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Legal Centralization: A Tocquevillian View

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BERTRAND CRETTEZ*, BRUNO DEFFAINS[†] AND OLIVIER MUSY[‡]

*Université Paris II Panthéon-Assas, CRED, 21 rue Valette, 75005, Paris, France. Email: bertrand.crettez@u-paris2.fr.

[†]Université Paris II Panthéon-Assas, CRED, 21 rue Valette, 75005, Paris, France. Email: bruno.deffains@u-paris2.fr.

[‡]Université Paris II Panthéon-Assas, CRED, 21 rue Valette, 75005, Paris, France. Email: olivier.musy@u-paris2.fr.

Abstract

We present an analysis of the degree of legal centralization in a setting where people are averse to inequality before the law. In this approach inspired by Tocqueville, the degree of legal centralization is determined by striking a balance between equality before the law and attention to local needs. We show that there is a threshold which is such that when the intensity of aversion to inequality before the law is below this threshold legal decentralization is preferred to legal centralization (and conversely). We also show that the optimal way to balance the desire for local adjustments and national uniformity is not an intermediate degree of centralization but to have nationally uniform rules that can be adapted by judges. We rely on these results to provide an analytical narrative to the abrupt change from legal diversity to full legal centralization and uniformization around the time of the French Revolution in 1789.

JEL Classification: K40, N40.

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1 Introduction

Common law and civil law differ in their principles and their applications. Some scholars claim that the differences between these legal systems are negligible or that they vanish over time (Armour et al., 2009; Crettez et al., 2014). Other authors, however, claim that the disparities between laws in different countries are constant and that legal origins matter since they correlate strongly with current economic outcomes (La Porta et al., 2008; Balas et al., 2008).

An important feature of legal divergence is the high degree of legal centralization in civil law countries like France, as opposed to common law countries like England. This paper presents a new analysis of the degree of legal centralization. Our analysis relies on the remark, first made by Tocqueville, that inequality before the law, a significant feature of the rule of law, is a major concern for legal designers. In this respect, decentralization of law creates a negative externality, namely the underproduction of legal uniformity, for people who are averse to inequality before the law. By contrast, legal centralization results in the neglect of local legal preferences. The degree of legal centralization is therefore determined by striking a balance between equality before the law and attention to local needs.

Our analysis builds on a new model of the degree of legal centralization in which legal uniformity can be directly valued by agents. We study three different cases of legal centralization. In the first case, there is complete legal decentralization. As a result, inequality before the law reaches its highest level, but local preferences are satisfied. In the second case, legal uniformity prevails. Hence, inequality before the law is at its lowest, but local preferences are not always satisfied. We also consider an intermediate case in which legal uniformity is achieved only in some subsets of the regions. We compare these different degrees of legal centralization, and notably show that there is a threshold such that when the intensity of aversion to inequality before the law falls below it, legal decentralization is preferred to legal centralization (and conversely).

Furthermore, we enrich the analysis by considering a case with both legal production (namely statutes) and judicial discretion. We show that the optimal way to balance the desire for local adjustments and national uniformity is not an intermediate degree of centralization (in the sense of aggregating administrative units into larger administrative units, but not centralizing completely) but to have nationally uniform rules that can be adapted by judges, in the context of a legal system that imposes costs on the exercise of judicial discretion. These costs act as a sort of Pigouvian tax such that the local adjustments can

be set at a level that internalizes the common interest in uniformity. The costs of legal discretion, however, differ from a Pigouvian tax, despite being similar.

Finally, we use our results to provide an analytical narrative of the *French Deviation* (Dawson, 1968). This deviation refers to the abrupt change from legal diversity to full legal centralization and uniformization around the time of the French Revolution in 1789, followed by some adjustments, particularly the Napoleonic Civil Code of 1804, which somewhat alleviated control over judges. Following Tocqueville we propose to analyze the French deviation to legal centralization as the result of increased aversion to inequality before the law, which was stimulated by the Enlightenment during the 18th century. We also rely on our study of the optimal degree of judicial discretion to explain why the Napoleonic codification, *i.e.*, the culmination of French legal centralization, was associated with a higher degree of judges' discretion than at the beginning of the Revolution. This attempt at explanation seems to be more consistent with the historical evidence than the interpretation, often made in the legal design literature, of the Napoleonic codification as a means to transform judges into automata.

The paper will be organized as follows. In the next section, we provide a brief review of the literature on vertical legal design, *i.e.*, the determination of the degree of centralization of legal production and judicial decisions. We present our model of legal centralization in section 3 and compare the different degrees of legal centralization in section 4. Judicial discretion is considered in section 5. Our analytical narrative of the French Deviation is presented in section 6, while section 7 concludes the paper.

2 Vertical Legal Design: A Brief Review of the Literature

Vertical legal design refers to the choice of the degree to which norms and judicial decisions are centralized. To explain this choice law-&-economics scholars single out tradeoffs faced by lawmakers.

Glaeser and Shleifer (2002) offer a pioneering study of one such tradeoff. These authors propose a model of legal design for France and England in the Middle Ages in which the degree to which judicial decisions are centralized is determined by a Coasean bargaining between local agents (the nobility) and a central authority (the king). Local agents prefer legal decisions made by local juries, since these juries are more likely to take into account their preferences. Local decisions, however, are also more vulnerable to local violence and pressures from peers. By contrast, centralized justice handed down by a judge in the name

of a central authority may not adapt to local preferences, but may also be less vulnerable to local pressure. Glaeser and Shleifer (2002) argue that in the Middle Ages, France chose to let royal judges make judicial decisions (leading later to a centralized legal system) because local lords feared their neighbors more than the king. Contrary to France, England chose a system of juries (leading later to a judge-made legal system) to counterbalance the overweening power of the king. While the background of the analysis is the Middle Ages, its scope is clearly widespread.

Judicial centralization is analyzed in another way by Arruñada and Andonova (2005). In their approach, a legal system is designed partly to protect freedom of contract, which is a necessary condition for economic development. Freedom of contract can be protected either by decentralized judge-made law or by a national legislation applied by constrained local judges. Arruñada and Andonova (2005) contend that in eighteenth-century France judges were considered the defenders of the Old Regime and as opponents of the principles of free market and contractual equality. Granting them judicial discretion would have threatened the development of a modern market economy. On the other hand, legal centralization and control over the judiciary allowed the freedom of contract to be protected. French legal centralization, consecrated by the Civil Code in 1804, can be considered as one of the means used to achieve this goal.²

Centralization of legal production can also be justified by the notion of *State capacity* initially proposed by Besley and Persson (2011). According to these authors, a State's efficiency crucially depends on both its fiscal and legal capacities. The former refers to a State's ability to raise the minimum amount of fiscal resources needed to finance sovereignty services. Legal capacity, on the other hand, is the ability of the national ruler strictly to apply the rule of law to all citizens. Fiscal capacity and legal capacity go hand in hand. To wit, fiscal capacity is best achieved if a certain degree of centralization and legal uniformization prevails, resulting in economies of scale in the process of tax collection. Johnson and Koyama (2014) apply this idea to 18th-century France by arguing that to finance its wars the French monarchy started to centralize its fiscal system and harmonize legal rules throughout the French regions. While France was not fully centralized at the end of this process, the foundations were laid for 18th-century centralization. France's improved legal capacity also came along with the building of a national identity which later proved instrumental in achieving full centralization during the French Revolution (on this,

² In addition to codification, introducing a judicial hierarchy, and notably an appeal process, is also a means to control judicial discretion and ensure judicial uniformity (see, *e.g.*, Bravo-Hurtado and Bustos, 2017, and the surveys in Kornhauser, 2012 and Kastellec, 2017).

see Johnson, 2015).³

Vertical legal design is a particular version of the choice between centralized and decentralized public decisions. This choice has been analyzed in the literature on “fiscal federalism”, which began with the work of Oates (1972). In this literature, decentralized decisions lead to better fulfilment of various local preferences regarding taxation and public goods. In the absence of any spillovers between local regions, public goods provision should always be decided at the lowest level of government, which integrates the relevant benefits and costs adequately. In the presence of spillovers, however, centralized uniform decisions can be preferable. Nevertheless, as discussed by Loeper (2011), legal spillovers differ from fiscal ones. Loeper shows that standard decentralization theorems do not apply in presence of legal spillovers. That is because, imposing legal uniformity in legal decisions brings about a cost that is always higher than that resulting from uncoordinated local legal decisions.

