

Croatian Yearbook of European Law and Policy

ISSN 1848-9958 (Online) | ISSN 1845-5662 (Print) Journal webpage: https://www.cyelp.com

To Refer or Not to Refer, That Is the (Preliminary) Question: **Exploring Factors Which Influence the Participation of** National Judges in the Preliminary Ruling Procedure

Monika Glavina

Suggested citation: M Glavina, 'To Refer or Not to Refer, That Is the (Preliminary) Question: Exploring Factors Which Influence the Participation of National Judges in the Preliminary Ruling Procedure' (2020) 16 CYELP 25.

DOI: 10.3935/cyelp.16.2020.366

https://www.cyelp.com/index.php/cyelp/article/view/377

DORCID https://orcid.org/0000-0001-9772-0335

© 2020 The Author(s)

Published by University of Zagreb

Submit your work to CYELP



Published online: 10 September 2020

3 OPEN ACCESS

All users are permitted to read, download, copy, distribute, print, search, or link to the full texts of this article, or use it for any other lawful purpose, provided the author(s) are properly acknowledged and cited.



This work is licensed under the Creative Commons Attribution - Non-Commercial - No Derivatives 4.0 International License. This permits anyone to copy and redistribute their work in any medium or format for non-commercial purposes provided the original work and source are appropriately cited.

More information about the journal and submission process can be found at https://www.cyelp.com/index.php/cyelp/about

TO REFER OR NOT TO REFER, THAT IS THE (PRELIMINARY) QUESTION: EXPLORING FACTORS WHICH INFLUENCE THE PARTICIPATION OF NATIONAL JUDGES IN THE PRELIMINARY RULING PROCEDURE

Monika Glavina*

Abstract: This paper explores factors that either motivate or constrain national judges' participation in the preliminary ruling procedure. By incorporating insights and evidence from American judicial politics literature and drawing from three models of judicial decision making: the attitudinal model, the team model, and the resource management model, it places the study of judicial behaviour with respect to the preliminary ruling procedure on more rigorous theoretical grounds. The paper is based on survey results conducted among 415 national judges from two new EU Member States: Slovenia and Croatia. In line with the theoretical predictions, the results show that the decision to make a referral to the CJEU is determined by several individual- and court-level factors. These are the position that a court occupies in a national judicial hierarchy, the judicial workload and availability of resources, and judges' knowledge and experiences with respect to EU law and Article 267 TFEU proceedings.

Keywords: CJEU, preliminary ruling procedure, judicial behaviour, team model.

1 Introduction

The relationship between the national courts and the CJEU governed by the preliminary ruling procedure has been, and will most likely continue to be, one of the most perplexing aspects of European integration. One of many reasons for this can be found in the heterarchical (rather than hierarchical) setting in which the EU operates. The CJEU does not possess the power to reverse national courts' rulings nor are there any sanctions the Court can impose on national courts or judges for their failure to refer legal questions or to implement its rulings.\(^1\) Likewise, the CJEU cannot

^{*} Dr Monika Glavina, Postdoctoral researcher at the Faculty of Social Sciences, University of Antwerp, monika.glavina@uantwerpen.be. The author acknowledges financial support from ERC Starting Grant 638154 (EUTHORITY). This article was written during doctoral research at the Centre for Legal Theory and Empirical Jurisprudence, Faculty of Law, KU Leuven. DOI: 10.3935/cyelp.16.2020.366.

¹ Although there are no direct sanctions that the CJEU can employ against national courts, sanctions for a failure to make a referral under Article 267 TFEU can be directed against EU Member States. Based on the Köbler doctrine, Member States are liable for damages

offer a monetary reward or promotion to national judges for their 'good service'.² The absence of any sanctions or external incentives from the CJEU or the EU makes the participation of national judges in the Union's legal order completely voluntary. What then drives judicial participation in the process of the legal, political, social and economic integration of Europe?

For three decades already this question has inspired (and continues to inspire) a great deal of literature. A variety of factors have been put forth to explain why national judges refer legal questions to the Luxembourg Court. Legal scholars have relied on the persuasiveness argument, (arguing that national courts have been convinced by the CJEU with the legal arguments of the validity of EU law supremacy) or on the plain meaning of Article 267(3) TFEU (emphasising the courts' obligation to refer). Political scientists, at least in their early work, saw the desire for power as the main driver of lower courts' participation in the procedure. Later research drew empirical conclusions based on large-scale data collections. The most influential work in this field has focused on the variations in referral rates across time, Member States, 5

caused to individuals in cases where a breach of EU law was caused by a court of final instance. This, however, does not apply to breaches of EU law caused by the first instance or the appellate courts. See Case C-224/01 *Gerhard Köbler v Republik Österreich* [2003] ECR I-10239. Another possibility is that the European Commission takes legal action (a so-called infringement procedure) against an EU Member State before the CJEU. This occurred in 2017 when the CJEU issued a landmark judgment in *Commission v France* and found France in breach of Article 267(3) TFEU for the failure of the French last instance court Conseil d'Etat to make a referral to the CJEU. See Case C-416/17 *Commission v France* ECLI:EU:C:2018:811. Finally, a failure to refer a preliminary question in cases that require this can constitute a violation of a fair trial and can be used as a basis for a claim before the ECtHR. See ECtHR, *Ullens de Schooten and Rezabek v Belgium*, Applications nos 3989/07 and 38353/07, Judgment of 20 September 2011. These sanctions, however, apply with respect to final instance courts only and are rarely used in practice.

² This type of incentive does not exist in national legal systems either, and nor would national judges consider it desirable. Based on interviews with national judges, Glavina found that judges do not think that their national judicial system should reward them financially for sending preliminary questions. See Monika Glavina, 'Reluctance to Participate in the Preliminary Ruling Procedure as a Challenge to EU Law: A Case Study on Slovenia and Croatia' in Clara Rauchegger and Anna Wallerman (eds), *The Eurosceptic Challenge: National Implementation and Interpretation of EU Law* (Hart Publishing 2019) 208.

³ M Claes, The National Courts' Mandate in the European Constitution (Hart Publishing 2006) 247.

⁴ JHH Weiler, 'A Quiet Revolution: The European Court of Justice and Its Interlocutors' (1994) 26 Comparative Political Studies 510; Karen J Alter, 'Explaining National Court Acceptance of European Court Jurisprudence: A Critical Evaluation of Theories of Legal Integration' in Anne-Marie Slaughter (ed), *The European Court and National Courts: Doctrine and Jurisprudence: Legal Change in Its Social Context* (Hart Publishing 1998).

⁵ Jonathan Golub, 'The Politics of Judicial Discretion: Rethinking the Interaction between National Courts and the European Court of Justice' (1996) 19(2) West European Politics 360; Alec Stone Sweet and Thomas L Brunell, 'The European Court and the National Courts:

legal areas,⁶ and levels of judiciary hierarchy.⁷ While all these contributions are indispensable in understanding judicial politics, we are still far from capturing the full picture of the Europeanisation of national judiciaries. There are several reasons why we must update.

Common to the research on Article 267 referral activity is the focus on the number of referrals submitted to the CJEU. Much less has been written on the situations that do not necessitate the interpretation of the Luxembourg Court. Several names, however, deserve mention. A handful of scholars have emphasised that European judicial politics literature has focused too narrowly on the minority of decisions referred to the CJEU. They have argued that the number of national decisions involving EU law is much larger than the number of questions referred to the CJEU.⁸ Furthermore, recent studies stress that preliminary questions are, in fact, a rare event in the day-to-day work of a national judge.⁹

A Statistical Analysis of Preliminary References, 1961–95' (1998) 5(1) Journal of European Public Policy 66; Clifford J Carrubba and Lacey Murrah, 'Legal Integration and Use of the Preliminary Ruling Process in the European Union' (2005) 59(2) International Organization 399; Marlene Wind, Dorte Sindbjerg Martinsen, and Gabriel Pons Rotger, 'The Uneven Legal Push for Europe Questioning Variation When National Courts Go to Europe' (2009) 10(1) European Union Politics 63; Marlene Wind, 'The Nordics, the EU and the Reluctance Towards Supranational Judicial Review' (2010) 48(4) Journal of Common Market Studies 1039.

⁶ Karen J Alter and Jeannette Vargas, 'Explaining Variation in the Use of European Litigation Strategies: European Community Law and British Gender Equality Policy' (2000) 33(4) Comparative Political Studies 452; Lisa Conant, 'Europeanization and the Courts: Variable Patterns of Adaptation among National Judiciaries' in Maria Green Cowles, James Caporaso, and Thomas Risse (eds), *Transforming Europe: Europeanization and Domestic Change* (Cornell Studies in Political Economy, Cornell University Press 2001); Rachel A Cichowski, 'The European Court and Civil Society: Litigation, Mobilization and Governance' Cambridge Core, March 2007; Elise Muir and Sarah Kolf, 'Belgian Equality Bodies Reaching Out to the CJEU: EU Procedural Law as a Catalyst,' in Elise Muir, C. Kilpatrick, and B. De Witte (eds), *How EU Law Shapes Opportunities for Preliminary References on Fundamental Rights: Discrimination, Data Protection and Asylum* (EUI Working Paper 2017).

⁷ Weiler (n 4); Karen J Alter, 'Explaining National Court Acceptance of European Court Jurisprudence: A Critical Evaluation of Theories of Legal Integration' in Anne-Marie Slaughter (ed), *The European Court and National Courts: Doctrine and Jurisprudence: Legal Change in Its Social Context* (Hart Publishing 1998); Arthur Dyevre, Monika Glavina, and Angelina Atanasova, 'Who Refers Most? Institutional Incentives and Judicial Participation in the Preliminary Ruling System,' (2019) 0 Journal of European Public Policy 1.

⁸ Lisa Conant, *Justice Contained: Law and Politics in the European Union* (Cornell University Press 2002); Gareth Davies, 'Activism Relocated. The Self-Restraint of the European Court of Justice in Its National Context' (2012) 19 Journal of European Public Policy 76; Damian Chalmers, 'The Positioning of EU Judicial Politics within the United Kingdom' (2000) 23 West European Politics 169; R Daniel Kelemen and Tommaso Pavone, 'Mapping European Law' (2016) 23 Journal of European Public Policy 1118; Denise Carolin Hübner, 'The 'National Decisions' Database (Dec.Nat): Introducing a Database on National Courts' Interactions with European Law' (2015) 17 European Union Politics 324.

