priorities, policy problems and political attention", *West European Politics*, 39(4), 605-627.

Baerg, N. (2020), *Crafting Consensus: Why Central Bankers Change Their Speech and How Speech Changes the Economy*, Oxford University Press, USA.

Bergbauer, S., Hernborg, N., Jamet, J. F., Persson, E., & Schölermann, H. (2020), "Citizens' attitudes towards the ECB, the euro and Economic and Monetary Union", *Economic Bulletin*, European Central Bank, (4).

Bølstad, J. (2015), "Dynamics of European integration: Public opinion in the core and periphery", *European Union Politics,* Vol. 16, No 1, pp. 23-44.

Chalkidis, I., Fergadiotis, M., Malakasiotis, P., Aletras, N., & Androutsopoulos, I. (2019), "Extreme multi-label legal text classification: a case study in EU legislation", *arXiv preprint arXiv:1905.10892*.

Devins, C., Felin, T., Kauffman, S., & Koppl, R. (2017), "The law and big data", Cornell JL & Public Policy, Vol. 27.

Dyevre, A. (2020, "The promise and pitfall of automated text-scaling techniques for the analysis of jurisprudential change", *Artif Intell Law*.

Filtz E., Kirrane S., Polleres A., Wohlgenannt G. (2019), "Exploiting EuroVoc's Hierarchical Structure for Classifying Legal Documents". In: Panetto H., Debruyne C., Hepp M., Lewis D., Ardagna C., Meersman R. (eds) On the Move to Meaningful Internet Systems: OTM 2019 Conferences. OTM 2019. Lecture Notes in Computer Science, Vol. 11877. Springer, Cham.

Fjelstul, J. C. (2019), "The evolution of European Union law: A new data set on the Acquis Communautaire", *European Union Politics*, Vol 20, No. 4, pp. 670–691.

Francart, T., Dann, J., Pappalardo, R., Malagon, C., & Pellegrino, M. (2019), "The European Legislation Identifier", *Knowledge of the Law in the Big Data Age*.

Häge, F. M., & Toshkov, D. (2011), "Anticipating resistance: The effect of member state preferences on the European Commission's agenda-setting activity." *University of Limerick Working Paper.*

Hagemann, S., Hobolt, S. B., & Wratil, C. (2017), "Government responsiveness in the European Union: Evidence from Council voting", *Comparative Political Studies*, Vol. 50, No. 6, pp. 850-876.

Hurka, S., and Steinebach, Y. (2020), "Legal Instrument Choice in the European Union", JCMS: Journal of Common Market Studies, Online First.

Koniaris, M., Anagnostopoulos, I. and Vassiliou, Y. (2018), "Network analysis in the legal domain: a complex model for European Union legal sources", *Journal of Complex Networks*, Vol. 6, No 2, pp. 243–268.

Lewis, C. & Young, S. (2019), "Fad or future? Automated analysis of financial text and its implications for corporate reporting", *Accounting and Business Research*, Vol. 49, No. 5, pp. 587-615.

Medvedeva, M., Vols, M. & Wieling, M. (2020), "Using machine learning to predict decisions of the European Court of Human Rights", *Artif Intell Law,* Vol. 28, No. 2, pp. 237–266.

Moodley, K., Serrano, P. V. H., van Dijck, G., & Dumontier, M. (2019), "Similarity and Relevance of Court Decisions: A Computational Study on CJEU Cases." *JURIX*, pp. 63-72.

Nanda, R., Siragusa, G., Di Caro, L. et al. (2019). "Unsupervised and supervised text similarity systems for automated identification of national implementing measures of European directives", *Artif Intell Law,* Vol. 27, pp. 199–225.

Ovádek, Michal (2020), eurlex: An R package for retrieving official data on European Union law. Available at: https://github.com/michalovadek/eurlex.

Rauh, C. (2019), "EU politicization and policy initiatives of the European Commission: the case of consumer policy", *Journal of European Public Policy*, Vol. 26, No. 3, pp. 344-365.

Rauh, C. (2020), "One agenda-setter or many? The varying success of policy initiatives by individual Directorates-General of the European Commission 1994–2016", *European Union Politics*, Online first.

Rauh, C., Bes, B. & Schoonvelde, M. (2019), "Undermining, defusing or defending European integration? Assessing public communication of European executives in times of EU politicization", *European Journal of Political Research*, Vol. 59, No. 2, pp. 397-423.

Robaldo, L., Villata, S., Wyner, A. et al. (2019), "Introduction for artificial intelligence and law: special issue "natural language processing for legal texts", *Artif Intell Law,* Vol. 27, pp. 113–115.

Schumacher, G., Schoonvelde, M., Traber, D., Dahiya, T., & de Vries, E. (2016), "EUSpeech: A New Dataset of EU Elite Speeches", on *PolText 2016: The International Conference on the Advances in Computational Analysis of Political Text* (pp. 75-80). Dubrovnik: University of Zagreb, Faculty of Political Science.

Senninger, R, Finke, D, Blom-Hansen, J. (2020), Coordination inside government administrations: Lessons from the EU Commission, *Governance*, Online first.

Toshkov, D. (2011), "Public opinion and policy output in the European Union: A lost relationship", *European Union Politics,* Vol. 12, No. 2, pp. 169–191.

Williams, C. J., & Bevan, S. (2019), "The effect of public attitudes toward the European Union on European Commission policy activity", *European Union Politics*, Vol. 20, No. 4, pp. 608-628.

Winkels, R. (2019), "Exploiting the Web of Law", In Boulet R., Lajaunie C., Mazzega P. (eds) Law, Public Policies and Complex Systems: Networks in Action. Law, Governance and Technology Series, Vol. 42. Springer, Cham.