But the actual nature of legal spillovers matters. In the model of Loeper (2011), each local region faces a cost when its legal decisions differ from those of other regions. Each region then balances the gain of being closer to the others against the costs of being farther from its own legal preferences. Legal uniformity is too costly since it imposes too much similarity among regional laws and hence too little satisfaction of local preferences. It can be argued, however, that legal uniformity can also be desired *per se*. For instance, Fuller (1969) describes legal uniformity as one of the elements defining the rule of law. This idea has deeper roots, one of which can be traced at least to the writing of Alexis de Tocqueville, who wrote in *Democracy in America* (Part IV, p. 1195).

After the idea of a unique and central power [...] is the idea of a uniform legislation. As each one of them sees himself as little different from his neighbors, he understands poorly why the rule that is applicable to one man would not be equally applicable to all the others. The least privileges are therefore repugnant to his reason. The slightest dissimilarities in the political institutions of the same people wound him, and legislative uniformity seems to him to be the first condition of good government.

In this connection, the nature of the cost considered in Loeper (2011) differs from that of legal diversity for those concerned with inequality before the law. In the former case, agents only pay attention to the differences between the law of *their* regions and that of the other

³Johnson and Koyama (2017) propose a survey of historical studies focusing on the influence of State capacity on growth.

regions and they simply ignore the difference between any pair of other regional laws. By contrast, this difference would matter for someone who is averse to inequality before the law. To address Tocqueville’s intuition that aversion to inequality before the law matters for vertical legal design, we next present a model in which agents’ preferences display this aversion.

3 A Model of Legal Centralization with a Tocquevillian Flavor

3.1 The setup

Consider a country which includes n local regions, $i = 1, \dots, n$, with $2 \leq n$. A local region is described by its culturally ideal law x_i and its actual law ℓ_i .⁴ Each region i is inhabited by a representative agent whose payoff function is

$$\mathcal{U}_i(\boldsymbol{\ell}) = -\frac{1}{2}(\ell_i - x_i)^2 - \frac{\alpha}{2n} \sum_{j=1}^n (\ell_j - \bar{\ell})^2, \quad (1)$$

where $\boldsymbol{\ell} = (\ell_1, \dots, \ell_n)$ is the vector of actual laws and $\bar{\ell}$ is the mean value of these laws.

This payoff function includes two terms. The first one, $-\frac{1}{2}(\ell_i - x_i)^2$, represents the cost of the divergence of region i ’s law from region i ’s own legal preferences. The second one, $-\frac{\alpha}{2n} \sum_{j=1}^n (\ell_j - \bar{\ell})^2$, represents agent i ’s aversion to inequality before the law. We capture this aversion by assuming that each representative agent’s payoff function decreases with respect to the *variance* ($\frac{1}{n} \sum_{j=1}^n (\ell_j - \bar{\ell})^2$) of the actual laws. The parameter α , which is a positive real number, measures the intensity of the aversion to legal inequality: the higher α the more agents become concerned about legal inequality.⁵

We further assume that the choice between the different degrees of legal centralization relies on the comparison of the values taken by the sum of the regional representative agent’s payoff functions \mathcal{U}_i . Following Glaeser and Shleifer (2002), we will first compare two degrees of legal centralization. In the first degree (decentralization), each region chooses its own law ℓ_i^d , without cooperating with other regions. By contrast, in the second degree (centralization) regions cooperate in the sense that they all adopt the same law. We shall also consider a third degree (federalism), corresponding to an intermediate level of legal

⁴Both the actual and ideal laws are associated with points of the real line. We may interpret these points as the values of an aggregate index of specific legal rules. The construction of aggregate indexes of legal rules is a current practice in the empirical law-and-economic literature (see, *e.g.*, Siems, 2011).

⁵To ease the analysis, we also assume that the parameter α is the same across regions.

centralization. We associate a notion of equilibrium with each degree, which we study in turn.

3.2 Decentralized equilibrium

We first address the case where there is no legal cooperation. Specifically, we study the Nash equilibrium ℓ^d of the game where each region chooses its actual legal rules ℓ_i^d , taking the choices of the other regions as given. We assume that each region i is sufficiently small that it considers it has no influence on the average decision ($\bar{\ell}^d$).⁶ We call this Nash equilibrium the *decentralized equilibrium*. In this equilibrium, the actual law of region i satisfies the following conditions

$$-(\ell_i^d - x_i) - \frac{\alpha}{n}(\ell_i^d - \bar{\ell}^d) = 0. \quad (2)$$

Thus for region i the marginal benefit of a decrease in the distance between the local law and the local preferences is equal to the marginal cost of an increase in inequality before the law.

Using equation (2) we find that the equilibrium value of the actual law in region i is

$$\ell_i^d = \frac{x_i + \frac{\alpha}{n}\bar{x}}{1 + \frac{\alpha}{n}}. \quad (3)$$

where $\bar{x} = (\sum_i x_i)/n$ is the average value of the local ideal laws x_i . The equilibrium value of the actual law in region i is itself an average between the ideal law of this region and the mean value of the local ideal laws.⁷ Observe that when n increases, region i 's choice is closer to its legal preferences. That is because, the higher n , the lower the impact of region i 's choice on legal diversity (the variance of actual laws). Conversely, the higher α , the higher the concern for equality before the law and thus the closer the law of region i to the average of other regions' preferences.

⁶This assumption is innocuous. Addressing the influence on the average decision would slightly complicate the analysis without changing the result qualitatively.

⁷As discussed in Section 2, Loeper (2011) shares some concerns and results with our model. In his paper, the preferences of region's i representative agent are as follows: $U_i(\ell) = -\frac{1}{2}(\ell_i - x_i)^2 - \frac{\beta}{2N} \sum_{j \neq i} (\ell_i - \ell_j)^2$. The utility of agent i depends on the average distance between his choice (ℓ_i) and other regions' choices. Therefore, agents do not care about the distance between the choices of two arbitrary regions. That is, agents do not care about inequality before the law.

Computing the equilibrium value of legal heterogeneity (the variance of the ℓ_i^d), we obtain

$$\sigma_{\ell^d}^2 = \frac{\sigma_x^2}{\left(1 + \frac{\alpha}{n}\right)^2}, \quad (4)$$

where σ_x^2 is the variance of the ideal laws x_i . We see that when α goes to infinity, legal uniformity is achieved since all the equilibrium values of the actual laws converge to \bar{x} (see equation (3)).