⁹ Tommaso Pavone, 'Revisiting Judicial Empowerment in the European Union: Limits of Empowerment, Logics of Resistance' (2018) 6 Journal of Law and Courts 303, 312–313; Dyevre, Glavina and Atanasova (n 7) 10; Glavina (n 2) 192–193.

In 2018, the CJEU received a total of 568 preliminary questions from across the EU. This figure, however, needs to be viewed in the light of millions of disputes that are adjudicated by several thousands of courts across all 28 EU Member States. The figure can be further illustrated as the proportion of referring courts across the EU in the period between 2004 and 2016. Figure 1 shows that referrals are normally made by less than 20 per cent of domestic courts.¹⁰

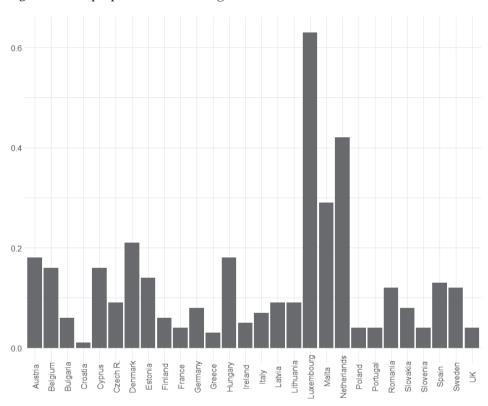


Figure 1. The proportion of referring courts across the EU, 2004-16

The proportion was calculated as a fraction of the number of referring courts and the number of courts in a Member State. Sources: CEPEJ, Reports on the European Judicial Systems, 2004-16; CJEU, Annual reports, Judicial Activity.

¹⁰ These patterns hold across most Member States, with the exception of Malta, Luxembourg and the Netherlands. In the case of Luxembourg and Malta, these percentages can be attributed to the low number of courts in the two countries. In 2016, Luxembourg had eight, while Malta had eleven courts in total. In the Netherlands, on the other hand, this activity of national courts can be attributed to, first, the non-existence of the judicial review and monist legal tradition and, second, to the fact that national judges are very supportive for EU law and the CJEU. Tobias Nowak and others, *National Judges as European Union Judges: Knowledge, Experiences and Attitudes of Lower Court Judges in Germany and the Netherlands* (Eleven International Publishing 2011).

In addition, the number of preliminary questions disguises the high number of 'repeat players'. References often come from the same national court, or even from the same judge sitting on a specific court.¹¹ Dyevre and others, for example, found that almost 52 per cent of Spanish referrals can be attributed to the *Tribunal Supremo*. Furthermore, the three Dutch supreme courts – *Hoge Raad der Nederlanden*, *College van Beroep* and *Raad van State* – account for almost 55 per cent of Dutch references.¹² The same holds for Slovenian courts. More than two-thirds of Slovenian references (68 per cent) originate from the Slovenian Supreme Court. Furthermore, three out of eleven references submitted by Croatian courts from 2013 to 2018 came from the same judge sitting at the Municipal Court of Velika Gorica. This supports the argument that the majority of national judges will never in their entire judicial career submit a preliminary question to the CJEU.¹³

Another feature of European judicial politics literature is its focus on country-level data. We know a great deal about the factors that cause cross-national variations in the number of referrals to the CJEU, yet very little has been written on the sub-national penetration of EU law at the court- and judge-level. Kelemen and Pavone tried to address this limitation by moving to the regional level. They demonstrated that there are few theoretical justifications and little empirical evidence to suggest that the referral rates are uniformly distributed within a country. Only recently have scholars started to study the motives of individual judges and how micro-level determinants such as the knowledge, preferences and experiences of judges shape the referral activity of national courts. 15

Finally, despite the well-documented research on the determinants of the referral activity of national courts and judges, European judicial

Michal Bobek, 'Talking Now? Preliminary Rulings in and from the New Member States' (2014) 21 Maastricht Journal of European and Comparative Law 782, 785.

¹² Dyevre, Glavina and Atanasova (n 7) 15.

¹³ Pavone (n 9); Dyevre, Glavina and Atanasova (n 7); Glavina (n 2).

¹⁴ Kelemen and Pavone (n 8) 1119.

¹⁵ Nowak and others (n 10); Juan A Mayoral Díaz-Asensio, 'The Politics of Judging EU Law: A New Approach to National Courts in the Legal Integration of Europe' (Thesis, European University Institute 2013); Juan A Mayoral Díaz-Asensio, 'In the CJEU Judges Trust: A New Approach in the Judicial Construction of Europe' (2017) 55 Journal of Common Market Studies 551; Juan A Mayoral, Urszula Jaremba and Tobias Nowak, 'Creating EU Law Judges, the Role of Generational Differences, Legal Education and Career Paths in National Judges' Assessment Regarding EU Law Knowledge' (2014) 8 Journal of European Public Policy; Urszula Jaremba, National Judges as EU Law Judges: The Polish Civil Law System (Martinus Nijhoff Publishers 2014); Urszula Jaremba, 'At the Crossroads of National and European Union Law. Experiences of National Judges in a Multi-Level Legal Order' (2013) 6 Erasmus Law Review 191; Arthur Dyevre, 'Unifying the Field of Comparative Judicial Politics: Towards a General Theory of Judicial Behaviour' (2010) 2 European Political Science Review 297; Pavone (n 9).

politics literature still lacks a general and unifying theory of what drives judicial behaviour in the process of European integration. Some scholars studying European courts integrate insights and evidence from American Legal Realism and American judicial politics literature into their work. He are overarching theory to take into consideration judicial policy preferences, the institutional context in which judges operate, and the trade-offs judges face. When deciding whether or not to turn to the CJEU with a preliminary question is still missing. Although some scholars have advocated the idea of bringing European and American judicial politics together, empirical research efforts continue to focus on country- or court-level data, not taking into account the preferences and personal attributes of individual judges.

The present paper contributes to European judicial politics by placing the study of judicial behaviour in the preliminary ruling procedure on more rigorous theoretical grounds. It incorporates insights and evidence from American judicial politics literature and draws from three models of judicial decision making: the attitudinal model, the team model, and the resource management model. By doing so, it offers a systematic account of what drives judicial behaviour in the preliminary ruling procedure. The paper further enriches the research efforts that look beyond the number of referrals to the CJEU and that emphasise the role of individual profiles of judges on the application and enforcement of EU

¹⁶ See the work of the following scholars: Arthur Dyevre, 'Unifying the Field of Comparative Judicial Politics: Towards a General Theory of Judicial Behaviour' (2010) 2 European Political Science Review 297; Dyevre, Glavina and Atanasova (n 7); Nicolas Lampach and Arthur Dyevre, 'Choosing for Europe: Judicial Incentives and Legal Integration in the European Union' [2019] European Journal of Law and Economics; Arthur Dyevre and Nicolas Lampach, 'The Origins of Regional Integration: Untangling the Effect of Trade on Judicial Cooperation' (2018) 56 International Review of Law and Economics 122; Pavone (n 9); Francisco Ramos Romeu, 'Law and Politics in the Application of EC Law: Spanish Courts and the ECJ 1986-2000' (2006) 43 Common Market Law Review 395; Francisco Ramos Romeu, 'Judicial Cooperation in the European Courts: Testing Three Models of Judicial Behavior' (2002) 2 Global Jurist Frontiers 1; Bruno de Witte and others (eds), National Courts and EU Law: New Issues, Theories and Methods (Edward Elgar Publishing 2016).

¹⁷ Jeffrey Allan Segal and Harold J Spaeth, *The Supreme Court and the Attitudinal Model* (CUP 1993); Jeffrey A Segal and Harold J Spaeth, *The Supreme Court and the Attitudinal Model Revisited* (New York: CUP 2002).

¹⁸ David W Rohde, 'Policy Goals, Strategic, Choice and Majority Opinion Assignments in the U. S. Supreme Court' (1972) 16 Midwest Journal of Political Science 652; Thomas H Hammond, Chris W Bonneau and Reginald S Sheehan, *Strategic Behavior and Policy Choice on the U.S. Supreme Court* (Stanford University Press 2005); Lee Epstein, William M Landes and Richard A Posner, *The Behavior of Federal Judges* (Harvard University Press 2013).

 $^{^{19}}$ Lee Epstein and Jack Knight, 'Reconsidering Judicial Preferences' (2013) 16 Annual Review of Political Science 11.

²⁰ Dyevre (n 15).

²¹ Lampach and Dyevre (n 16); Dyevre, Glavina and Atanasova (n 7).

law.²² The units of my analysis are individual national judges (level one), judges who are nested in a domestic court (level two), and courts that are ultimately nested in an EU Member State (level three). I further contribute to the empirical study of the European legal order by extending the research on two new EU Member States – Slovenia and Croatia – to see how the factors put forth by European judicial politics literature travel to these two countries.

The paper is structured as follows. Section Two discusses the debates on the referral behaviour of national judges. Section Three gives its own account of the participation of national judiciaries in the preliminary ruling procedure and derives research hypotheses. I present three models of judicial decision making: the attitudinal model, the team model, and the resource management model that are believed to be complementing rather than competing accounts of judicial behaviour. Section Four describes the choice of countries, data and methodology. Finally, Section Five presents and discusses the results of the statistical analysis.

2 Judicial cooperation and judicial behaviour

The field of judicial behaviour has gone through notable theoretical advancements. Scholars of judicial politics have moved beyond the fruitless two-sided debate between the legalist and the attitudinal model, towards a more realistic notion of judicial behaviour. It is now widely recognised that the way in which judges decide cases is shaped by a broader set of factors: from their personal motivations, through their audience, to their preferences for leisure. A study of judicial behaviour and judicial decision making remained relatively unknown in Europe until the late 20th century. Because it was believed that courts and judges are outside politics, European political scientists have rather focused on studying legislative and executive bodies. It is, thus, not surprising that the first scholars to study European courts, including the CJEU, were American political scientists. Although they rarely employed the models of judicial

²² Nowak and others (n 10); Jaremba, 'At the Crossroads of National and European Union Law. Experiences of National Judges in a Multi-Level Legal Order' (n 15); Mayoral Díaz-Asensio, 'In the CJEU Judges Trust: A New Approach in the Judicial Construction of Europe' (n 15); Mayoral, Jaremba and Nowak (n 15); European Parliament, 'Report on the Role of the National Judge in the European Judicial System' (2008) (2007/2027(INI)); Adam Lazowski, 'Half Full and Half Empty Glass: The Application of EU Law in Poland (2004–2010)' (2011) 48 Common Market Law Review 503; Pavone (n 9).

