Comparative Law Review

Rescuing Comparative Law and Economics?
Exploring Successes and Failures of an Interdisciplinary Experiment

COMPARATIVE LAW REVIEW
The Comparative Law Review is a biannual journal published by the
I. A. C. L. under the auspices and the hosting of the University of Perugia Department of Law.

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Comparative Law Review is registered at the Courthouse of Monza (Italy) - Nr. 1988 - May, 10th 2010.

COMPARATIVE
LAW
REVIEW
SPECIAL ISSUE – VOL. 12 /2

Edited by Giuseppe Bellantuono

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BREXIT AND A BANKING REGULATION FOR SMALL BANKS AND BUILDING SOCIETIES: A NEW MEANS OF RE-KINDLING THE COMPARATIVE (AND ECONOMIC) ANALYSIS OF LAW?!

*Camilla Della Giustina & Pierre de Gioia Carabellese**

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Brexit, a complex and controversial phenomenon, is often discredited on this side of the English Channel. By contrast, it should pave the way to new horizons for economic-comparative legal analysis. The United Kingdom, now a real "sovereign state," is about to issue new rules, recommended by the Bank of England, in the matter of banking regulation, particularly building societies or, mutatis mutandis, cooperative banks, to use the "Continental" jargon. On the other hand, the EU remains stubbornly anchored to the principle of "One Size Fits All," a "mantra" in its initial guise, more recently a Damocles' sword that hangs on the head of several medium-small banks.

In view of this prospective scenario, the paper aims to analyse, also from an economic viewpoint, the new UK rules, as well as the benefits that they could have, in a truly comparative perspective, in the aftermath of "Brexit." Ultimately, a new proportionate "architecture" of the banking system in the EU, as far as banks are concerned, is instrumental in preventing the demise of the different banking businesses.

Paradoxically, the results of the work, beyond the merit of the legal analysis relating to the new British legal framework, shows not only that the regulation is "alive and kicking," but also that its dual interpretation, where the economic impact is taken into account, is necessary in order to avoid what probably is the dearth of vision of the current European Financial Legislation.

I. INTRODUCTION

The 2008 financial crisis could be qualified as the "kickstart" of a new era of EU regulation in the banking and financial sector. As from the dramatic events of the summer of 14 years ago, when severe insolvencies of credit institutions materialised all of a sudden and on a serial basis, the EU has "stepped up" to the plate insomuch as to legislate, more in depth, in the areas of both banking and finance. Until then, these niche sectors had highly been left to the discretion of each Member State.

In this respect, a first reference shall be made to the various components of the financial statements of banks, which have become very rigorous, complex, and detailed. A second *locus* is given by the architecture of credit institutions.[1]

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[1] D. T. Llewellyn, T. Condgon, *Bank regulation: Has the regulation pendulum swung too far?*, in J.Banking Reg. Online First Articles 25 February 2022.

The economic corollary of these two postulations is the supervision of banks, to be construed as a close "echo" of the "principles of prudence."[2] This paradigm (the banker's prudent management of the credit institution) means, in a conventional way, that credit institutions' managers should have full knowledge of the means and businesses of borrowers before lending money to these counterparties.[3]

Prudential supervision, within the broader concept of banking regulation, is a necessary element aimed at preventing the contagion of the insolvency of a bank which, ultimately, may materialize as a systemic risk. Before the 2008 financial-economic crisis, supervision was a "local job," since the supervisors were local, albeit within the EU, and did not operate according to a single mechanism. This local *modus operandi* "drove a coach and horses through" the idea of "universal bank," which, masterminded by the EU, particularly within the Second Banking Directive, had become since the late eighties the normal way for a bank to operate[4].

In the regulatory architecture preceding the 2008 financial crisis, the main objective pursued by the banking secondary legislation was to achieve better efficiency of the banking system through a risk and business line diversification. In doing so, market discipline was considered the most credible and effective safeguard against the financial risks associated with the rapid expansion of major banks.[5] This "genre" of banking regulation was defined as micro-prudential regulation, because at that time there was "no such thing" as a macro-prudential regulation.[6]

Despite the dearth of a macro-prudential regulation, the universal bank model was still the one opted for at a global level. Admittedly, the choice of the universal bank model could engender a moral hazard. On the one hand, the originate-to-distribute principle, to a certain extent entailed to the universal bank model, rendered that credit institution less prudent, as far as risk evaluation is concerned. On the other hand, the "universal bank," which started being forged on the premises of that regulation, was eventually susceptible for becoming

[2] This concept was introduced by Adam Smith to allude to a possible remedy for vices: it is not a different orientation, rather it constitutes the true ends for the human. A. Smith, *The Theory of Moral Sentiments* [1759], K. Haakonssen ed. (Cambridge: Cambridge University Press, 2002); R.P. Hanley, *Adam Smith and the Character of Virtue* (Cambridge: Cambridge University Press, 2009), 100-132.

[3] G. Rae, *The Country Banker, His Clients, Cares, and Work, from an Experience of Forty Years* (New York, Charles Scriber's Sons, 1886). For an analysis of principle of prudence in UK see D.M. Ross, *History of Banking II, 1844–1859*, vol. 5 (London: Pickering & Chatto, 1988).

[4] M. Haentjens, P. de Gioia Carabellese, *European Banking and Financial Law*, (London and New York: Routledge, 2020).

[5] G. Giombini, G. Travaglini, *La regolamentazione del sistema bancario dopo la crisi*, in Argomenti. Rivista di Economia, Cultura e Ricerca sociale, 14/2019, 7-24.

[6] In the literature, an overview of the macro-prudential regulation can be read in I. Y.-Y. Chiu, *Banking Law and Regulation* (Oxford: Oxford University Press, 2019), 189-230.

"too big to fail."[7] The latter was the adamant statement made by both politicians and supervisors in 2008, when, in contemplating the widespread debris left by the serial bank insolvencies, they assessed that no other option was on the table but to rescue with public money these "beleaguered" banks.

From a different perspective, namely in terms of supervision, financial globalization, coupled with liberalization – two elements embedded in the "global agenda," including the European one, since 1970 –slowed down the formalization of an effective, therefore universal banking supervision.[8] The asymmetry between a "giant" universal bank, in fact a number of universal banks "loitering" around the EU and in other developed economies, and "dwarves" supervisors, each of which was located in one country, became the most obvious explanation for one of the reasons, perhaps the most significant one, of the collapse of credit institutions during that period.[9]

Against the backdrop of this scenario, it is not a coincidence that one of the first steps made from the ashes of the 2008 financial crisis, was, particularly within the European Union, a major reform of the banking supervision. Thus, a number of pieces of legislation have been passed in order to overcome the pathological asymmetry highlighted above. Among the different EU statutes blossomed after the 2008 financial crisis,[10] one is worthy of a mention:

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[7] E. Avgouleas, *The Global Financial Crisis, Behavioural Finance and Financial Regulation: In Search of a New Orthodoxy*, Journal of Corporate Law Studies, 9/2015, 23- 59.

[8] Examples are the UK and Belgium. The former completed the formalization of banking supervisions with Margaret Thatcher's 'Big Bang' regulation only in 1987. E. Hotori *et al.*, *Formalization of Banking Supervision. 19th-20th Centuries* (Singapore: Palgrave Macmillan, 2022); M. Haentjens, P. de Gioia Carabellese, *European Banking and Financial* Law, 2nd ed. (London and New York: Routledge, 2020, 110).

[9] M. Haentjens, P. de Gioia Carabellese, *European Banking and Financial* Law, 2nd ed. (London and New York: Routledge, 2020, 15), highlight this aspect:

"The introduction of a single market for the European banking sector, which, as just indicated, began with Directive 73/183/EEC of 16 July 1973, and, more generally, the liberalisation of the European financial markets, led to a significant increase in cross-border banking services and a booming international financial sector. A truly European integration of supervisors, however, remained absent. Therefore, until relatively recently, a paradox of sorts prevailed within the EU where, on the one hand, a fully integrated market for credit institutions reaped the benefits of a single market which afforded them the tools to expand and operate at a greater pace across the EU. On the other hand, the fragmentation of supervisors as numerous as the various countries constituting the EU, was not fit to effectively supervise the systemic dimensions of this integrated market. In hindsight, this asymmetry may have been a contributory factor in the collapse of several major financial institutions in the late 2000s, as these institutions proved to be too big and pan-European to be supervised by the assemblage of authorities existing in each respective country. In October 2008, Jacques de Larosière de Champfeu was therefore entrusted with the mandate to chair a group of experts to devise practical proposals in the area of financial regulation and supervision. The report was commissioned against the backdrop of economic crisis and recession. In the first months of the global financial crisis, which led to a eurozone public debt crisis, it was felt that the EU faced a critical juncture: the EU could either fall apart, or strengthen cooperation so as to provide a united front against financial recession. The latter solution found the favour of the De Larosière Report which essentially emphasised three steps to guard against the likelihood of a future collapse: (i) a new regulatory agenda; (ii) a stronger coordinated supervision; and (iii) effective crisis management procedures".

[10] The first one of which may be regarded Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit rating agencies Credit Rating Agency Regulation (as amended by Regulation (EC) No 462/2013). It is well-known that credit rating agencies were among the usual suspects, not the only ones, responsible for the financial crisis.

the EU Regulation No. 1024/2013,[11] whereby the Single Supervisory Mechanism (SSM) was established, consisting of the European Central Bank (ECB) and the national supervisory Authorities of the participating Member States.[12]

II. A NEW ECONOMIC SCENARIO FOR THE UK MARKET REGULATION

The turning point in the relationship between the UK and the UE was – without any doubt– the British referendum on European Union membership (2016). Following that, in March 2017 the British government called upon Article 50 of the Treaty on the European Union and, consequently, officially started negotiating the UK's withdrawal from the EU. As a result of this process, at the end of January 2020, the UK left the EU.[13]

[11] Council Regulation (Eu) No. 1024/2013 Of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the Prudential Supervision of Credit Institutions.

[12] Regulation (EU) No 468/2014 of the European Central Bank of 16 April 2014 establishing the framework for cooperation within the Single Supervisory Mechanism between the European Central Bank and national competent authorities and with national designated authorities (SSM Framework Regulation). The European Banking Union has been adopted in one day, the so-called Super Tuesday, 15 April 2014. On that day, measures were adopted to set up what is now called the Banking Union. These measures specifically concern the Eurozone, but some apply to the Union as a whole. In general, the Banking Union, as initially envisaged by the European Commission, consists of three pillars: (i) the Single Supervisory Mechanism (SSM); (ii) the Bank Recovery and Resolution framework and Single Resolution Mechanism (SRM); and (iii) the EU Deposit Guarantee Scheme. The third pillar has not been implemented yet. As far as the SSM literature is concerned, see D. Alford, *Is a Single Bank Supervisor Inevitable throughout the European Union?*, in 15(58) Int. In-house Counsel J. (2022), Online; G. Bassani, *Of Viruses, Economic Crises and Banks: the European Banking Union and the Response to COVID-19*, in 32(3) Eur. Bus. L. Rev. 437-471 (2021); G. Bassani, *The Centralisation of Prudential Supervision in the European Union: the Emergence of a New "Conventional Wisdom" and the Establishment of the SSM*, in 31(6) Eur. Bus. L. Rev. 1001-1022 (2020); A. Biondi, A. Spano, *The ECB and the Application of National Law in the SSM: New yet Old*, in 31(6) Eur. Bus. L. Rev. 1023-1046 (2020); P. Faraguna, D. Messineo, *Light and Shadows in the Bundesverfassungsgericht's Decision Upholding the European Banking Union*, in 57(5) Common Mkt. L. Rev. 1629-1646 (2020); G. Zagouras, *Sanction Powers and Proceedings of the European Central Bank in the Single Supervisory Mechanism*, in 34(12) J.I.B.L.R. 438-446 (2019); M. De Poli, P. de Gioia Carabellese, *Towards a Full Harmonization of the European Banking Regulation: Dilemmas in a Legal Discourse between Regulation and Enforcement*, in 26(2) Maastricht J. Eur. Comp. L. 190-216 (2019); M. Bozina Beros, *The ECB's Accountability within the SSM Framework: Mind the (Transparency) Gap*, in 26(1) Maastricht J. Eur. Comp. L. 122-135 (2019); P. Nicolaides, *Accountability of the ECB's Supervisory Activities (SSM): Evolving and Responsive*, in 26(1) Maastricht J. Eur. Comp. L. 136-150 (2019); A.H. Turk, N. Xanthoulis, *Legal Accountability of European Central Bank in Bank Supervision: a Case Study in Conceptualising the Legal Effects of Union Acts*, in 26(1) Maastricht J. Eur. Comp. L. 151-164 (2019); E. Howell, *EU Agencification and the Rise of ESMA: are its Governance Arrangements Fit for Purpose?*, in 78(2) Cambridge L.J. 324-354 (2019); A. Dumitrescu-Pasecinic, *International Law in the European Banking Union: the Case of non-Euro Periphery*, in 44(3) Eur. L. Rev. 359-382 (2019); F. Amtenbrink, M. Markakis, *Towards a Meaningful Prudential Supervision Dialogue in the Euro Area? A Study of the Interaction between the European Parliament and the European Central Bank in the Single Supervisory Mechanism*, in 44(1) Eur. L. Rev. 3-23 (2019); A. Miglionico, *Rethinking the Resolution Tools for Distressed Banks: a New Challenge in the Banking Union?*, in 33(9) J. Int. Banking L. and Reg. 314-320 (2018); M. Goldmann, *United in Diversity? The Relationship between Monetary Policy and Prudential Supervision in the Banking Union*, in 14(2) Eur. Const. L. Rev. 283-310 (2018); P. Weismann, *The ECB's Supervisory Board under the Single Supervisory Mechanism (SSM): a Comparison with European Agencies*, in 24(2) Eur. Pub. L. 311-334 (2018); E. Chiti, F. Recine, *The Single Supervisory Mechanism in Action: Institutional Adjustment and the Reinforcement of the ECB Position*, in 24(1) Eur. Pub. L. 101-124 (2018); A. Pizzolla, *The Role of the European Central Bank in the Single Supervisory Mechanism: a New Paradigm for EU Governance*, in 43(1) Eur. L. Rev. 3-23 (2018).

[13] S. James, L. Quaglia, *Rule maker or rule taker? Brexit, finance and UK regulatory autonomy,* in *Int. Pol. Sci. Rev.* Special Issue OnlineFirst 5 November 2020, 1-14.

An important outcome of Brexit is concerned with the legal implications for the financial sector: London, in fact, was and still is a leading international financial hub, in such a way that the UK is often defined the "Europe's investment banker."[14]

In the wake of those events, the United Kingdom formally left the European Union at 11:00 pm, on 31 January 2020, whereas, during the period from such time until 11:00 pm on 31 December 2020, there was a transaction period ("Brexit Transition Period"), during which the UK was regarded as a Member State of the Union, albeit departing. Until 31 December 2020, the EU legislation that was directly applicable in the UK up to that date was transposed into a "retained EU law." This was possible in pursuance of the European Union (Withdrawal) Act 2018, as amended by the European Union (Withdrawal Agreement) Act 2020 (as so amended, the "EUWA").

A consequence of Brexit is the loss for British enterprises of passporting rights in the single market, and therefore the impossibility, specifically for banking businesses, to have direct access to the large financial market of the European Union. The financial market of the EU, despite Brexit, still comprises more than 450,000 million potential customers, *de facto* one of the largest markets in the world. It is true that an opposite consequence of Brexit pertains to the loss, for EU clients, of their rights to have direct access to the UK financial market, although, from a mere quantitative point of view, the figures that the EU single market can still boast despite Brexit – admittedly Brexit has meant a loss of no more than 10% of the previous EU market - should more than compensate the potential damage arising out of the British departure from the UK.

Whether or not Brexit is a "gain" or a "loss" for the two opposing players, undeniably the UK is now in a position to decide on its future, and this is not simply a political slogan. The UK is empowered to set up its own rules in the banking regulation, including banking supervision.

As far as the latter is concerned, first and foremost, the UK Government could better define the bank prudential regulation in a way that it is different from the EU capital requirements rules, although the power of London in this area cannot considered unfettered, since any too *sui generis* regulation may potentially alienate the UK from international bodies and frameworks operating in a global way: *inter alia*, the "G7" and "Basel."[15]

At a second stage, which is a consequence of the previous one, there is an option for the Bank of England to implement a different but at the same time holistic style of banking

[14] M. Carney, Oral Evidence. 11 January, Treasury Committee, House of Commons, London, 2017.

[15] For any reference to Basel and its different versions, see, e.g., R. Cranston *et al.*, *Principles of Banking Law*, 3rd ed. (Oxford: Oxford University Press, 2017), 19ff.; M. Haentjens, P. de Gioia Carabellese, *supra* note 7.

supervision. This could potentially pursue the final goal of boosting the international competitiveness of the City of London.[16]

III. THE UK'S NEW POTENTIAL REGULATION OF BUILDING SOCIETIES

Bearing this in mind, the Prudential Regulation Authority (PRA)[17] has disseminated a Discussion Paper[18] in order to explore the possible options for the development of a simpler prudential framework[19] for banks and building societies that are neither "systemically important," nor internationally active. The main objective of this prospective framework is to combine a resilient regulation with a dynamic and diverse banking sector in the UK. The rationale behind this framework is that the UK, far from being exclusively the City of London and its major financial giants headquartered there, is a country with its own countryside and towns, rife with small credit institutions with no ambition to operate globally, rather with the sincere intention to operate efficiently and in a reliable way in a local environment.

About this new draft of regulation, the PRA qualifies this prospective piece of legislation as a "strong and simple framework." In other words, the intention of the British Supervisor is to finalize, after the necessary approval of the UK Parliament, a statute which, first and foremost, would be consistent with the Basel Committee on Banking Supervision's Core Principles for Effective Banking Supervision.[20] Secondly, this piece of legislation should be simpler than the Basel standards normally applicable to large and internationally active banks. The central idea of PRA is to implement a concept of proportional banking regulation, aimed at removing the complexity of the rules which need be associated with more complex firms, such as the largest banks. The result is that, once the new framework is approved, a simple

[16] A. Lehmann, *UK banks in international markets. Implications of UK-euro area divergence in regulation and supervisory practice*, Economic Governance Support Unit (EGOV) Directorate-General for Internal Policies, 2021.

[17] In the UK, the same global financial crisis brought to light the inability of supervisors to prevent the collapse of major financial institutions. This stressed the need for a creation of a new system of supervision, so that as of 1 April 2013, on the basis of the UK Financial Services and Markets Act 2000 (FSMA), the Financial Services Authority was broken up and the Financial Conduct Authority and the Prudential Regulation Authority took charge in the UK of financial conduct and prudential supervision, respectively. Also in the EU, profound changes were effectuated to the supervisory framework, which will be discussed below. In between the pushes for more stringent regulation, harmonisation and the restructuring of supervision as just discussed, periods of liberalisation can be discerned. The period between the 1970s and 1990s, for instance, may be characterised as a period in which several jurisdictions, including the US and UK, profoundly liberalised their financial markets. Cfr. M. Haentjens, P. de Gioia Carabellese, *supra* note 7, 4-5.

[18] Bank of England, Prudential Regulation Authority, Discussion Paper DP1/21, *A strong and simple prudential framework for non-systemic banks and building societies*, April 2021.

[19] It is important to highlight that simpler is not synonym with less resilient.

[20] Basel Committee on Banking Supervision, 15 December 2019.

regime would suffice for purposes of supervision to the smallest firms. By contrast, the second level of rules, the more complex ones, will be applicable only to major banks.

The criteria to be used to identify which firms should be in the "mirror" of this first layer of rules (with the exclusion of the more complex ones) are based on certain factors: the geographical footprint; the size; the activities; and, finally, the risk exposures.

Furthermore, the PRA has also considered the benchmarks and has identified two typologies of approach. The first one, which can be called "streamlined," whose starting point is the already existing prudential framework. From this, some aspects concerned with some elements which are too over-complex for smaller firms, shall be modified. The second one, that can be called "focused" approach, is concentrated on a much narrower, but more conservatively calibrated, set of prudential requirements. The second one will apply to major banks.

Differently from the envisaged changes, in fact a "sea-change" across the Channel, the existing UK prudential framework for small banks and building societies is still, *de facto*, the legacy of pieces of legislation coming from Brussels. The striking feature is the application of the same prudential requirements to all firms without any difference about their size and/or activities. This poses a dilemma, given the fact that, for the smallest firms, the costs associated with both the understanding and the operationalization of prudential requirements are too high and not matched by the public policy benefits that the Supervisor may have in mind.

Admittedly, some crucial aspects currently affecting the smaller credit institutions could be alleviated with a change in the prudential requirements, so that the current level of resilience could be achieved in a less convoluted way. According to this, simplified requirements would translate into lower costs, given the fact that prudential regulation would be understood, interpreted and put in place a more straightforward way. Ultimately, this will reflect the specific risk, which is lower by definition, that smaller firms usually face. However, it is also vital to be minded of a drawback of this prospective framework. In essence, this simplification process could result in adding "barriers to growth" – both economic and psychological – for smaller firms. Empirically, if the prudential regulation is less complex for smaller firms, should the latter contemplate becoming large firms, they should adjust prudential requirements, and this process could be time-consuming. Since the level of regulation grows in proportion to the growth of the firm, similarly the further costs of this potential change could constitute a deterrent for growth.

The first stage, in the view of the new Regulatory framework, is to define which firms could take advantage of the simpler regime. It is clear that internationally active banks are subject

to Basel standards. Consequently, they cannot adhere to the simpler regime, which, inevitably, would be tainted with different standards. The crucial point is that the Basel Committee does not provide any definition of an "internationally active bank:" the national jurisdictions have discretion to determine which national banks are active across the national borders.[21] In the light of this, the UK, already outside the European Union, need not comply with any "diktat" coming from across the Channel, and the best interests of the country will be taken into account.

Therefore, it is in the interest of the PRA to develop its own criteria, to ensure that a definition of domestic firms is found. In this way, the fundamental point seems to be identifying which magnitude of cross-border activities this definition would entail. Thus, potential criteria for a domestic, *ergo* British, regulation in this area can be made up of two components: the scope of activities outside of the UK, and the kind of major constraints existing on those firms within the UK, their own country. Likewise, international activities could be interpreted from the perspective of the financial statements: the relevant background should be based on the financial statements figures, and where they are located in terms of assets or liabilities of the firm. Another criterion could be the "legal form:" based on this, information concerned with the jurisdictions where firms, or their groups, have banking subsidiaries or branches, shall be taken into account.[22]

The simpler prudential regime, under the aegis of the PRA, could be derived from the application of the following criteria:[23]

1. The difference between the simpler regime and the existing prudential framework.
2. The resilience of small firms to be maintained with a standardised approach in the light of the determination capital requirement.
3. The requirement of liquidity to be applied to small firms.
4. The disclosure criteria about the resilience of small firms

As the result of this first discussion paper,[24] the majority of the respondents were asked to say whether their firms would continue operating under the prudential regime for larger

[21] S. Hohl *et al.*, *The Basel Framework in 100 Jurisdictions: Implementation Status and Proportionality Practices*, Financial Stability Institute Insights on policy implementation, No.11/2018.
[22] A.P.C. Carvalho *et al.*, *Proportionality in Banking Regulation: a Cross-country Comparison*, Financial Stability Institute Insights on policy implementation No.1/2017.
[23] Bank of England, *supra* note 16.
[24] Bank of England, Prudential Regulation Authority, Discussion Paper FS1/21, Responsed to DP1/21 A strong and simple prudential framework for non-systemic banks and building societies, December 2021.

firms. Furthermore, the majority expressed a preference for the "streamlined" approach, i.e. the prudential requirements under the simpler regime.[25]

IV. THE IMPORTANCE OF THE UK REGULATION PROPOSAL

The proposal of Regulation on building societies, or in other words on small and medium banking firms, is of crucial importance for its value as a possible "leading case." The idea is that other countries, or other jurisdictions, could draw inspiration from the final document, should a proposal follow up on this and become definitive, in order to implement a reform process of their own national regulation.

In doing so, the European Union could implement its own pieces of legislation, differentiating it according to the size of firms and businesses. It must be highlighted, though, that this sort of import should not become "transplanted"[26] or "copied-and-pasted" regulation, rather a model to be followed with any amendments that may appear to be necessary.