The equilibrium value of agent i 's payoff is

$$\mathcal{U}_i(\ell^d) = -\frac{1}{2} \frac{\left(\frac{\alpha}{n}\right)^2}{\left(1 + \frac{\alpha}{n}\right)^2} (x_i - \bar{x})^2 - \frac{\alpha}{2} \frac{\sigma_x^2}{\left(1 + \frac{\alpha}{n}\right)^2}. \quad (5)$$

From the preceding expression we obtain the equilibrium value of the sum of all the regions' payoffs

$$\sum_{i=1}^n \mathcal{U}_i(\ell^d) = -\frac{n\sigma_x^2}{2} \frac{\left(\frac{\alpha}{n}\right)^2 + \alpha}{\left(1 + \frac{\alpha}{n}\right)^2}. \quad (6)$$

3.3 Centralized equilibrium

We now assume that the actual value of the law is the same in all the regions. This single value is supposed to be chosen by a decision maker who maximizes the sum of the agents' payoff functions (this is in the spirit of Glaeser and Shleifer, 2002, see the discussion in Section 4). Formally, the decision-maker problem boils down to

$$\max_{\ell^c} -\frac{1}{2} \sum_{i=1}^n (\ell^c - x_i)^2, \quad (7)$$

where ℓ^c is the value of the law that is applied in all the regions. We notice that by construction the variance of the actual laws is nil, and therefore so is the cost of legal heterogeneity.

We can show that the *centralized equilibrium* ℓ^c is equal to the mean value of the ideal laws

$$\ell^c = \bar{x}. \quad (8)$$

This value satisfies the property that the sum of the marginal costs of the distance of the uniform value of the law to the regional culturally ideal laws is nil.

Agent i 's payoff is

$$\mathcal{U}_i(\boldsymbol{\ell}^c) = -\frac{1}{2}(x_i - \bar{x})^2, \quad (9)$$

where $\boldsymbol{\ell}^c = (\ell^c, \dots, \ell^c)$ and the equilibrium value of the social objective function is therefore

$$\sum_{i=1}^n \mathcal{U}_i(\boldsymbol{\ell}^c) = -\frac{n}{2}\sigma_x^2. \quad (10)$$

The centralized equilibrium does not depend upon α since the variance of the actual laws is nil.

3.4 Intermediate centralization equilibrium

We now consider an intermediate level of legal centralization. At this level the country is divided into \mathbb{P} different administrative provinces. The set of these provinces is denoted \mathcal{P} . A province P includes n_P local regions. Each province P chooses its law ℓ_P (that is, the law ℓ_P applies in all the regions belonging to P).

Given these assumptions, agent i 's preferences (as given in (1)) can be written as follows

$$\mathcal{U}_i(\boldsymbol{\ell}_P) = -\frac{1}{2}(\ell_P - x_i)^2 - \frac{\alpha}{2n} \sum_{P' \in \mathcal{P}} n_{P'} (\ell_{P'} - \bar{\ell})^2, \quad (11)$$

where $\bar{\ell}$ is the average value of the law across the different provinces, *i.e.*,

$$\bar{\ell} = \sum_{P \in \mathcal{P}} \sum_{i \in P} \frac{\ell_P}{n} = \sum_{P \in \mathcal{P}} \frac{n_P}{n} \ell_P. \quad (12)$$

The lawmakers of province P choose the actual law ℓ_P of the province by maximizing the sum of the payoff functions of the regional representative agents, taking the other provinces decisions $\ell_{P'}$ and the average decision $\bar{\ell}$ as given. Formally, province P solves the following problem

$$\max_{\ell_P} \sum_{i \in P} \mathcal{U}_i(\boldsymbol{\ell}) = \max_{\ell_P} \sum_{i \in P} \left\{ -\frac{1}{2}(\ell_P - x_i)^2 - \frac{\alpha}{2n} \sum_{P' \in \mathcal{P}} n_{P'} (\ell_{P'} - \bar{\ell})^2 \right\}. \quad (13)$$

An *intermediate centralization equilibrium* is a Nash equilibrium of the corresponding non-cooperative game between the administrative provinces. In this equilibrium the optimal

decision of province P satisfies the following condition

$$\sum_{i \in P} (\ell_P - x_i) + \frac{\alpha}{n} n_P^2 (\ell_P - \bar{\ell}) = 0. \quad (14)$$

Thus, a reduction in the sum of the marginal cost of the distance between the province' law and the ideal laws of the regions belonging to this province is canceled by the increase in the marginal cost of inequality before the law.

Solving for ℓ_P we get

$$\ell_P = \frac{\bar{x}_P + \alpha \frac{n_P}{n} \bar{\ell}}{1 + \alpha \frac{n_P}{n}}, \quad (15)$$

where \bar{x}_P is the mean value of the regions' ideal legal laws belonging to the province, *i.e.*,

$$\bar{x}_P = \sum_{i \in P} \frac{x_i}{n_P}. \quad (16)$$

Equation (15) expresses the optimal law of province P given the average value $\bar{\ell}$ of the laws across provinces. In equilibrium we find that this average value is given by

$$\bar{\ell} = \frac{\sum_{P' \in \mathcal{P}} \frac{\frac{n_{P'}}{n}}{1 + \alpha \frac{n_{P'}}{n}} \bar{x}_{P'}}{\sum_{P' \in \mathcal{P}} \frac{\left(\frac{n_{P'}}{n}\right)}{\left(1 + \alpha \frac{n_{P'}}{n}\right)}}, \quad (17)$$

and therefore the value of province P 's actual law is

$$\ell_P = \frac{\bar{x}_P + \alpha \frac{n_P}{n} \left\{ \frac{\sum_{P' \in \mathcal{P}} \frac{\frac{n_{P'}}{n}}{1 + \alpha \frac{n_{P'}}{n}} \bar{x}_{P'}}{\sum_{P' \in \mathcal{P}} \frac{\left(\frac{n_{P'}}{n}\right)}{\left(1 + \alpha \frac{n_{P'}}{n}\right)}} \right\}}{1 + \alpha \frac{n_P}{n}}. \quad (18)$$

In the intermediate centralization case, externalities are partially internalized inside each province. The provinces' lawmakers, however, do not coordinate their legal decisions. There are therefore some advantages and some costs with this setup.

4 Choosing the Degree of Legal Centralization

Following Glaeser and Shleifer (2002) (pp. 1201, 1203, 1213), we assume that the country chooses the degree of legal centralization that delivers the highest value of social welfare, where social welfare is defined as the sum of the regions' payoffs. That is, we take the view that regions can strike a bargain over the level of centralization and that in this Coase-like bargaining transfers between regions are always possible.⁸

4.1 Legal diversity vs Legal centralization

We first compare the values of the “social welfare function” in the centralized and the decentralized equilibria. Using equations (6) and (10), we find that

Proposition 1. *Legal centralization is preferred to legal decentralization if, and only if, the degree α of aversion to inequality before the law is higher than $\frac{n}{n-2}$.*

A first implication of the above Proposition is that legal unification is *never* chosen where there are two regions only. Secondly, we notice that the higher the degree α of aversion to inequality before the law, the more likely it is that legal centralization will be preferred to legal decentralization.

This proposition can come as a surprise for students of legal convergence, since it departs from standard results in games of legal harmonization. Loeper (2011) and Crettez et al. (2013) show that under slightly different preferences (see footnote 6) legal unification is never preferred to legal decentralization. That is because, with these preferences agents do not care about the distance between the choices of two arbitrary regions. In our model, which incorporates a shared concern for inequality before the law, it is more difficult for the decentralized equilibrium to be the best level of legal decentralization.