²³ Richard A Posner, *How Judges Think* (Harvard University Press 2008); Epstein and Knight (n 20); Epstein, Landes and Posner (n 18); Elliott Ash and W Bentley MacLeod, 'Intrinsic Motivation in Public Service: Theory and Evidence from State Supreme Courts' (National Bureau of Economic Research 2014) Working Paper 20664.

²⁴ Dyevre (n 15) 298.

behaviour originally developed in the American context, these scholars did advocate the view that the referral behaviour of national judges in the EU is shaped not only by the existence of legal rules, but by a broader set of factors, from macro- (years of membership, population, intra EU-trade), meso- (court caseload, litigation levels, the power of judicial review), and micro-level determinants (individual preferences).²⁵

Starting from the macro-level determinants of judicial behaviour, scholars have sought to explain variations in the referral rates by pointing to disparities in intra-EU trade;²⁶ legal culture;²⁷ the type of democratic tradition;²⁸ Member State's litigation rates;²⁹ the country's size and population levels;³⁰ or public support for EU membership.³¹ Others have pointed out the existence of institutional disparities among different types and levels of courts and, thus, to the impact of meso-level factors on the referral behaviour of national judges. Scholars emphasise the desire for empowerment among lower courts;³² court specialisation;³³ and judicial centralisation.³⁴ It has been argued that embracing the preliminary ruling procedure gives the national court more power, either *vis-à-vis* the

²⁵ Dyevre (n 15).

²⁶ Alec Stone Sweet and Thomas L Brunell, 'The European Court and the National Courts: A Statistical Analysis of Preliminary References, 1961–95' (1998) 5 Journal of European Public Policy 66; Clifford J Carrubba and Lacey Murrah, 'Legal Integration and Use of the Preliminary Ruling Process in the European Union' (2005) 59 International Organization 399.

²⁷ Carrubba and Murrah (n 26) 399; Maarten Vink, Monica Claes and Christine Arnold, 'Explaining the Use of Preliminary References by Domestic Courts in EU Member States: A Mixed-Method Comparative Analysis', paper presented at the 11th Biennial Conference of the European Union Studies Association, Friday 24 April 2009.

²⁸ Marlene Wind, Dorte Sindbjerg Martinsen and Gabriel Pons Rotger, 'The Uneven Legal Push for Europe Questioning Variation When National Courts Go to Europe' (2009) 10 European Union Politics 63; Marlene Wind, 'The Nordics, the EU and the Reluctance Towards Supranational Judicial Review' (2010) 48 JCMS: Journal of Common Market Studies 1039.

²⁹ Lisa Conant, 'Europeanization and the Courts: Variable Patterns of Adaptation among National Judiciaries' in Maria Green Cowles, James Caporaso and Thomas Risse (eds), *Transforming Europe: Europeanization and Domestic Change* (Cornell University Press 2001); Karen J Alter and Jeannette Vargas, 'Explaining Variation in the Use of European Litigation Strategies: European Community Law and British Gender Equality Policy' (2000) 33 Comparative Political Studies 452; Vink, Claes and Arnold (n 27).

 $^{^{30}}$ Sweet and Brunell (n 26); Vink, Claes and Arnold (n 27); Wind, Martinsen and Rotger (n 28).

³¹ Carrubba and Murrah (n 27).

³² Weiler (n 4); Alter (n 4).

³³ T de la Mare, 'Article 177 in Social and Political Context' in Paul Craig and Gráinne de Búrca (eds), *The Evolution of EU Law* (OUP 1999); Morten Broberg and Niels Fenger, *Preliminary References to the European Court of Justice* (OUP 2014).

³⁴ Kelemen and Pavone (n 8); R Daniel Kelemen and Tommaso Pavone, 'The Political Geography of Legal Integration: Visualizing Institutional Change in the European Union' (2018) 70 World Politics 358.

government³⁵ or vis- \dot{a} -vis other courts in the national judicial hierarchy.³⁶ Furthermore, courts with specialised jurisdiction were believed to be more frequent submitters simply because they encounter EU law more frequently in their daily caseload and have more opportunities to raise preliminary questions,³⁷ although recent studies reject this argument.³⁸

Other scholars suggest that it is not about the type of cases judges decide on but also their number. Stone Sweet and Brunell, for instance, wrote that national judges have an incentive to dispose of their cases efficiently and 'go home at the end of the day having disposed of more, rather than fewer, work-related problems'.³⁹ In a similar vein, Dyevre posited that lower instance judges find it more pressing to manage their huge caseload than being concerned about public support or the threat of legislative override.⁴⁰ Recent scholarly efforts offer empirical evidence on the role of workload on the application of EU law.⁴¹ Pavone⁴² and Glavina,⁴³ for example, found that workload pressures - which are most pressing among lower-court judges - are one of the main reasons for diffuse resistance towards the CJEU and the preliminary ruling procedure.⁴⁴ Scholars have further considered the role of litigants in the process of European legal integration and how they used national judges as a medium to gain access to the preliminary ruling mechanism. 45 Conant stated that interest groups facilitate the pursuit of legal rights by providing information and financial support, which are both necessary to assist litigation before courts. 46 Kelemen and Pavone then pointed to the existence of 'hot spots' for EU litigation, located near cargo ports where maritime trade activity is concentrated and in a city that hosts either a Supreme or a Constitutional Court.47

³⁵ Weiler (n 4).

³⁶ Alter (n 4).

³⁷ de la Mare (n 33); Broberg and Fenger (n 33); Sweet and Brunell (n 26) 73.

³⁸ Dyevre, Glavina and Atanasova (n 7).

³⁹ Sweet and Brunell (n 26) 73.

⁴⁰ Dyevre (n 15) 323.

⁴¹ Tobias Nowak and others, *National Judges as European Union Judges: Knowledge, Experiences and Attitudes of Lower Court Judges in Germany and the Netherlands* (Eleven International Publishing 2011); Jaremba, 'National Judges as EU Law Judges' (n 15); Pavone (n 9); Glavina (n 2).

⁴² Pavone (n 9).

⁴³ Glavina (n 2).

⁴⁴ Pavone (n 9) 307; Glavina (n 2) 204.

⁴⁵ Anne-Marie Slaughter, Alec Stone Sweet and Joseph HH Weiler (eds), *The European Court and National Courts: Doctrine and Jurisprudence: Legal Change in Its Social Context* (Hart Publishing 1998) 222.

⁴⁶ Conant (n 29) 98-99.

⁴⁷ Kelemen and Pavone (n 34) 365-366.

Finally, a recent stream of thoughts started emphasising the role of judges' preferences and personal attributes in judicial behaviour and, related to it, the referral activity of national judges. This includes, inter alia, judges' knowledge of EU law, their experiences when applying EU law in practice, and their attitudes towards the EU and EU law. 48 Some of these research efforts reported on the gap between the formal obligations and expectations imposed on national judges on one hand, and the reality of judicial participation in the preliminary ruling procedure on the other.⁴⁹ The European Parliament's study on judicial training on EU law, for instance, highlighted the problems with making a referral to the CJEU that arise from insufficient knowledge of EU law or procedure.⁵⁰ In a similar vein, Pavone reported that gaps in EU law knowledge - stemming from the absence of judicial training in this field - make judges unlikely to raise preliminary questions on their own.⁵¹ A further approach to studying judicial knowledge was taken by Mayoral and others who focused on the role of generational differences, legal education and judges' career paths on how judges assess their EU law knowledge. 52 Finally, on the role of judicial attitudes, Dyevre and others discussed the possibility that judges - who are otherwise in favour of the procedure - may be discouraged from turning to the CJEU out of fear that this decision will attract an unfavourable response from the legislature. A judge who does not particularly care about European integration, by contrast, may want to request a preliminary ruling in order to change the legislative status *quo* in his country.⁵³

⁴⁸ European Parliament, 'Judicial Training in the European Union Member States' (2011); Nowak and others (n 10); Mayoral, Jaremba and Nowak (n 15); Vink, Claes and Arnold (n 27); Lazowski (n 22); Allan F Tatham, 'The Impact of Training and Language Competence on Judicial Application of EU Law in Hungary' (2012) 18 European Law Journal 577; Mayoral Díaz-Asensio, 'In the CJEU Judges Trust: A New Approach in the Judicial Construction of Europe' (n 15); Lampach and Dyevre (n 16).

⁴⁹ Nowak and others (n 10); U Jaremba and T Nowak, 'The Role of EU Law Education and Training in the Functioning of National Courts as Decentralized EU Courts: An Empirical Investigation into the Polish and German Civil Judiciary' [2012] Integration Through Legal Education: The Role of EU Legal Studies in Shaping the EU 111; Mayoral, Jaremba and Nowak (n 15); Mayoral Díaz-Asensio, 'In the CJEU Judges Trust: A New Approach in the Judicial Construction of Europe' (n 15); Pavone (n 9).

⁵⁰ European Parliament (n 48) 26; John Coughlan, 'Judicial Training in the EU: A Study for the European Parliament' (2012) 13 ERA Forum 1, 4.

⁵¹ Pavone (n 9) 307. A similar observation was raised by Glavina. See Glavina (n 2) 201-202.

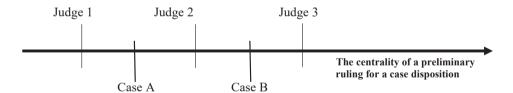
⁵² Mayoral, Jaremba and Nowak (n 15) 1131-1132.

⁵³ Lampach and Dyevre (n 16) 8.