With the UK leaving the European Union, the banking supervision in "London" has moved to a system where the supervisory model is hinged upon domestic Authorities under the direct control of the British Government. In other words, it is the Government that takes into account the difference stances coming from British businesses including British banks. Therefore, from this simplified political architecture, among other things, it is possible to infer that in the future there will be a more efficient interaction between law makers and regulation. Intriguingly, a further peculiarity of the common law system should not be neglected, the English one in particular, within the broader British legislation, where, notoriously, a constitution is historically missing. Although the statement may lead – theoretically - to absurd conclusions, nevertheless it is undeniable that the higher is the level of constitutional norms, the lower is the degree of a flexibility bestowed upon the regulator, first and foremost the banking and financial one.

By contrast, the European Union, a comparatively new "beast," albeit firmly shaped on civil law jurisdictions – where a fundamental Chart by definition is an entrenched "attire" of the legal "wardrobe" of a specific Member State –, seems to be fettered by more "principles," the infamous pillars that are now such familiar features of the EU nomenclature. However, while on the one hand "pillars" may provide better safeguards, on the other hand they may

[25] This, in fact, is hinged upon some starting points, among which the modification of some elements of regulation currently existing for smaller firms.

[26] P. Legrand, *Comparative Legal Studies and the Matter of Authenticity*, in 1(2) J. Comp. L. 365, 367 (2006); P. Legrand, *European Legal System are not Converging*, in 54(1) Int.& Comp. L. Q. 52, 55-56 (1996).

turn out to be, in keeping on with the metaphors, very heavy pieces of furniture, very difficult to change and move.

The paradoxical effect that could be sparked off would be that a country that left the European Union may become a model to follow in reforming the financial legislation regulation. At the same time – and in this respect this may be a silver lining –, it is possible to see a new potential trend of the comparative analysis of law within Europe. With a country such as the UK which has left the European Union, the comparative methodology may not only regain momentum, but also expand its traditional area, in such a way to include the regulation, particularly the banking regulation, rather than simply the law.

The reform of Continental cooperative banks becomes unavoidable, providing that they are considered as an essential element of the banking system. In this perspective, therefore, it becomes essential to fit them out with their own subjectivity in order to make them competitive in the European landscape. If on the one hand this need for reform is perceived, on the other hand a revaluation of the role of these credit institutions should take place whilst maintaining their own nature.[27]

The proposal made by the British supervisory Authority would have the merit of diversifying the applicable body of law according to the size of the company and in relation to the activity actually carried out internationally. In other words, there is a need for forging an *ad hoc* regulation addressed to building societies in order not only to implement, but also enhance the peculiarities of this kind of credit institutions.[28]

[27] M.C. Cardelli (ed.), *Nuove opportunità e sfide per le banche di credito cooperativo: la riforma del 2016* (Torino, Giappichelli, 2016).

[28] A. Miglionico, *Grande dimensione e regolamentazione del credito cooperativo nell'UE*, in *Riv. Trim. Dir. Econ.*, No. 4/2018, 488 ff.

COMPARATIVE LAW AND ECONOMICS IN THE FIELD OF MODERN COMPETITION LAW

Koki Arai[1]

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This study provides an overview of the relationship between comparative law analysis and the economic analysis of law in competition law and offers some perspectives for the future. In the United States, it has been argued that market power has expanded since deregulation was implemented and that this expansion has not been accompanied by long-term improvement in consumer welfare. The reasons for this are the Chicago School's reform of antitrust laws and changes in the technological environment of the economy. There is a certain convergence in the institutional and enforcement landscape of competition law today. The paper then puts forth the argument of the increasing trend of market power in today's economy from a bird's eye view and presents an alternative view to empirical industrial organisation theory. The dominant method in law and economics today is the latter, which has been applied as comparative law and economics. Based on this, I point out that comparative law and economics require a discussion of the nature of competition law and discuss the importance of returning to the basics of empirical industrial organisation.

I. INTRODUCTION

This paper provides an overview of the relationship between comparative law analysis and economic analysis of law in the field of competition law and looks towards a more fruitful direction for the future. Among the developments in law and economics in competition law, two influential books written by Robert Bork and Richard Posner on antitrust law and policy in the late 1970s are particularly important[2]. With them, the influence of the Chicago School became pervasive. Today, however, it is argued that market power in the United States, which has expanded since deregulation was implemented, has not been accompanied by long-term improvements in consumer welfare. One reason for this, it is argued, is that the Chicago School reformed antitrust laws. Another reason is change in the technological environment of the economy. The technology giants of today did not exist when Bork and Posner were writing, but these giants have grown since they emerged. At present, the debate between law and economics over competition and antitrust is in the direction of convergence. This paper points out the importance of going back to the basics of empirical industrial organisation

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[2] R. H. Bork. *The Antitrust Paradox: A Policy at War with Itself* (New York, NY: Basic Books, 1978); R. A. Posner. *Antitrust Law: An Economic Perspective* (Chicago, IL: University of Chicago Press, 1978).

and, accordingly, reconstructs the position of antitrust economics and 'law and economics in the modern economy.'

In the development of law and economics in competition law, the respective publications of Robert Bork and Richard Posner have shaped the entire field and have been unparalleled in their influence. Bork, a graduate of the University of Chicago, and Posner, a professor at the University of Chicago, published books analysing antitrust law based on economic analysis and proposed an antitrust law that emphasised efficiency and aimed at consumer welfare. They argued that some of the regulations in antitrust law hindered business and prevented companies from becoming more efficient, which could have a negative impact on the economy. Against this backdrop, deregulation was promoted under the national administration of President Reagan[3].

However, in response to the current economic situation, empirical studies in macroeconomics have discussed the trend of increasing price markups and market power in the United States and other countries worldwide. Here, US price markups are summarised based on the relationship between macroeconomics and market power[4]. One reason for this is that the Chicago School reformed antitrust laws, and the other is the changing technological environment of the economy. The most highly regarded technology giants in today's financial markets did not exist during the Chicago School's deregulation drive. It is also said that companies from all sectors are investing in information technology and that many new and difficult competition policy issues have arisen with the development of the technology economy.

For this reason, two books that echo Bork's and Posner's work and that are considered particularly important today for an overview of the future of antitrust law, are Herbert Hovenkamp's antitrust enterprise[5] and Jonathan Baker's antitrust paradigm[6]. The former answers the question of whether the antitrust regulations raised there are excessive and whether they need to be analysed in detail. The latter directly answers the question of whether antitrust regulations need to be more stringent in light of the current economic situation. It is interesting to note that although both books are considered specialised books on antitrust

[3] See T. Kirat, F. Marty, *How Law and Economics Was Marketed in a Hostile World: l'institutionalisation du champ aux Etats-Unis de l'immédiat après-guerre aux années Reagan*, GREDEG Working Paper No. 2021-03. 2019, available at: http://www.gredeg.cnrs.fr/working-papers/GREDEG-WP-2021-03.pdf (accessed January 1, 2022).

[4] See S. Basu, *Are Price-Cost Markups Rising in the United States? A Discussion of the Evidence*, in 33(3) J. Econ. Persp. 3–22 (2019); C. Syverson, *Macroeconomics and Market Power: Context, Implications, and Open Questions*, in 33(3) J. Econ. Persp. 23–43 (2019).

[5] H. Hovenkamp, *The Antitrust Enterprise Principle and Execution* (Cambridge, MA: Harvard University Press, 2006).

[6] J. B. Baker, *The Antitrust Paradigm: Restoring a Competitive Economy* (Cambridge, MA: Harvard University Press, 2019).

law, they can be evaluated in the context of law and economics and show how good empirical approaches can be utilised in law and economics.

Section II provides an overview of competition law and its global trends, which are the subject of this study. In this section, I outline the converging trends of competition law institutions and enforcement worldwide and explain their response to today's digitalised social economy. Section III touches on the debate about the trend towards increasing market power in today's economy from a bird's eye view and presents an alternative view from empirical industrial organisation theory. This analysis then explains that the dominant methods in law and economics today are positioned as the latter and have been applied as comparative law and economics. Section IV describes the reality of competition law in the world and how today's comparative law and economics have responded to the digitalised social economy. Finally, Section V concludes the paper.

II. Concepts in Competition Law

Today, competition law is largely based on regulations common around the world. For example, considering the prohibition of cartels, cartels are typically regulated by the Japanese Antimonopoly Law under the unfair restraint of trade. The same is true in US antitrust law and European competition law. Furthermore, competition laws worldwide are increasingly regulating the same types of conduct. The two main pillars of competition law are cartels and the abuse of market power (exclusion and exploitation by monopolies), and merger control and other ancillary regulations have been institutionalised to complement these two pillars. These regulations have been enacted and enforced in the United States, the EU, and other major countries such as Japan, China, and Russia. As for legal systems, EU-type legislation has been accepted in many countries because it is transnational in origin, and in fact, it has spread widely in China, India and other developing countries. In addition, the procedures for enforcement (on-site inspections, reporting orders, and requests for submission of materials) have become similar, with various exceptions. In addition, a special enforcement system, the leniency system (an exemption from sanctions for those who report cartel violations), has been introduced in many countries in recent years. This is, in part, an example of the success of comparative law and economics, as the United States, which is seen as successful in enforcing competition law, has been active in exporting the system, which has led to the spread of comparable systems in other countries. In this case, economic analysis has been

used to explain the merits and demerits of enforcement, and this is an area where comparative law and economics are most often used.

In addition, international cooperation in this competition law enforcement field is progressing. Discussions in the International Competition Network are actively conducted, and many workshops are held in addition to annual general meetings[7]. Cooperation among enforcement authorities is also taking place in the investigation of individual cases.

Suppose law is an instrument of social discipline. In that case, economics can provide theoretical support for such policies and a measure for their evaluation and analysis of their actual effects. For this purpose, economics uses models that abstract from reality: the models perform econometric analysis using actual statistics and aggregate figures. For example, in economics, the idea that "competition is desirable" is as follows. The first theorem of welfare economics shows that perfectly competitive markets lead to Pareto-efficient resource allocation. This is achieved when demand is adjusted such that the marginal rate of substitution equals the price ratio on the demand side and when production is adjusted so that the marginal rate of transformation equals the price ratio on the supply side. In this perfectly competitive equilibrium, the social surplus, the sum of producer and consumer surplus, is maximised. However, if there is only one business in the market, the social surplus may be less than the level of perfect competition due to the control of price or quantity by that business.

In law and economics, actual laws and precedents are used as materials for economic examination, and the analysis of problematic issues in the science of legal interpretation is partly conducted from the perspective of economics in the field of competition law. The effects of system design on legislation are often discussed using models. In the field of antitrust law, economic analysis is used in specific cases, such as when assessing changes in economic conditions as indirect evidence when proving a cartel case or estimating the amount of damage in a violation case. In particular, economics is often used to judge business combinations. In the case of mergers, when defining the market, the concept of 'a small but not substantial temporary increase in price' for individual cases is presented (small but substantial and non-transitory increase in price [SSNIP] test)[8], and ex-post reviews of changes in the market environment after a merger are conducted. Game theory has also been repeatedly used in decisions related to the leniency system (exemption system), and

[7] See https://www.internationalcompetitionnetwork.org/ .

[8] See Japan Fair Trade Commission, *Guidelines to Application of the Antimonopoly Act Concerning Review of Business Combination* (2004, rev. 2019).

economics and game theory approaches have also been used in discussions on how to report the illegal activities of cartel participants.

The economic analysis of theory and empirical evidence for each of these realities is important in practice, but this is discussed in Section IV on the subject of platform companies and the regulatory framework for them. The overall economic and social trends surrounding competition law in recent years, needed to understand the framework of comparative law and economics, are examined next.

III. Discussion on Market Power

This section discusses the impact and limitations of the law on today's economic situation. Specifically, we look at research on price markups and the increasing trend of market power in the United States and other countries worldwide. The situation illustrates how the subject of this study, comparative law and economics, has been forced to respond. That study explains the dynamic relationship between comparative law and economics, including empirical industrial theory and the real economy.

Three methods have been used to estimate markup trends in the US economy. In the first method, economic profit is estimated using aggregated or enterprise-level data, and the estimation value of the markup size is deduced assuming a fixed yield based on the scale. The second method estimates the production function of enterprises and departments based on the movement of various inputs. The third method restores the markup from the optimisation condition for one input. The portion of pricing above the marginal cost is a basic measure of market power. In perfect competition, a company that maximises profit sets a price equal to the marginal cost, and the markup is 1. In imperfect competition, marginal revenue produces an amount equal to the marginal cost, and the price exceeds the marginal cost. When attempting to measure markup, the immediate hurdle is how to measure marginal cost. Cost minimisation frameworks are usually used to comprehensively estimate markups for most or all of the economy.

All three methods begin with the hypothesis that firms minimise costs using a given input price. This hypothesis is powerful, but it does not cover all cases. Qualitatively, if a firm has the power to set some factor prices, the effect of the market forces described above does not change much. In most cases, such factor market power drives a wedge between marginal

product and factor prices, reinforcing the above conclusion in the case of only market power in the goods market[9].

The assumption of cost minimisation enables us to derive the relationship between the three parameters (return on size, markup, and economic profit margin). Assuming that the rate of return on scale is constant, the calculation of economic profit enables the estimation of the markup. This method is applied to US national accounts data to obtain the estimated gross profit margin or the average profit of the whole economy, and it has been employed to calculate the value-added profit margin from 1984 to 2014[10]. Since the early 1980s, companies have dramatically reduced their labour and capital costs and increased their pure profits. In this period, pure profit has increased dramatically. In the major specifications, the share of pure profit (the ratio of pure profit to gross value added) increased by 13.5 percentage points. Profit margins, price-cost margins, and market concentration have risen since 2000. This upward trend is accompanied by declines in investment, enterprise entry, and labour distribution rates. If the average level of market power increases overall, key indicators of overall economic welfare, such as investment, innovation, gross production, and income distribution, are likely to decline.

The results of these macroeconomic analyses have been used to explain various factors. Something flattened firms' residual demand and marginal cost curves, increased economies of scale and network effectiveness, and increased consumers' ability to find low-cost or high-quality firms. These changes have led to an increase in concentration but do not necessarily imply growth in market power. The expansion of the scale economy has also been brought about by reducing marginal costs, which reduces the inputs required for production and improves efficiency. On the other hand, in economies of scale, firms need sufficient market power in equilibrium to pay fixed costs and production costs within sectors. Network effects affect both efficiency and market power. Although consumers can benefit from the network effect of utilities, the network effect causes lock-ins and provides pricing power to enterprises. Improving consumers' ability to choose who to buy from would increase efficiency. This increase in efficiency may be due, for example, to changes in search, transport, and trade costs.

Much of the recent work on markups, however, has adopted an analytical approach that was widely rejected in the field of industrial organisation theory more than 30 years ago, namely the 'structure-conduct-performance' paradigm. First, regression analysis is conducted using left-sided variables indicating outcomes such as markups and profits, right-sided variables

[9] See Basu, *supra* note 2.

[10] See S. Barkai, *Declining Labor and Capital Shares*, in 75(5) J. Fin. 2421–2463 (2020).

indicating indicators of market concentration, and various control variables. An early empirical study of industrial organisation theory from 1950 to 1970 investigated how competition affects market outcomes, using the structure-conduct-performance paradigm. The following regression analysis was typically carried out as a demonstrative technique for this paradigm. The dependent variables were market outcomes, such as profit, value, and price. The important explanatory variables tried to grasp the market structure, using the scale of concentration (e.g. the Herfindahl-Hershman index, which is usually the sum of the squares of market shares). The regression also included variables aimed at capturing other exogenous reasons for variability. Thus, the structure is related to performance, and (unobservable) conduct is captured as an estimated relationship between structure and performance. The purpose of this regression analysis was to understand how the intensity of competition changes as the degree of market concentration changes; however, in industrial organisation theory, the structure-conduct-performance approach is not credible[11]. Much of the recent interest in increasing markup and other market outcomes has focused on this reasoning. Such research continues without addressing the issues that have led the field of industrial organisation theory to reject the structure-conduct-performance approach. Given the intuitive relationship between market concentration and enterprise performance, it is necessary to explain why industrial organisation theory rejected the structure-conduct-performance paradigm. The most important point is that there are multiple causal relationships between the degree of concentration and the results of other markets. This means that the question of "What is the impact of concentration on prices and price increases?" has not been sufficiently addressed.

Unfortunately, there is no clearly defined causal effect of concentration on prices; rather, only a set of hypotheses can explain the observed correlations in the simultaneous determination of price, measured markup, market share, and concentration. The impact of concentration cannot be properly interpreted without a clear focus on balanced oligopolistic demand and supply, including the list of marginal cost functions and the nature of oligopoly. Industry research in industrial organisation theory, as a whole, provides evidence in several simple or stylised models. These studies deny a model close to perfect competition. Similarly, these studies highlight the important features of a game-theoretic oligopoly in the market and reject simple interpretations related to antitrust and the Chicago School. Rather, these industrial organisation studies suggest a subtle reality that large enterprises have changed their

[11] T. F. Bresnahan, *Empirical Studies of Industries with Market Power*, in R. Schmalensee, R. Willig (eds.), *Handbook of Industrial Organization*, vol. 2 (Amsterdam: Elsevier. 1989), 1011–57; R. Schmalensee, *Inter-industry Studies of Structure and Performance*, in Schmalensee, Willig, *ibid.*, 951–1009.

products and production methods over time, including how marginal and fixed costs should be. Fixed cost is often a sunk cost accumulated over time through network investments, product quality, and geographic location. How the reallocation from marginal to fixed costs affects labour demand is an interesting question. Another important issue is whether the labour share of variable costs is higher or lower than fixed costs. These studies imply that to fully answer questions about overall markup trends, we must address a broader area of the economy as a whole. As for the level of markup, many studies have been conducted at the industry level based on existing theory of industrial organisation, studies focusing on the trend of markup to clarify why and where markups are increasing. This has been discussed in recent developments in law and economics[12]. For example, the cost of decision-making concerning the regulatory decision-making process in the energy sector is being examined analytically and in the creation of indicators that take into account various factors in consideration of regulators in providing a framework[13].

Another factor to consider is that some of the basic structures of modern industrial organisation theory, such as cost conditions, demand conditions, and price environment, have changed significantly in the last 10–15 years. For example, the adoption of information technology is often a fixed cost associated with hardware, such as servers or software, and software that operates internal resources. As described above, in companies and industries where the importance of information technology has increased, fixed costs increase, leading to an increase in the profit rate, and one or a few large companies dominate the market. On the demand side, when the importance of the network effect increases, one company or a few companies dominate the market and charge a higher price. As for corporate behaviour, the increased exploitation of managers due to market power may increase value. It has also been pointed out that antitrust enforcement in the United States is declining moderately[14].

In this regard, the fields of empirical industrial organisation theory, comparative law, and economics also directly discuss answers to the concerns of macroeconomics. There are arguments that US antitrust enforcement needs to be revitalised in three areas[15]. The first area where antitrust enforcement is too lax deals with mergers. Accumulating evidence indicates that competition is protected and facilitated if the Department of Justice and the Federal Trade Commission are willing to block more horizontal mergers. The second area where antitrust enforcement has become inadequate is the treatment of exclusionary

[12] K. Arai, *Law and Economics in Japanese Competition Policy* (Singapore: Springer Nature, 2019).
[13] See G. Bellantuono, *Comparing Regulatory Decision-Making in the Energy Sector*, in 1(2) Comp. L. Rev. 1–64 (2010).
[14] See Baker, *supra* note 4.
[15] C. Shapiro, *Protecting Competition in the American Economy: Merger Control, Tech Titans, Labor Markets*, in 33(3) J. Econ. Persp. 69–93 (2019).

practices by dominant firms. A fundamental problem in this field is that the Supreme Court has dramatically narrowed the scope of application of antitrust law over the past 40 years. The third area concerns the market power of employers as buyers in the labour market. To date, antitrust enforcement has largely ignored the labour market. It is too early to know whether stronger antitrust enforcement in the US labour market makes a big difference in wages for employees, but more attention to and oversight of antitrust law is needed.

In addition, from the viewpoint of the history of the United States, there is an assertion that a firm must operate with two basic principles at its core[16]. First, firms can grow significantly through innovation and integration with competitors. Second is that even the most innovative firms may rely on anticompetitive tactics to maintain their market position. The balance between these competing principles has long been a cornerstone in the context of US antitrust law, as the fear of large companies has faded, and companies have learned to stabilise their industries without violating antitrust authorities and to compete on dimensions other than price. However, it is difficult to strike the right balance, and policymakers have lost their commitment to long-term principles. At first, they went to the extreme that 'big was bad' and had to be dealt with, and conversely, they went to the other extreme that it was never a problem as long as it brought benefits to consumers. Perhaps now is the time to return to the task of assessing the behaviour of large enterprises. Otherwise, it is argued, successful large enterprises prevent innovative challengers.

IV. COMPETITION LAW'S RESPONSE TO DIGITAL PLATFORMS

How should these debates about market power be reframed in the context of comparative law and economics in today's digitalised social economy? With regard to the development of rules for digital markets, in addition to the issues in the United States, the establishment of online platform economic monitoring committees and ways to promote platform fairness and transparency are being addressed in Europe. In Japan), the establishment of a specialised organisation (the Digital Market Competition Headquarters), the development of rules to ensure transparency and fairness in transactions between digital platform companies and users, and the promotion of data transfer and disclosure are being considered[17]. In addition, from the perspective of law and economics, there is a need to promote a broad analysis and

[16] N. R. Lamoreaux, *The Problem of Bigness: From Standard Oil to Google*, 33(3) J. Econ. Persp. 94–117 (2019).
[17] Rules for the Digital Market, Japan Growth Strategy Portal Site.

study of such institutional design and rule operations and to consider proposals based on empirical analysis.

A recent paper addresses the state of today's global economy and the place of competition law within it, identifying three key signs and three approaches[18]. It explores ways to apply the competition law of the industrial capitalist era to the 'next generation of competition' of post-industrial information capitalism, pointing out the lags in response but sending a positive message that competition law can be transformed to address the value of innovation in the digital economy. From the perspective of Lianos' methodological approach, the way to accumulate the approach, and three perspectives to go further, the study examines the issue of competition law litigation against giant digital platform operators in the United States, which is currently under discussion. It argues for the necessity and effectiveness of academic examination in reality by showing how the methodology can be useful in analysing and repositioning real-world cases, and what is required as a criterion for judging individual issues.

Lianos' argument first points out that competition law has been slow in responding to the development of digital capitalism. He then states that competition law scholars are attempting to theorise the impact of technology on competition while exploring the applicability of existing frameworks. However, he mentions the emergence of new concepts such as diminishing returns, leverage points, tipping points, and path dependence and states that factors such as multifaceted markets have made the interaction among competitive participants more complex.

His discussion goes beyond merely highlighting the points to keep in mind when enforcing competition laws in the wake of digitalisation. It emphasises the need to consider new factors and develop new decision-making frameworks that can be regarded as highly useful and practical. However, the study fails to capture existing efforts and innovations in competition law enforcement; second, the necessary and sufficient conditions for this new approach are not clearly stated, making it difficult to see how the approach can capture the complex economic reality and why such an approach would be beneficial. It is difficult to determine how this approach can capture complex economic realities and why it is beneficial.

In light of these criticisms, this section describes three methodologies that complement the approach identified by Lianos and deepen the study of competition law. The first perspective is research that is aware of the necessary and sufficient conditions. When analysing competition law enforcement, various new concepts may emerge and need to be examined from this perspective. The second perspective is the provision of appropriate decision criteria

[18] I. Lianos, *Competition Law for a Complex Economy*, in 50 IIC-Int. Rev. Int. Prop. and Comp. L. 643–648 (2019).

from evidence-based research. This issue arises when analysing law enforcement, especially when it involves new concepts. Care must be taken to balance a principles-oriented approach with a case-by-case approach. The goal should be to provide criteria from research that distinguish between evidence-based, principle-oriented phases and individual judgment-oriented phases. The third perspective is 'futurism', which Lianos also mentions. It is important to balance the research substance and logistics to achieve this. To study the laws of competition in a complex economy, it is necessary to acquire knowledge of digital platforms and cybernetics that can be applied to demand management, including algorithms, in addition to traditional research methods centred on neoclassical price theory (plus game theory and new empirical econometrics).