4.2 Legal diversity and legal centralization vs intermediate legal centralization

Comparing the intermediate centralization and the decentralized equilibria does not yield clear-cut results. We thus concentrate on asymptotic results. We consider two cases in turn.

⁸Glaeser and Shleifer (2002) write p. 1201: “We examine the choice of the legal system from the viewpoint of social welfare, including that of the king and the nobles... As long as there is some way of enforcing a bargain whereby the king agrees to decentralized adjudication in exchange for taxes, there might be efficiency pressures towards such a bargain, including efforts to secure peace.” In this approach, there is no need to assume that there is a benevolent dictator.

In the first case we let α goes to 0 (complete indifference to inequality before the law). In the second we let α goes to ∞ (extreme sensitivity to legal inequality).

- SMALL AVERSION TO INEQUALITY BEFORE THE LAW

Proposition 2. *When aversion to inequality before the law is small (α being close to 0), the intermediate centralization equilibrium is never preferred to the decentralized equilibrium, and the centralized equilibrium is never preferred to the intermediate centralization equilibrium.*

That is because, when α goes to 0 the value of the “social welfare function” with the decentralized solution goes to 0 whereas the value of this objective with the intermediate centralization equilibrium goes to $-\frac{1}{2} \sum_P \sum_{i \in P} (\bar{x}_P - x_i)^2$. In the first case, each region tends to make its actual law equal to its culturally ideal law, while in the second case, the provincial lawmaker makes law by considering the various regional ideal laws in the province (generally, the law chosen for a province is not equal to the ideal law of a region included in this province).

Proposition 2 echoes Oates (1972)’s “Decentralization theorem. According to this theorem, in the absence of externalities a principle of subsidiarity, giving legal responsibility to the lowest units of decision, should be applied. Here, this means that when there is little concern for inequality before the law, legal decentralization should always be chosen.

- STRONG AVERSION TO INEQUALITY BEFORE THE LAW

Proposition 3. *When aversion to inequality before the law is strong (α goes to ∞), the intermediate centralization equilibrium is never preferred to the centralized equilibrium, nor is it to the decentralized equilibrium.*

When aversion to inequality before the law is strong (*i.e.*, when α goes to ∞), all the provinces tend to choose the same law, that is: $\lim_{\alpha \rightarrow \infty} \ell_P = \lim_{\alpha \rightarrow \infty} \bar{\ell}$ for all provinces P , where

$$\lim_{\alpha \rightarrow +\infty} \bar{\ell} = \sum_{P \in \mathcal{P}} \frac{\bar{x}_P}{\mathbb{P}}. \quad (19)$$

In this extreme case, each province is better off by choosing law close to the average. That is why the equilibrium provinces’ choices tend to be similar. Accordingly, legal uniformity

tends to be achieved when aversion to inequality before the law is very strong. In addition, we notice that the centralized equilibrium coincides with the intermediate centralization equilibrium in the particular case where each province corresponds to one region. In this case, we have $\lim_{\alpha \rightarrow +\infty} \bar{\ell} = \bar{x}$, and the limit equilibrium is equal to the centralized equilibrium. But in other cases the value of $\lim_{\alpha \rightarrow +\infty} \bar{\ell}$ differs from \bar{x} . According to equation (19), this limit is equal to the average of the values of \bar{x}_P across provinces, each \bar{x}_P being itself the average of the ideal laws of the regions included in province P . Since \bar{x} is the uniform value of the actual law which maximizes the “social welfare function”, it follows that the intermediate centralization equilibrium can never dominate the centralized equilibrium. This conclusion, however, only applies to the extreme case where aversion to legal inequality is very strong.

To make a better comparison of the different equilibria considered so far we now consider a normative viewpoint.

4.3 A Normative Viewpoint

Consider the following “social planner” problem:

$$\max_{\boldsymbol{\ell}} \sum_{i=1}^N \mathcal{U}_i(\boldsymbol{\ell}) = \max_{\boldsymbol{\ell}} \left\{ \sum_{i=1}^N -\frac{1}{2}(\ell_i - x_i)^2 - \frac{\alpha}{2} \sum_{j=1}^n (\ell_j - \bar{\ell})^2 \right\}. \quad (20)$$

In this problem we look for the regional laws $\boldsymbol{\ell} = (\ell_1, \dots, \ell_n)$ that maximize the “social welfare function”. We call the set of these laws the social optimum. We find that

$$\ell_i^{so} = \frac{x_i + \alpha \bar{x}}{1 + \alpha}, \quad i = 1, \dots, N. \quad (21)$$

Comparing equations (3), (8) and (18) with equation (21) we readily obtain the following result:

Proposition 4. *Whatever the level of legal centralization, the corresponding equilibrium never coincides with the social optimum.*

With respect to the centralized equilibrium, the social optimum gives more weight to the region’s ideal laws (the weight given to region i ’s ideal law in the actual law in this region is $1/(1 + \alpha)$ instead of 0). With respect to the decentralized equilibrium, the social optimum places more weight on the mean value of the regions’ ideal laws (the weight given to this mean value is $\alpha/(1 + \alpha)$ in the social optimum instead of $\frac{\alpha}{n}/(1 + \frac{\alpha}{n})$ in the decentralized

equilibrium). The social optimum strikes a balance between two concerns, namely the need for each region to keep the law as close as possible to its ideal law, and the need to increase equality before the law. No level of decision considered so far, however, achieves the social optimum.⁹ In the next section we analyze yet another mode of legal design which combines legal centralization with judicial discretion.

5 Legal Centralization with Judicial Discretion

Up to now, we have neglected judicial discretion. Yet when law is centrally designed, judicial discretion helps to tailor it to local needs. We now take this fact into account.

5.1 An alternative model of legal centralization

Assume that in each region i a judge maximizes the following payoff function

$$\mathcal{J}_i(\ell^c, \mathbf{a}) = -\frac{1}{2}(\ell^c + a_i - x_i)^2 - \frac{\theta}{2}a_i^2 - \frac{\alpha}{2n} \sum_{j=1}^n (a_j - \bar{a})^2. \quad (22)$$

In this function, the actual value of the law in region i is $\ell^c + a_i$. The first term ℓ^c of this sum is the law decided in a centralized way (*i.e.*, statute law). We interpret the second term a_i as the decision made by the judge. To wit, the term a_i represents the change in the legislation ℓ^c decided by the judge to adapt the law to the needs of region i . We let \mathbf{a} be the vector of the judge's decisions, and \bar{a} be the mean of these decisions.

Since the actual law in region i is $\ell^c + a_i$, the variance of the regions' actual laws is equal to the variance of the judges' adjudication decisions

$$\frac{1}{n} \sum_{j=1}^n (\ell^c + a_j - (\ell^c + \bar{a}))^2 = \frac{1}{n} \sum_{j=1}^n (a_j - \bar{a})^2. \quad (23)$$

We observe that the payoff function of the judge in region i is equal to the objective function of the region's representative agent up to the term $(\theta/2)(a^i)^2$. This term represents the cost borne by the judge in adapting the law to local conditions. While we assume that each judge is benevolent (in the sense that he takes into account the preferences of the region's representative agent), we also assume that departing from the law ℓ^c is costly for him (not

⁹Of course, this conclusion is no longer true, whenever $\alpha = 0$, or α is arbitrarily large. In both cases the corresponding equilibrium coincides with the social optimum

only because tailoring of the law contributes to increased inequality before the law). The parameter θ measures the cost of discretion. The higher θ , the higher the cost borne by the judge i to tailor the law to local needs.¹⁰ This cost hinges in particular on the degree of precision of the law. Codification in this regard is often considered as a means to clarify the law, notably by eliminating vague formulations. Following this interpretation, when θ is high, the Code is very precise and thus curtails the discretionary power of the judges. When θ is low, the Code merely lays down general principles and judges can more easily adapt these principles to local cases.