3 Exploring the referral behaviour of national judges

To these theoretical debates, I add my own account of the referral behaviour of national judges. The first building block of my theoretical framework incorporates insights from the attitudinal model. Analogous to scaling judges on a left-right or liberal-conservative dimension, I argue that EU Member States' judges can be scaled on the pro- vs anti-EU integration dimension. To explain the application of the attitudinal model to the preliminary ruling procedure, I rely on the concept of case space.⁵⁴ In its most basic form, a case space is a line that represents all possible cases that a court might decide, together with a complete description of the facts of the case. Individual cases, as well as judges' preferences over cases, can be placed somewhere on this one-dimensional line. Figure 2 illustrates such a case space in a preliminary ruling procedure example. In two hypothetical referral cases, judges are confronted with a request to submit a preliminary question to the CJEU. Case A involves the question of the interpretation of EU law where a ruling from the CJEU is not central for the case disposition, and the interpretation could be given by the national judge himself. Case B, in contrast, involves a question on the validity of EU law, in which a judge is obliged to make a referral and the CJEU's ruling is central for delivering a judgment.

Figure 2. Case space in an example of a preliminary ruling procedure



Judge 1, who is pro-integration, will submit a preliminary question to the CJEU in every case that raises an issue of the interpretation or validity of EU law. Judge 2, who is not as pro-integration as Judge C, will only resort to the preliminary ruling mechanism if the question concerns the validity of EU law and where the CJEU's ruling is central for the case disposition. This may be a judge who is otherwise indifferent to EU law but wants to avoid negative criticism for not turning to the CJEU in cases when he is obliged to. Finally, Judge 3 is anti-integration and will avoid referring a legal question to the CJEU in any of the hypothet-

⁵⁴ Glendon Schubert, *The Judicial Mind: The Attitudes and Ideologies of Supreme Court Justices 1946-1963* (Northwestern University Press 1965); Segal and Spaeth, *The Supreme Court and the Attitudinal Model Revisited* (n 17) 89–91.

ical cases. This case space suggests that a judge on the pro-integration side of the dimension may want to make a referral to the CJEU even when the ruling of the CJEU is not central for delivering a judgment to promote deeper integration and to ensure uniform application and greater compliance with EU law. 55 A judge on the anti-EU integration side, in contrast, will refuse to refer even in cases where he is obliged to do so 56 and when the CJEU's ruling is central for case resolution, simply because he believes that a case should be resolved in light of national law. Based on this theoretical proposition, I derive the first hypothesis $(\mathrm{H_{1}})$ of my research.

Understanding judicial attitudes is crucial for understanding judicial behaviour in the preliminary ruling procedure. However, it must be emphasised that the desire to see one's ideology imprinted in the law is not the only motivation for judges, and for many it might not even be the dominant one.⁵⁷ Instead, judges have multiple interests and needs that they pursue simultaneously.⁵⁸ Furthermore, in the process of decision making, judges are ultimately bound by the facts of the case and the legal arguments presented by the parties and are constrained by institutional rules.⁵⁹ The ability of judges to decide cases in line with their ideological preferences, therefore, depends on various incentives and constraints for such behaviour. In other words, ideology is likely to play a larger role when other constraints are missing.

This brings me to the second building block of the theory, which follows the rationale of the 'pure team model'.⁶⁰ The team model is often seen as the opposite of the principal-agent (or 'the agency') model. It presupposes that judges share a common goal, which is to maximise the number of 'correct' decision outcomes given the limited resources they have at their disposal.⁶¹ The agency model, by contrast, points to conflicting interests among the judges. It assumes that judges have ideologically opposed preferences and seek to implement those preferences through their decisions.⁶² Hierarchy exists 'so that the small set of po-

⁵⁵ Lampach and Dyevre (n 16) 8.

 $^{^{56}}$ Either because he sits at the last instance court or when the question concerns the validity of EU law.

 $^{^{\}rm 57}$ Epstein and Knight (n 19) 12–13.

⁵⁸ Epstein, Landes and Posner (n 18) 48.

⁵⁹ Wind (n 28).

⁶⁰ Lewis A Kornhauser, 'Adjudication by a Resource-Constrained Team: Hierarchy and Precedent in a Judicial System Symposium on Positive Political Theory and Law' (1994) 68 Southern California Law Review 1605; Romeu (n 16).

 $^{^{61}}$ Kornhauser (n 60) 1609. According to Kornhauser, 'correctness' may be interpreted in many ways. See ibid 1606, 1603.

⁶² Kornhauser (n 60) 1609.

litically dominant judges can enforce their views on recalcitrant judges lower in the hierarchy'. The idea of an error is very different in the agency model compared to the team model. In the team model, an error arises from imperfect information about the case. In the agency model, by contrast, errors are deliberate and 'rebellious' decisions of lower-court judges to apply their rule instead of the preferred rule of a higher court. While national hierarchical judiciaries are typically designed by a hybrid team/agency model (where inter-court cooperation is sustained by a threat of reversal and a division of tasks), heterarchical regimes such as that of the EU follow the design of the team model.

According to the team model, a national judge sends the preliminary question to Luxembourg simply because the CJEU is a specialised EU law court, and resolving a dispute at the national level will benefit from the CJEU's ruling. 67 The rationale behind the judicial hierarchy is to achieve a division of labour and to minimise possible errors. The purpose of lower courts is fact-finding and the quick resolution of cases. The law-finding task is left for the appellate instance, with major doctrinal issues to be dealt with by supreme and constitutional courts. Furthermore, appellate courts enjoy a lower workload and better access to resources, which allows them to spot and correct possible errors. 68 In a nutshell, the law-finding specialisation, more beneficial resources vs the workload ratio, and the fact that preliminary questions can only address points of law should give second instance domestic courts a greater incentive to refer legal questions to Luxembourg (H_2).

The third building block of the theory follows the rationale of the resource management model. National judges are public sector workers who have varying resources to process different workloads.⁶⁹ Because there are only 24 hours in a day and only seven days a week, the central problem for judges is to strike a balance between judicial work, non-judicial work and leisure.⁷⁰ Having difficulties in finding this balance, judges

⁶³ Lewis A Kornhauser, 'Appeal and Supreme Courts' in Boudewijn Bouckaert and Gerrit de Geest (eds), *Encyclopedia of Law and Economics* (Edward Elgar 2000) 46.

⁶⁴ Jonathan P Kastellec, 'The Judicial Hierarchy: A Review Essay' [2016] Oxford Research Encyclopedia of Politics 8; Charles M Cameron and Lewis A Kornhauser, 'Appeals Mechanism, Litigant Selection, and the Structure of Judicial Hierarchies' in James R Rogers, Roy B Flemming and Jon R Bond (eds), *Institutional Games and the US Supreme Court* (University of Virginia Press 2006) 177.

⁶⁵ Kastellec (n 64).

⁶⁶ Kornhauser (n 60); Cameron and Kornhauser (n 64).

⁶⁷ Romeu (n 16) 397.

⁶⁸ Kornhauser (n 60) 1614; Kastellec (n 64) 6.

⁶⁹ Epstein, Landes and Posner (n 18) 25.

⁷⁰ Ash and MacLeod (n 23) 8.

are faced with certain trade-offs, which may have a direct bearing on the decision to refer a legal question to the CJEU. Time, intellectual effort and resources spent on drafting and preparing a preliminary question are time, effort and resources that cannot be spent on something else such as leisure, undergoing education, or managing one's workload. Based on the resource management model, I hypothesise that the higher the workload of a particular judge, the higher are the opportunity costs associated with making a referral. We would, therefore, expect heavily burdened judges to be more reluctant to refer legal questions to the CJEU ($H_{\rm a}$).

The opportunity costs of making a referral can, however, be lowered if a judge has sufficient access to resources, such as access to state-of-the-art libraries, databases and to law clerks and other assistants to the court. Yet not all judges have access to these resources. The better access to online databases and to the case law of the CJEU, the lower are the opportunity costs of making a referral. Furthermore, an important resource available to judges is the existence of an EU law research unit at the respective court. The existence of such a unit saves the time and effort a judge has to invest in doing research on the issue. We would, therefore, expect judges with sufficient access to the sources of EU law and judges who benefit from the assistance of a special EU law research unit to exhibit a higher propensity to refer legal questions to the Luxembourg Court (H_4).

Yet, if sending a question to Luxembourg only adds to judges' substantial workload, it is difficult to imagine why any judge would opt for such a choice. This problem stresses the role of the individual profiles of judges. Judges differ from each other with regard to their competences, level of expertise, experiences with EU law, and how much time they have invested in EU law education. The higher the knowledge of EU law and the more experiences a judge has had with EU law, the lower is the opportunity cost of making a referral. This is because a judge with sufficient knowledge of the preliminary ruling procedure or a judge who often encounters cases with an EU law element generally needs to invest less time and effort into drafting a reference than a judge who encounters it for the first time and who has limited knowledge of it. More experience with EU law and better knowledge of the preliminary ruling procedure should, in principle, bring a higher probability of making a referral (H₅ and H₆). The summary of all research hypotheses is presented in Table 1.

H ₁	Attitudes	Judicial attitudes towards the EU and EU law will affect the probability of making a referral.
H_2	Court level	Appellate court judges will exhibit a higher probability of making a referral.
H ₃	Workload	Judges with a higher workload will exhibit a lower probability of making a referral.
H_4	Resources	Judges with sufficient access to resources will exhibit a lower probability of making a referral
H ₅	Knowledge	Judges with higher knowledge of EU law will exhibit a lower probability of making a referral
H_6	Experience	Judges with more experience with EU law cases will exhibit a lower probability of making a referral

Table 1. Summary of research hypotheses

4 Choice of countries, data and methodology

This paper relies on the data of a survey conducted among national judges in Slovenia and Croatia. The survey on the knowledge of, experiences with, and attitudes towards EU law among national judges was conducted among all first and second instance courts in Slovenia and Croatia in spring 2017. It covered a population of 1,792 judges from 39 ordinary and 37 specialised courts in Croatia and 857 judges from 59 ordinary and six specialised courts in Slovenia. The response rate was 16.6 per cent for Croatia and 14.7 per cent for Slovenia (see Appendix, Table 1A).⁷¹ The questionnaire was borrowed from the research of Nowak and others conducted in 2011.⁷² The percentage of missing survey data varies between one and ten per cent, depending on the question (see Appendix, Table 2A).