With regard to platform giants and antitrust law, based on the arguments in Section III, there has recently been an antitrust crackdown on platform giants such as Google and Facebook in the United States. On October 20, 2020, the US Department of Justice (DOJ) and 11 US states filed a lawsuit against Google in the US District Court for the District of Columbia for allegedly violating Section 2 of the Sherman Act. On December 9, 2020, the US Federal Trade Commission (FTC) filed a lawsuit against Facebook for alleged violations of Section 5(a) of the FTC Act based on violations of Section 2 of the Sherman Act, which was dismissed in June 2021 but was re-filed in August. Other state lawsuits have also been filed, but this study does not go into the details of these lawsuits. Instead, it discusses the perspectives necessary for antitrust enforcement in these cases.

In the discussion of comparative law and economics, in light of the constituent requirements of Section 2 of the Sherman Act, there are five key issues in these lawsuits: identification of the relevant market; presumption of monopoly power; creation, maintenance, and enhancement of market power; analysis of consumer harm; and measures to resolve the problem. These issues serve as the basis for judgements in individual cases as well as points to keep in mind when considering the future development of competition law research.

The first issue is identifying the relevant market, which seems to be the biggest barrier to competition analysis. Usually, the definition of a market is based on the cross-price elasticity of demand among products to determine a particular product group. For example, the SSNIP test is an indicator for this purpose. However, further discussion is needed to determine whether the markets discussed here have market power. The second issue is the presumption of monopoly power. In both cases, if we consider each market separately, it is clear that Google and Facebook occupy the dominant share. However, there are many arguments, such as the different barriers to entry for each service. For example, in the US Supreme Court

decision in the Amex case[19], the market definition that separates the merchant-to-market and cardholder-to-market markets and demarcates them as one relevant market rather than as separate relevant markets was the one justices voted 5–4 to adopt. Researchers are, however, divided. The third issue is the formation and maintenance of market power. As for unfair exclusion, for example, stating in a contract clause that the company cannot do business with other companies in the same industry is not considered unfair by itself because it does not explicitly exclude other companies. The fourth issue is whether there is any damage to consumers. Stifling innovation or hindering consumer choice is certainly a factor. The principle tenet of antitrust law is that if competition is restricted, the law has been violated. It does not matter whether it has caused damage. The destruction of the competitive order itself is a violation of the law. However, this is a matter of legal dogma, and in the real world of law enforcement, especially when discussing law enforcement against giant corporations, the important question is how much actual harm is caused to consumers. Fifth, there is a debate about whether antitrust remedies are necessary and what measures should be taken to resolve this issue. It is generally argued that a finding of illegality, an injunction against conduct, and future inaction are necessary. Also, to what extent should structural measures (so-called corporate divestitures) be taken into account? For example, in Microsoft litigation in the 2000s, Microsoft argued that the Operating System business (Windows) and the application business (Word and Excel) were complementary, and after the monopoly was granted, it was argued that these businesses should be split up when considering the elimination of market power. In the end, however, this did not happen, and measures were limited to behavioural aspects.

A discussion of the nature of competition law is necessary for the discussion of comparative law and economics. These five elements indicate the essence of competition law in a digitalised social economy. It is then necessary to conduct an economic analysis based on these discussions. This requires a discussion beyond the structure-conduct-performance framework and empirical analysis based on actual data. Furthermore, concerning futurity, we need to know what will be realised through competition. For example, we need to discuss consumer welfare and the extent to which remedies should be sought.

These are also dealt with in the discussion by Hovenkamp and Baker, as mentioned in Section 1. Hovenkamp's book takes the same position as Bork, in principle. He argues that the Supreme Court was overprotective of small businesses in the 1960s and the 1970s and that reforms are needed to review the overprotection and restore lost vitality[20]. By also pointing

[19] *Ohio v. American Express Co.*, 138 S. Ct. 2280 [2018].
[20] Hovenkamp, *supra* note 3.

out that some members of the Chicago School had gone too far and became too pro-business, he made it clear that this would not be tolerated by the uncritical Chicago School. Hovenkamp argued that control in a deregulated industry is more appropriately borne by antitrust law rather than government regulation but that more precise enforcement of antitrust law is desirable for that purpose. The Supreme Court also stated that difficult oversight is desirable and that several technical issues are to be considered.

Furthermore, Baker's work is particularly relevant to recent socioeconomic conditions[21]. In addition, his book, *The Antitrust Paradigm*, emphasises rethinking the power of antitrust, with Bork's book in mind. He states that it is possible and necessary to reverse the trend of non-enforcement by strengthening antitrust laws. In other words, the current environment and new forms of business driven by information technology pose new competition problems. He then states that market power has become a very important political issue and that economic progress has brought us face-to-face with market power. He argues that industrial organisation theory has been thoroughly restructured using game-theoretic arguments and that new empirical tools have made it possible to measure incentives, behaviour, and effects more precisely, which would further increase the use of antitrust economics. He argues that while it is true that antitrust rules have been heavily influenced by the Chicago School of economic thought, one of the reasons for this is that many antitrust enforcers and officials have not been able to fully absorb the results of new theories and discoveries.

Finally, based on the various insights gained thus far, we contrast Japanese Antimonopoly Law and US Antitrust Law from the perspective of law and economics analysis. In particular, this part outlines the law enforcement in the digital field as an example. As mentioned above, the US Antitrust Law discusses law enforcement in the digital field from the viewpoint of five issues. In contrast, Japan's Antimonopoly Law adopts a different approach from that of the US with respect to these five issues. The first issue is relatively the same type of law enforcement. The second and third issues are regulated and enforced differently. Different approaches are taken in the fourth and fifth issues. First, the consideration of the relevant market in Japan is discussed in the same way as in the US, and it can be mentioned that the data distribution market in Japan has been delineated and law enforcement has been conducted in the merger control field in recent years. Second, with respect to the presumption of monopoly power, there are differences in the legal system, with regulation of articles of the abuse of superior bargaining position in Japan, and more interventionist enforcement of competition laws than in that of the US. Third is the detection of forming,

[21] Baker, *supra* note 4.

maintaining, and strengthening market dominance. In this issue, for example, interventionist regulations in Japan have been applied to Amazon and Apple ahead of other enforcements, and detection of violations of the regulation has not been litigated as in the US. As for the fourth point, consumer damage, and the fifth point, remedies, they have not been realized in litigation in Japan, but have been enforced through policy, and there has been prior policing through industrial survey researches and regulation formulation. This Japanese approach can be positioned as aiming for EU-type law enforcement rather than US-type. From an economic evaluation, the social cost of conflict of EU-type approach is likely to be lower than that of US-type approach if the case were litigated. On the other hand, US-type ex post enforcement is considered to have a better chance of creating a dynamic that generates innovation.

V. CONCLUSIONS

This study provides an overview of the relationship between comparative legal analysis and the economic analysis of law in the field of competition law and an outlook for the future. Today, it is argued that since deregulation was implemented in the United States, market power has expanded and has not been accompanied by a long-term improvement in consumer welfare. The reasons for this are the Chicago School's reform of antitrust laws and the changing technological environment of the economy. At present, the state of institutions and enforcement of competition, antitrust, and antimonopoly laws are also moving in the direction of convergence. While keeping this in mind, this paper points out the importance of going back to the basics of empirical industrial organisation in the discussion of comparative law and economics, citing the need to discuss the nature of competition law.

The significance of this study is that it clarifies the position of comparative law and economics, including the field of competition law, in light of more comprehensive economic trends, and points out the importance of considering necessary and sufficient conditions, which are particularly important in such discussions, as well as the importance of enforcement, planning, and future orientation based on empirical analysis to understand the actual state of the market. As for its policy implications, it explains the contemporary need for comparative law and economics based on historical positioning.

The limitations and future challenges of this study are that it mainly focuses on economic analysis of the United States, and more information needs to be collected and organised on the economic situation and the development of competition law in other jurisdictions, such as the EU, Japan, and China.

RELATIONAL DISCLOSURE AS A MEANS FOR DATA SUBJECTS' INFORMED CONSENT*

Antonio Davola & Ilaria Querci

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Digital markets are flexible and developing, and so it is privacy law. Before and together the enactment of the GDPR, data protection rules have drawn contributions, amongst others, from sociology, anthropology, economics, and marketing. This happens, intuitively, because privacy has an inherent social dimension: the concepts of identity and autonomy, equality and freedom, the meaning of social relations and political relations all play a distinct role in privacy law. Undoubtedly, a central role in constructing privacy and data protection law has been played by decision-making studies: since its early days, individual protection has been structured according to the axioms of economic neoclassical theory. Accordingly, the attribution of rights in favor of users has been significantly affected by the view of individuals as homini oeconomici. Yet, as soon as deviations and diversions from the traditional paradigm emerged, law has been proven able to evolve as well, and progressively adjusted in order to encompass new approaches to online interaction that largely contrast with the rigidity of the conventional economic theory of individual behavior. Still, some axioms of the early neoclassical model as it was originally conceived are still present in consumer law, despite being widely debated amongst economic scholars. In particular, the assumption of a-social individualism still permeates the structure of user rights, and European privacy law rests on the implicit assumption that consent to the processing of personal data and the analysis of big data is a purely individual choice. Against this view, the paper investigates evidence emerging from studies and experiments that show that consent in data processing is not only – and often – partially irrational, but also inherently relational. Then, it observes that the regulatory framework laid down by the GDPR does not take into proper account this aspect and subsequently defends the development of a system of contextualized disclosure as a tool to promote informed consent. Lastly, the compatibility of such a system with the European and Californian data protection law is analyzed.

I. INTRODUCTION

It is widely acknowledged that the vast majority of B2C online interactions exploit users' profiling and that the "digital footprints" of individuals are employed as essential tools for

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elaborating and delivering products and services on the web.[1] As people unconsciously operate as "informative agents", they constantly share information via their online activity, as well as in their interaction with IoT products, and wearable devices: hence, with technology facilitating the free flow of information, the scale of the collection and sharing of personal data has increased exponentially.

As a result, users' data analysis is nowadays a fundamental resource for web operators and platforms, and being able to obtain, process (and sell) information is one of the main drivers for economic success in the digital environment. Alongside personal data becoming economically valuable assets, also comes the increased exposition of users to requests to provide information when they surf the internet, and the risks of data being misused by data processors and controllers.[2]

The joint outcome of these two aspects is, indeed, that users are oftentimes unaware of how their personal information is acquired, and then managed, by companies. The advent of digitalization entails, therefore, a growing risk, that citizens are deprived of control and lack awareness regarding which information about them is available on the web, as an inner corollary of computerization.

Against the wide-spreading feeling of disorientation and disempowerment emerging as a result of the structural power asymmetry created by digital infrastructures,[3] privacy and data protection law emerged as cornerstones of the regulation of the information society, operating as major tools to enhance individuals' protection and to ensure an effective oversight on information detained by third parties.

Whereas privacy has traditionally been seen as the "right to be let alone",[4] operating as a restricting tool against unwanted intrusion of individuals' private sphere and as a pre-condition to the exercise of fundamental rights, data privacy law aimed at further strengthening the effective (and, to a certain extent, proactive) power of individuals over intensive data collection and processing: in other terms, protecting the right of individuals to control their analogical and digital identities entirely.[5]

Historically, this trend can be traced (at least) back to the early 70's, with the first strand of legal scholarship pointing out how computers and large databases could introduce new risks

[1] *Inter alia* see I. Domurath, *Technological Totalitarianism: Data, Consumer Profiling, and the Law* in L. de Almeida, M. Cantero Gamito, M. Durovic and K. Purnhagen (eds) *The Transformation of Economic Law: Essays in Honour of Hans-W. Micklitz*, Hart, 2019, 66.
[2] R. Calo, *Digital Market Manipulation*, in 82 George Wash Law Rev, 2013, 995.
[3] See L.A. Bygrave, *Data Protection Law: Approaching Its Rationale, Logic and Limit*, Kluwer, 2002, 117.
[4] S.D. Warren; L.D. Brandeis, *The Right to Privacy*, in *Harvard Law Review*, 1890, Vol. 4, No. 5, 193-220.
[5] G. Gonzales Fuster, *The Emergence of Personal Data Protection as a Fundamental Right of the EU*, Springer, 2014.

related to data processing for users; in Europe, the issue led to an early set of national laws and court decisions[6] establishing an individual right to informational self-determination, incompatible with a society where citizens do not know who knows what about them.

Yet, it cannot be doubted that contemporary technologic developments further augment the need for data protection: with the protection of personal data being identified as a fundamental right by Art. 8 of the Charter of Fundamental Rights of the European Union (2000/C 364/01)[7], individuals have been conferred dedicated rights in relation to the legal protection of their personal data and information, being therefore qualified as "data subjects".

II. DATA SUBJECTS' RIGHTS AND THE INFORMATIONAL PARADIGM

In the European Union, the qualification of an individual as a data subject represents the normative basis for the application of the set of rights currently awarded by the General Data Protection Regulation (Regulation 2016/679/EU, hereafter, GDPR): while being heterogeneously structured, the common trait of these entitlements lies in the assumption that, over digital-interactions, users are generally deprived of a satisfactory level of knowledge regarding the acquisition and processing of their data: therefore a substantive compensation of the power and information asymmetry existing between them and their counterparties is necessary in order to allow them to make punctual informed decisions on whether to provide consent to data-related practices[8] and to monitor that the data processing is conducted according to their will.

Accordingly, data subjects' empowerment measures operate through the award of *ex ante* and *ex post* rights, providing users with a set of powers to exercise before and after the data processing starts: this is functional to enable individuals' control over information throughout the whole personal data's lifecycle; some of the rights awarded to data subjects are prerequisites to others: for example, the right to access constitutes a pre-requisite to the

[6] E.g. in Germany see BVerfG, decision 15. December 1983 - 1 BvR 209/83 -, Rn. 1-215; also, Swiss Federal Court, 2019, BGE 146 I 11; Swiss Federal Supreme Court, 2017, BGE 143 I 253; Supreme Court of the Czech Republic, order of 12 December 2012, file no. 30 Cdo 3770/2011; Mosley v. United Kingdom, judgment of 10 May 2011, no. 48009/08, complaints valid September 15, 2011; European Court of Human Rights, judgment of 24 June 2004, no. 59320/00, Hannover v. Germany; and judgment of 31 January 1995, no. 15225/89, Friedl v. Austria.

[7] "(1) Everyone has the right to the protection of personal data concerning him or her. (2) Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified".

[8] See G. Gonzales Fuster, *How Uninformed is the Average Data Subject? A Quest for Benchmarks in EU Personal Data Protection*, in Revista de Internet, Derecho Y Politica, 2014, 9.

(different) right to the rectification of incomplete or untruthful data.[9] In addition, all data subjects' rights are to be interpreted in light of the general principles of transparency and fairness present in the GDPR,[10] and are implemented with the observations and considerations operated by the Court of Justice of the European Union.

Consistently with the abovementioned belief, that users' vulnerability is essentially due to the information gap they suffer from in their interaction with professional counterparties, data subjects' rights are mostly communication-based and inspired to an overall duty to enhance transparency and comprehensibility: accordingly, the General Data Protection Regulation requires information to be concise, transparent, intelligible, and expressed in an easily accessible form, using clear and plain language.[11]

In order to substantiate this claim into properly intended standards, data protection rules (before and) within the GDPR have drawn contributions, amongst others, from sociology, anthropology, economics and marketing. In addition, EU institutions increasingly engaged in attempts to encompass emerging empirical and theoretical findings in their regulatory processes and to accordingly shape the modes of users' rights in their interactions with business operators.

Such an interdisciplinary approach is particularly significant in this field, given the inherent social dimension of privacy: the consequences that digital media and the big data market have on individuals, their identity and anonymity, the transformation of social relationships, justice and equality, for democratic political procedures and for society in general all play a distinct role in the debate about the development of data protection law.[12]

Considering these aspects, the importance of privacy has mostly been justified by the individual interests and rights it protects, such as informational self-determination and autonomy;[13] it is, therefore, not surprising that a central role in constructing privacy and data protection law has been played by decision-making studies following the neoclassical approach.[14]

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[9] See European Court of Justice, Case C-454/16, Peter Nowak v Data Protection Commissioner, EU:C:2014:317; Case C-73/16, College van burgemeester en wethouders van Rotterdam v Mee Rijkeboer, EU:C:2009:293.

[10] European court of justice, Case C-49/17, Fashion ID GmbH & CoKG v Verbraucherzentrale NRW eV, EU:C:2019:629, 102.

[11] See Art. 12. GDPR.

[12] B. Roessler D. Mokrosinska (eds), *Social Dimensions of Privacy Interdisciplinary Perspectives*, Cambridge University Press, 2015, *passim*.

[13] D. Solove, *Understanding Privacy*, Harvard University Press, 2008.

[14] *Ex multis* A. Acquisti, C. Taylor, and L. Wagman, *The Economics of Privacy*, in Journal of Economic Literature, 2016 54 (2): 442-92.

Following the well-established concept of individuals as *homini oeconomici*[15] and the expected utility theory for choices under certainty,[16] data protection has long been considering individuals as rational entities able to process the information at their disposal to reach logical conclusions and pursue their priorities.[17] As a consequence, users' empowerment heavily relied on employing disclosures, which are seen as the main tool to overcome the information asymmetry lying at the core of exploitation by professional counterparties.[18]

Even if the disclosure is not the only form of users' protection, operating *inter alia* alongside supervisory and structural obligations (such as the rules on Privacy by Design and by Default[19]), informational duties are still a primary mode of regulation.

Besides the influence of the neoclassical theory, several additional reasons can be identified to justify the primacy of disclosure obligations as regulatory tools. It has been observed, for example, that disclosure is a (relatively) low-cost form of intervention and that it is also a "transparent" one for all the parties involved: *ex ante* disclosure rules are prompt to enforce for supervisory authorities and, at the same time, allow companies to clearly identify whether they are complying or not with the relevant provisions. Lastly, it is often defended that disclosure obligations enjoy some sort of "bi-partisan" support, as they strike a convenient balance between paternalist and liberalist approaches to market regulation.[20]

III. THE CRITIQUES TO THE INFORMATIONAL PARADIGM. AN OVERVIEW

Against this background, it is well-known that a vast amount of research (and behavioral studies more in general) defends that individual decision-making often deviates from the neoclassical paradigm[21] and provides evidence of the dynamics of online interaction that are in contrast with the rigidity of the conventional economic theory of individual behavior, especially in cases involving standard form contracts.

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[15] J.S. Mill, *On the Definition of Political Economy, and on the Method of Investigation Proper to It*, in London and Westminster Review, 1836; see also C.H. Hinnant, *The invention of homo oeconomicus: A reading of John Stuart Mill's "on the definition of political economy"*, in Prose Studies, 1998, 21, 3, 51-68.

[16] J. Von Neumann, O. Morgenstern, *Theory of Games and Economic Behavior*, Princeton University Press, 2013 (1st ed. 1944); see, *amplius,* J. Levin., *Choices Under Uncertainty*, 2006, at https://web.stanford.edu/~jdlevin/Econ%20202/Uncertainty.pdf, accessed on 12 May 2022.

[17] S. Selikoff, *Understanding Neoclassical Consumer Theory*, 2011, at http://www.samselikoff.com/writing/economics/understanding-neoclassical-consumer-theory/, accessed on 12 May 2022. See also R.A. Epstein, *The Neoclassical Economics of Consumer Contracts*, in 92 Minnesota Law Review, 2007, 803; T. Zalega, *Consumer and Consumer Behaviour in the Neoclassical and Behavioural Economic Approach*, in 4 Konsumpcja I Rozwój, 2014, 9, 64-79.

[18] P.D. Lunn, *Are Consumer Decision-Making Phenomena a Fourth Market Failure?,* in Journal of Consumer Policy, 2015 .

[19] L. Bygrave, *Data Protection by Design and by Default: Deciphering the EU's Legislative Requirements,* in Oslo Law Review, Volume 4, No. 2, 2017.

[20] O. Ben-Shahar, C. Schneider, *The Failure of Mandated Disclosure*, in 159 University of Pennsylvania Law Review, 2011, 647 681-684.

[21] *Ex multis* C. Sunstein, Behavioural Law & Economics, Cambridge University Press 2000.

Accordingly, studies on information overload; on the influence and effects of the no-reading problem, and the framing and saliency bias in information provision show the inner weakness of – traditionally intended – information duties as a means to ingenerate genuine awareness[22] and, more specifically, as viable strategies for preserving users' control regarding the collection and processing of their data.

Data protection law has not been immune to these developments, and regulatory initiatives tried to accommodate behavioral findings within the structure of the GDPR, mainly by rethinking the traditional approach to the principle of transparency and promoting a substantive approach to disclosure as a means to stimulate informational self-determination. This can be observed, for instance, in the provisions of the GDPR mandating for information and communications regarding data processing to be easily accessible and easy to understand, and that clear and plain language is used for such disclosure.[23]

The growing attention to ensuring the awareness of consent – both by express statutory provisions[24] and by means of judicial decisions rendered by Member States' authorities and the European Commission[25] - further supports these considerations.

IV. The unspoken axiom of the "a-relationality" of decision-making

Despite these advancements, axioms that can be traced back to the conceptual underpinnings behind the neoclassical model seem to be still present and untouched in the GDPR structure. In particular, it should be observed that an underlying assumption of a-social individualism still permeates the structure of data subjects' rights: individuals' desires and preferences for privacy and data management are deemed to be essentially endogenous: allegedly, an individual's choice regarding how to manage her privacy settings will depend only on her

[22] I. Ayres, A. Schwartz, *The No-Reading Problem in Consumer Contract Law*, in Stanford Law Review, 2014, 66(3) pp. 545-609; Ben-Shahar (n 20); F. Cheng, C. Wu, *Debiasing the framing effect: The effect of warning and involvement*, in 49 Decision Support Systems, 3, 2010.

[23] Art. 5(1)(a) and Recital 58 GDPR.

[24] See Art. 7 GDPR, further discussed in Section 6.

[25] See, Autorità Garante della Concorrenza e del Mercato, 'Sanzioni per 20 milioni a Google e ad Apple per uso dei dati degli utenti a fini commerciali (PS11147)', 16 November 2021, https://www.agcm.it/media/comunicati-stampa/2021/11/PS11147-PS11150; Bundeskartellamt, decision no B6-22/16 of 6 February 2019.OLGDüsseldorf,26 Aug. 2019, VI-Kart 1/19 (V), Bundeskartellamt c. Facebook; Bundesgerichtshof, 23 Jun 2020, KVR 69/19; Datatilsynet, 'Grindr LLC (Administrative Fine)' (2021) https://www.datatilsynet.no/contentassets/8ad827efefcb489ab1c7ba129609edb5/administrative-fine---grindr-llc.pdf; ECJ, Case 673/17 Bundesverband der Verbraucherzentralen und Verbraucherverbände - Verbraucherzentrale Bundesverband eV v Planet49 GmbH, ECLI:EU:C:2019:801. For a comparative analysis of these decisions and their implications see A. Davola, G. Malgieri, *Data-Powerful*, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4027370 (last accessed 12 May 2022).

personal preferences and (at most) by the quality of information disclosed by the counterparty in compliance to the GDPR. According to this view, users' choices are not supposed to be affected in any way by their ability to put the information "in context", which might include the observation of others' behaviors as well: the mere provision is already sufficient for reaching optimal decision-making.

Symptomatic of this conception of individual decision-making are, for example, the rules set in Articles 13 and 14 GDPR[26], as well as the notion of specific, informed, and unambiguous consent as developed in Recital 32 of the Regulation:[27] all these provisions ultimately rely on the idea of users operating as individual deciders, who can elaborate information and make choices without a need for contextualization.

As a consequence, data protection and privacy scholars take into account the direct interaction between data processors and data subjects only; in addition, this approach does not change even when the modes of intervention depart from the traditional approach to regulation and disclosure - for instance when debiasing and nudging strategies are employed.[28]

Even those critiques recently addressing the structure of the data protection framework in the European Union, and arguing in favor of the introduction of some sort of "social" components in the consideration of decision-making's nature do not seem to contend with the ultimate individualized nature of this process: for example, remarks raised on the basis of game-theory analyses[29] criticize consent as a meaningful tool of protection given the structural cross-processing of personal data by companies and observe that denying consent is generally a non-profitable strategy to be followed (e.g. considering what other individuals might do in response to our conducts). Still, even this perspective is ultimately focused on the strategic analysis of other data subjects' expected behavior, rather than on the actual observation of peers' acting as a determinant for choice-making.

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[26] Respectively regulating "Information to be provided where personal data are collected from the data subject" and "Information to be provided where personal data have not been obtained from the data subject".