We further assume that the national lawmaker first chooses the law ℓ^c that applies to the whole country. Then judges make their decisions, without cooperation. To solve for the subgame perfect Nash equilibrium, we work backward. We first study the Nash equilibrium of the game between the judges assuming that they take the value of the legislation ℓ^c as given. Next, we study the lawmaker's problem. The lawmaker acts as a Stackelberg leader: he takes into account the fact that the equilibrium adjudication decisions depend on ℓ^c . The complete study of the equilibrium is presented in the appendix.

We find that in this equilibrium the value of the legislation ℓ^c is

$$\ell^c = \bar{x}, \tag{24}$$

and that the region i judge's decision is

$$a_i = \frac{x_i - \bar{x}}{1 + \theta + \frac{\alpha}{n}}. \tag{25}$$

In this new version of the centralized equilibrium, the national law is again equal to the mean of the regions' ideal laws. Region i 's adjudication depends on the difference between the value of region i 's ideal law and the mean of these ideal laws. If region i 's ideal law is above or below the mean of the regions' values, then the judge will make the actual law of region i closer to the region's ideal law. Observe that the higher the value of θ , the fewer the local adjustments. Also observe that the average of the adjudication decisions is nil.

¹⁰This model of judges' preferences is related to Glaeser and Shleifer (2002), pp. 1205-1206, who write that: "The royal judge, like the jury, has some innate preferences and is also subject to local pressures. However, unlike the jury, the judge can be punished and rewarded by the king..."

The equilibrium value of the representative agent's objective function in region i is as follows:

$$\mathcal{U}_i^{c,d} = -\frac{1}{2} \frac{(\theta + \frac{\alpha}{n})^2}{(1 + \theta + \frac{\alpha}{n})^2} (x_i - \bar{x})^2 - \frac{\alpha}{2} \frac{1}{(1 + \theta + \frac{\alpha}{n})^2} \sigma_x^2. \quad (26)$$

Summing up these equilibrium values, we obtain the value of the “social welfare function”

$$\sum_{i=1}^n \mathcal{U}_i^{c,d} = -\frac{1}{2} n \sigma_x^2 \frac{\alpha + (\theta + \frac{\alpha}{n})^2}{(1 + \theta + \frac{\alpha}{n})^2}. \quad (27)$$

5.2 Legal centralization, judicial discretion and the social optimum

Using equations (21) and (25), we get the following result¹¹

Proposition 5. *Let the cost of judicial discretion θ be such that: $\theta^* = \alpha(1 - \frac{1}{n})$. Then the equilibrium with both legal centralization and judicial discretion coincides with the social optimum: $\ell^c + a_i = \ell_i^{so} = \frac{x_i + \alpha \bar{x}}{1 + \alpha}$ for all i .*

Proposition 5 shows that it is never optimal to eliminate judges' discretion (formally, this would amount to set $\theta = \infty$), nor is it optimal to allow complete discretion (*i.e.*, $\theta = 0$). The Proposition also shows how the optimal degree of discretion changes with the degree of aversion to legal inequality α . The higher α , the higher the concern for legal equality, and the higher the need to control judges' decisions, thus the higher θ^* . We also observe that the higher the number n of regions the lower the optimal degree of discretion. That is because, the higher the number of regions, the greater the legal diversity, and the higher the value of inequality before the law.

Controlling judicial discretion is a particular way to force judges to internalize the impact of their decisions on legal inequality. In a more traditional public economics approach, internalization of the cost of legal inequality can be achieved with a Pigouvian tax. Consider for instance the decentralized equilibrium in which each region i bears a cost $\tau_i \ell_i$ when it chooses law ℓ_i . Therefore each region maximizes the following payoff function

$$\mathcal{U}_i(\boldsymbol{\ell}) = -\frac{1}{2} (\ell_i - x_i)^2 - \frac{\alpha}{2} \frac{1}{n} \sum_{j=1}^n (\ell_j - \bar{\ell})^2 - \tau_i \ell_i. \quad (28)$$

¹¹We are grateful to the Editor and a referee for drawing our attention to this aspect of legal design.

We can then show that when

$$\tau_i = \alpha \left(1 - \frac{1}{n}\right) \frac{(x_i - \bar{x})}{1 + \alpha} \quad (29)$$

the decentralized equilibrium coincides with the social optimum. Specifically, when $x_i < \bar{x}$, region's i choice is subsidized, whereas it is taxed otherwise. The logic behind this taxation scheme is in line with standard Public Economics. But this logic seems somewhat awkward in terms of legal design. Controlling judicial discretion seems to be a more natural way to tackle legal inequality.

6 French Legal Origins: A Tocquevillian View

We now rely on the models presented in the preceding sections to propose an analytical narrative of French deviation towards legal and judicial centralization around the time of the French Revolution. To do this, we first explain how our model can be interpreted to analyze both the Old Regime and its transformations during the Revolution and the Napoleonic period.

6.1 Interpreting the French Old Regime

Throughout the entire Old Regime the French legal system was characterized by significant legal disparities within the country. A first type of disparity was the *privilèges*, granting specific rights and duties to the three social groups (*i.e.*, the nobility, the clergy and the rest of the population, called the *Tiers État*, or the *Tiers*). Duties differed notably from a fiscal viewpoint since taxes were mainly borne by the Tiers (although the sharing of the tax burden among the three different orders varied from one region to another). These differences can be viewed as vertical since the specific rights of the nobility and the clergy unambiguously gave them more privileges than the Tiers.

The second type of disparity resulted from the application of different legal rules from one *province* to another. Provinces (numbering fourteen in the second part of the seventeenth century) were administrative areas which had their own parliament. Local parliaments handed down law at an intermediate level, formally in the name of the king but in practice independently of him. A decision taken by a given parliament only applied within its own jurisdiction and did not have legal effect in the other provinces.¹² Moreover, each new

¹² The legal system of the Old Regime was also characterized by the co-existence of different sources

province entering the kingdom was allowed to keep some of its previous laws and institutions.

To interpret the Old Regime with the model developed below we propose to consider that a region i corresponds roughly to a province. There are two reasons for this interpretation. First, as previously mentioned above, provinces had a certain control over their laws (notably through parliamentary legislation, *i.e.*, the *arrêts de réglemets*). Second, under the Old Regime, territories joining the kingdom had their own cultures and so their laws were different. Therefore, we can formally associate a province with a pair (ℓ_i, x_i) .

Further, we can also consider that the payoff function of a region is itself a regional “social welfare function.” Inasmuch as the level of legal centralization is supposed to be chosen by using the sum of the regions’ payoff functions, we assume that lawmaking at the regional level is also chosen by using a sum of regional stakeholders’ payoff functions. We do not pay attention, however, to the details of these functions. We simply *assume* that the sum of the regional stakeholders’ functions has a reduced form which is given by equation (1).