The decision to focus on Croatia and Slovenia was made for methodological reasons. First, when taken in absolute numbers, Slovenian and Croatian courts have submitted the lowest number of preliminary questions compared to all post-2004 enlargement Member States, with the exception of Malta and Cyprus (see Appendix, Table 4A). When accounting for population, however, the number does not seem so low, at least for

⁷¹ Although this may seem a low response rate, it is higher than the response rate obtained by Nowak and others on German judges (10 per cent) and by Jaremba obtained on Polish judges (8 per cent) (Nowak and others 2011; Jaremba 2014). Regarding the sample size, Roscoe and Abranovic argue that in behavioural research there is hardly any justification for sample sizes smaller than 30 and larger than 500 participants. Within this limit, a sample size of 10 per cent of the population is recommended. Some researchers even suggest that it is rarely necessary to sample more than 10 per cent. See: John T Roscoe, *Fundamental Research Statistics for the Behavioral Sciences* (2nd edn, Holt, Rinehart and Winston 1975); Wynn Anthony Abranovic, *Statistical Thinking and Data Analysis Methods for Managers* (Addison-Wesley 1997); Pamela L Alreck and Robert B Settle, *The Survey Research Handbook* (2nd edn, Irwin Professional Publishing 1995).

⁷² Nowak and others (n 10).

Slovenia. Croatia, by contrast, holds the lowest number of referrals per million inhabitants compared to all post-2004 enlargement states, including Malta and Cyprus. These numbers, however, need to be seen in the light of the short membership of Croatia in the EU. When it comes to the number of judges per capita, however, Slovenia and Croatia do stand out. The two countries have the highest number of judges per capita in the entire EU: Slovenia 42.6 and Croatia 43.3, while the EU average is only 21.2 judges per 100,000 inhabitants. ⁷³ Yet, as I illustrate in Table 4A in the Appendix, Croatia and Slovenia have the lowest number of referrals per number of judges and are in the same groups as Malta and Cyprus, the two smallest EU Member States. The argument that some Member States will refer more simply because they have more courts and judges that can refer questions does not seem to hold for Slovenia and Croatia. ⁷⁴

Furthermore, although the main objective of this research is not to conduct a country-level comparison, the most similar system design (hereafter 'MSSD') allows us to control and to keep constant many confounding variables.⁷⁵ Slovenia and Croatia are similar in the sense that they are both new EU Member States, they were both part of former Yugoslavia, and have shared a legal and judicial system in the past. Furthermore, there are no major discrepancies in the size of their population or GDP. They do, however, differ in the duration of their EU membership which could cause a difference in the factors that influence the referral propensity of national judges.⁷⁶ This is particularly true when it comes to judicial knowledge of EU law and their experience with EU law cases in their daily work.

Slovenian and Croatian judges further differ in their use of the preliminary ruling procedure. Croatian courts have submitted more preliminary questions annually than have their Slovenian counterparts. Furthermore, for the majority of EU Member States – with the exception of the early years of EU integration – it took one or two years to adapt to the mechanism and to send their first preliminary question. Slovenia and Malta are the only two new EU Members States that took as many as four years before submitting their first reference to the CJEU. Croatia, by contrast, followed the practice prevailing in other new Member States and submitted its first reference in its second year of EU membership (see Figure 3). Furthermore, the majority of referrals from Slovenia originate from

⁷³ 'EU Justice Scoreboard - European Commission' (2016) 577.

⁷⁴ Vink, Claes, and Arnold (n 27) 13.

 $^{^{75}}$ Carsten Anckar, 'On the Applicability of the Most Similar Systems Design and the Most Different Systems Design in Comparative Research' (2008) 11 International Journal of Social Research Methodology 389.

⁷⁶ Lampach and Dyevre (n 16); Dyevre and Lampach (n 16); Romeu (n 16).

⁷⁷ Court of Justice of the European Union, 'The Annual Report of the Court of Justice of the European Union' (2017).

the third instance (the Supreme or the Constitutional Court) and none was submitted by a first instance court. In Croatia, by contrast, ten references were submitted to the CJEU by first instance courts, one by an appeal court, and none came from the Supreme or the Constitutional Court. Finally, research efforts on the Central and Eastern European Member States ('CEE Member States') have largely focused on the application of EU law and courts in Poland, the Czech Republic, Slovakia and Hungary,⁷⁸ leaving other post-2004 enlargement countries largely under-researched.

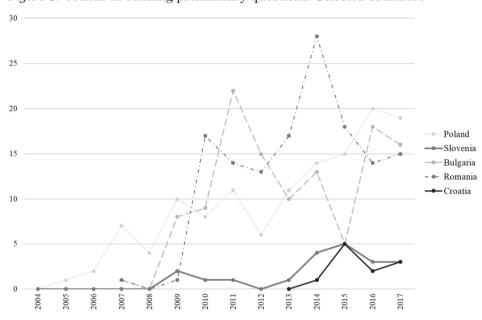


Figure 3. Trends in sending preliminary questions: Selected countries

⁷⁸ Jaremba, 'National Judges as EU Law Judges' (n 15); Jaremba, 'At the Crossroads of National and European Union Law. Experiences of National Judges in a Multi-Level Legal Order' (n 15); Michal Bobek, 'Landtová, Holubec, and the Problem of an Uncooperative Court: Implications for the Preliminary Rulings Procedure' (2014) 10 European Constitutional Law Review 54; Michal Bobek (ed), Central European Judges Under the European Influence: The Transformative Power of the EU Revisited (Bloomsbury Publishing 2015); Marcin Matczak, Mátyás Bencze and Zdeněk Kühn, 'Constitutions, EU Law and Judicial Strategies in the Czech Republic, Hungary and Poland' (2010) 30 Journal of Public Policy 81; Marcin Matczak, Mátyás Bencze and Zdeněk Kühn, 'EU Law and Central European Judges: Administrative Judiciaries in the Czech Republic, Hungary and Poland Ten Years after Accession' in Michal Bobek (ed), Central European Judges Under the European Influence: The Transformative Power of the EU Revisited (Bloomsbury Publishing, 2015); Jan Komárek, 'National Constitutional Courts in the European Constitutional Democracy' (2014) 12 International Journal of Constitutional Law 525; Jan Komárek, 'Czech Constitutional Court Playing with Matches: The Czech Constitutional Court Declares a Judgment of the Court of Justice of the EU Ultra Vires; Judgment of 31 January 2012, Pl. ÚS 5/12, Slovak Pensions XVII' (2012) 8 European Constitutional Law Review 323; David Kosać, 'Politics of Judicial Independence and Judicial Accountability in Czechia: Bargaining in the Shadow of the Law between Court Presidents and the Ministry of Justice' (2017) 13 European Constitutional Law Review 96.

The survey data that I introduced above was used to empirically test the determinants of referral behaviour that I presented in the theoretical section. The dependent variable used in this paper is the probability of sending a preliminary question to the CJEU in the case of interpretative doubts. Because Slovenian and Croatian judges have not been very active consumers of the preliminary ruling procedure, we cannot rely on the number of preliminary questions submitted to the CJEU as an appropriate measure of their referral behaviour. Instead, I rely on the reported willingness of national judges to submit a preliminary question to the CJEU in cases where they are expected to do so. The measure of the referral probability used in this research is, therefore, different from the actual number of preliminary questions that have been submitted by Slovenian and Croatian judges. The independent variables are the following: (1) attitudes towards the EU and EU law; (2) the judge's individual workload; (3) the court's resources; (4) the court's level; (5) knowledge of EU law; (6) experience with EU law. Several other control variables, deriving from previous research efforts, were added to the analysis. These are: (1) the type of court; (2) attitudes towards the EU and EU law; (3) parties' input; (4) the judge's seniority; and (5) the court's location. The list of the variables and the survey questions used to measure them are presented in Table 2.

Table 2. List of variables

	Variable name	Type of data	Survey question
Dependent	The	Discrete	What is the probability that you
variable	probability		would send a preliminary question
	of making a		to the CJEU in case of interpretative
	referral		doubt?
Explanatory	Individual	Continuous	As an estimate, how many cases
variables	workload		did you decide in the past twelve
			months?
	Experience	Continuous	As an estimate, in how many of the
			cases you decided in the past twelve
			months did European Union law
			play a role?
	Court level	Discrete	At which court do you adjudicate
			(first or second instance)?
	Court type	Discrete	At which court do you adjudicate
			(generalised or specialised)?

	Variable name	Type of data	Survey question
Explanatory variables	Attitudes	Discrete	I see myself as a European Union law judge, measured on the Likert scale. Trust in national institutions, namely the national parliament, the constitutional court, the supreme court, and the ministry of justice (0 no trust – 10 complete trust). Trust in EU institutions, namely the European Parliament, the European Commission, the Council of the EU, and the CJEU (0 no trust – 10 complete trust)
	Knowledge of the procedure	Discrete	Index created on the basis of several questions measured on the Likert scale: (1) I know in which situations I am expected to refer a preliminary question to the CJEU; (2) I know how to ask a preliminary question to the CJEU; (3) The preliminary ruling procedure is clear to me; (4) I know how I am supposed to proceed with an answer of the CJEU to a preliminary question
	Access	Discrete	How do you rate your access to sources of EU law (from very bad to very good)?
	EU law unit	Discrete	Is there an advisor on EU law or an EU law research unit at the court where you sit? (yes or no)
	Party input	Discrete	In practice, it is difficult to recognise if EU law is applicable to a case if the parties do not point this out, measured on the Likert scale.
	Seniority	Continuous	For how many years have you worked as a judge?
	Location	Discrete	At which court do you adjudicate? (in capital or not)

The dependent variable is considered ordinal with four levels interpreted as (1) very low, (2) low, (3) high, and (4) very high. An ordinal logistic regression model can be formulated as follows:

$$logit[P(Y \le j)] = \alpha_j - X'\beta$$

where j=1,...,J-1 is the level of the ordered response variable with J levels. In this case, J=4 since the dependent variable has four levels. There are different intercepts, α , depending on the level of interest. The regression coefficients for the independent variables are denoted by vector β . In order to account for correlation between respondents within the two countries, standard errors are clustered by country. The bootstrap method was used for estimating standard errors with 1000 replications. The dataset used in this paper contains several missing values due to survey non-response. To account for the missing data, two different models were fitted: first, a model using complete case analysis ('CC') in which cases with missing values were deleted and the analysis was done on the complete observations only; as an alternative to this approach, I use an imputation method based on the machine learning algorithm Random Forest, which is implemented in the 'RandomForest' package in the programming language R. Random Forest operates in such a way that it creates a large number of relatively uncorrelated individual decision trees. Each tree gives its own prediction of a missing value. Based on the 'wisdom of crowds' logic, Random Forest chooses the prediction with the most votes as the model's predicted value.⁷⁹

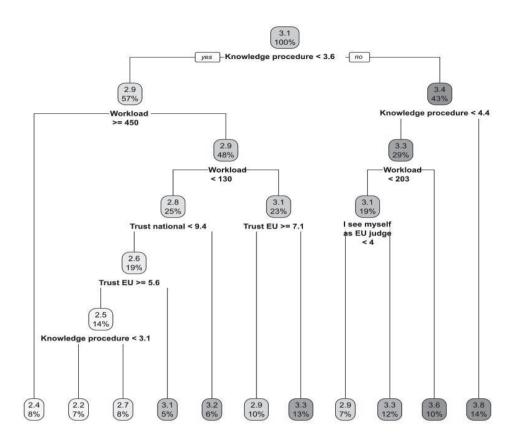
5 Results

To explore the determinants of the referral behaviour of national judges, I start with the regression tree. Regression trees are an effective tool to model complex relationships and to explore non-linear relationships between the dependent variable and the explanatory variables. The regression tree illustrated in Figure 4 suggests that judges' knowledge of the preliminary ruling procedure, their workload and attitudes towards the EU and EU law are the strongest predictors of the referral behaviour of national judges. The tree shows that judges who rate their knowledge of the procedure higher than 3.6 (on a 1 to 5 scale) report a higher probability of making a referral if there are interpretative doubts related to EU law.