[27] "Consent should be given by a clear affirmative act establishing a freely given, specific, informed and unambiguous indication of the data subject's agreement to the processing of personal data relating to him or her, such as by a written statement, including by electronic means, or an oral statement. This could include ticking a box when visiting an internet website, choosing technical settings for information society services or another statement or conduct which clearly indicates in this context the data subject's acceptance of the proposed processing of his or her personal data. Silence, pre-ticked boxes or inactivity should not therefore constitute consent. Consent should cover all processing activities carried out for the same purpose or purposes. When the processing has multiple purposes, consent should be given for all of them. If the data subject's consent is to be given following a request by electronic means, the request must be clear, concise and not unnecessarily disruptive to the use of the service for which it is provided."

[28] C. Jolls, C.R. Sunstein, *Debiasing through Law*, in The Journal of Legal Studies, 2006, vol. 35, no. 1, 199–242.

[29] Y. Hermstrüwer, *Contracting Around Privacy. The (Behavioral) Law and Economics of Consent and Big Data*, in JIPITEC, 2017.

Also, scholarship who argues in favor of the promotion of a "relational" turn for privacy and data protection:[30] still – and as much as desirable it might be – this approach merely refers to the conceptual consideration of data protection as a social (rather than an individual) value, with specific regards to the societal consequences that can arise from unlawful data processing. Therefore, in this case, the relationality does not pertain to the users' decision-making but, rather, to the general understanding of the nature of the values protected by data protection and privacy law.

Against this bedrock, we argue that introduction of a model based on s.c. "relational disclosure"— i.e., the creation of a condition in which consumers are able to compare their own privacy terms to those presented to individuals with similar or different characteristics, and the envisaged consequences of those processing— can significantly improve data subjects' awareness and advance their degree of protection.

V. The case for relational disclosure for data acquisition: insights from sociological studies and model

If the idea of a "relational nature" of decision-making ultimately seems to be missing in the legal debate, this conception is not unknown to other fields of research: the analysis conducted by the Swiss sociologist Albert Badura in the late '90 – which then developed in a framework that is nowadays known as Social Cognitive Learning Theory (SCLT)[31] – defend that an essential part of individuals' learning process comes from developing behaviors and cognitive strategies by means of observing others who act in contexts that are similar and different from the ones the subject is experiencing.

Therefore, the question arises: if contextualization of information is a primary determinant of learning in general, is it possible, with specific reference to data protection, to improve the awareness of data subjects' choices (e.g. regarding the provision of the consent) by making individuals able to contextualize the consequences of their choice within the market state and in comparison to their peers, therefore introducing relational element in disclosure?

Moving from the consideration, that the shortcomings affecting consent in data processing cannot be entirely undertaken as long as they are interpreted in their individual dimension

[30] N.M. Richards, W. Hartzog, *A Relational Turn for Data Protection?*, in 4 European Data Protection Law Review 1, 2020.

[31] A. Bandura, *Social foundations of thought and action: A social cognitive theory*, Prentice Hall, 1986; Id. *Social Learning Theory*, Prenctice Hall, 1977.

only, it is reasonable to defend that currently existing, individually segmented disclosure on parameters and determinants for data processing could be integrated by an outcome-oriented disclosure, exploiting elements from legal design[32] and providing relational information to data subjects.

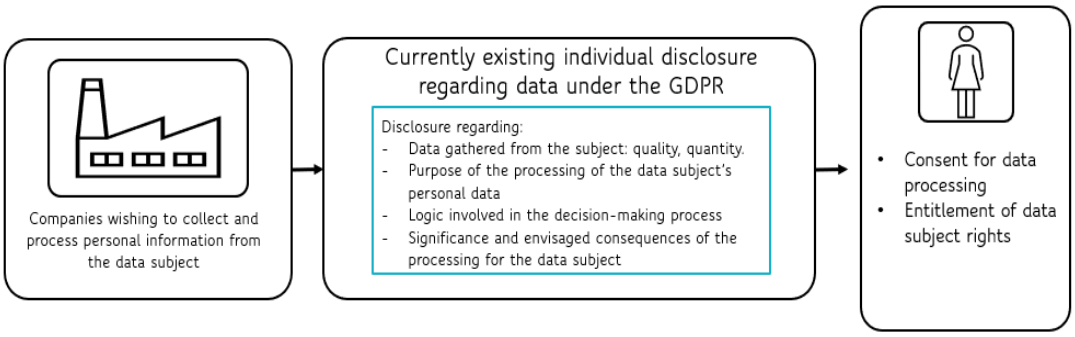
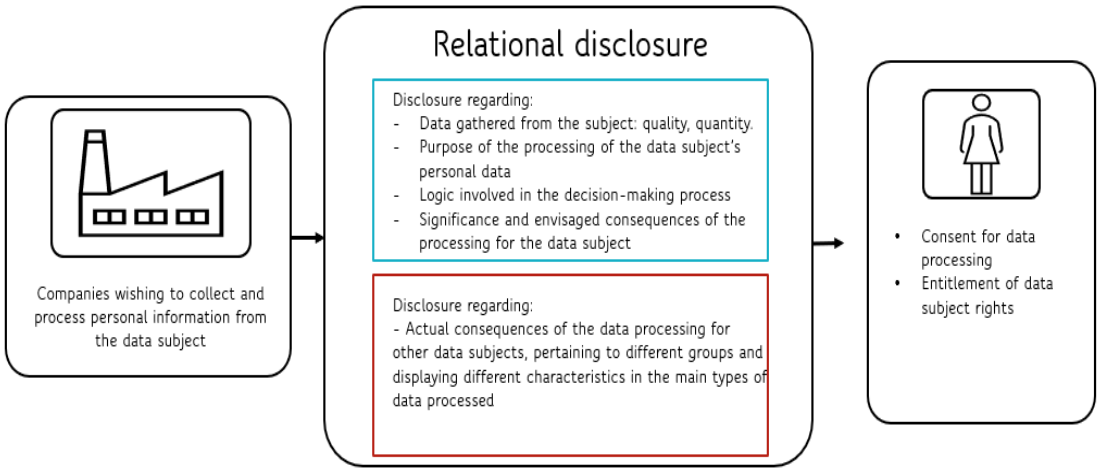


Figure 1 provides a theoretical overview of the traditional, non-relational, regulatory mode of disclosure within the GDPR framework:

As it can be observed, existing information obligations pertain to different aspects involved in the data processing (quantity and quality of the data, storage mechanisms, purpose of the processing and, when specific hypotheses occur – e.g. an algorithmic decision-making system is involved – the logic and the envisaged consequences of the automated processing), which shall be transmitted to the data subject to empower her to properly exercise her consent, as well as the other rights provided by the GDPR. Yet, all those information refers to the individual relationship existing between the data subject and her counterparty, without the first being able to contextualize the statement provided.

On the other hand, *Figure 2* displays a graphical representation of a hypothetical model based on the relational disclosure paradigm:

[32] H. Haapio, M. Hagan, M. Palmirani and A. Rossi, *Legal Design Patterns for Privacy*, in E Schweighofer et al. (eds), *Data Protection / LegalTech. Proceedings of the 21th International Legal Informatics Symposium IRIS 2018*. Editions Weblaw, Bern 2018, pp. 445–450.



A relational disclosure model provides a set of additional obligations, which do not describe aspects of the specific data processing involving the users: in particular, the second block of disclosure mandates to inform the data subject regarding the consequence of data processing for other individuals showing different – and yet, statistically significant – characteristics. This kind of information could be, for example, provided by the companies by extracting historical data about previous processing, in order to illustrate the consequence and outcomes for (in hypothesis) the main demographic group considered, or for subjects displaying characteristics that are deemed essential for the analysis. Considering, e.g., the use of data for advertising purposes, it would be possible for instance to illustrate how key-characteristics displayed by other data subjects impacted on the offerings that were presented to them, or more in general how the different advertisements vary on the basis of specific characteristics of clustered groups considered in the data processing.

VI. Comparative investigation of the normative foundations of a relational disclosure model: considerations on consent amidst GDPR and CCPA

Ideally – and as some empirical investigations already seem to suggest[33] – the introduction of a relational disclosure model could empower users' awareness in providing consent for data processing activities and, subsequently, activating their rights as data subjects.

[33] A. Davola, I. Querci, S. Romani, *No consumer is an island. Relational disclosure as a regulatory strategy to advance consumer protection against microtargeting,* available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4068548 (accessed 12 May 2022); S. Larsson, *Algorithmic governance and the need for consumer empowerment in data-driven markets*, in 7 Internet Policy Review, 2018, 2.

In order for such a system to be introduced, though, its compatibility with current data protection provisions should be first assessed, with specific reference to the rules regulating the provision of consent for data acquisition and processing.

Considering the potential normative foundations of such a claim, the GDPR seems, indeed, to provide a *prima facie* fruitful margin of maneuver: by analyzing the wording present in the provisions existing in the Regulation it is possible to observe, for example, that in those cases in which data processing is based on profiling or implies an automated component, the GDPR mandates data processors and controllers to provide data subjects with specific information about the processing (along with rights to objection and to request for human intervention and for challenging decisions), the logic involved in the decision-making process, and the significance and envisaged consequences for the individual.[34]

As it can be observed, the content of the disclosure operated pursuant to the provision is open-ended, and the quality of the information provided is to be appreciated from a teleological perspective, considering its adequacy to advise the data subject regarding some key aspects of the data processing.[35]

Analogously, the structure of the other rules of the GDPR enlisting data subjects' rights is generally interpreted as functional to enable individuals' effective control over information throughout the whole personal data's lifecycle in light of the general principles of transparency and fairness present in the GDPR,[36] as well as inspired to an overall duty to enhance comprehensibility.[37] These considerations, *inter alia*, inspired those researchers who tried to hypothesize and inspect the existence of a properly intended right to explanation within the GDPR,[38] focusing their investigation on the opportunity for information to promote actual, rather than merely formal, awareness in data subjects.[39]

In the aftermath of the enactment of the GDPR, and in light of the increasing automation of data processing, many debated regarding what constitutes a meaningful, aware, and informed consent according to Art. 5 and if the GDPR also includes an implicit right to an explanation as its intrinsic corollary.[40] As the European Data Protection Board underlined

[34] Art. 22 GDPR

[35] See also P. Hacker, J.H. Passoth, *Varieties of AI Explanations Under the Law. From the GDPR to the AIA, and Beyond*, in A. Holzinger, R. Goebel, R. Fong, T. Moon, K.R. Müller, W. Samek, (eds) xxAI - Beyond Explainable AI. xxAI 2020. Lecture Notes in Computer Science, Springer, 2022.

[36] European court of justice, Case C-49/17, Fashion ID GmbH & CoKG v Verbraucherzentrale NRW eV, EU:C:2019:629, 102.

[37] See abovementioned Art. 12 GDPR.

[38] M. Kaminsky, *The right to explanation, explained,* in 34 Berkeley Technology Law Journal, 2019 1, 189-218.

[39] See also O. Seizov, A. Wulf, J. Luzak, The Transparent Trap. Analyzing Transparency in Information Obligations from a Multidisciplinary Empirical Perspective, in Journal of Consumer Policy, 2019, 42(1), 149-173.

[40] See Kaminsky (n 38).

that consent can be deemed informed when the data subject is provided those "elements that are crucial to make a choice",[41] Art29 Data Protection Working Party further clarifies that the way the information is given plays a crucial role in assessing whether the consent can actually be deemed informed and, subsequently, aware. In particular, the way in which information must be provided to the data subject must be specifically declined on the basis of the context of the provision, in order to always allow for a regular/average user to be able to understand what she is consenting to, and for what purposes.[42]

Whereas such indication is often identified as only referring to the usage of a clear, transparent, and plain jargon in communicating the conditions and relevant elements pertaining to the data processing, it should also be observed that the data subject's understanding is explicitly qualified as "contextual",[43] which subtends the idea that information could be modulated in order to allow the user to compare her condition to her peers, to other data subjects, or to an external dimension more in general, as long as this procedure is functional to promote consciousness in the exercise of her rights.

Interestingly, this functional interpretation of the notion of informed consent is not present in the GDPR only and can be, indeed, observed in other *corpora* outside the European Union as well, therefore identifying some conceptual common ground for policy recommendations. As far as the United States are concerned, it is widely known that a major characteristic of North American jurisdictions lies in the absence of a unitary federal law regulating data protection; rather, currently, several vertically-focused federal privacy laws exist, which take into account data processing and privacy challenges that arise in different fields.

Yet, besides the body of federal law, in recent years a minor number of states (namely, Colorado, California, and Virginia) have been introducing harmonized privacy laws, that are meant to operate horizontally. Amongst national laws, the recently enacted California Consumer Privacy Act (CCPA) is of particular relevance: the CCPA was first introduced in 2018, and in the subsequent years has been significantly amended to take into account technological developments and new risks emerging from intensive data processing activities, with the last step of this process being represented by the California Privacy Rights Act (CPRA) of 2020, which will take effect from the beginning of 2023 onwards.Differently from

[41] EDPB, Guidelines 05/2020 on consent under Regulation 2016/679, 4 May 2020, available at https://edpb.europa.eu, last accessed on 12 May 2022.
[42] Art. 29 DPWP, Opinion 15/2011 on the definition of consent, Adopted on 13 July 2011 01197/11/EN WP187, available at https://ec.europa.eu/justice/article-29/documentation/opinion-recommendation/files/2011/wp187_en.pdf, last accessed on 12 May 2022.
[43] Art. 29 DPWP, Opinion 15/2011 on the definition of consent, p 35.

the GDPR, the CCPA and the CPRA do not require explicit *ex ante* consent by users in order for their data to be processed by a business operator: indeed, Californian law only requires a privacy notice to be made available informing consumers of their right to opt-out from data collection, and eventually correct inaccurate data.

Still – and considering that an evaluation regarding whether or not the actual opt-out system regulated by the CCPA establishes a robust means of protection for American citizens is beyond the scope of this paper - it shall be observed that under the disclosure requirements set by the CCPA consumers must still receive notice "as to the categories of personal information to be collected and the purposes for which the categories of personal information shall be used".[44] As no indication is provided regarding the specific format of the disclosure, it is not implausible to hypothesize the utilization of a relational model in an *ex post* format as well; this solution might even operate with major effectiveness if the consequences of the data processing for the users are actually displayed in comparison with the outcomes of the processing for other individuals.

Also, given the current framework of both EU and US data protection regulations, it is relevant to observe that the introduction of a system of relational disclosure might operate as a resource to harmonize cross-country data processing best practices, operating a step towards the establishment of common standards for advancing users' protection, which currently represents a major challenge for the EU-US relationship in the aftermath of the Schrems judgments.[45]

VII. PRELIMINARY CONCLUSIONS AND FORTHCOMING ANALYSES.

Whereas the rethinking of disclosure models in order to empower users in exercising their consent for data acquisition and processing constitutes an already rather robust strand of research, European law still rests on the implicit assumption that consent to data processing (and, more in general, decision-making) is a purely individual choice. Accordingly, regulatory interventions – and the GDPR itself – mainly focus on how to overcome informational asymmetry by providing the user with additional information about her relationship with the professional counterparty. Even those studies that criticized this approach, addressed the shortcomings of the information paradigm as a whole, without questioning the individual nature of decision-making as a matrix for developing users' rights.

[44] Cal. Cov. Code §178.100(b)

[45] Case C-362/14, Maximillian Schrems v Data Protection Commissioner [2018] ECLI:EU:C:2015:650 and case C-311/18, Data Protection Commissioner v. Facebook Ireland Ltd, Maximillian Schrems (Schrems II) [2020], ECLI:EU:C:2020:559.

Against this view, the research defends that prompting people to reflect on a contextual dimension of data processing—by means of a simple framing intervention, which is here presented in its theorical structure—could boost their awareness and ability to manage their privacy preferences.

These considerations resonate with the recent findings that interventions based on relational disclosure – such as studies investigating the functioning and effectiveness of recommending systems in the streaming services market[46] – can help to increase people's subjective understanding regarding data processing activities, as well as the impact on their willingness to disclose personal data.

On the basis of this preliminary theoretical framing, future research should first and foremost explore the adaptability of contextual disclosures to heterogeneous frameworks for data processing that can be observed in the digital environment: different services might indeed require different modes of disclosure, to be developed according to the relational paradigm. At the same time, and building on the foundations of Social Cognitive Learning Theory,[47] additional analyses should inspect the cognitive mechanisms underlying the functioning of relational decision-making. Lastly, in order to move from conceptual and experimental evidence to an actual policy proposal, further investigations – beyond the overview provided in this paper – exploring the regulatory margins for such a system to be implemented seems advisable.

Waiting for these developments, our research attempts to shed a light – considering evidence emerging from studies and experiments – on the fact that consent in data processing is not only (and often) partially irrational, but also inherently relational, in order to provide a first conceptual basis that can inform future interventions aiming at enhancing data subjects' understanding regarding the modes and functioning of data processing phenomena

[46] See A. Davola, I. Querci, S. Romani (n 33).
[47] See *supra* (n. 31).

COMPARING THE EFFICIENCY OF REMEDIES FOR ENVIRONMENTAL HARM: US V. EU

Francesca Leucci[1]

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*One central question in the economics of torts is: what is the optimal level of damages? This paper focuses on the issues of inaccuracy that may occur when dealing with environmental damage assessments. Given the nature of loss, the assessment of environmental harm raises several issues of inaccuracy that scholars largely investigated. Traditionally, they deal with the assessment of the extent of the injury, the causal links and the specific characteristics of the considered remedy. In the wake of this scholarship, the paper looks closer at the existing remedy of restoration in order to determine whether it is "*on average accurate*" and it draws on two case studies (US and EU) in order to test whether the law is in line with the economic theory.*

I. THE ECONOMIC THEORY OF DAMAGES

In order to have optimal liability rules, damages awards should be efficient[2]. More specifically, damages (the magnitude of liability[3]) should be such that the parties would be correctly induced to minimize the total social costs of accidents (sum of the costs of care, the expected damage and the administrative costs involved in the application of the law)[4]. This economic goal needs to be kept in mind when determining the "adequate" amount of damages[5]. In other words, the goal in economics is not just to compensate the victim (return the victim to the *status quo ante*)[6], but to minimize the risk of accidents. So, one central question in the economics of torts is: what is the optimal level of damages?

A largely agreed conclusion is that there is no one optimal rule for all situations[7]. Indeed, the efficiency of damage awards necessarily relies on the specificities of the ruled situation.

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[2] J. Arlen, *Tort Damages*, in B. Bouckaert, G. de Geest (eds.), *Encyclopedia of Law and Economics* (Cheltenham: Elgar Publishing, 1999).

[3] S. Shavell, *Foundations of Economic Analysis of Law* (Cambridge, MA: Harvard University Press, 2004), 224.

[4] The central goal of tort law from an economic perspective is indeed to prevent accidents, so that accident costs are minimized. See G. Calabresi, *The Cost of Accidents: A Legal and Economic Analysis* (New Haven, CT: Yale University Press, 1970); S. Shavell, *Strict Liability Versus Negligence,* in 9(1) J. Leg. Stud. 1 (1980); Shavell, *supra* note 2; R. Posner, *Economic Analysis of Law* 14th ed. (New York, NY: Aspen, 2014).

[5] M.G. Faure, L.T. Visscher, *The Role of Experts in Assessing Damages - A Law and Economics Account*, in 3 Eur. J. Risk. Reg. 376 (2011).

[6] *Ibid.,* footnote 7 at 378.

[7] Arlen, *supra* note 2, at 682.

In view of that, Arlen identified five main criteria[8] to analyze these situations: 1) harm to replaceable versus irreplaceable goods; 2) unilateral versus bilateral risk; 3) strict liability versus negligence; 4) individual versus vicarious liability; 5) further issues: information costs, uncertainty, judgement-proof problems. For instance, current liability rules for replaceable losses are more likely to be optimal compared to liability for irreplaceable losses. Moreover, law and economics scholars agree that under a strict liability regime economic efficiency requires that the injurers pay for all the losses they caused[9]. In other words, full compensation of victims is merely a consequence of requiring injurers to pay the full cost of accidents. Therefore, as a general principle, damages should ensure "full" compensation not as a goal but as a means to achieve optimal prevention[10].

Another important principle highlighted by law and economics' scholars is that, when there are difficult-to-measure damages, the estimation should not grossly and systematically deviate from accidents' social costs. In fact, both systematic underestimation or overestimation may bring to too low care and too much activity, or to the opposite situation.

However, accuracy in the assessment involves administrative costs (or tertiary costs[11]) and it is important to set the level of damages so that the increase in tertiary costs is outweighed by the benefits (avoided expected loss). For instance, abstract assessments are arguably advantageous from an economic perspective since they allow to save costs, provided that they are a good approximation of the true magnitude of damage[12]. Moreover, since the injurer takes decisions on care and activity *ex ante* (based on the "expected" losses), more accuracy *ex post* will not necessarily result in optimal incentives. To say it better, (slightly) inaccurate assessments have to be considered efficient to the extent that losses are "on average" correct. Inaccuracy would instead bring to suboptimal incentives if specific and large components of the losses are systematically included or excluded from damage awards.

Nonpecuniary losses, such as personal injuries or environmental harms, are components of losses which are more difficult to assess and that can therefore sharpen issues of

[8] *Ibid.*, at 682.

[9] M. Landes and R. Posner, *The Economic Structure of Tort Law* (Cambridge, MA: Harvard University Press, 1987), 987; A. Polinsky, *An Introduction to Law and Economics* (Boston, MA and Toronto: Little, Brown & Co, 1983), Posner, *supra* note 3; S. Rose-Ackerman, *The Simple Economics of Tort Law: An Organizing Framework*, in 2(1) Eur. J. Pol. Econ. 91 (1986). Calabresi differs from the later scholars since he requires accuracy in order to choose among remedies and identify a fair or just compensation of victims. Calabresi, *supra* note 4.

[10] Although full compensation in economics is required only for strict liability rules. See on this point R. Cooter, *Prices and Sanctions*, in 84(6) Col. L. Rev. 1523 (1984).

[11] G. Calabresi, *supra* note 4. Talking about transaction costs would instead be not exact since in accidental relationships there is no transaction occurring between injurers and victims.

[12] For legal examples of this efficient assessment of damages, see M. Faure, L. Visscher, *supra* note 5, at 379.

inaccuracy[13]. Apparently, many legal systems are inefficient because nonpecuniary damages are systematically underestimated, hence determining a reduced internalization of accidents' social costs[14]. For example, it has been demonstrated that personal injury damage should take into account expected life and salary expectancies[15]. Also, a good approximation of the value of life can be achieved by looking at decisions on health and safety[16]. However, even "limiting" damages to the real losses might turn out to be inefficient if the probability of detection is lower than 100%[17]. Considering that, scholars of law and economics show how following economic insights can help achieve more correct damage assessments in view of improving the deterrent effect of liability laws. Another aspect that has been emphasized in this scholarship is the contribution of experts to the judicial decision-making. Indeed, in case of difficult-to-value damages, experts can help achieve the economic goal of liability (minimizing social costs) by reducing information costs given their superior knowledge[18]. Experts might even help the judge to achieve more accurate and independent assessments. Therefore, as a general principle it would make economic sense to have experts for extremely difficult damage assessments.

Having reviewed the basic law and economic scholarship in the domain of damage calculation, this paper looks closer at the existing remedy of restoration for environmental damages in order to determine whether it is "on average" correct. The examination draws on two case studies (US and EU) to test whether the law is in line with the economic theory of remedies. The following paragraphs will thus illustrate the US law and practice on natural resource damage assessment and, then, the EU legal framework which largely relies on the US. Bearing the two case studies in mind, the last two paragraphs will compare existing remedies and conclude as to the efficiency of restoration from the perspective of law and economics.

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[13] M.G. Faure, *Economic Analysis of Environmental Law: An Introduction*, in 1 Économie publique/Public economics [online] (2001).

[14] Law and economics scholars largely agree that accident law tends to compensate for the objective value of nonpecuniary losses, whereas subjective losses are neglected and they may lead to a serious underestimation of the harm if greater than objective losses.

[15] R. Lewis *et al.*, *Court Awards of Damages for Loss of Future Earnings: An Empirical Study and an Alternative Method of Calculation*, in 29(3) J. L. & Society 406 (2002).

[16] For references on the broad literature on the Value of Statistical Life, see M. G. Faure, L. T. Visscher, *supra* note 5, at 383.