Finally, we can conceive that θ , the parameter describing the cost for judges for deviating from a national rule, is null. This is because national rules were far fewer than local rules and there was thus no need to make sure that a unique rule applied in the same way everywhere in the kingdom.

6.2 French Revolution and the turn towards legal centralization

Before the Age of Enlightenment, legal diversity was generally accepted since actual legal rules were considered to be natural laws. Even when law differed from the ideal one, a change in existing rules was not always considered as necessary (Ubrecht, 1933 (1969)).

With the Enlightenment, actual statutes were no longer considered as natural (in the sense of exogenous). Rather, law had to express the will of the nation. Philosophers made strong statements against all forms of legal inequality existing in the Old Regime, be they horizontal or vertical. The greatest opposition was to the so-called *privilèges*. Local differences were also contested because they mostly came from the past and lacked rationality. As Voltaire (1819, p. 5) put it

of law. At the national level, the major source of law was the royal ordinances (*ordonnance royales*). Provinces, on the other hand, were split into two legal families. Roman law was the legal inspiration in the southern part of the country (*pays de droit écrit*), while customary laws were the basis of legal decisions in the northern part (*pays de coutumes*). According to Le Bris (2015), about 80 general customs and 380 local customs were applied in France under the Old Regime.

Is it not an absurd and terrible thing that what is true in one village is false in another? What kind of barbarism is it that citizens must live under different laws? When you travel in this kingdom you change legal systems as often as you change horses.

Philosophers of Enlightenment advanced the idea that every set of rules had to be rationally decided and that these rules should not differ from one area to another, except for when fully justified. To ensure equality of treatment between citizens, sentences and indictments had to be determined by a uniform national law, not by local judges. Voltaire summarized these views in his article on Civil and Ecclesiastical Laws (Voltaire, 1764 (2004), p. 141): “*One weight, one measure, one custom.... Every law should be clear, uniform and precise.*” Laws had to be thought of as uniform rules applying to everyone, even if individuals’ preferences were diverse (Carbasse, 2014). In this case, uniformization of law had to precede uniformization of preferences.

Tocqueville discusses the influence of the Enlightenment in Chapter 1 of Part III of the *Old Regime and the Revolution* (this chapter is entitled “How towards the middle of the XVIII century men of letters took the lead in politics and the consequences of this new development”).¹³ Tocqueville also considered that administrative centralization before the Revolution had already slightly increased legal equality (this is the topic of Book 2 of the *Old Regime*) and transformed mores by inculcated sentiments of equality (see Pittz, 2011). He also argued that when legal equality becomes the rule of society, the least traces of inequality become unbearable to the people. This is notably spelled out in Chapter I of Book II of the *Old Regime* (p. 49), which is entitled “Why the feudal rights were more odious to the people in France than anywhere else”. The conclusion of this chapter is as follows:

The feudal system, though stripped of its political attributes, was still the greatest of our civil institutions; but its very curtailment was the source of its unpopularity. It may be said, with perfect truth, that the destruction of a part of that system rendered the remainder a hundred-fold more odious than the whole had ever appeared to be.

¹³This idea of the influence of the Enlightenment on the Revolution was also proposed, *inter alia*, by Portalis (1820). A turning point of the Enlightenment was the publication of the *Encyclopedie*, which spread the enlightened ideas throughout France (Darnton, 1973).

In sum, aversion to inequality before the law grew steadily and was therefore conducive to legal uniformity when the Revolution occurred.

During the first years of the Revolution, indeed, the previous role of parliaments in the making of laws was completely eliminated and the *privilèges* were abolished. A new administrative system was built around three levels: department, district, municipality.¹⁴ All the new administrative levels were deprived of any judicial power and were bound to execute the decisions taken by the legislative power in Paris.

Moreover, the judicial system was overhauled. Each department was divided into several *cantons* and in each of these cantons, an elected judge, the *juge de paix*, addressed minor civil issues. Each district had a court addressing the other issues (the *tribunal de district*), including 5 to 6 judges and one public prosecutor (the *ministère public*). These judges were also elected, but from among the members of legal professions. To ensure that law was respected and court judgments consistent, appeal courts (*Tribunaux d'appel*) and a supreme court (the *tribunal de cassation*) were introduced later on.

There was little room for judicial discretion in the new judicial system. As the deputy Maximilien de Robespierre put it (in a speech given on 18 November 1790, quoted in Heuschling, 2007): “*The term jurisprudence (i.e., case law) has to be deleted from our language. In a State with a Constitution and legislation, the case-law of the courts ought to be nothing else than the legislation.*” To wit, whenever an interpretation of a law or a new law was needed, judges had to consult the National Assembly, which had the monopoly of legal interpretation (procedure of *référé législatif*, introduced in August 1790).^{15,16} The *référé législatif* was frequently used by judges, to the point that the National Assembly was soon unable to respond to all their requests.¹⁷

Because of increasing abstention, judges were less often elected and more and more ap-

¹⁴Initially, each of the 83 departments was conceived as a square with a side of 70 km. While the final design of departments was different, the geometric approach of the initial design illustrated the will to break references to past local entities and specificities and to replace them with national unity (Biard, 2010).

¹⁵Even the *Tribunal de Cassation* was actually under the authority of the National Assembly (Royer et al., 2016).

¹⁶Alvazzi del Frate (2008) argues that the introduction of the *référé législatif* was directly motivated by the contents of the pre-revolutionary *Cahiers de doléances* (book of grievances), which demanded a reduction of the discretionary power of judges, a separation of powers between the judiciary and the legislative powers, and an interpretation of the law restricted to the legislative body. For him, the revolutionary legal setup was the institutional response to the French people’s demands.

¹⁷In criminal matters, judicial discretion was also severely restricted through the introduction of a penal code in 1791 (with provisions strictly controlling the minimum and maximum punishments of offenses), and the jury, for judging the most serious offenses.

pointed by the government (the *Convention*). Both 1793 and 1794, the *Comité de Salut public* (the dictatorial governing body set up by the *Convention*) removed many judges and directly appointed their successors (Pluen, 2011, p. 134). Actually, during the entire revolutionary period judges were constantly overwatched by the authorities (Bodinier, 2010). Taking into account these facts, and the very limited amount of judicial discretion, we can consider that in terms of our model the revolutionary legal setup is close to the case where $\theta = \infty$.

Therefore Propositions 1, 2 and 3 capture Tocqueville’s insight regarding the rise in aversion to inequality before the law and the resulting turn towards legal centralization during the Revolution. Before the Enlightenment, the degree α of aversion to legal inequality was lower than $\frac{n}{n-2}$ and close to 0. In that case legal decentralization was indeed better than legal centralization (be it intermediate or incomplete) because legal diversity was not a matter of concern. By contrast, during the Enlightenment and the Revolution aversion to inequality grew so much (though gradually over time) that the degree of aversion α became higher than $\frac{n}{n-2}$. Legal centralization was then the best choice.¹⁸ Tocqueville (Tocqueville, 1856) also gives another, complementary explanation of the rise in α . According to him α also changed as a result of the will of the Crown, leveling preferences slowly over time. For instance, studying the content of the *Cahiers de doléances*, Johnson (2015) show that people affected by the fiscal reforms led by the Crown had more concern about national issues, as opposed to people unaffected by these policies.