⁷⁹ Fei Tang and Hemant Ishwaran, 'Random Forest Missing Data Algorithms' (2017) 10 Statistical Analysis and Data Mining: The ASA Data Science Journal 363; Daniel J Stekhoven, *MissForest: Nonparametric Missing Value Imputation Using Random Forest* (2013), CRAN Repository https://cran.r-project.org/web/packages/missForest/missForest.pdf accessed 1 August 2019.

⁸⁰ Hal R Varian, 'Big Data: New Tricks for Econometrics' (2014) 28 Journal of Economic Perspectives 3; Glenn De'ath and Katharina E Fabricius, 'Classification and Regression Trees: A Powerful Yet Simple Technique for Ecological Data Analysis' (2000) 81 Ecology 3178; Lampach and Dyevre (n 16).

Figure 4. Regression tree



Regression tree done on complete cases. The number of observations: 145.

The workload appears several times in the regression tree, but with an opposite sign. Judges whose workload exceeds a threshold of 450 cases per year have the lowest probability of making a referral to the CJEU. Yet, as the regression tree suggests, the relationship between judicial workload and the referral behaviour of national judges is not linear but rather follows the form of a quadratic equation. I interpret this result as follows. A judge with fewer cases on his docket (fewer than 130 cases, as suggested by the regression tree) has fewer opportunities to encounter EU law. Because of his scarce experience with EU law, he will be less likely to know how to handle such a case once it shows up on his docket. The probability of making a referral to the CJEU thus rises with an increasing workload but only to a certain point. Once the number of cases on a judge's docket becomes more pressing, this probability will decrease.

Table 3. Ordinal logistic regression model for referral behaviour

	Probabilit		a preliminary e CJEU	question to
	CC (1)	Random Forest (2)	CC (3)	Random Forest (4)
I see myself as an EU law	0.412***	0.110***	0.395**	0.433*
judge	(0.088)	(0.328)	(0.120)	(0.176)
Trust in EU institutions (0) No trust → (10) Complete trust	0.024	0.024*	0.014	0.031***
	(0.023)	(0.145)	(0.014)	(0.007)
Trust in national institutions (0) No trust → (10) Complete trust	-0.092	-0.085	-0.074	-0.041
	(0.078)	(0.178)	(0.087)	(0.056)
Knowledge of the procedure (1) Strongly disagree → (5) Strongly agree	1.082***	0.620***	1.059***	1.191***
	(0.023)	(0.126)	(0.058)	(0.033)
Experiences with EU law	0.010***	0.001**	0.006***	0.003
	(0.002)	(0.006)	(0.001)	(0.004)
Individual workload	-0.001*** (0.00006)	-0.0008*** (0.00005)	0.002*** (0.0003) -0.000004***	0.0013 (0.0008) -0.000003*
(Individual workload) ²	_	_	(0.0000)	(0.00001)
EU law unit	-0.747***	-0.224***	-0.810***	-0.743***
Reference: Yes	(0.074)	(0.062)	(0.061)	(0.100)
Access to sources of EU law (1) Bad → (4) Good	-0.694	-0.498	-0.661	-0.689
	(0.575)	(0.089)	(0.527)	(0.470)
Parties' input (1) Strongly disagree → (5) Strongly agree	0.157	-0.099	0.174**	0.137**
	(0.081)	(0.112)	(0.063)	(0.052)
Court specialisation Reference: Specialist	-0.170	0.016	-0.110	-0.412
	(0.382)	(0.364)	(0.406)	(0.335)
Court level	0.822*	0.350**	0.734*	0.678*
Reference: First instance	(0.370)	(0.550)	(0.371)	(0.268)
Capital	-0.121	0.0813	-0.213**	-0.218
Reference: Yes	(0.131)	(0.286)	(0.077)	(0.191)
Seniority	0.024	0.033	0.027	0.028
	(0.024)	(0.101)	(0.019)	(0.019)
Intercepts 1 2 2 3 3 4	-1.0637	-3.0267	-0.8133	-0.5875
	1.1060	-0.8099	1.4139	1.8505
	4.2067	1.8192	4.5695	5.3809
Nagelkerke R ² AIC	0.3341	0.4790	0.3524	0.3594
	292.74	573.83	291.38	340.30
Number of observations	145	182	145	182

Note: *p<0.05; **p<0.01; ***p<0.001

I now turn to the results of ordinal regression analysis, whose estimates are presented in Table 3. The analysis was done on four different models. Model 1 relies on complete cases, that is, cases with no missing values, and it includes 145 observations. As for the second model, missing values were predicted with a Random Forest imputation technique. Furthermore, because the regression tree illustrated in Figure 4 shows a non-linear quadratic relationship between the individual workload of a judge and the probability of referral, two additional models with a variable (workload)² were fitted. The effect of individual variables is presented in Table 5A in the Appendix.

I start with the interpretation of individual-level factors. Based on the results of the ordinal logistic regression presented in Table 3, I accept Hypothesis 1 of my research. As can be seen from the table, based on Model 1 and at the 0.001 level of significance, the more judges see themselves as EU law judges, the more likely they are to opt for a preliminary question in the case of interpretative doubts. The odds of moving from a '(very) low' to '(very) high' probability of sending a preliminary reference to the CJEU are multiplied by exp(0.4126)=1.51 for every one-unit increase in the variable 'I see myself as an EU judge'. This variable is significant in all four models. A similar pattern holds for judges' trust in EU institutions. Although only significant in Model 2 and Model 4, the more a judge trusts EU institutions (which include the CJEU, the European Parliament, the European Commission, and the Council of the EU), the more likely they are to make a referral to the CJEU in the case of interpretative doubts. Based on Model 2, the odds of moving from a '(very) low' to a '(very) high' probability of making a referral are multiplied by exp(0.024)=1.02 for every one-unit increase in the variable 'Trust in EU institutions'. These results confirm that the attitudinal model of judicial decision making can be fruitfully applied to the study of what drives judicial participation in the preliminary ruling procedure. I demonstrate that judges who are closer to the pro-integration side of the dimension will be more eager to turn to the CJEU in the case of interpretative doubts with EU law. Judges closer to the anti-integration of the dimension, by contrast, will prefer to solve a case without getting the Luxembourg Court involved.

I further accept Hypothesis 5 of my research. Knowledge of EU law has been found positive and statistically significant at the 0.001 significance level in all models used in this research. Based on the first model, the odds of moving from a '(very) low' to a '(very) high' probability of sending a preliminary reference to the CJEU are multiplied by $\exp(1.0829)=2.95$ for every unit increase in 'knowledge of the preliminary ruling procedure'. This result is in line with the resource management model according to which knowledge of the preliminary ruling procedure lowers the opportunity cost of making a referral simply because a judge

with sufficient knowledge of the procedure has to invest less time and less effort into drafting a reference. This result challenges the argument that more expertise in EU law will make national judges more eager to take the interpretation of EU law in their own hands rather than turning to the CJEU for help. 81

Finally, the results show a statistically significant and positive effect of experience with EU law on the probability of making a referral in three out of four models used in this research. Based on Model 1, the odds of moving from a '(very) low' to a '(very) high' probability of sending a preliminary reference to the CJEU are multiplied by $\exp(1.01006)=1.01$ for every unit increase in 'experience with EU law'. Thus, the more cases with an EU law element that judges have solved in one calendar year, the keener they will be to use the preliminary ruling procedure in practice. Experience with EU law cases is an important factor to explore as only four out of 415 judges covered by the survey submitted a preliminary question to the CJEU. This factor, therefore, does not capture judges' previous experience with the preliminary ruling procedure, but rather with EU law in general, which is an important precondition for recognising situations that require making a referral to the CJEU in the case of interpretative doubts.

I now turn to the role of court-level factors in the referral behaviour of national judges. This paper finds a statistically significant and positive effect of the appellate court level on the probability of submitting a legal question to the CJEU. Such an effect was found in all four models used in this research. Based on the first model, the odds of having a '(very) high' probability of sending a preliminary question to the CJEU are 56 per cent (1-exp(-0.8221)=0.44) lower among first instance judges as compared to second instance judges. I interpret these results as evidence that the law-finding specialisation, as well as a more beneficial resource vs workload ratio, gives appellate national courts more incentive to turn to the CJEU with a preliminary question. Furthermore, because preliminary questions can only address points of law, second instance judges have much more to gain from outsourcing the law-creation task to the CJEU.82 This result holds irrespective of the fact that many preliminary questions that came from Croatia were submitted by first instance courts. Recent research efforts show that first instance courts have pioneered the use of Article 267 TFEU proceedings. Yet, over time, these were overtaken by appellate and supreme and constitutional courts, which now dominate the preliminary ruling procedure (see Figure 5).83 This trend holds for the majority of EU Member States and it is

⁸¹ Romeu (n 16) 397; Vink, Claes and Arnold (n 27) 8.