[17] A.M. Polinsky, S. Shavell, *Punitive Damages: An Economic Analysis*, in 111(4) Harv. L. Rev. 869 (1998).

[18] This is due to the specialization of the expert and the advantage of the repeated player. See: M. Galanter, *Why the 'Haves' Come Out Ahead: Speculations on the Limits of Legal Change*, in 9 L. & Society Rev. 95 (1974).

II. THE US LAW ON NRDA

Among the most interesting regional experiences on environmental damage assessment, the US is surely the first worth examining.

The legislative history of "natural resource damage assessment" (NRDA)[19] in the US dates back to the Trans-Adriatic Pipeline Authorization Act of 1973[20]. This act for the first time empowered public trustees to sue compensation for damage caused by oil spills. The so-called Superfund legislation (the *Comprehensive Environmental Response, Compensation and Liability Act,* CERCLA of 1980[21]) extended this possibility to the case of environmental damage caused by the release of hazardous substances (in addition to the discharge of oil). If public trustees follow the damage assessment procedures set forth by the law, they are granted a rebuttable presumption in litigation[22].

Before delving into damages, it is helpful to point out that in order to have an "injury" under this regime, the law requires a "*measurable adverse change, either long or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a discharge of oil or release of a hazardous substance, or exposure to a product of reactions resulting from the discharge of oil or release of a hazardous substance*"[23]. After the occurrence of an injury, trustees may recover damages, intended as the amount of money sought as compensation for the injury[24] and they can encompass:

1) damages calculated "*based on injuries occurring from the onset of the release through the recovery period, less any mitigation of those injuries by response actions taken or anticipated, plus any increase in injuries that are reasonably unavoidable as a result of response actions taken or anticipated*"[25];

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[19] "Natural Resource Damage Assessment" can be defined as the process of collecting, compiling and analyzing information, statistics, or data through prescribed methodologies to determine damages for injuries to natural resources (43 CFR § 11.14 - Definitions).

[20] K. Smith, *Natural Resource Damage Assessments and the Mineral Sector: Valuation in the Courts*, in E. M. Wade (ed.), *Environmental Economics and the Mining Industry* (New York: Springer Science, 1994), 15.

[21] 42 USC. 9601.

[22] 43 CFR § 11.10. "*Rebuttable presumption means the procedural device provided by section 107(f)(2)(C) of CERCLA describing the evidentiary weight that must be given to any determination or assessment of damages in any administrative or judicial proceeding under CERCLA or section 311 of the CWA made by a Federal or State natural resource trustee in accordance with the rule provided in this part.*" (43 CFR § 11.14).

[23] 43 CFR § 11.14. As a further clarification, the terms "injury", "loss" and "destruction" shall be regarded as synonyms.

[24] *Ibid.*

[25] In addition to this head of damages, the "*compensable value*" is the amount of money needed to compensate the loss of services provided by the injured natural resources between the time of the discharge or release of the hazardous substance and the time for the resources to be fully returned to their baseline conditions. "*The compensable value can include the economic value of lost services provided by the injured resources, including both public use and nonuse values such as existence and bequest values. Economic value can be measured by changes in consumer surplus, economic rent, and any fees or other payments collectible by a Federal or State agency or an Indian tribe for a private party's use of the natural resources; and any economic rent accruing to a private party because the Federal or State agency or Indian tribe does not charge a fee or price for the use of the resources. Alternatively, compensable value can be determined utilizing a restoration cost approach, which measures the cost of implementing a project or projects that restore, replace, or acquire the equivalent of natural resource services lost pending restoration to baseline".*

2) the costs of "*emergency restoration*" under 43 CFR § 11.21;

3) the "*reasonable and necessary costs of assessment*", including the costs of the preassessment and assessment plan, administrative costs and expenses necessary for, and incidental to, the assessment, assessment planning, restoration, rehabilitation, replacement, and/or acquisition of equivalent resources planning;

4) interests on the recoverable amounts[26].

The exact methodologies to assess natural resource damage have been illustrated by the US Department of Interior (hereinafter, DOI) through some regulations on the implementation of this legislation[27]. In these guidelines, the DOI referred to: market price, appraisal, factor income, travel cost, hedonic pricing, benefits transfer, conjoint analysis, habitat equivalency analysis, resource equivalency analysis, random utility modelling[28]. Further methodologies are also acceptable, provided that they determine compensable value according to the willingness to pay for the lost service or with the cost of a project that restores, replaces or acquires services equivalent to the lost services pending restoration to baseline in a cost-effective manner[29]. The DOI also provided some binding criteria for authorized officials to choose among the techniques[30]:

(i) methodologies should be feasible and reliable for a particular incident and type of damage to be measured;

(ii) methodologies should be performed at a reasonable cost;

(iii) methodologies should avoid double counting or they allow for removing it in the final calculation;

(iv) methodologies should be cost-effective.

These criteria need to be explained. Feasibility means that the chosen methodology is capable of providing information of use in determining the restoration cost or the compensable value appropriate for a particular natural resource injury, but also that the methodology addresses the particular injury and service losses. Whereas, reliability refers, alternatively, to the availability of peer review or that it receives "*general or widespread acceptance*" by experts in the field, to the fact that its application is subject to standards or

26 43 CFR § 11.15.
27 43 CFR Part 11 § 11.83 (Code of Federal Regulation – Title 43 Public Lands: Interior – Part 11: Natural Resource Damage Assessment - § 83 Damage determination phase – implementation guidance).
28 43 CFR § 11.83 – Damage determination phase – use value methodologies - c) compensable value 2) valuation methodologies.
29 *Ibid.*
30 43 CFR § 11.83 – Damage determination phase – use value methodologies – a) General (3).

that its assumptions are supported by a "*clearly articulated rationale*". Specifically regarding "*cutting-edge methodologies*", they should be "*tested and analyzed sufficiently, so as to be reasonably reliable*"[31]. Cost-effectiveness should be interpreted as it follows: "*when two or more activities provide the same or a similar level of benefits, the least costly activity providing that level of benefits will be selected*"[32]. Furthermore, costs are reasonable under US law on NRDA "*when: the injury determination, quantification, and damage determination phases have a well-defined relationship to one another and are coordinated; the anticipated increment of extra benefits in terms of the precision or accuracy of estimates obtained by using a more costly injury quantification, or damage determination methodology are greater than the anticipated increment of extra costs of that methodology; and the anticipated cost of the assessment is expected to be less than the anticipated damage amount determined in the injury quantification and damage deetermination phases.*"[33]. Lastly, double counting means that a cost or a benefit has been calculated more than once in the damage assessment[34].

In 1990, the Oil Pollution Act (OPA) was adopted in reaction to the Exxon Valdez oil spill to ensure compensation for oil pollution and to allow the Federal State to directly manage clean-ups. Like in CERCLA, The scope of natural resource damages under the OPA encompasses: *"(A) the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of, the damaged natural resources; (B) the diminution in value of those natural resources pending restoration; plus (C) the reasonable cost of assessing those damages, restoration and interim losses caused by an injury which occurs in US waters or on US shorelines."*[35].

Lastly and more importantly, the US legislation provides, at least in theory, compensation for both the loss of use value of natural resources and non-use or passive value (existence value and bequest value) of nature. However, as it will be further clarified, no clear guidelines on how to estimate nonuse values have been set forth[36]. Therefore, whether these provisions practically lead to the full internalization of social costs of environmental accidents has to be ascertained by looking at the case law. The following section wishes to shed a light on this.

[31] 43 CFR § 11.83 – Damage determination phase – use value methodologies – a) General (4).
[32] 43 CFR § 11.14 - Definitions.
[33] *Ibid.*
[34] 43 CFR § 11.84.
[35] 33 USC Ch. 40 § 2706 (d) – Natural Resources – Measure of damages.
[36] *General Electric,* 128 F.3d (D.C. Cir. 1997), par. 778.

III. THE US PRACTICE ON NRDA

In order to understand the development of the US case law on natural resource damage assessment, a previous clarification needs to be done. While the above-mentioned laws were approved (especially, CERCLA in 1980), environmental economists were conducting research on how to value the environment. Particularly, in the late 1980s they had already developed both market-valuation techniques and non-market valuation techniques. The latter aimed at assessing the value of non-market goods (environmental goods) which, in spite of the absence of market prices, have nevertheless value because of their direct use (use-values) or their mere existence (nonuse-values). Especially the contingent valuation technique was receiving much attention in that time because it seemed to be the only way to calculate the non-use value and to get closer to the total value of the environment.

The first landmark case in the US came therefore in the midst of the new adopted laws on NRDA and the findings in the field of environmental economics. Just four months after the Exxon Valdez oil spill, the famous *Ohio v. DOI decision*[37] came in the spotlight to trigger the (already lively) debate on the valuation of nature. In the latter case, Ohio and other States challenged the new regulations issued by the US Department of Interior (DOI) to specify the techniques for the assessment of environmental damage under CERCLA. With its decision, the Court of Appeals for the District of Columbia challenged the regulations[38] by explicitly stating three main principles: first, the main purpose of NRD should be to restore the damaged environment and, for this reason, damages should be based on restoration costs (the cost of a restoration project) rather than use values (unless "*grossly disproportionate to use values*")[39]; secondly, judges should be always allowed to compensate for nonuse values (it would be unreasonable to give only priority to use values and not to include nonuse values); thirdly, nonmarket valuation techniques (CV) should be used as much as market-based techniques (giving priority to market-based valuation and appraisal techniques would be unreasonable[40]). The ruling was extremely relevant because it overturned the regulation by putting on the same level of importance both restoration and

[37] 880 F.2d 432 (D.C. Cir. 1989).

[38] The issue at stake regarded the fact that damages had to be limited to "the lesser of the costs" of restoration or the lost use value under the NRD assessment regulations. In addition to that, the DOI provided a hierarchy of techniques to estimate use values and market-based techniques were given priority over nonmarket valuation techniques. Lastly, the DOI included CV as a possible technique adding that "*estimation of option and existence values (*i.e., *non use values) shall be used only if…no use values can be determined*" (43 CFR § 11.83(b)(2)).

[39] In other words, the D.C. Circuit held that the lesser of the cost was invalid since in contrast with the intentions of the Congress. By contrast, the Parliament clearly expressed preference for restoration costs as a measure of recovery (880 F.2d 432 D.C. Cir. 1989, par. 459).

[40] *Ibidem,* par. 463.

contingent valuation. In this way, the court wanted to overcome the previous trend of calculating environmental damages looking just at market prices and it opened the road towards the calculation of nonuse values through the contingent valuation method (hereinafter, CV). After the Ohio court expressed its favor for the CV, this was applied in the Exxon Valdez case and it led to a final amount of damages around US$ 9 billion[41]. Likewise, in the case *United States v. Montrose Chemical Corp.* in Southern California, damages for environmental damage were awarded for over half of US$ 1 billion. Moreover, these decisions triggered considerable debate among legal scholars around restoration costs versus lost use values[42]. Scholars were split between those supporting the use of CV (Montesinos, Dobbins, Brookshire, McKee, McConnell, Baker), those limiting its use to exceptional cases where restoration could not be applied (Cross) and those clearly against its employment in litigation because costs outweigh the benefits (Niewijk) or because clearly flawed (Cummings, Harrison, Bohm, Binger, Copple, Hoffman). The former emphasized the advantages of CV (the most complete technique to monetize environmental damages) and the latter its shortcomings (mainly, overestimation of the damage).

In 2002 Thompson made a first review of all cases after the Ohio decision to analyze how much economic evidence was introduced in litigation. Broadly speaking, every time that courts had to decide on the validity of economic evidence on the non use value of nature, they were more inclined to accept evidence based on restoration costs rather than contingent valuation. Very few cases after the Exxon Valdez relied on market-based techniques, including the well-known *California v. BP America (American Trader)*[43] that occurred in the Californian bay on 7 February 1990. There, the lost use value of Californian beaches was awarded by the jury by means of the travel cost approach and by applying the estimations of beaches in Florida. In other cases[44] in which the restoration-cost approach was not applicable because the environment was irreversibly damages, the court accepted the Habitat Equivalency Analysis (hereinafter, HEA) that considers costs of restoration referred to equivalent services. These cases show that when NRD claims regarded nonuse values of nature, a restoration approach was more frequently implemented. Arguably,

[41] R. T. Carson *et al.*, *Contingent Valuation and Lost Passive Use: Damages from the Exxon Valdez*, in 25 Env. and Res. Econ. 257 (2003). However, the case was settled for US$ 1 billion in the end, plus $3,4 billion in fines, compensation and clean-up costs, plus a lawsuit for punitive damages that were reduced to $500 million in 2008 by the Supreme Court.

[42] For a summary of the whole debate between 1989 and the late 1990s, see D. B. Thompson, *Valuing the Environment: Courts' struggles with Natural Resources Damages*, in 32(1) Env. L. 57, 62 (2002).

[43] Case n. 64 63 39 (Cal. Super. Ct. Dec. 8, 1997).

[44] *United States v. Fisher (Fisher I),* 22 F.3d 262, 265 (11th Cir. 1994) and *United States v. Fisher (Fisher II),* 977 F. Supp., par. 1198.

Judges tend to reject methods to assess non-use values since they run into issues when dealing with their validity[45]. It is very likely that this is the reason why CV has been rarely applied after the Ohio decision and until the early 2000s[46]. For instance, in *Southern Refrigerated*[47], the State claimed damages for water pollution caused by the accidental spill of an agricultural fungicide in the little Salmon River in 1987 and the court rejected the application of CV because it could not provide estimates with reasonable certainty[48]. Generally, US judges have rejected CV studies because they did not seem to meet certainty standards for scientific evidence. On the other hand, achieving such high standards in litigation is extremely expensive for plaintiffs, so parties might be disincentivized to propose a methodology that will be probably rejected.

The issue of damage calculation came again into the spotlight after the occurrence of the largest oil spill in the US so far: the Deepwater Horizon case (DWH). The accident happened in northern Gulf of Mexico (64 km from mainland Louisiana) in April 2010 with the explosion and subsequent fall of the drilling platform, which ultimately led to the release of 200 million gallons of oil for a period of 87 days[49]. Given the complexity of the event and the potential of consequences, the US Congress asked the National Academy of Science to evaluate the impacts of the DWH spill. Moreover, there was a specific request to determine whether the "ecosystem services approach" might help achieve full compensation of environmental damages[50]. Among its conclusions, the final report

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45 Kopp and Smith examined all the issues of validity that may be raised in litigation when dealing with nonmarket valuation techniques in the famous Eagle Mine case. R. Kopp, V. K. Smith., *Eagle Mine and Idarado*, in K. M. Ward, J. W. Duffield (eds.), *Natural Resources Damages: Law and Economics* (New York, NY: John Wiley & Sons, 1992). Particularly, they commented that: "*the level of economic expertise available to judges to evaluate the facts of each side's evidentiary claims probably needs to exceed what many analysts of judicial behaviour have arhued can be expected*" (at 381).

46 Contingent valuation studies were conducted in several cases but they were all settled, so that judges never ruled on their validity apart from two cases (Thompson, *supra* note 42, at 78).

47 *Southern Refrigerated,* n. 88-1279, 1991 US Dist. 1869 (D. Idaho 24 January 1991).

48 *Ibid.,* par. 55-56.

49 The 1989 Exxon Valdez spilled out almost 11 million gallons out of 53 million gallons carried by the tanker. The 1979 Ixtoc 1 spill caused the release of almost 126 million gallons. See A. Jernelöv, O. Lindén, *Ixtoc I: A Case Study of the World's Largest Oil Spill,* in 10(6) Ambio 299 (2001).

50 Committee on the Effects of the Deepwater Horizon Mississippi Canyon-252 Oil Spill on Ecosystem Services in the Gulf of Mexico, Ocean Studies Board, Division on Earth and Life Studies, National Research Council, *An Ecosystem Services Approach to Assessing the Impacts of the Deepwater Horizon Oil Spill in the Gulf of Mexico* (Washington DC: The National Academies Press, 2013). As the report pointed out at page 1, "*the ecosystem services approach is different from traditional approaches to damage assessment and restoration (e.g., the Natural Resources Damage Assessment, NRDA) because it focuses not on the natural resources themselves, but on the valuable goods and services these resources supply to people. Taking an ecosystem services view can supplement traditional methods of assessing, or valuing, damage to natural resources by estimating flows of goods and services before and after an event. In addition, thinking in terms of ecosystem services would change the way that the public and agencies conceptualize and discuss restoring natural resources to their former condition*".

highlighted that the technical complexity of the disaster largely exceeded industrial and regulatory safety measures. In fact, environmental agencies with supervision committed several mistakes before approving operations, such as excluding deep water drilling from regulatory requirements and carrying out inappropriately large-scale reviews. Admittedly, the Deepwater Horizon unveiled the inadequateness of technologies and regulatory responses to large oil spills[51]. Moreover, assessing the costs of post-spill restoration was "a monumental task" because, first, the value of all affected ecosystem services needed to be estimated and, then, the different economic methods of economic valuation had to be 'reconciled'[52]. For the DWH, the first part of the task was facilitated by the large availability of data[53]. Whereas, on the economic valuation of ecosystem services, Costanza and colleagues provided two monetary examples. The first one assumed the almost total closure of Louisiana's fishery activities for an estimated annual loss of $ 2.5 billion. The second one calculated all values of services provided by the most affected area in the region (Mississippi River Delta) with an envisaged reduction of 10-50% reduction in ecosystem services for a final total loss of $1.2–$23.5 billion per year until full ecological restoration at an indefinite time in the future[54]. Other ecologists in 2016 proposed a socio-ecological approach to restoration that integrated social (economic, ethical) and ecological variables in order to achieve a successful restoration[55]. Some ecologists also pointed out that the adoption of adequate conservation beforehand would have reduced the need for extensive post-spill restoration.

Notwithstanding the previous calculations, the legal settlement of the DWH ended up in $ 21 billion, much less than the estimated costs of cleanup ($ 61.1 billion) including economic losses and settlement funds[56]. Other scholars proposed different estimations, such as $ 145 billion[57] and $ 2 trillion based on annual sales of coast businesses[58]. That allows us to infer that settlements represent an alternative to postcrisis cost assessments but their outcome

[51] https://www.nytimes.com/2013/12/09/booming/lessons-from-the-exxon-valdez-oil-spill.html
[52] B. P. Wallace *et al.*, *Overview Effects of the Deepwater Horizon oil spill on protected marine species,* in 33 Endang. Species Res. 1 (2017).
[53] Gulf of Mexico Ecosystem Services Valuation Database maintained by Texas A&M University and the US National Research Council's (NRC) study of the ecosystem services affected by the Deepwater Horizon (NRC 2013). See C. P. Santos *et al.*, *Gulf of Mexico Ecosystem Service Valuation Database (GecoServ): Gathering ecosystem services valuation studies to promote their inclusion in the decision-making process,* in 36(1) Mar. Pol'y 214 (2012).
[54] R. Costanza *et al.*, *The Perfect Spill: Solutions for Averting the Next Deepwater Horizon*, in 1 Solutions 17 (2010).
[55] A. Abelson *et al.*, *Upgrading Marine Ecosystem Restoration Using Ecological–Social Concepts*, in 66 BioScience 156 (2016).
[56] NOAA 2019. This amount is based on the BP assessment.
[57] Y. G. Lee, X. Garza-Gomez, R. M. Lee, *Ultimate Costs of the Disaster: Seven Years After the Deepwater Horizon Oil Spill*, in 29 J. Corp. Acc. & Fin. Journal of Corporate 69 (2018).
[58] Dun and Bradstreet Bureau of Labor Statistics, *2010 Deepwater Horizon, Oil Spill Preliminary Business Impact Analysis for Coastal Areas in the Gulf States* (2010).

is unpredictable and it depends on the process involving judges, jury trials and corporate statements. Also, lacking sufficient support of the liable party, US laws provide for national funding of cleanup and postcrisis response (Oil Spill Liability Trust Fund) but payments are limited. Compensation includes damages to natural resources, loss of subsistence use of natural resources, damages to real or personal property, loss of profits or earning capacity, loss of government revenues, and increased cost of public services. Yet, the law sets down that the Fund can pay up to $1 billion per accident, of which no more than $500 million may compensate for natural resource damages[59]. Clearly, the Fund could not cover all cleanup costs, 1 billion was only 1/60th than the needed amount.

It is apparent from the above that relying on postcrisis restoration assessments means to make the success of restoration depending on the money available from government and corporations with the risk that long-term restoration goals do not match short-term goals of elected politicians or appointed corporate directors.

IV. THE EU LAW ON ENVIRONMENTAL LIABILITY

The second relevant regional experience on environmental damage assessment can be found in the EU, where the main legislative act providing for an assessment of environmental damage is the European Directive on Liability (ELD)[60].

Formally, the starting point of the ELD's history can be identified in the year 1986. While the entire Europe was mourning for the accident recently occurred at the Chernobyl Nuclear Power Plant in Ukraine, another dramatic event happened at the Sandoz agrochemical storehouse in Switzerland causing a tremendous release of toxic pesticides in the air and the underground water[61]. These events raised the level of perceived risk for human health and they ended up in the resolution of 24 November 1986 of the Council[62].

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[59] OPA 9001(c); 26 U.S.C. § 9509)" (USCG 2017: 2).

[60] Directive 2004/35/CE of the European Parliament and the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, OJ L 143/56. The Directive entered into force on 30 April 2004.

[61] For a detailed description of the accident and the pollutants, see H. GÜTTINGER, W. STUMM, *Ecotoxicology An Analysis of the Rhine Pollution caused by the Sandoz Chemical Accident, 1986*, in 17(2) *Interdisciplinary Science Reviews* 127 (1992).

[62] The reference to the Council's Resolution is at p. 1 of the Commission's Proposal of 1991 (*infra* note 62). At that time the term 'Council' unambiguously referred to the Council of Ministers of the EEC (European Economic Community). Following the creation of the European Union with the Maastricht Treaty of 1992, the Council was formally renamed 'Council of the European Union' and it has to be distinguished from the

With this act, the Ministries asked the Commission to investigate the consequences of environmental harm and to review existing measures to prevent and remediate environmental harm. As a response, the Commission adopted its first Proposal for a Directive on civil liability for environmental damage caused by waste in 1989[63]. Among its primary objectives, the 'polluter-pays' principle was mentioned together with the accomplishment of the internal market, the fair compensation of victims and the internalization of waste-related costs[64]. Although the novelty of the proposal was a liability regime for '*injury to the environment*'[65] and not just for traditional damage to persons and property, the initial intentions were soon replaced by a more ambitious project that was not limited to waste.

On 14 May 1993 the Commission published the Green Paper on Remedying Environmental Damage[66] that summarized the main issues to be debated before a new piece of legislation was drafted. At the same time, in June 1993, the Council of Europe adopted the 'Lugano Convention'[67]. The following important dates included a resolution of the EU Parliament asking for a Directive on civil liability for environmental damage[68], a Working Paper on Environmental Liability in 1997[69], a White Paper on Environmental Liability in 2000[70], another Working Paper in 2001 and a proposal for a Directive in 2002[71]. After two years of continuous debate, on 21 April 2004 the Presidents of the European Parliament and the Council finally signed the text of the ELD in the version agreed by all engaged parties (the Commission, the Council, the Economic and Social Committee, the Parliament and the Conciliation Committee).

Regarding the key features of the ELD, it must be said first that the Directive did not establish a civil liability regime that enables private parties to sue for damages. It rather set down an administrative law regime that empowers public authorities to impose specific

'European Council' that remains a separate institution devoid of legislative powers and based on intergovernmental decision-making. The Lisbon Treaty officially enlisted it among the EU institutions.

63 European Commission, *Proposal for a Council Directive on Civil Liability for Damage caused by Waste* [1989] COM (89) 282, amended by [1991] COM (91) 219.

64 *Ibid.,* p. 1, par. 2.

65 *Ibid.,* p. 3, par. 5. It should be noted that the original scope of the Proposal included the three categories of damage to individuals (physical injury, death), damage to property (deterioration, destruction) and injury to the environment.

66 European Commission*, Communication from the Commission to the Council and Parliament and the Economic and Social Committee: Green Paper on Remedying Environmental Damage* COM (93) 47 final, 14 May 1993.

67 Council of Europe, *Convention on Civil Liability for Damage resulting from Activities Dangerous to the Environment*, 21 June 1993.

68 European Parliament, *Resolution A3-0232/94 of 20 April 1994 on Preventing and Remedying Environmental Damage*, OJ C 128, 9 May 1994, p. 184-185.