In particular, we recall that when α is large enough, the centralized equilibrium is a better legal arrangement than the intermediate equilibrium. This observation can explain the failure of the attempt by the “Girondins” (a group of *parlementaires* mostly from the region of Bordeaux) to avert a second step of centralization after the fall of the king in 1791-1792. This fall necessitated a new constitution. The “Montagnards”, leaders of the political faction “La Montagne”, favored strict supervision of locally applied national laws, notably by sending commissars from Paris to monitor and control departmental offices and municipal authorities. In contrast, the “Girondins” supported more legal decentralization, as well as giving more powers to departments (Amson, 2010). They were strongly opposed

¹⁸ Certainly, the institutional changes brought about by the Revolution can also be analyzed from a political economy view point since the material interests of the various social classes in the Old Regime were probably antagonistic. Still, we contend, following Tocqueville, that ideas mattered. In this connection, it is noteworthy that many nobles (Mirabeau) or clergymen (Syèyes) took sides with the Tiers against the class to which they belonged. Conversely, in Brittany and Vendée, the three old orders united to fight the revolutionary regime (though the insurrection was quickly crushed).

to the growing and now exclusive influence of Paris in the making of political and legal decisions. In 1792, the Girondin deputy Lasource argued that “The influence of Paris should be reduced to a 1/83th, as for any other département” (Biard and Dupuy, 2014). The Girondins, however, were eliminated in a few months. A constitution written in 7 days by the Montagnards, in which any attempt to decentralize power was ruled out, was then approved by the National Assembly on June 24, 1793. The concentration of legal and political powers in France thereafter became greater than in any other period (Chevallier, 2001).

6.3 Legal Centralization and Judges’ Discretion: Understanding the Napoleonic Phase

The last step towards legal centralization was taken during the Napoleonic era, and culminated with the introduction of the Civil Code of 1804. For Glaeser and Shleifer (2002), the first aim of codification is to control judges, transforming them into automata. The higher the desire of the central authority to impose its will, the more precise the code has to be (in the sense of giving less room for judges’ interpretation of the law).¹⁹ According to these authors: “It is not surprising, in that regard, that centralized civil law systems were often championed by the great autocrats, like Napoleon.” A second, but less important aim of codification, is to make adjudication more transparent.

Yet, this analysis of codification is not really supported by the facts. While the Civil code appeared in France in 1804, the will to control judges was already present at the beginning of the Revolution. It was soon realized, however, that a workable legal system required a certain level of judicial adjudication (Carbasse, 2014, p. 243). As a result, at the end of the Revolution and under the Napoleonic empire, the *référé législatif* was removed and judicial adjudication and legal interpretation were tolerated again.

This is because codification was unable to make detailed provisions so judges were severely constrained. Actually most provisions of the Civil Code were (and are still) expressed in the form of general rules. By construction, therefore, judges had (and still have) wide discretion in interpreting the Code and in particular the meaning of the terms of the provisions in the case at hand (Moreleau, 1994).

¹⁹ Glaeser and Shleifer propose an interesting model of codification as a means to control judicial behavior. In their model, codification is considered as a set of “bright line rules” that trigger automatic judicial decision-making when offenses reach a given level.

Moreover, the interpretation of the provisions in the Code could depend upon local conditions.²⁰ Consider for instance article 1135: “Agreements are binding not only as to what is therein expressed, but also as to all the consequences which equity, usage or statute give to the obligation according to its nature.”²¹ Or article 1159: “What is ambiguous shall be interpreted by what is in use in the region where the contract was made”, and article 1160: “Terms which are customary shall be supplemented in the contract, even though they are not expressed there.” Relying on article 1159, different local interpretations were given to the notions of usufruct, lease of houses and farms, and so forth.

Not only were judges able to interpret the law when necessary, but they had the *obligation* to do so in certain cases. As stated in Article 4 of the Civil Code, “Any judge refusing to judge, by reason of the silence, the obscurity or the insufficiency of the law, shall be liable to prosecution for denial of justice.”

We can use Proposition 5 to interpret the decisions made during the Revolution and the First French Empire. Formally, choosing $\theta = +\infty$ (at the beginning of the revolution) was not the best solution. Neither was choosing $\theta = 0$, namely full discretion, as was more or less the case in the Old Regime, was the best solution. On the contrary choosing an intermediate level of judicial discretion meant that the statutes decided at a national level could be tailored for local needs. Judicial discretion was controlled by the introduction of appeal courts (the *cours d’appel*, created in 1804), which were themselves supervised by the supreme court (renamed *Cour de cassation* in 1804). The *Cour de cassation* exercised disciplinary power over the entire judiciary. In addition, judges became civil servants and were appointed by the central authority. The organization of the judiciary was based on that of the army (the highest rank being that of president of the *Cour de cassation*). The candidates suitable for promotion were in principle proposed by the *presidents* and the *procureurs* of the *cours d’appel*. But these propositions were rarely followed: it was the minister of justice who had the final say (Pluen, 2011, p. 171). Once nominated, judges were in principle irremovable. But in 1807 and 1808, two decrees led to the removal of many judges for so-called professional incompetence (Bourdon, 1970). This was followed in 1810 by the removal of many appeal court judges (Royer et al., 2016). To sum up, during the First French Empire, judicial discretion was reintroduced but at the same time, judges were kept under control. In our model, this setting corresponds to the case where θ takes

²⁰See, e.g., Bart (1977), for the case of Burgundy.

²¹We rely upon the translation by Rouhette and Rouhette-Berton available at: <http://www.fd.ulisboa.pt/wp-content/uploads/2014/12/Codigo-Civil-Frances-French-Civil-Code-english-version.pdf>

a finite positive value.

7 Conclusion

In this paper, we have provided a new explanation of legal centralization and judicial discretion, which focuses on aversion to inequality before the law. We have proposed a new model in which payoffs decrease with respect to the variance of the actual laws. We have compared three levels of legal centralization (namely, complete legal decentralization, intermediate centralization and complete centralization) and considered judicial discretion. While legal decentralization is preferred to the other levels of legal centralization if aversion to inequality is below a certain threshold, we have argued that the optimal level of legal centralization combines a centrally determined law with a certain degree of judicial discretion.

We have also given an analytical narrative of the sharp turn towards legal centralization during the French Revolution, as well as the simultaneous adoption of the Napoleonic codification and the increase of judicial discretion. We contend that the French deviation towards legal centralization was the response to the rise in aversion to legal inequality, caused by the spread of the Enlightenment across the kingdom. Complete legal uniformity, however, proved unworkable, and this is why codification, while being the symbol of legal centralization and judicial control, was finally accompanied by more judicial freedom.

An important implication of our analysis is that it does not support the argument of La Porta et al. (2008) that “regardless of whether the revolutionary or the medieval story is correct, they have very similar empirical predictions.” If our analysis is correct, wealth measures such as GDP per capita should not be the only criteria used to compare the virtues of alternative legal organizations. Qualitative measures such as the degree of inequality before the law should also be taken into account. Focusing only on economic outcomes can bring about misleading conclusions on the costs and benefits of each legal system, and erroneous policy recommendations as well.

At least three topics deserve further research. First, to model aversion to legal inequality we have assumed that individual preferences decrease with the variance of the actual laws. It would be interesting to look for alternative measures of aversion to legal inequality and to allow for individual heterogeneity in the degree of this aversion as well. A second, natural way to further our analysis of vertical legal design would be to pay more attention to the role of the judicial hierarchy in establishing judicial uniformity (see, *e.g.*, Shavell, 2010,

and the literature studied in Kornhauser, 2012 and Kastellec, 2017). Third, we have relied on a static analysis of the relationships between legal centralization and aversion to legal inequality. Since the demand for legal equality is self-perpetuating (as Tocqueville noticed), a dynamic analysis of the long-term consequences of a one-time shift in favor of egalitarian institutions could better our understanding of the origins of French legal centralization.