⁸² Romeu (n 16); Dyevre, Glavina and Atanasova (n 7).

⁸³ Dyevre, Glavina and Atanasova (n 7).

only a matter of time before it becomes evident in Croatia. Furthermore, that first instance judges see appellate and supreme and constitutional courts as 'true enforcers of EU law' has also been reported by Glavina. Based on the results of interviews with judges, she found that dealing with the preliminary ruling procedure is often not perceived as the purpose of the first instance. The interviewed judges admitted that EU law questions are often left to the higher instance, that is, to the appellate or the supreme court.⁸⁴

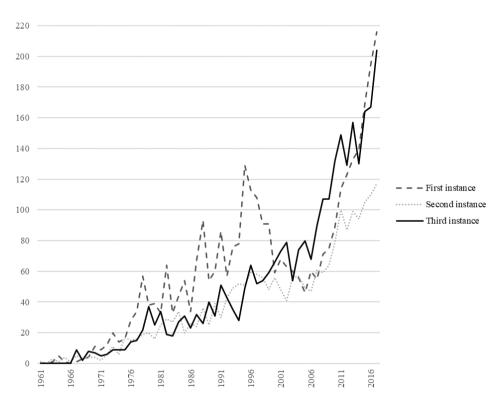


Figure 5. Referral activity according to the level of the referring court, 1961-2017

The graph includes all preliminary questions submitted by courts in all 28 EU Member States between 1961 and 2017. Category 'third instance' covers supreme and constitutional courts.

Source: EUTHORITY project data collection85

⁸⁴ Glavina (n 2) 207

⁸⁵ See https://euthority.eu/?page_id=795> accessed 11 May 2020; Dyevre, Glavina, and Atanasova (n 7).

I further accept Hypothesis 3 and show that the workload increases the opportunity costs of making a referral. The negative effect of the workload on the referral propensity of national judges was confirmed in all four models used in the analysis, for both the linear and quadratic relationship between the variables. Based on the results of the first model, the odds of moving from a '(very) low' to a '(very) high' probability of sending a preliminary reference to the CJEU are reduced by 0.01 (1exp(-0.00105)) for every unit increase in 'judicial workload'. 86 The role of workload on the referral propensity of Slovenian and Croatian judges is partly a result of the existence of the court's targets that prescribe the number of cases a particular judge should solve in one calendar year⁸⁷ or the time period in which a judgment should be delivered.88 Not fulfilling this numerical target can result in a lower judicial grade at the end of the calendar year and can also lead to sanctions such as a lower salary or even dismissal.⁸⁹ Furthermore, sending a preliminary question under the time targets requires writing a special report where judges have to justify why sending a preliminary question might take longer than prescribed. 90The existence of court targets and the possibility that the unresolved workload results in sanctions create a contra-incentive for judges to use the preliminary ruling procedure in their daily work. This supports the argument that in deciding cases judges are often constrained by different institutional rules or practices that exist at the national level and which make referral to the CJEU more time and effort consuming, similar to what was reported by Wind in the case of Denmark.91

Another meso-level factor that was found statistically significant is the existence of a research unit on EU law. Based on Model 1, the odds of having a '(very) high' probability of sending a preliminary question to CJEU are 53 per cent (1-(exp(-0.7471)=0.47) lower among judges without a unit on EU law in their court as opposed to those who benefit from such assistance. I interpret this result as evidence that additional resources available to judges lower the opportunity costs of making a referral.

⁸⁶ Discussing the role of the workload requires taking into account the case complexity. Different courts deal with cases of different complexity. For example, first instance courts typically process simpler cases than second instance courts. Yet, cases relating to commercial law are more complex than civil and criminal law first instance cases. To account for case complexity, I control for the court type.

⁸⁷ Ministry of Justice of the Republic of Croatia, 'Framework Criteria for Judicial Work (Okvirna mjerila za rad sudaca)' 9.

⁸⁸ Ministry of Justice of the Republic of Slovenia, 'Time Standards: Expected Times for Performing Typical Process Actions and Court Cases (Časovni Standardi: Pričakovani Časi Opravljanja Tipičnih Procesnih Dejanj in Reševanja Zadev Na Sodiščih)'.

⁸⁹ Glavina (n 2).

⁹⁰ ibid 205.

⁹¹ Wind (n 28) 1051.

Judges who have access to a special research unit or a person who specialises in EU law will have to spend less time and effort on conducting research and on drafting a question. Time and resources that they save by outsourcing the production of EU law knowledge to a specialist can be used on something else, such as getting home early on a Friday night or managing their caseload. As for 'access to sources of EU law and the CJEU's jurisprudence', the analysis does not show a statistically significant effect of the access variable in any of the models used in this paper.

The type of court, which was used as a control variable and a proxy for case complexity, was not found significant in any of the models. The results on Slovenian and Croatian judges, thus, do not support the argument that judges working at specialised courts should be more frequent participants of the procedure simply because they encounter EU law more frequently.93 This result, however, is in line with the findings of Dyevre and others who find no conclusive evidence that jurisdictional specialisation correlates with the higher referral propensity of national courts. 94 Furthermore, a positive effect of litigants' input on the referral behaviour of national judges was found to be statistically significant at the significance level of 0.5 in Model 3 and Model 4. Finally, the last two control variables, the court's location and the judge's seniority, were not found significant in any of the four models. This finding suggests that the research conclusions of Mayoral and others on the judges' age95 and those of Dyevre and Lampach on the court's location96 do not travel to Slovenia and Croatia.

6 Conclusion

This paper contributes to European judicial politics literature by placing the study of the referral behaviour of national judges on more rigorous theoretical grounds. It combines insights and evidence from American judicial politics literature and argues that whether or not national judges turn to the CJEU by means of the preliminary ruling procedure depends on the interaction of various individual- and court-level factors. I derived hypotheses from three models of judicial decision making:

⁹² Ash and MacLeod (n 23).

⁹³ de la Mare (n 33); Broberg and Fenger (n 33).

⁹⁴ Arthur Dyevre, Angelina Atanasova and Monika Glavina, 'Who Asks Most? Institutional Incentives and Referral Activity in the European Union Legal Order' (Social Science Research Network 2017) SSRN Scholarly Paper ID 3051659.

⁹⁵ Mayoral, Jaremba and Nowak (n 15).

⁹⁶ Arthur Dyevre and Nicolas Lampach, 'The Unequal Reach of Transnational Institutions: Mapping, Predicting and Explaining Spatial Disparities in the Use of EU Law' (Social Science Research Network 2018) SSRN Scholarly Paper ID 3136462 https://papers.ssrn.com/abstract=3136462 accessed 15 March 2018.

the attitudinal model, the resource management model, and the team model. First, in line with the attitudinal model that scales judges on a pro- vs anti-EU integration dimension, I find evidence that the referral behaviour of national judges is influenced by whether judges see themselves as Union judges and by the extent to which they trust EU institutions. Attitudes, however, play a much more important role when other constraints are missing. One such constraint is the judicial workload. I demonstrate that the pressure to manage one's workload might be more pressing than the desire to see one's own preferences imprinted in law or the desire to raise one's reputation. Furthermore, and consistent with the resources management model, my results show that judges closer to the pro-EU integration side of the spectrum are more likely to turn to the CJEU with a preliminary question if their annual workload does not exceed 450 cases. The opportunity costs of making a referral are, however, lower among judges with sufficient experience and knowledge with respect to EU law and among those who enjoy support from a special EU law research unit at their court. Finally, in line with the team model of judicial decision making, I demonstrate that law-finding specialisation, a more favourable workload vs resources ratio, as well as the fact that preliminary questions can only address points of law, give second instance courts more incentives to use the preliminary ruling procedure in their daily work. With these novel findings, I demonstrate that the attitudinal model, the team model, and the resource management model are complementary rather than competing accounts of judicial behaviour, adding an additional dimension to the grand theories of European legal, political, economic and social integration that have developed in the course of the last two decades.

This research offers a valuable contribution to European judicial politics literature. Yet, it suffers from several methodological limitations. The focus on two EU Member States (Slovenia and Croatia) does not allow for testing the macro-level determinants of judicial behaviour such as the population, intra-EU trade, or public support for EU membership. It does, however, allow for exploring meso- and micro-level determinates of judicial behaviour much more rigorously and in more detail than studying all 28 Member States ever would. The problem of the generalisation of research results to all EU Member States, nonetheless, remains, The results of this research are much more applicable to new EU Member States (that joined the EU in 2004 or later) than they are to the old Member States. This is because some constraints in the application of EU law are more evident among new Member States' judges than among old ones. Scholars have, for example, argued that because post-communist judges rely on textualism (that is, on a narrow and limited set of arguments, the earlier case law of the same court, accepted and well-estab-

lished legal doctrines, and on the traditional methods of interpretation) they are not able to apply EU law properly. Another factor to take into account is judicial knowledge of EU law. The old Member States and their judiciaries have had a considerably longer period to adapt to EU law doctrines as they have emerged. The new Member States, by contrast, had to accept the entire *acquis communautaire* overnight.

Because the survey that I rely on for the purpose of this paper has been employed before on Dutch, German, Polish, and Spanish judges, my suggestion for future research is to merge these data and to test whether the determinants of judicial behaviour, as uncovered by this research, hold for the other studied Member States. Furthermore, a focus on six Member States, of which three are considered old Member States would allow some macro-level factors to be added to the analysis, allowing for a better overview of what drives judicial behaviour in Article 267 TFEU proceedings. I further hope this research will inspire other scholars to use the survey on the knowledge of, experience with, and attitudes towards EU law on the remaining 22 EU Member States, and to bring new data and insights on the application and enforcement of EU law by national judges.



This work is licensed under the Creative Commons Attribution – Non-Commercial – No Derivatives 4.0 International License.

Suggested citation: M Glavina, 'To Refer or Not to Refer, That Is the (Preliminary) Question: Exploring Factors Which Influence the Participation of National Judges in the Preliminary Ruling Procedure' (2020) 16 CYELP 25.

 $^{^{97}}$ M Bobek (ed), Central European Judges Under the European Influence (Hart Publishing 2015) 13.