69 European Commission, *Working Paper on Environmental Liability*, Brussels, 17 November 1997.

70 European Commission, *White Paper on Environmental Liability* COM (2000) 66 final, 9 February 2000.

71 European Commission, *Proposal for a Directive of the European Parliament and of the Council on environmental liability with regard to the prevention and remedying of environmental damage*, COM(2002) 17 final, OJ C 151, 25 June 2002.

obligations on polluters in case of imminent threat or occurred damage to the environment. For this reason, it is more correct to say that the Directive belongs to the domain of public law and not to the one of private law[72].

Secondly, on the regime of liability, the Directive opted for a double regime: strict liability for dangerous or potentially dangerous activities (listed in Annex III to the ELD) and fault or negligence for the others (activities not perceived to be dangerous under Article 3.1). Liability is imposed on the so-called '*operators of occupational activities*', where '*operator*' refers to the natural or legal person that operates, controls or even exercises decisive economic power over the technical functioning of an activity and '*occupational activity*' is defined as any economic activity, a business or an undertaking regardless its private or public, profit or non-profit purpose (Article 2.6 and 2.7 of the ELD). If the activity is listed in Annex III, then a regime of strict liability applies. On the contrary, operators of non-listed activities might be held environmentally liable only where a proof of negligence is provided by the plaintiff.

Thirdly, on the scope, for the first time the category of damage to nature or, more in general, to natural resources was legally recognised at the EU level. Indeed, it is clearly stated that the Directive does not cover traditional damages granted under international agreements on civil liability or under national civil law regulating personal injury, damage to private property or economic loss (recitals 11 and 14 of the ELD). In particular, it shall not affect any rights related to these categories of damages. More specifically, the Directive applies to '*environmental damage*', meaning '*a significant adverse effect on reaching or maintaining the favourable conservation status of* protected species *and* natural habitats '(Article 2.1.a of the ELD), to '*water damage*' as '*a damage that significantly adversely affects the ecological, chemical or quantitative status or the ecological potential of the waters* (…) *and the* marine waters ' (Article 2.1.b of the ELD) and to 'land damage' as '*land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction in, on or under land of substances, preparations, organisms and micro-organisms*' (Article 2.1.c). In principle, the Directive only refers to damage to protected natural habitats, protected species and protection areas but it allows Member States to expand its scope. Fourthly, the ELD established a regime of remediation that gives priority to restoration rather than monetary compensation. From this point of view,

[72] This is a quite common observation that can be found, *ex multis,* in G. Van Calster, L. Reins, *The Environmental Liability Directive's Background*, in L. Bergkamp, B. J. Goldsmith (eds.), *The EU Environmental Liability Directive: A Commentary* (Oxford: Oxford University Press, 2013), 9-30.

the Directive deliberately mirrored the US regulation on natural resource damage assessment that imposed on liable parties three categories of costs: the costs of restoring the impaired ecosystem to baseline conditions, the loss occurring during the restoration period ('*interim losses*') and the cost of assessing damages (administrative costs, costs of enforcement, data collection and monitoring)[32]. In particular, under the ELD restoration has to be achieved through primary restoration or any measures that returns natural resources to their baseline conditions, followed by complementary remediation or any measures aimed at providing the same level of natural resources ineluctably impacted in an alternative site and, lastly, by compensatory measures that compensate for the interim losses pending recovery.

V. COMPARING RESTORATION IN THE EU AND THE US

Following the assessment of the injury, the EU procedure for damage assessment focuses on primary restoration or the action needed to return the damaged natural resources to their baseline conditions. This assessment deals with the following steps[73]: a) setting *restoration targets*, b) identifying *restoration options* (no intervention, limited intervention, and full-scale reconstruction), c) selecting restoration options through an *evaluation process* that weighs the cost of each option, the time for restoration to be effective, the extent to which each option will prevent future damage, other benefits for the environment and public health. In general, the aim is to select the least costly option that leads to the restoration targets through a process known as cost-effectiveness analysis (CEA)[74]. The cost of each option includes the costs of damage assessment and those to implement restoration (cleaning and restoring species, habitats); they need to be weighed with the benefits of restoration (in terms of ability of damaged resources to provide services) in order to establish whether a restoration option is cost-effective and that it can be implemented.

Likewise, trustees in the US have to consider a range of restoration alternatives, each being a package that includes primary and compensatory restoration actions in view of making the public whole. Primary restoration implies to consider first "*natural recovery alternatives*"[75], then

[73] EU Commission, Directorate-General Environment, "Study on the valuation and restoration of damage to natural resources for the purpose of environmental liability", B4-3040/2000/265781/MAR/B3, Final report by Macalister Elliott and Partners Ltd and the Economics for the Environment Consultancy Ltd, 2001.

[74] *'The ideal outcome of a liability regime would be a solution that provides full compensation to the public for damages to natural resources at the least cost to the liable party'* (*ibidem*, p. 3).

[75] This means that "*no human intervention would be taken to directly restore injured natural resources and services to baseline*" (15 CFR § 990.53 – Restoration selection).

"*active primary restoration actions*" (aimed at directly returning the environment to the baseline[76] "*on an accelerated time frame*"[77]) and, thirdly, "*compensatory restoration actions*" that "*provide services of the same type and quality, and of comparable value as those injured*"[78].

The last stage of damage assessment both in the EU and the US concerns compensatory restoration options that serve to compensate the public for the loss of natural resources and services during the recovery period. There are a number of approaches that can be employed to identify and select compensatory remedies. The first is the 'service-to-service' approach that is based on a one-to-one trade- off, meaning that the lost service is replaced by a new one created through compensatory restoration. The second is the 'value-to-value' approach and it entails solutions when a one-to-one match is not possible. Its aim is to identify a restoration option such that the economic value of the compensatory services is equal to the value of interim losses. This means that whenever the service-to-service approach is not practicable, damaged natural resources have to be measured and compared in monetary terms to establish losses and gains.

Similarly in the US, if 'replacement natural resources' and services are not of comparable value, a 'scaling process' is required to value lost and replacement services. All restoration actions need to be scaled to make sure that they will provide resources and/or services equivalent to the lost ones. The valuation scaling approach may be of two kinds: 'resource-to-resource' and 'service-to-service'. To do that, trustees have to measure the value of injured natural resources or services and then "*select the restoration action that has a cost equivalent to the lost value*"[79]. Moreover, when scaling a restoration action, trustees have to discount all service quantities and/or values to the date of the claim and to evaluate the uncertainties of restoration actions. The criteria to follow when selecting the appropriate restoration action include the capability of returning the resource to baseline in an "*expeditious and cost-effective*"[80] manner while involving the interested parties in the administrative process.

In light of the above, it is clear that the economic valuation still plays an important role within the environmental damage assessment either in the EU or the US. Indeed, it allows to carry out a cost benefit analysis of restoration options, hence facilitating a decision on the

[76] The baseline is defined as "*the condition of the natural resource that would have existed had the incident not occurred. Baseline data may be estimated using historical data, reference data, control data, or data on incremental changes (e.g., number of dead animals), alone or in combination, as appropriate*" (15 CFR § 990.53).
[77] 15 CFR § 990.53.
[78] *Ibid.*
[79] *Ibid.*
[80] 15 CFR § 990.10 – Purpose.

desirability of a specific option of restoration if it has a reasonable and not disproportionate cost[81], although the value of damage is something different from the cost of cleanup[82]. The estimation of the value of damage is nevertheless required because it provides a term of comparison to avoid spending on restoration a disproportionate amount of money.

In addition, economic valuations are needed to estimate interim losses[83] and baseline conditions[84]. In fact, even when restoration is possible and cost-effective, it cannot compensate the public for the losses during the recovery period. Compensatory measures take into account these losses and make use of monetary valuation techniques.

The fundamental issue of inaccuracy either in the EU and the US is that the value of lost services is normally obtained through the habitat equivalency analysis (HEA) which raises well-known pitfalls in the estimation. Some ecological scholars argued that the HEA excludes the need for valuation due to four questionable assumptions.

First of all, the HEA assumes that the type, quality and quantity (value) of services provided is comparable to the lost ones[85](so that the two resources would provide the society with the same level of utility or wellbeing).

Secondly, the value of the injured and compensatory services are considered to be constant (and so, equal) over time (this is mathematically needed so that both sides of the equation can be canceled out)[86].

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[81] *Ibid.,* at 2.

[82] *Ibid.,* at 3. The 'value of damage' to the environment can be achieved through economic valuation techniques that measure public preferences for an environmental state. These techniques include stated preference and revealed preference mechanisms aimed at eliciting people's preferences through surveys, in the first case, or by using data from actual markets, in the second case. By contrast, costs of clean-up and restoration do not need to previously identify a damage and damaged parties. They are based on technical options available rather than on public preferences.

[83] It must be kept in mind that interim losses occur over an infinite period of time if primary restoration is not possible. The magnitude if interim losses depends indeed on the primary restoration options and the time for recovery to take place (*Supra* note 73, 36).

[84] par. V of the Executive Summary.

[85] R. E. Unsworth, R. C. Bishop, *Assessing Natural Resource Damages Using Environmental Annuities,* in 11.1 Ecol. Econ. 5 (1994). That allows to assume that the present value of losses is equal to the present value of gains. Moreover, the services should be equal from an economic point of view, meaning that their demand has to be equal and they are substitutes. For instance, if a wetland area has to offset the ecological losses of a similar wetlands, then the demand and supply of these resources should be the same. It is important therefore to take account of the availability of substitutes and the income effect on the demand and supply: the availability of substitutes makes the value for restoration lower. See W. H. Desvousges *et al.*, *Habitat and Resource Equivalency Analysis: A Critical Assessment*, in 143 Ecol. Econ. 74 (2018). Some scholars argued that this assumption can be relaxed if resources are scaled and, thus, HEA can be applied to services that are not of the same type and quality. Yet, as Desvousges *et. al.* made clear, scaling requires prior knowledge of the value of the services and relative demand and supply to make sure that there is proportionality.

[86] What Desvousges *et al.* (*supra* note 85) pinpointed in this regard is that "*the longer the (nda, recovery) time period involved in the HEA quantification, the less likely this assumption is to hold*". Despite this assumption, it seems that the value of environmental services is more plausibly expected to increase over time because of technological changes and rising incomes that affect the future demand for environmental services. See A. C. Fisher *et al.*, *The Economics of Environmental Preservation: A Theoretical and Empirical Analysis*, in 62(4) Amer. Econ. Rev. 605

Thirdly, marginal changes in the value of the injured services are considered to be constant over time[87].

Fourthly, costs of restoration are assumed to be equal to the value of lost services (but they might be more or less, hence determining over- or under-compensation[88]).

According to the ecological literature, all these assumptions are highly questionable. Furthermore the accuracy of equivalency analyses relies on three crucial factors: metric, baseline and uncertainty. The metric should reflect the whole change of society's well-being or utility before and after the injury[89]. However, finding a metric that can encompass all services provided by one ecosystem is extremely challenging and there is not just one way to do that[90]. For instance, it has been proved that the choice of the metric should depend on the complexity of the specific damaged ecosystem[91] and Dunford criticizes the use of a single metric for single services[92]. After the metric is chosen, it is possible to measure the change in service after the injury comparing the estimated level with the level that would have been if the injury had not occurred. The final estimation thus relies on the baseline condition. Disagreements on the baseline may surely affect the measure of the ecosystem losses[93]. Accurate assessments of the baseline should require instead to look not just at the 'without contamination' scenario but also at historical data, especially for long-term injuries (*e.g.*, mining)[94].

(1972) and A. C. Fisher *et al.*, *The Economics of Environmental Preservation: Further Discussion*, in 64(6) Amer. Econ. Rev. 1030 (1974).

87 Marginal values are crucial in the economic valuation because they depend on which amount of services is already available, on shifts in the demand due to substitutes and on rising incomes. This is also in the literature on HEA, since it is common knowledge that among the conditions for service-to-service scaling is that changes in resources and services are sufficiently small and the value per unit if service is expected to be independent of changes. See D. Chapman *et al.*, *Calculating Resource Compensation: An Application of the Service-to-Service Approach to the Blackbird Mine Hazardous Waste Site*, NOAA Damage Assessment and Restoration Program Technical Report 97-1 (1998).

88 Unsworth, Bishop, *supra* note 84.

89 Compensation is in fact an anthropocentric concept aimed at returning the society to the level of utility prior to the injury. S. G. Cole, *Wind Power Compensation is not for the Birds: An Opinion from an Environmental Economist,* in 19 Rest. Ecol. 147 (2011).

90 Common metrics used in HEA are the number of fish or the number of acres of habitats.

91 T. P. Holmes *et al.*, *Choice Experiments. Chapter 5,* in P. A. Champ, K. Boyle, T. C. Brown (eds.), *A Primer on Nonmarket Valuation. The Economics of Non-market Goods and Resources* (Dordrecht: Kluwer Academic Publishers, 2017).

92 R. W. Dunford *et al.*, *The Use of Habitat Equivalency in Natural Resource Damage Assessments*, in 48 Ecol. Econ. 49 (2004).

93 Desvousges *et al.*, *supra* note 84, explain how changes in the baseline specifically makes the service losses increasing, decreasing or constant. Therefore, it would be better to employ a before-and-after approach if historical data is available, instead of a reference location approach (based on typical baseline ecological conditions). The two approaches can be regarded as equivalent only where no changes in the baseline occur before and after the injury. See S.G. Cole *et al.*, *Main Toolkit and Annexes,* http://envliability.eu/docs/D13MainToolkit_and_Annexes/D13MainToolkit.html

94 Commercial, industrial and agricultural activities can also change the baseline over time.

The last issue that might negatively affect the accuracy of the HEA is uncertainty and the fact that equivalency analyses are not based on statistical information but on professional and subjective judgements. Therefore, unlike other valuation methods, external validation cannot be applied. All the above supports the conclusion that equivalency analyses are unlikely to provide accurate estimates of losses and gains, unless careful attention to the metric, the baseline and the external validity is paid. Lacking clear guidelines on these points, the accuracy of final estimates clearly depend on the discretion of the judge.

VI. CONCLUSIONS

Both in the EU and the US two main forms of restoration exist as a remedy for environmental harm. Normally, the costs of primary restoration represent the biggest part, whereas compensatory restoration serves to compensate the public for the diminution in quality and quantity of the resource on a temporal (interim losses) or permanent basis.

Restoration costs are frequently valued based on the HEA, whereas interim losses can be calculated either by market-based approaches (where market prices are available) or non-market valuation techniques (where the impaired resource is not traded in the market) or even benefits transfer approaches (although their accuracy may vary depending on the data available and the specific circumstances).

As argued in the official report on the effects of the accident, the new ecosystem services approach to restoration might supplement and improve traditional methods of natural resource damage assessment. However, its application in environmental damage assessments is not yet binding under current liability regimes either in the US or the EU. Moreover, it suffers from several limitations that need to be tackled through further research.

Given the above-illustrated pitfalls of HEA and the state of the art the ecosystem services approach, the preference given to restoration as a primary remedy cannot exclude inaccuracies, hence undermining the optimality of the final estimation for the deterrent effect of liability laws. More specifically, restoration does not seem to be an accurate 'on average' remedy due to the issues of inaccuracy and the questionable assumptions pointed out in the ecological scholarship. On the other hand, if one wants to achieve better accuracy in damage assessment with the current approach, litigation costs are likely to be very high, with a subsequent possible disincentive to file a lawsuit. As already mentioned, more accuracy would be economically desirable and bring to optimal incentives of care and activity.

CLEAN INNOVATION TO CLIMATE RESCUE: A COMPARATIVE LAW & ECONOMICS ANALYSIS OF GREEN PATENTS REGULATION

Noemi Mauro[*]

TABLE OF CONTENTS

Using a Comparative Law & Economics methodology (CLE), this article intends to contribute to the debate on the relationship between institutions, green patent filing and the rate of innovation in the environmental field. An introductory section addresses the necessity of analyzing the interrelation between patent rules around the world and green innovation. The discussion then explores which institutions concerning clean patents are responsible for improving the rate of inventions for low-carbon technologies. Attention is given to countries ranking high as fundamental market recipients of new patented technologies, namely China, the U.S., Japan, South Korea, and Germany. This comparison will develop in a two-step analysis: (1) A discussion on the impact that different types of institutions have in incentivizing or hindering patent applications, and (2) whether this results in increased rates of clean innovation, with consistent effects in fighting climate change. The main methodological issues are: (a) Considering the array of different drivers of innovation, in a complex, multifactorial environment; (b) determining what kind of legal transplants could be carried on by States lacking relevant involvement in green innovation, modelling on those more proactive in the field. Rather than identifying a generic set of guidelines that could be replicated around the world in terms of efficient institutions for low-carbon technology innovation. The goal should be to use CLE to assist policymakers in recognizing which country-specific and local factors are most relevant for green innovation.

I. INTRODUCTION: THE ADDED VALUE OF A COMPARATIVE LAW & ECONOMICS APPROACH TO ECO INNOVATION

Green Intellectual Property Rights (IPRs) aim to legally protect clean technology inventions[1]. Developing innovations beneficial to the environment is one of the core strategies to address climate change[2]. Technology is the primary cause of pollution, as industrialization is the main factor contributing to the increase in extreme climate events. Nevertheless, it can also be the

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[1] Definition of 'clean technology' as interchangeable with 'environmentally sound technology', see WIPO Green (Pilot) Charter and IPC Green Inventory, both at www.wipo.org . On this point and for the relationship genus-species of the terms 'green technology' and 'clean energy technology': J.M.W.W. Chu, *Developing and Diffusing Green Technologies: The Impact of Intellectual Property Rights and their Justification*, in 4 Wash. & Lee J. Energy, Climate & Env't. 53 (2013).

[2] On the role of patents to address the issue of climate change, see, e.g., IRENA, *The Role of Patents in Renewable Energy Technology Innovation*, June 2013; A. Aberdeen, *Patents to Climate Rescue: How Intellectual Property Rights are Fundamental to the Development of Renewable Energy*, 4iP Council, October 2020; IEA, *Patents and the Energy Transition* (Paris: IEA, 2021).

most relevant solution to tackle the problem[3]. The global drive to accelerate innovation must be significant and coordinated across countries to reach net-zero emissions, using cutting-edge technology to reduce reliance on limited natural capital resources. With the rise of mitigation and adaptation techniques in this field, there is a pressing need to create a robust innovation framework and make effective national and international IPRs systems more accessible to maintain the increasing growth of technology, goods, and services needed to build a greener future. IPRs can and must fulfil a pivotal role in stimulating environmental-friendly inventions. The literature on this topic accounts for both optimistic and more skeptical approaches, offering fertile ground for debating between those advocating in favour of the role IPRs play in R&D and commercialization of green inventions and those lamenting the barrier these rights create towards developing countries, granting artificial monopoly revenues that prevent the international transfer of knowledge[4]. To what extent, then, IPRs (with a specific focus on patents) influence the diffusion of green technologies? It seems to be an almost impossible question to answer through empirical analysis, due to the complex nature of these rights. Their effect on promoting or slowing down the pace of clean innovation is still unclear[5]. However, it is undoubted that IPRs have an impact on the development of (clean) technologies[6]. Moser even goes as far as to conclude that 'patent laws influence the direction of innovation'[7].

The scope of the present paper is to analyse the nature of this influence and the repercussions on the global fight against climate change, under the lenses of Comparative Law & Economics (CLE). The choice of adopting the CLE methodology comes along as almost natural for such a study, given the transnational nature of the climate phenomenon and the complexities it involves. For what concerns the global diffusion of environmentally sound technologies, the challenge regards the so-called 'double externality'. This dual-sided problem exists because (a) pollution is a negative externality, influencing others than those deciding in the context of a market economy and (b) the nature of the knowledge to develop (green) technologies is non-rival and non-excludable[8]. The non-appropriability of knowledge

[3] Chu, *supra* note 1, at 71.
[4] Chu, *supra* note 1, at 55.
[5] On this point see e.g. C.M. Kalanje, *Role of Intellectual Property in Innovation and New Product Development*, available at www.wipo.org; Chu, *supra* note 1, at 73.
[6] As an example, in this sense: P. Moser, *How Do Patent Laws Influence Innovation? Evidence from 19th-Century World Fairs*, in 95(4) Am. Econ. Rev. 1214-36 (2005).
[7] *Ibid.*, at 28.
[8] B. H. Hall, C. Helmers, *The Role of Patent Protection in (Clean/Green) Technology Transfer*, in 26 Santa Clara Comp. & High Tech. L.J. 487 (2010).

produces a divergence between private and social returns to R&D in the production of inventions. Due to these two aspects that interact and compound, returns on innovation see a decrease that disincentivizes the efforts and resources put into developing new clean technologies[9].

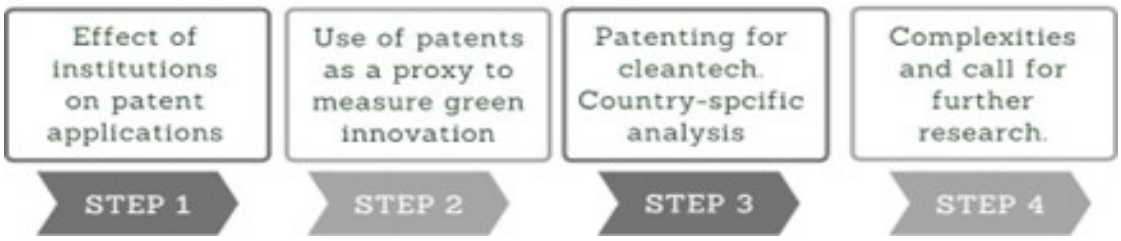
IPRs are often seen as a possible solution to the imperfect appropriability of knowledge. They produce two types of economic effects: static and dynamic[10]. On the one hand, the static impact is related to the fact that such rights create social welfare loss deriving from artificially inflated prices. On the other hand, IPRs allow for the right prompt to invent due to the possibility for innovators to charge monopoly prices[11]. In particular, a robust patent system is capable of promoting the development of all types of technologies, including those related to cleantech[12]. It becomes interesting at this point to further inquire about the choices made by some states in terms of eco-innovation, namely: China, the U.S., Germany, Japan, and South Korea. They have been selected because they account for a rapid and significant increase in patenting activity in green energy technologies during the last decades[13]. According to the OECD's Technology Diffusion Indicator, these jurisdictions are sought by inventors to give protection to their environmentally-sound inventions, becoming fundamental markets for the commercialization of new technologies (which does not imply they rank high in terms of the consequent development)[14]. The CLE methodology perfectly suits the task, providing the right tool to further understand the motivations for the existence of certain legal rules and institutions and their evolution through time[15]. Not only the study of domestic legislation, but also the interactions among different legal systems are of interest to the appreciation of divergencies and convergencies in approaches to green patent activities. Why are certain states performing better than others in terms of innovation? Can it be related to different institutional frameworks supporting environmental growth? Finding virtuous practices among these five states would entail addressing the possibility of subsequent legal transplants of these efficient rules to less innovation-performing countries. The hypothesis of a consequent transplant needs to take into account the mechanism of

[9] *Ibid.,* and OECD, *Raising the Returns to Innovation: Structural Policies for a Knowledge-based Economy*, in OECD Economics Department Policy Notes, 17 (2013).
[10] For a more extensive discussion about the types of economic benefits of intellectual property rights, see: W. M. Landes, R. A. Posner, *The Economic Structure of Intellectual Property Law* (Harvard, MA: Belknap Press, 2003), at 4.
[11] Hall, Helmers, *supra* note 8, at 5.
[12] P. Gattari, *The Role of Patent Law in Incentivizing Green Technology*, in 11 Nw. J. Tech. & Intell. Prop. 41 (2013), at 42.
[13] K. Fushimi *et al.*, *Measuring Innovation in Energy Technologies: Green Patents as Captured by WIPO's IPC Green Inventory*, Economic Research Working Paper 44 (2018).
[14] See OECD, *Green Patents* (2015), available at: www.oecd.org.
[15] U. Mattei *et al.*, *Comparative Law and Economics*, in B. Bouckaert, G. de Geest (eds.), *Elgar Encyclopedia of Comparative Law* (Cheltenham: Elgar Publishing, 2000), at 55.

transferring technological knowledge from developed to developing countries, focusing on the elements that promote or hinder such transfer of know-how. The argument here is not that there is a one-size-fits-all solution for green innovation. Rather, a CLE approach fosters awareness of the local institutional factors which could affect it.