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A Equilibrium with Legal Centralization and Regional Judicial Discretion

Recall that the lawmaker first chooses the law ℓ^c that applies to the whole country. Then judges make their adjudication decisions without cooperation. To solve for the subgame perfect equilibrium, we work backward. We first study the Nash equilibrium of the game between the judges assuming that they take the value of the legislation ℓ^c as given. Next, we study the lawmaker's problem. The lawmaker acts as a Stackelberg leader: it takes into account the fact that the equilibrium decisions depend on ℓ^c .

A.1 The Nash equilibrium of the games between the judges

In any Nash equilibrium the region i judge's decision a_i must satisfy the following first-order condition

$$-(\ell^c + a_i - x_i) - \theta a_i - \frac{\alpha}{n}(a_i - \bar{a}) = 0, \quad (30)$$

from which we deduce that

$$a_i = \frac{(x_i - \ell^c) + \frac{\alpha \bar{a}}{n}}{1 + \theta + \frac{\alpha}{n}}. \quad (31)$$

To compute the equilibrium value of the mean \bar{a} , we sum the above equation across regions which yields

$$\bar{a} = \frac{\bar{x} - \ell^c}{1 + \theta}. \quad (32)$$

After a little algebra, we find that the utility of agent's i is given by

$$\mathcal{U}_i(\ell^c, \mathbf{a}) = -\frac{1}{2} \frac{1}{(1 + \theta + \frac{\alpha}{n})^2} \left(\left(\left(\theta + \frac{\alpha}{n} \right) (\ell^c - x_i) - \frac{\alpha}{n} \frac{\ell^c - \bar{x}}{1 + \theta} \right)^2 + \alpha \sigma_x^2 \right), \quad (33)$$

and the variance of the judges' decisions is equal to

$$\sigma_a^2 = \frac{1}{(1 + \theta + \frac{\alpha}{n})^2} \sigma_x^2. \quad (34)$$

A.2 The equilibrium value of the law ℓ^c

We now determine the equilibrium value of the law ℓ^c . Recall that we assume that the law-maker maximizes the sum of the representative agents' objective functions \mathcal{U}_i with respect to ℓ^c

$$\max_{\ell^c} \sum_{i=1}^n \mathcal{U}_i(\ell^c, \mathbf{a}) = \max_{\ell^c} -\frac{1}{2} \frac{1}{(1 + \theta + \frac{\alpha}{n})^2} \sum_{i=1}^n \left((\theta + \frac{\alpha}{n})(\ell^c - x_i) - \frac{\alpha}{n} \frac{\ell^c - \bar{x}}{1 + \theta} \right)^2 - \frac{n\alpha}{2} \frac{1}{(1 + \theta + \frac{\alpha}{n})^2} \sigma_x^2 \quad (35)$$

The first-order condition is

$$-\sum_{i=1}^n \left((\theta + \frac{\alpha}{n})(\ell^c - x_i) - \frac{\alpha}{n} \frac{\ell^c - \bar{x}}{1 + \theta} \right) \left(\theta + \frac{\alpha}{n} - \frac{\alpha}{n(1 + \theta)} \right) = 0, \quad (36)$$

$$\iff \left(\theta + \frac{\alpha}{n} \right) (\ell^c - \bar{x}) - \frac{\alpha(\ell^c - \bar{x})}{n(1 + \theta)} = 0. \quad (37)$$

We deduce from the last equation that

$$\ell^c = \bar{x}, \quad (38)$$

and that the equilibrium value of region i judge's decision is

$$a_i = \frac{x_i - \bar{x}}{1 + \theta + \frac{\alpha}{n}}, \quad (39)$$

The equilibrium value of the region i representative agent's objective function is

$$\mathcal{U}_i^{c,d} = -\frac{1}{2} \frac{(\theta + \frac{\alpha}{n})^2}{(1 + \theta + \frac{\alpha}{n})^2} (x_i - \bar{x})^2 - \frac{\alpha}{2} \frac{1}{(1 + \theta + \frac{\alpha}{n})^2} \sigma_x^2. \quad (40)$$

If we sum equation (40) across regions, we find that the equilibrium value of the sum of the representative agents' objective functions is

$$\sum_{i=1}^n \mathcal{U}_i^{c,d} = -\frac{1}{2} n \sigma_x^2 \frac{\alpha + (\theta + \frac{\alpha}{n})^2}{(1 + \theta + \frac{\alpha}{n})^2}. \quad (41)$$

B Proof of Propositions 2 and 3

B.1 Proof of Proposition 2

Proof. From equation (6) we see that $\sum_{i=1}^n \mathcal{U}_i(\ell^d)$ goes to 0 as α goes to 0. On the other hand, in the centralized equilibrium the value of the sum of the regions payoffs is equal to $-\frac{n}{2}\sigma_x^2$ and does not depend upon α . From equation (12), (18), and (13), we can see that $\lim_{\alpha \rightarrow 0} \sum_{P \in \mathcal{P}} \sum_{i \in P} \mathcal{U}_i(\ell^g) = -\frac{1}{2} \sum_{P \in \mathcal{P}} \sum_{i \in P} (\bar{x}_P - x_i)^2$. Let us now compare the value of the sum of the payoff functions with the centralized and the intermediate centralization equilibria. We have

$$-\frac{n}{2}\sigma_x^2 + \frac{1}{2} \sum_P \sum_{i \in P} (\bar{x}_P - x_i)^2 = \frac{1}{2} \sum_P \sum_{i \in P} \{(\bar{x}_P - x_i)^2 - (x_i - \bar{x})^2\}. \quad (42)$$

Substituting $(\bar{x}_P - \bar{x} + \bar{x} - x_i)^2$ for $(\bar{x}_P - x_i)^2$ in the above expression, we obtain after a little algebra

$$-\frac{n}{2}\sigma_x^2 + \frac{1}{2} \sum_P \sum_{i \in P} (\bar{x}_P - x_i)^2 = -\frac{1}{2} \sum_P n_P (\bar{x}_P - \bar{x})^2, \quad (43)$$

$$\leq 0. \quad (44)$$

The Proposition follows. \square

B.2 Proof of Proposition 3

Proof. From equation (6) we see that $\sum_{i=1}^n \mathcal{U}_i(\ell^d)$ goes to $-\frac{n}{2}\sigma_x^2$ when α goes to ∞ which is the value of the sum of the payoff functions in the centralized equilibrium. Again, from equation (12), (18), and (13), we can see that

$$\lim_{\alpha \rightarrow +\infty} \sum_{P \in \mathcal{P}} \sum_{i \in P} \mathcal{U}_i(\ell^g) = -\frac{1}{2} \sum_{P \in \mathcal{P}} \sum_{i \in P} (\bar{\bar{x}} - x_i)^2,$$

where $\bar{\bar{x}} = \sum_{P \in \mathcal{P}} \frac{\bar{x}_P}{\mathbb{P}}$. Using the same reasoning as in the proof of Proposition 2, we found that:

$$-\frac{n}{2}\sigma_x^2 + \frac{1}{2} \sum_P \sum_{i \in P} (\bar{\bar{x}} - x_i)^2 = \frac{n}{2} (\bar{\bar{x}} - \bar{x})^2 \geq 0. \quad (45)$$

The Proposition follows.