APPENDIX

Figure 1A. Correlation matrix

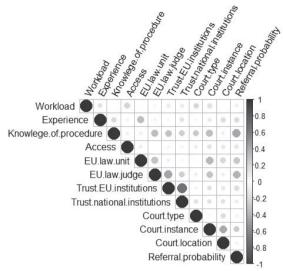


Table 1A. Number of preliminary references in the CEE Member States

Member State	Number of referrals
Bulgaria	137
Croatia	14
Estonia	27
Hungary	187
Latvia	65
Lithuania	61
Poland	158
Czech Republic	69
Slovakia	50
Slovenia	22
Romania	162

The table shows the number of referrals since a Member State's accession to the EU until 2018.

Source: CJEU, Annual reports.

Table 2A. Numerical overview of the number of participants

Country	Courts approached	Judges	Participants	_	% of female participants
Slovenia	65	857	126	14.7%	71%
Croatia	76	1,792	289	16.6%	74%

The response rate corresponds closely to the actual gender distribution in Slovenia and Croatia. The share of female judges at first and second instance courts in 2016 was 70.8 per cent for Croatia and 75 per cent in Slovenia.

Table 3A. The proportion of missing data

	Variable	Percentage
Dependent variable	Referral propensity	3.57
Independent variables	Individual workload	9.52
	Experience with EU law	9.92
	Knowledge of preliminary ruling	
	procedure	1.58
	Acknowledging the role of parties	3.96
	Access to sources of EU law	2.77
	Consultant/Research unit on EU law	2.77
	I see myself as an EU judge	7.53
	Trust in EU institutions	7.83
	Trust national institutions	7.63
	Seniority	7.14
	Capital city	0.00

The table shows the proportion of missing data for the variables used for the analysis in this paper.

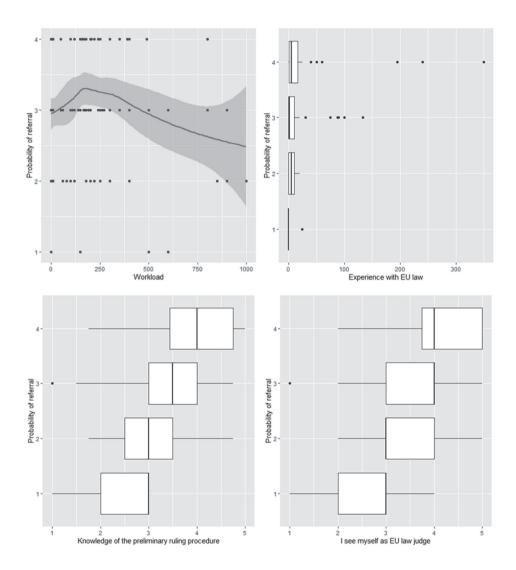
Table 4A. Comparing post-2004 enlargement Member States (2004-2017)

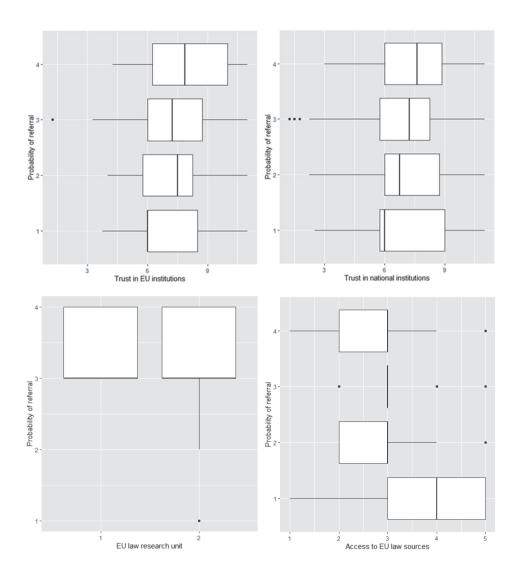
	Number	Years of	Referrals	Population	Referrals	Judges	Referrals
	of	membership	per years of	in million	per million	per	per judges
	referrals	membersinp	membership	inhabitants	inhabitants	capita	per capita
Cyprus	7	13	0.5	0.86	8.14	13.1	0.53
Estonia	28	13	2.1	1.31	21.37	17.6	1.59
Hungary	158	13	12.1	9.77	16.17	28.7	5.51
Latvia	60	13	4.6	1.93	31.09	25.5	2.35
Lithuania	55	13	4.2	2.80	19.64	27.3	2.01
Malta	3	13	0.2	0.47	6.38	10.2	0.29
Poland	127	13	9.7	37.97	3.34	26.0	4.88
Czech R.	57	13	4.3	10.61	5.37	28.4	2.01
Slovakia	44	13	3.4	5.44	8.09	24.1	1.83
Slovenia	20	13	1.5	2.06	9.71	42.6	0.47
Bulgaria	117	10	11.7	7.05	16.60	31.8	3.68
Romania	139	10	13.9	19.52	7.12	23.6	5.89
Croatia	11	5	2.2	4.10	2.68	43.3	0.25

Includes data for the year 2017. Data source: CJEU annual report; Eurostat; EU Scoreboard98

⁹⁸ Court of Justice of the European Union, 'The Annual Report of the Court of Justice of the European Union'; European Commission, 'Eurostat. National Accounts (Including GDP)' 2018; 'EU Justice Scoreboard - European Commission' https://ec.europa.eu/info/policies/justice-and-fundamental-rights/upholding-rule-law/eu-justice-scoreboard accessed 25 May 2016.

Figures 2A. Relationship between the probability of referral and independent variables





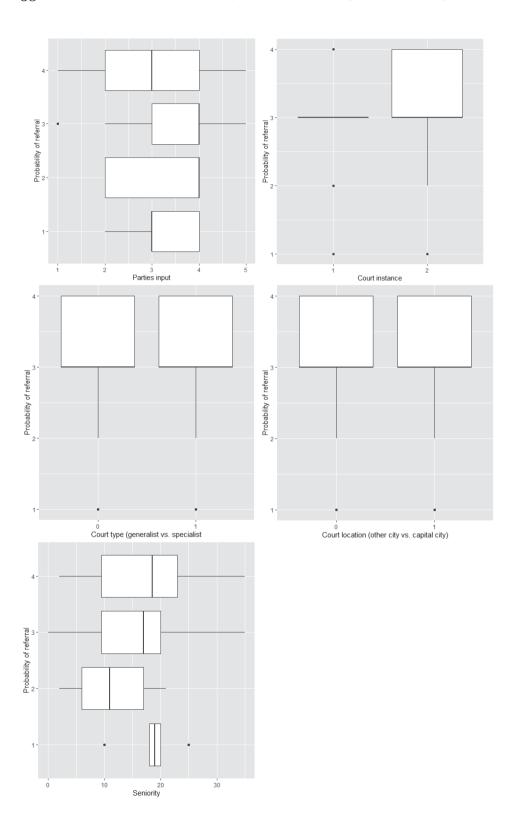


Table 5A. Ordinal logistic regression, Full models

dge 0.666*** S	(3) (3) (3) (1.009*** (0.053) (1.009***	(4) (4) 0.0092***	(5) (5) (6) (0.0002)	(2) (3) (4) (5) (6) (6) (7) (139** (0.053) (4) (5) (6) (7) (6) (7) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	(7)		(8) 0.412*** (0.088)	(9) 0.395** (0.120)
0.666***	(3) - - 1,009*** (0,053) - -	(4) - - 0.0092***	(5) - - -0.0006** (0.0002)	(6)	(2)		(8) 0.412*** (0.088)	(9) 0.395** (0.120)
0.666***	1.009***	0.0092***	-0.0006**	0.004***		1 1	0.412*** (0.088)	0.395** (0.120)
(0.044)	1.009***	- - 0.0092*** (0.0006)	-0.0006**	0.004***			(0.088)	(0.120)
	1.009***	- - 0.0092*** (0.0006)	- -0.0006** (0.0002)	0.004***		,	0.024	
	1.009***	- 0.0092***	-0.0006**	0.004***		_	1	0.014
	1.009***	- 0.0092*** (0.0006)	-0.0006**	0.004***			(0.023)	(0.014)
	1.009***	0.0092***	-0.0006**	0.004***		1	-0.092	-0.074
	1.009*** (0.053)	0.0092***	-0.0006**	0.004***			(0.078)	(0.087)
	(0.053)	0.0092***	-0.0006**	0.004***			1.082***	1.059***
	1 1 1	0.0092***	-0.0006**	0.004***			(0.023)	(0.058)
		(0.0006)	-0.0006**	0.004***	1	1	0.010***	0.006***
1	1 1		-0.0006** (0.0002)	0.004***			(0.002)	(0.001)
	1		(0.0002)	(0000	1	-	-0.001***	0.002***
				(0.0006)			(0.0000)	(0.0003)
(Individual workload) ²		1		-0.0000007*** (0.00000004)	1	ı	1	-0.000004*** (0.0000)
EU law unit					-0.713***		-0.747***	-0.810***
Reference: Yes					(0.171)		(0.074)	(0.061)
Access to sources of EU law	1		1	1	1		-0.694	-0.661
1 (bad) - 4 (good)							(0.575)	(0.527)
Parties' input	1	1	1		1	1	0.157	0.174**
1 (disagree) – 5 (agree)							(0.081)	(0.063)
Court specialisation	1	1	1	1	1	1	-0.170	-0.110
Reference: Specialist							(0.382)	(0.406)
Court level	1	1	1		,	1.277***	0.822*	0.734*
Reference: First instance						(0.220)	(0.370)	(0.371)
Capital	1	-	1	-	1	1	-0.121	-0.213**
Reference: Yes							(0.131)	(0.077)
Seniority -	1	1	1	1	1	1	0.024	0.027
							(0.024)	(0.019)
Intercepts -2 5578 -2 5578	-0.3566	-3 4555	-3 6957	-3 3681	-4 2198	-3 3653	-1 0637	-0.8133
0.6752	1.6863	-1.5015	-1.7433	-1.3510	-2.2655	1.4033	1.1060	1.4139
	4.4319	0.9602	0.6832	1.2078	0.1749	1.1447	4.2067	4.5695
Nagelkerke R2 0.01128 0.0251 AlC 304.23 316.20	0.1804 294.28	0.0380 314.50	0.0054 318.76	0.0764 311.31	0.0156	0.8351 308.35	0.3341 292.74	0.3524 291.38
Number of observations 145 145	145	145	145	145	145	145	145	145

Note: 'p<0.1; *p<0.05; **p<0.01; ***p<0.001