This paper will discuss (although not solve) the above issues in a logical order, starting from a general introduction to the relationship between institutions, patents, and the rate of green technology innovation. Consequently, an analysis of the Chinese, American, German, Japanese and South Korean legal systems in terms of patent rules and underlying institutions will be conducted. Through a diagnostic input, the attempt is to shed light on a reasoned choice of which drivers of innovation to include in further econometric studies. In short, this research paper contributes to a theoretical understanding of the complexity of studying the institutional enabling factors for green innovation. CLE, through a diagnostic analysis, can help understand such an issue by dissecting it in its components, explaining their relevance and importance[16]. Automatically, this approach will lead to asking more questions about the interdependency and causality of the factors revolving around eco-innovation[17]. The added value of this contribution is to link domains and academic articles that generally coexist but have not been integrated, to understand why some countries are more likely to perform better than others in terms of environmental innovation.

Figure 1. Main steps of the analysis on institutional drivers of eco-innovations.



II. FIRST STEP OF THE ANALYSIS: EFFECT OF INSTITUTIONS ON PATENT APPLICATIONS (AS A MEASURE OF INNOVATION)

The causal link between the degree of green innovation of a certain country and patent rules as designed in that same country is still of unclear nature. Most of the literature in the field

[16] G. Bellantuono, *Comparative Legal Diagnostics,* Working Paper 7 February 2012, at 14, available at www.ssrn.com.
[17] *Ibid.*

concentrates directly on the relationship between institutions and innovation, mainly using patents as a proxy for the rate of inventions in a country. Before assessing the choice of using patents to measure innovation (Section III), more needs to be said in terms of the association between institutions and innovation. Several empirical studies try to evaluate whether there is causation, correlation, or no connection at all between these variables, using econometric tools. In one of the most recent pieces of research on the theme, Donges *et al.* look at how inclusive institutions affect innovation, using newly assembled data sets for Imperial Germany[18]. The historical perspective is in line with the CLE approach, concentrating mainly on a dynamic analysis that attempts to account for the interplay of judicial systems across time, with a particular emphasis on legal evolution. Donges *et al.* study the development of patents' role in early Germany, analyzing the differences across German states and the influence that the French institutions (in particular, the *Code civil*) had on German patent law[19]. The authors clearly state that variations in patent rules influence innovation[20]. They conclude that there is a «*quantitatively large effect of institutional quality on patenting activity*», providing evidence that counties that were occupied by the French were able to develop better institutions in a shorter time compared to those left free. This factor resulted in a doubled number of patents per capita in the year 1900[21].

In another study, Tebaldi and Elmslie chose to use cross-country data and the instrumental variable method to assess whether institutions influence inventions, using patent production across countries as the proxy for the dependent variable 'rate of innovation'[22]. The authors' research reveals that institutions have a growth effect on income because institutional quality influences an economy's rate of innovation, which is 'the engine of economic growth'[23]. Therefore, their findings specifically address the effect of innovation on society, which is to stimulate the general social welfare. Technical innovation (expressed in terms of patent production) is seen as a mechanism to generate growth, and the econometric model adopted confirms the role institutions have in this causal cycle. Tebaldi and Elmslie selected four different types of institutions to test their influence on patent production, discovering that *«control of corruption, market-friendly policies, protection of property rights and a more effective judiciary system boost an economy's rate of innovation»*[24].

[18] A. Donges *et al.*, *The Impact of Institutions on Innovation*, in Mgmt. Sci. Articles in Advance, 28 April 2022.
[19] The authors' choice to include the French influence on Germany is because, for geostrategic considerations, France occupied areas of Germany after the French Revolution. Longer-occupied regions were early adopters of more inclusive institutions, whose impact on innovation has been the center of this study. *Ibid.*, at 7f..
[20] *Ibid.*, at 17f., recalling Moser (2005), *supra* note 6.
[21] *Ibid.*, at 8f..
[22] E. Tebaldi, B. Elmslie, *Do Institutions Impact Innovation?*, MPRA Working Paper 8757 (2008).
[23] *Ibid.*, at 3.
[24] *Ibid.*, at 2.

van Waarden contributes to the present discussion, focusing on the impact that formal institutions, especially laws, have on the rate of innovation of a certain country. He talks about 'national systems of innovation'[25], meaning that the overall framework of institutions that a country has set in place significantly influences its innovative outcome. The author affirms that variation in institutional factors can explain the differences in the inventive performance of nations[26]. In exploring the relationship between legal rules and innovations, van Waarden does not fail to account for the complexity of such a task, pointing out the 'dilemmas and paradoxes' met along with the study[27].

In general, many scholars seem to agree on the fact that institutions do matter for innovation and growth. From the early studies[28] till nowadays, the academic world has been researching and positively answering such questions. However, do institutions impact not only innovation in general but also, specifically, green inventions? Bosetti *et al.* recall the importance of developing new technologies to tackle climate change, supporting their view with simulation exercises that assess how certain policies can effectively produce induced green innovation. Some of these policy tools are carbon taxes, research and development programs, and subsidies for the adoption of available technology[29]. Along this line, Veugelers restates the pivotal role that incentives to private actors can play to transition to cleaner technologies[30]. Moreover, by looking at institutional theory and innovation literature, it is noticeable how increased governmental and normative pressures on environmental challenges positively affect enterprises' tendency to engage in clean technological innovation. Berrone *et al.* argue how eco-innovation is influenced by regulatory and legislative pressure, especially on less environmentally performing firms that seek clean technological improvements to rehabilitate their image in the eyes of the world[31].

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[25] F. van Waarden**,** *A Prototypical Institution: Law, Regulation and Innovation,* in S. Casper, F. van Waarden (eds.) *Innovation and Institutions* (Cheltenham: Elgar Publishing, 2005), 229.
[26] *Ibid.*
[27] *Ibid.,* at 230.
[28] D. Acemoglu *et al.*, *Institutions as the Fundamental Cause of Long-Run Growth*, in P. Aghion, S. Durlauf (eds.), *Handbook of Economic Growth* vol. 1A (Amsterdam: North-Holland, 2005), 386-472; D. Acemoglu, J. Simon, *Unbundling Institutions*, in 113(5) J. Pol. Econ. 949-95 (2005).
[29] V. Bosetti *et al.*, *The Role of R&D and Technology Diffusion in Climate Change Mitigation: New Perspectives Using the WITCH Model*, in OECD Economics Department Working Papers 664, OECD Publishing (2009), at 5.
[30] R. Veugelers, *Which Policy Instruments to Induce Clean Innovating?*, in 41(10) Res. Pol'y 1770-1778, at 1770 (2012).
[31] P. Berrone *et al.*, *Necessity as the Mother of "Green Inventions": Institutional Pressures and Environmental Innovations,* in 34 Strat. Mgmt. J. 891-909 (2012).

It appears that institutions, in the broader sense of the term, including formal and informal ones, do have a say in eco-innovation[32]. As recalled by Hojnik and Ruzzier, 'research in this area primarily adopts the resource-based and institutional theories as its theoretical foundations'[33], which would not be the case if institutions were not relevant. Therefore, it can legitimately be asked what the factors driving green inventions are in general. The authors report how regulation seems indeed to be the most frequent and mainstream element influencing the rate of cleantech innovation, followed by market pull factors[34].

The next step of this analysis will revolve around the second link highlighted in Figure 1, i.e., the correlation between the number of patents and rates of eco-innovation.

III. SECOND STEP: DO MORE CLEAN PATENTS PRODUCE HIGHER RATES OF GREEN INNOVATION?

Surely, the data on the number of patents for clean technologies have been widely adopted as a proxy to *«measure the results of innovation policies»*, e.g., by the OECD, which used patent data for measuring and analyzing innovation in its 2015 report concerning the *«analyses of narrow technological fields such as many environment- and climate-related technologies»*[35]. However, almost every study about eco-innovation, and using patents as means of evaluating it, carefully contextualizes the choice. The most adopted disclaimer regards the fact that, despite being useful indicators in many ways, patents bring along limitations that are worth being mentioned. On the one hand, patents are often used as markers to measure innovation because, when compared to other options, they have several appealing features[36]. Some of these properties, as mentioned by Haščič and Migotto, are their wide availability, quantitative, commensurability, output-orientation, and capability of being disaggregated[37]. Moreover, patents provide a great deal of information on the invention per se, the inventor(s) and, in general, several details on the application. On the other hand, not all inventions are patented;

32 'There is a consensus in this literature regarding regulation, technology push, and market pull as drivers of eco-innovation' (P. Demirel, E. Kesidou, *Sustainability-Oriented Capabilities for Eco-Innovation: Meeting the Regulatory, Technology, and Market Demands*, in 28(5) Bus. Strat. and the Env. 847-857 (2019)). Also see N. Arranz *et al.*, *Innovation as a Driver of Eco-Innovation in the Firm: An Approach from the Dynamic Capabilities Theory,* in 29(3) Bus. Strat. and the Env. 494-1503 (2020), who argue that innovation, in general, can be considered a driver (and thus a premises) for eco-innovation.

33 J. Hojnik, M. Ruzzier, *What Drives Eco-Innovation? A Review of an Emerging Literature,* in 19 Env. Innov. and Soc. Trans. 31-41 (2016).

34 *Ibid.*, at 39.

35 I. Haščič *et al.*, *The Use of Patent Statistics for International Comparisons and Analysis of Narrow Technological Fields*, OECD Science, Technology and Industry Working Papers 2015/05.

36 I. Haščič, M. Migotto, *Measuring Environmental Innovation Using Patent Data*, OECD Environment Working Papers no. 89 (2015), at 7.

37 *Ibid.*, at 16, for an in-depth analysis of these prominent features as well as the disadvantages.

although it is also true that there are few cases of economically relevant inventions that have not gone through the pathway of patent application[38]. In addition to that, not all inventions meet the requirements to be patented (novelty, non-obviousness, and usefulness), which sometimes makes the inventors opt for other forms of IPRs, namely trade secrets.

For the purposes of this paper, it is relevant to mention that Haščič and Migotto note how 'patent data are best suited for identifying specifically 'environmental innovation', because of their inner 'technical' nature. Unlike other kinds of classifications (commodity and industrial), patents allow for a detailed description of key technologies by specifying the engineering elements of an invention, which suits the highly technological nature of clean inventions[39]. After mentioning the difficulties in choosing the right proxy to measure innovation, Tebaldi *et al.* opt to refer to the number of patents registered in a given period as a quantification tool for inventiveness. Their choice is justified by mentioning a wide array of literature in support of using patents, although several drawbacks are put forward, similar to those mentioned above[40]. Lastly, two more elements need to be considered. Urbaniec *et al.* evoke that the number of patents does not necessarily imply their respective relevance or influence in the practical field[41]. Griliches turned his attention to the object of patent- related measurement: Do patents quantify the input or output of innovation? Additional variables would require to be included, for example 'input measures such as R&D expenditures, and output measures such as productivity growth, profitability, or the stock market value of the firm'[42].

A radical vision against patents is offered by Boldrin and Levine, who underlined how patent systems are exposed to risks of lobbying and rent-seeking. They suggest completely abolishing patents, in favor of other, more efficient, legislative tools and policies[43]. For completeness, as a more nuanced position, Wagner explicitly analyzed whether and how patent data can be used to identify eco-innovations and if such data can be used for

[38] *Ibid.*, at 15. For the answer to the criticism on patents, see H. Dernis, D. Guellec, *Using Patent Counts for Cross-Country Comparisons of Technology Output*, 27 STI Rev. 129 (2001).
[39] Haščič, Migotto, *supra* note 36, at 17.
[40] For the literature in support of using patent data as a proxy to measure innovation see Tebaldi, Elmslie, *supra* note 22, at 7.
[41] M. Urbaniec *et al.*, *Measurements and Trends in Technological Eco-Innovation: Evidence from Environment-Related Patents*, in 10(7) Resources 68 (2021).
[42] Z. Griliches, *R&D and Productivity: The Econometric Evidence* (Chicago, IL: University of Chicago Press, 1998), at 297.
[43] M. Boldrin, D. K. Levine, *The Case Against Patents,* in 27 (1) J. Econ. Persp. 3-22 (2013).

quantitative econometric analysis[44]. He concludes that the use of patent data to measure environmental-related innovation is 'a more conservative approach that identifies only the more radical environmental innovations'. The reasons he gives are multiple: (a) It might be that the invention is protected with other means such as trade secrecy, (b) the invention could have been made under public funding, thus with the condition of public disclosure or even (c) it could be that the firm has no interest in preventing others from freely using the inventions[45]. Therefore, the link between patent filings and innovation outputs is still debatable[46].

IV. PATENTING FOR CLEANTECH

So far, the discussion has allowed us to explore the influence of institutions on patents, as a proxy for innovation, and the relationship between green patents and eco-innovation. The general outline of the Chinese, American, German, Japanese and Korean jurisdictions is meant to offer an overview of the role that institutions have in promoting patenting activities and thus produce a higher rate of innovation. The CLE methodology, supporting the review of the literature on the theme, induces a focus on legal and economic aspects of these countries, such as the way institutions are used to address and reduce risks and uncertainties related to innovation systems. It will be possible to notice how the outcome is not always positive for all jurisdictions, as the American case suggests[47].

Origin	Patents	Marks	Designs
China	1	1	1
U.S.	2	2	4
Germany	5	4	3
Japan	3	5	8
Republic of Korea	4	11	2

Figure 2. Ranking of total (resident and abroad) IP filing activity by origin, 2020.[48]

[44] M. Wagner, *On the Relationship Between Environmental Management, Environmental Innovation and Patenting: Evidence from German Manufacturing Firms*, in 36(10) Res. Pol'y 1587-1602, 1589 (2007).
[45] *Ibid.*, at 1590.
[46] A quite complete study in this sense is R. Kempt, P. Pearson, *Final Report MEI Project about Measuring Eco-Innovation* (European Commission, 2007), 15-22.
[47] See F. van Waarden, S. Casper, *Conclusion: Questions for Further Research*, in Casper, van Waarden, *supra* note 25, 265.
[48] WIPO, *World Intellectual Property Indicators 2021*, at 8, available at www.wipo.int.

IV.1 THE CHINESE CASE

The National Intellectual Property Administration of the People's Republic of China (CNIPA), the Chinese Patent Office, recorded a 6.9% growth in patent filings in 2020[49]. The number is more than twice the amount registered at the United States Patent and Trademark Office (USPTO) in the same year. China undoubtedly classifies first in the ranking for total resident and abroad patenting activity. How is this high rate of innovation explainable? Are there specific Chinese institutions affecting in a significant way the number of (green) patents in the country? The majority of the studies on clean patents and institutions come from this country, signaling the great interest shown towards the issue. Zhou *et al.* focused their attention on the relationship between the Chinese Institutional Environment and Green Economic Growth in the country. They affirm that the improvement of the institutional context decreases transaction costs, promotes factor mobility to enhance resource allocations, minimizes corruption and rent-seeking, generates a fair and equitable setting for entrepreneurs, stimulates innovation, and fosters additional growth in various businesses[50]. The authors consider three main institutional sub-environments, namely the governmental, cultural, and legal ones. According to their study, a good legal environment attracts more funds, whereas the enforcement of the rule of law helps the strengthening of IPRs. As a result, entrepreneurs are more prone to innovate[51]. A country-specific institutional feature mentioned by the study is the 'Chinese style decentralization'. Due to the size of the country, decentralized local governments have more direct control over the economic growth of their community, acting as 'economic politicians'. As a consequence, governmental sub-environments also play a role in green growth, because the political and fiscal direction they embrace will determine a more or less sustainable orientation of the local economy. Lastly, cultural factors also influence eco-businesses. A positive culture for business and environmental protection avoids entrepreneurs leading their activities towards non-green innovation to make faster profits in an already mature market[52]. After conducting their empirical analysis, Zhou *et al.* suggest that an improvement of the cultural sub-environment (informal institution) will positively affect the rate of innovation in China, stating that 'we

[49] *Ibid.*, at 12.
[50] X. Zhou *et al.*, *Institutional Environment and Green Economic Growth in China,* in Complexity 6646255 (2021), at 2.
[51] *Ibid.*, at 3.
[52] *Ibid.*

should strengthen R&D on green patents to promote green transformations with environmentally friendly technological innovations'.

Han *et al.* criticize the Chinese system of fiscal decentralization adopted by local governments. The argument is that it gives incentives to inter-regional competition, 'thus forming a development model centered on short-term interests'[53]. On the contrary, Kuai *et al.* conducted a study that corroborates the thesis that fiscal (and institutional) decentralization has a positive regulatory impact on more sustainable growth and environmental protection[54]. Therefore, it can be said that the role of decentralized authorities and local fiscal policies as institutional factors affecting eco-innovation is still under assessment.

IV.2 THE AMERICAN CASE

The U.S. Patent and Trademark Office registered 597,172 applications in 2020, classifying in the second position among the countries with the highest patent filing activitu[55]. Brunnermeier and Cohen studied the determinants of eco-innovation in the U.S., using successful environmental patent applications as a proxy. Through the use of industrial organizations' literature, the authors aimed to find out the main factors influencing green innovation. Among the major findings, spending on emissions reduction is linked to a moderate but statically relevant rise in environmental eco-innovation (holding everything else equal). Although the rate of successful green patent applications is higher as abatement pressures increase (governmental institutional factor), it does not seem the case for an ex-post increase in enforcement of these abatement mechanisms[56].

van Waarden discusses the role of institutions (law in particular, which he calls 'meta-institution') to reduce risk and uncertainty in the American innovation system. He notices how activist regulation[57], typical in the U.S., can have negative effects on the rate of innovation in the country. In fact, environmental standards tend to be quite strict, rising the costs of compliance for the industry, but giving at the same time more certainty for

[53] For a complete analysis of the main hurdles hindering the growth of a green economy in China, see: J. Han *et al.*, *Technology or Institutions: Which Is the Source of Green Economic Growth in Chinese Cities?,* in 13 Sustainability 10934 (2021).

[54] P. Kuai *et al.*, *Environmental Effects of Chinese-style Fiscal Decentralization and the Sustainability Implications,* in 239 J. Cleaner Prod. 118089 (2019).

[55] WIPO, *supra* note 48, at 12.

[56] S. B. Brunnermeier, M. A. Cohen, *Determinants of Environmental Innovation in US Manufacturing Industries*, in 45(2) J. Env. Econ. and Mgmt. 278-293, 291 (2003).

[57] 'High, strict and detailed standards imposed on business and actively and fiercely implemented and enforced' (van Waarden, *supra* note 25, at 250).

implementing business strategies in the long run (as long as these standards remain constant). The trade-off between predictability and flexibility is of a difficult nature because inflexibilities result in reduced freedom to innovate. Nevertheless, the author notices how 'stricter standards provide more certainty; and can, if formulated at a high level, be a challenge for innovation, either to satisfy it, or to circumvent it'.

IV.3 THE GERMAN CASE

Regarding the impact of German institutions on the rate of green innovation in the country, Hughes and Urpelainen offer case-based evidence of some of the main institutional factors affecting German climate policies[58]. The authors chose to perform a cross-country analysis to find the main reasons explaining differences in national climate policies, which in turn partially determine the rate of green innovation. Referring to their work, it is possible to notice which aspects of the German institutional environment causally affect the development of clean technologies in the country. One of the main findings is that the German population has a strong sense of environmentalism, showing a high interest in climate change-related issues: 'In a 2006 World Value survey, 88% of all Germans considered global warming a "Very Serious" or "Somewhat Serious" threat', reports the paper[59]. Such environmentalism is canalized through the German Green Party. Therefore, public instances to mitigate climate issues receive parliamentary attention, in contrast with the situation in other observed countries, for example, the United States, where the political agenda does not have such strong public-induced attention to environmental concerns. Institutional capacity is also cited as one of the elements determining the development of German green climate policies. Institutional bodies such as the German Energy Agency, the Federal Ministry of Economics and Technology, and the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety contribute to the development of climate change mitigation strategies[60]. It seems that these factors, combined with the consistent use of regulatory instruments, positively impact the German tendency to offer strong industrial and environmental policies. As a result, the clean technology sector is dominant, public support for such measures is solid, and the energy heavy industry grows steadily.

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[58] L. Hughes, J. Urpelainen, *Interests, Institutions, and Climate Policy: Explaining the Choice of Policy Instruments for the Energy Sector,* in 54 Env. Sci. & Pol'y J. 52-63 (2015).
[59] *Ibid.*, at 58, footnote 6, with reference to the *World Values Survey Wave 5, Question 111 – Environmental Problems in the World: Global Warming.*
[60] *Ibid.*, at 58.

It is important to remember that, as mentioned by Holger *et al.*, the essential premise of the green economy innovation system is that innovative ideas are dependent not only on R&D incentives but also on the collaboration of various stakeholders and organizations involved in the green innovation process[61]. Innovation cannot be seen anymore as mere technological progress, as it was in the past. A revolution is ignited by upturns of mindsets, hence the importance covered by green movements in national political settings, such as the German *Energiewende*. According to the authors, social innovation leads and influences technical progress, preparing a fertile ground in which to plant the seed of the green revolution. What Holger *et al.* advocate for in their work is a 'co-evolution processes of technological, organizational and institutional changes', underlying the pivotal role that social and cultural institutions have in the German green innovation framework[62].

IV.4 THE JAPANESE CASE

Patents help in assessing a country's technological capabilities, as well as mapping out the networks of innovation that arise inside and within countries. Some authors have underlined the importance that Japanese universities have in creating basins of creativity to spur innovation[63]. The strong academic environment and dedication to R&D in Japan contribute to the country's leading role in technology novelties[64]. When looking at eco-innovation activities, Kemp and Pearson refer to Porter's Diamond Theory of National Advantage to demonstrate how governments can function as drivers in improving a country's competitiveness in a world economy[65]. Porter's determinants leading to comparative economic advantage include the 'Selective Factor Disadvantage'. According to the Diamond Theory, the lack of resources acts as an incentive for countries to develop competition mechanisms. Japan is one such example, especially for what concerns the energy sector. Venhammar uses evolutionary economic theory to argue that increased energy innovation in

[61] S. Holger *et al.*, *Green Economy Innovation Index (GEII) - A Normative Innovation Approach for Germany & its FEW Nexus*, in 142 Energy Procedia 2310-2316, at 2311 (2017).
[62] More on a comparative analysis of eco-innovation drivers in Germany and France can be consulted through: J. Belin *et al.*, *Determinants and Specificities of Eco-innovations – An Econometric Analysis for the French and German Industry based on the Community Innovation Survey*, in Cahiers du GREThA (2007-2019) 2011-17, Groupe de Recherche en Economie Théorique et Appliquée (GREThA).
[63] As an example, see the study of M. Yarime, *Coevolution of Environmental Regulation and Innovation Network: The Development of Lead-Free Solders in the United States, Europe, and Japan.* Paper presented at the Fourth European Meeting on Applied Evolutionary Economics, Utrecht, The Netherlands, May 19-21 (2005).
[64] Kempt, Pearson, *supra* note 46, at 20.
[65] For a broader view of the Porter's Diamond Model, as well as a revision of such theory to study the G20's renewable energy industry competitiveness, see: K. Fang *et al.*, *Assessing National Renewable Energy Competitiveness of the G20: A Revised Porter's Diamond Model*, in 93 Ren. Sus. Energy Reviews 719-731 (2018).

Japan might be a reaction to the energy dependence of the country on foreign resources. This seems to be the Japanese rationale, as they have encouraged technological innovation to reduce their reliance on non-renewable resources[66]. As for what is stated by the author, to reach energy import dependence, it is essential for Japanese economic and institutional structures to stimulate sustainable innovation.

IV.5 THE SOUTH KOREA CASE

South Korea is characterized by a recent history of green development and innovation, constituting an optimal case study to understand why East Asian countries are striving toward clean innovation[67]. Castellacci and Mee Lie used data from the Korea Innovation Survey 2010 to investigate what factors influence the various types of eco-innovation in South Korea. The authors offer a new taxonomy of green innovation, intended to go beyond the traditional international focus on European countries' clean technology development (in particular, the focus on Germany's *Energiewende*), to offer a new geographical perspective on the debate[68]. Among the main eco-innovation drivers, the authors mention marked demand (especially for recycling technologies), environmental policies and consequent taxes and regulations[69]. The study highlights the great effort of the South Korean government in developing strong climate policies, implemented through an explicit green growth mechanism. As a result, firms have reacted with increasing involvement in eco-innovation, supported by the government rhetoric stressing the positive effect that innovation has on competition. Castellacci and Mee Lie seem to notice for the South Korean case what Zhou *et al.* have put forward for the Chinese one. In fact, both contributions point out the combined impact that legal, governmental, and cultural sub-environments have on the innovation rate of a country. The efforts by the Korean government in advocating for green growth as a virtuous business driver has sensibly impacted the overall clean technological growth of the country. Nevertheless, Veugelers warns against excessively straightforward links between clean governmental policies and private eco-innovation. In his econometric

66 N. A. Venhammar, *Overcoming the Challenges of Energy Scarcity in Japan. The creation of fossil fuel import dependence* (2017), Lund University. Department of Economic History, at 29.
67 F. Castellucci, C. Mee Lie, *A Taxonomy of Green Innovators: Empirical Evidence from South Korea*, in 143 J. Cleaner Prod. 1036-1047, 1037 (2017).
68 *Ibid.*, at 1038.
69 *Ibid.*, at 1046.

study, the author affirms that 'government intervention can [and must] affect private sector innovations, albeit with substantial variation among policy instruments and technologies'. Therefore, there are differentiations to be drawn, as each sub-type of eco-innovation calls for sector-specific institutional drivers (this same conclusion is reached by Castellacci and Mee Lie).

V. INSTITUTIONS INCREASING THE NUMBER OF CLEANTECH PATENT APPLICATIONS

What are the country-specific institutional features that make these nations score high in terms of green innovation, represented by the number of patents? The previous nation-focused sections had the role to depict the framework in which to develop further econometric studies to answer this question. Can we then say that institutions incentivizing patenting in a safe and rewarding environment have an actual impact on the rate of innovation of a country? And does more innovation mean more tools to fight climate change? The issue is undoubtedly complex, involving many different stakeholders influencing innovation, such as 'institutions, culture, policies, infrastructures, education, mediators, financers, research, society, public sectors, business'[70]. As suggested by Cohen *et al.*, besides institutions, other factors are increasing the rate of green patenting, such as the allocation of capital[71]. In addition to the involvement of multiple clean-innovation drivers, green inventiveness does not follow a one-path direction. As previously reported, there is a whole eco-innovation taxonomy that can be developed, with each sub-sector having its own influencing factors. Several studies try to find justifications for such heterogeneity. For example, Leyva-de la Hiz *et al.* partially explained the phenomenon through differences in home-country institutional profiles. What emerges from their study is that several elements are reciprocally influencing each other, as governmental institutions do on industrial organizations. The former affects the latter through environmental policy and regulation pressures[72], whereas the contrary also occurs, when firms lobby for their interests in political contexts[73]. This makes it difficult to draw a distinct line between drivers of innovation to operate sound econometric analysis that could confirm the causal correlation. Another layer of complexity in trying to determine what causes some countries to be more environmentally

[70] Holger *et al.*, *supra* note 61, at 2311.
[71] L. Cohen *et al.*, *The ESG-Innovation Disconnect: Evidence from Green Patenting*, The Harvard Law School Forum on Corporate Governance (2020).
[72] D. I. Leyva-De La Hiz *et al.*, *The Heterogeneity of Levels of Green Innovation by Firms in International Contexts: A Study Based on the Home-Country Institutional Profile*, 32 Org. & Env. 508–527, 509 (2019).
[73] Example provided by Hughes, Urpelainen, *supra* note 58, at 59, with the Association of the German Machinery Industry (VDMA) supporting the introduction of the Renewable Energy Act in 2000.

innovative than others is the geographical factor. The Global North and South, as well as the East and the West of the world, have different needs to satisfy, depending on the growth rates of their economies and the perception of the climate problem[74]. As recalled several times by Castellacci and Mee Lie, most studies concentrate on European samples, whereas sound econometric studies on East Asian countries are still lagging behind. Hence, extending the geographic coverage of empirical analyses on eco-innovation is essential.[75]

VI. FINAL CONSIDERATIONS

Many are the elements to include in the study of eco-innovation and its institutional drivers, and this discussion tried to display the complexity of the topic while providing a guide to navigate through the issue. The analysis started from the consideration of several factors, such as institutions affecting the patenting activity, the use of patents to measure the increasing rate of innovation and the country-specific elements leading to sustainable growth. Is all this the result of a causal series of events? This work aims to be a synthesis of some of the relevant pieces of literature in the field, whereas the need for further econometric studies to assess the causal chain of these drivers is evident. The limitations of this paper due to the lack of a quantitative study leave the door open for additional research. Errors and reverse causality are behind the corner, therefore a careful selection of the methodology and data to execute the quantitative study is required. An example of reverse causality is pointed out by Zhou *et al.*[76] when stating that green innovation is listed among the factors influencing an institutional environment. Are institutions influencing innovation or vice versa? Is it reciprocal? This needs to be considered. Moreover, patents alone cannot be the sole proxy used to measure eco-innovation, first and foremost because they are indicators for inventions, not innovations[77]. This paper is meant to provide a conceptual overview for those wanting to approach the issue, without any pretense to be exhaustive. A CLE methodology applied to all the several stages of the innovation process can help identify the most relevant institutions and their interplay, not only in a national context but with an eye to international

[74] More on the willingness of the North to help the South at: K. S. Herman, *Beyond the UNFCCC North-South Divide: How Newly Industrializing Countries Collaborate to Innovate in Climate Technologies*, in 309 J. Env. Mgmt. 114425 (2022).

[75]

[76] Zhou *et al.*, *supra* note 50, at 2.

[77] Kempt, Pearson, *supra* note 46, at 103.

counterparts[78]. As an example, both Germany and South Korea seem to have strong governmental policies (governmental sub-institutions) in favor of green innovation. Under the CLE lenses, it is possible not only to highlight the similarities between the two legal systems, but also to go one step further and use a comparative approach to all the phases of the policy process, from agenda-setting to termination[79]. Another fruitful avenue for research could be to assess to what extent comparative law could help less green innovation performing governments draft sound and effective policies that could spur more eco-inventiveness. A further line of continuation of this work could also be to verify two major questions: (a) Does more green innovation mean a more effective fight against climate change? (b) What are the main methodological issues related to legal transplants of green innovation and how could they be resolved? Hopefully, these considerations will have broader implications in the process of understanding what determines innovation in a country and what could be done to virtuously imitate the best- performing ones. One last point needs to be mentioned: although a common CLE methodology has yet to be drafted[80], at least this approach can aim to provide a general framework in which different stakeholders can start an interdisciplinary dialogue to address global issues, such as environmental innovation to fight climate change.

[78] For more on comparative legal diagnostics see Bellantuono, *supra* note 16.
[79] *Ibid.*, at 4.
[80] *Ibid.*, at 8.

THE KEY ROLE OF COMPARATIVE LAW AND ECONOMICS IN THE STUDY OF ESG

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In the legal and economic context, sustainability is of paramount importance, as it inspires regulators and investors with their choices. Within this topic, ESG factors have been identified as a crucial factor, as well as the current benchmark adopted by gatekeepers to assess the «quality» of the markets' players. Because of the relevance of the issue, lawmakers and authorities are providing operators with an increasing number of «hard» and «soft» provisions, whose final goal is to make the system compliant with (the best) environmental, social and governance standards. This paper offers a preliminary analysis of the importance of Comparative Law and Economics (CLE) in the subject matter, and then a comparative study of (i) the legal frameworks and the case law of different legal systems on ESG, as well as (ii) the markets' outcomes, grounded on a cost-benefit analysis of the investors' behaviors. More particularly, the paper provides readers with a comparison between different regulatory choices adopted by a selected number of legal systems, so to allow a clear comprehension of the topic, of its cost and of its consequences, also in the light of competition between jurisdictions, and identification of shared solutions amongst players.

I. PREMISE

The issue of sustainability is undisputedly central in economic law: as it is well known, especially after the pandemic, regulators and gatekeepers have begun to devote particular attention to the creation of an economic system - or, to be more precise, a financial system[2] - capable of complying with standards and canons aimed at pursuing goals other than mere profits.

In such a framework, the pre-determination of environmental, social and governance factors (so-called "ESG") represents a particularly important turning point. On the one hand, it provides operators with a useful benchmark for their work. On the other hand, it confirms the importance of "third parties" (*id est* stakeholders) with respect to businesses, with the

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[2] On this topic see, *ex multis*, D. Bush *et al.* (eds.), *Sustainable Finance in Europe. Corporate Governance, Financial Stability and Financial Markets* (Cham: Palgrave Macmillan, 2021). See also S. Giglio, B. Kelly, J. Stroebel, *Climate Finance,* 13 Annual Review of Financial Economics 15 (2021).

consequent progressive reformulation of certain main principles of the productive-economic-financial system, as well as the re-evaluation of those players who, being excluded from investment processes, historically became the sole bearers of negative externalities of entrepreneurial activities.

Economic considerations, although central, are nevertheless not the only ones to benefit from the current relevance of the general issue of sustainability. Such matter, in fact, offers the possibility of dwelling on a multitude of aspects, linked together by the common denominator here at issue. Among the many possible ones, it is worth recalling the relevance that the subject of sustainability has both for environmental demands and for the "social" dimension of the actors in the various legal systems. Nonetheless, the vastness of the topic imposes the question as to the rationale (and actual possibility) of arriving at an all-encompassing regulation capable of transcending not only geographical borders, but also sectoral ones, by virtue of the so-called holistic approach that is said to characterize the study of the subject under examination.

The multitude of issues highlights that what counts in the sustainable path imposed by policymakers is, first and foremost, the implementation of a method of research and study fully shared and capable of shedding light on the various topics that characterize the subject. A method, in other words, that is necessarily cross-sectoral and intended to take into due consideration the importance of both theoretical and practical-quantitative data, in a constant dialogue between law and economics, as well as between legal systems of different natures and perspectives.

Against this background, given a short introduction (sections I, II, III), this paper intends to analyze the topics of sustainability and ESG (section V) through a comparative law and economics method, paying attention at the relevance of social and governance factors (section VI, VII) and, *inter alia,* suggesting the need to re-discover the importance of privatization for the subject matter (section VIII). All the above, in the light of understanding the effective allocation of cost (section IV), as well as of liabilities (section IX), related to the brand-new "sustainable wave".

II. The issue relating to the method

The methodological approach adopted assumes fundamental relevance in the study and evolution of ESG factors and thus, more generally, in the approach to the issue of sustainability. The reason for this relevance is certainly not trivial and must be sought in the

perimeter of a research that, in the first instance, takes on an ever-changing character, depending on the point of view of the readers.

If on the one hand ESG factors, as singularly understood, represent precise aims of the renewed and virtuous entrepreneurial behavior, on the other hand the general theme of sustainability also outlines a method. This is a method that, on the one side, has a strong practical nature and, on the other side, would seem to implement a methodological *reductio ad unum* able to transcend disciplinary boundaries, with a view to and by virtue of the need to relate to a subject that is so systematic as to require a renewed course of action in its study.

Such a comment, on closer inspection, becomes moreover of central importance when related to the strongly interconnected nature of the issue of sustainability, which in fact has a direct impact on operators, regardless of any geographical and/or ideological barriers. Sustainability, more than other topics, evokes the need to relate to a progressively globalized study of law, and this because (i) it is necessarily aimed at finding general and shared solutions to problems. And (ii) it underlines the importance of paying attention to the cost of regulatory choices, in an economic-financial system of checks and balances, that can no longer be regulated at the local level.

III. RELEVANT ASPECTS: COMPARISON, FORUM SHOPPING

In view of the above, the legal-economic method (which can be traced back to the economic analysis of law or EAL[3]) presents the ideal characteristics for the study of sustainability, on the basis of the - verified - premise that the critical analysis of the rules leads to the creation of an efficient system aimed at the (desirable) minimization of costs and risks (at least internalized) and the maximization of benefits (both at an individual and collective level).

However, this approach, by virtue of the above-mentioned evident interconnected nature of the relevant issues, also finds key support from the comparative methodology, which is unique among other methodologies in providing a reasoned study of many different positions. An essential element, the latter one, especially in the light of a system lacking single and shared regulatory Authorities among the various actors involved.

As pointed out by leading scholars, the discipline known as Comparative Law and Economics (CLE)[4] has developed from the combination of EAL and comparative studies[5]. A discipline that was born out of a constant dialogue between approaches that were once distinct, and then

[3] See S. Shavell, *Foundations of Economic Analysis of Law* (Cambridge, MA: Harvard University Press, 2004). See also G. Alpa, *Il futuro di Law & Economics: le proposte di Guido Calabresi*, in *Contratto e Impresa* (2016), 597.

[4] See N. Garoupa,T. Ulen, *Comparative Law and Economics: Aspirations and Hard Realities*, forthcoming in 70 *Am. J. Comp. L.* (2022); U. Mattei, *Comparative Law and Economics* (Ann Arbour, MI: University of Michigan Press, 1997).

[5] On this topic, *ex multis*, see R. Sacco, P. Rossi, *Introduzione al diritto comparato* 7th ed. (Turin: UTET, 2019).

capable of mutually reinforcing each other, given that: on one hand, "comparative law may gain theoretical perspective by using the kind of functional analysis employed in economic analysis of law"[6]; and, on the other hand, "comparative law enriches EAL with a tank of alternative institutional models that are not merely theoretical but tested by history"[7], thus making it easy for operators "to identify and explain the phenomenon of convergence between systems and to identify the possible implementation by a given legal system" - more, or less, globalized - "of an efficient solution, foreseeing, by means of comparison, consequences that in the medium-to-long term a rule may bring with it"[8].

In other words: it is an excellent way to achieve socially desirable and sharable models (resulting in zero costs and negative externalities from forum shopping phenomena) and, thus, perhaps fully sustainable.

IV. IN PARTICULAR: COSTS AND EFFICIENCY

The subject matter should be closely linked to reasoning of an efficiency type that, overall, should highlight which, among many ways, may be the "best way" to achieve a sustainable system, without losing focus on the economic perspective as well.

In fact, beyond reasoning of a (dangerously) ethical nature - and therefore far away from the sphere of law - it is crucial to emphasize how the complexity of the matter, the multitude of factors established by it as optimal, and the recurrence of other "variables" instead classically characterizing the real and financial market, impose a serious review of the issue, necessary to identify a reliable and shared evaluation and scoring tool for the transition process between systems.

The topic under consideration must be closely linked to an "efficientist" reasoning that, overall, must highlight which, among many ways, may be the "best way" to achieve a sustainable system. On this point, the following can be observed in an exploratory way.

With reference to the pre-determination of, and the relationship between, one or more sustainable factors, a useful tool of analysis could well be that offered by the EAL, in its comparative declination, insofar as it is apt to understand what is the ideal - *rectius* optimal - measure of fulfilment of environmental, social and governance goals. In other words, given the clear distinction between the three ESG factors, it is correct to conclude for an inevitable

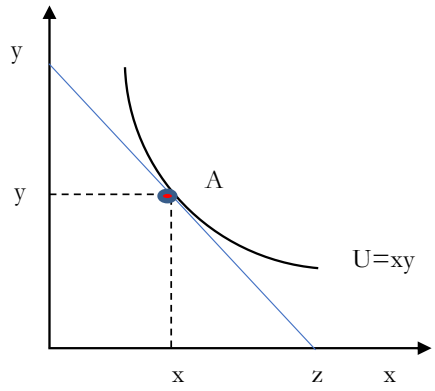
6 See U. Mattei, A. Gallarati, *Economia politica del diritto civile* (Torino: Giappichelli, 2009).
7 *Ibid.* (translation from Italian provided by the author).
8 *Ibid.* (translation from Italian provided by the author).

trade-off between them to be made (unless one utopianly imagines a "perfect world"); therefore, it seems correct, as well as necessary, to resort to certain concepts typical of economic analysis to understand how much of each purpose it is efficient to pursue.

In this regard, it is crucial, on the one hand, to recall the indifference curves and utility functions, which graphically present all the positions in which an objective can be considered satisfied and, on the other hand, to define, in an unambiguous and shared way between legal systems, which concept of efficiency is to be used.

With reference to the first point, it will in fact be possible for a company to understand the "optimal" point, *id est* the position, among all the possible combinations of ESG factors, from which it will obtain (at least theoretically) the greatest utility, also taking into account external variables such as those of the balance sheet (see Figure 1 below).

Figure 1. Optimal combination of ESG factors.



Note:
Imagine the functions "y" and "x" represent different levels of satisfaction of environmental, social or governance (ESG) targets. "U" represents the position in which the subject obtains utility from each combination. Given the budget constraint "z", point "A" represents the optimal sustainable management action, i. e. the best possible choice among all those conceivable, also taking into account external variables.

Reference made to the second point, it will be possible to understand what is the efficiency criterion that the new sustainable market aspires to reach. A criterion which, perhaps, should well recall the teachings of Pareto aimed at "pushing" all market players (including the sustainable ones) towards the highest of the indifference curves, according to a design in which any further modification of the factors (e.g. greater attention towards the environmental factor, to the detriment of the social one) can only lead to an inefficient system insofar as it is capable of correlating the greater utility of one individual with the lesser utility of another. The foregoing, moreover, shall be intended as net of compensatory measures of a public nature, which are, moreover, perfectly plausible (and in part already in place) in the matter under

consideration (and so pointing out the relevance also of the Kaldor and Hicks theory of efficiency in this sector[9]).

Notwithstanding the observations above, it should however be underlined that the issue of sustainability is closely connected to that of efficiency and costs from its very origin: in fact, it relates to the well-known debate on the correct identification of the corporate purpose[10] between shareholders' interests and the position of third parties who, improperly accumulated in the all-encompassing category of stakeholders, have historically been the bearers of the negative externalities of entrepreneurial action.

V. THE ESG FACTORS

The sustainable transition thus represents an optimal testbed for the use of legal-economic methodologies that can outline the most efficient ways to achieve the envisaged aims, even more so in a comparative framework – characterized by (quite often not so clear) rules and regulations.

In fact, with reference to the positive discipline, it is evident that, at the current state, particular attention is paid to the issue of the environment and climate change, which is considered a starting point in the subject matter. In this regard, it is sufficient to recall the centrality assumed, in the European context, by Regulation 2020/852 (the so-called Taxonomy Regulation) and Regulation 2019/2088 (the so-called SFDR) relating to sustainability disclosure in the financial services sector. The same topic is now also subject of interest by the Securities and Exchange Commission (the "SEC" or "Commission") who recently proposed rules for climate change disclosure requirements for both U.S. public companies and foreign private issuers[11].

However, the same degree of accuracy is lacking in relation to the other two pillars of sustainability. Pillars which, presumably, represent the source of innumerable transactional costs and negative externalities.

[9] See U. Mattei, A. Gallarati, *supra* note 5, at 21.

[10] On this topic see E. W. Orts, *The ALI's Restatement of the Corporate Objective Is Flawed*, available at https://clsbluesky.law.columbia.edu/2022/06/06/the-alis-restatement-of-the-corporate-objective-is-seriously-flawed/comment-page-1/#comment-379129.

[11] The proposed rules and the relevant press release are available at https://www.sec.gov/news/press-release/2022-46. On this topic see Professor Sean Griffith's comment letter, available at https://www.professorbainbridge.com/professorbainbridgecom/2022/06/sean-griffiths-comment-letter-to-the-sec-re-climate-change-disclosure.html.

VI. THE "SOCIAL" ISSUE: THE REBIRTH OF THE BEHAVIORAL PARAMETER

It is precisely the social issue that becomes the point where opposing visions of sustainable transition could meet and clash. This is because, while the environmental dimension and the regulatory approach (governance topic) are important (see below), it is clearly on the social side that conflicting visions, even opposing demands and, above all, solutions that are probably neither objective nor scientifically probable (as is the "E" factor) could clash and, therefore, easily be enmeshed in a debate that is more political than legal.

This systemic issue enables to dwell, among many other things, on a key aspect: that of the re-evaluation of the classic categories typifying the *homo oeconomicus* (as it is well known, driven by rationality and the exclusive interest in looking after individual interests) in favour of players capable of assessing, in their own decision-making process, also the social aspects of their investment. Social aspects, however, which, as mentioned above, have not yet found a clear classification and which, indeed, could well become the subject of countless readings and classifications, perhaps even conflicting with each other.

As pointed out by legal scholars, behavioral law and economics is crucial as it "imports the findings of cognitive and social psychology into legal and economic decision making. The importance of this innovation is that it replaces the mechanical and unrealistic view of decision making (called "rational choice theory") that has long been the prevailing theory of decision making in microeconomics, with a more realistic view of fallible human decision making"[12].

Sustainability, therefore, offers the ideal opportunity to consider such a methodological question and - precisely starting from the centrality of the "S" factor - to rediscover the importance of the behavioural approach and thus also of that behavioural law and economics that favour the "real mankind" to the "economic mankind", as such, oriented in its choices (sometimes even irrational) by cognitive biases, social beliefs and reputational issues (or even just anagraphical ones) that usually escape the strictest boundaries of numerical-legal analysis.

[12] See N. Garoupa, T. Ulen, *supra* note 4.

All of the above is without prejudice to the centrality of the ethical-emotional sphere[13], and the hypothetical relevance in this regard of the theory of legal origins[14].

VII. THE GOVERNANCE ROLE: THE MEANING OF RULES

A further crucial and problematic aspect refers to regulation, regarding which an initial paradox must be highlighted: namely the "unsustainability"[15] of the discipline dictated on the subject of sustainability[16].

The regulatory framework is constantly evolving and must be related to an interconnected system of sources, in which a problem of hierarchy and alignment between hard law and soft law provisions (as much as between lawmakers on the one hand, policy makers on the other, as well as the European Supervisory Authorities – ESAs) frequently arises.

In particular, and focusing on the European system, which is the reference context for civil law, it must be underlined that the relationship between the European Commission and the ESAs is of particular importance; as recently pointed out, from a scholarly point of view, the issue revolves around questioning "the unity of the (substantive) action of the European Institutions and Authorities", as well as the need for a "correct and timely coordination at European level of the sources, which do not develop on a single level, but are layered in a multilevel system that sees its foundations in the freedoms and principles contained in the Treaties (TEU and TFEU). Such a system includes first level derivative law (directives and regulations) and second level derivative law (for example, delegated and implementing regulations, including those aimed at the adoption of the regulatory or implementing technical standards, known as RTS and ITS, prepared by the European Supervisory Authorities at the request of the Commission and formally adopted by the latter pursuant to Art 290 TFEU),

[13] See E. Zamir, B. Medina, *Law, Morality, and Economics: Integrating Moral Constraints with Economic Analysis of Law*, in 96 *Cal. L. Rev.* 323 (2008).

[14] On this topic, see R. La Porta *et al.*, *The Economic Consequences of Legal Origins*, in 46 J. *Econ. Lit.* 285 (2008). See also M. Gelter, M. Siems, *Language, Legal Origins, and Culture before the Courts: Cross-Citations between Supreme Courts in Europe,* in 21 *Sup. Ct. Econ. Rev.* 215 (2013).

[15] See J.L. Hansen, *Unsustainable Sustainability*, in *Oxford Business Law Blog*, 8th March 2022.

[16] See R. Cooter *et al.*, *Il mercato delle regole. Analisi economica del diritto civile* 2nd ed. (Bologna: il Mulino, 2006). See also F. Denozza, *Norme efficienti. L'analisi economica delle regole giuridiche.* (Milano: Giuffré, 2002).

often in turn supplemented and detailed by third level acts, in some cases of non-binding nature (for example, guidelines and guidance of the European Supervisory Authorities)"[17, 18].

In addition to the above-mentioned topic and as precisely underlined by prominent scholars, it is worth focusing on another key aspect of sustainability regulation, particularly important for the CLE approach: the cost of regulations and their consequent (in)efficiency.

Over-abundant regulations, unclear in their application and lacking a concrete, serious and transparent enforcement mechanism, entail high costs for operators who, according to the classic EAL reasoning, will consider it more efficient to transgress the regulatory dictates, as the possible sanction - if ever imposed - will cost less than that of compliance.

With reference, furthermore, to the comparative point of view, it is worth recalling the diversity of approaches with which, as of today, the issue of sustainability has been addressed, even between neighbouring systems belonging to the same legal family. By way of example, it should be recalled that the Italian model - where the issue of sustainability has been codified at a constitutional level and by self-regulation - and the French model - instead characterized by a more precise first degree regulatory provision on the subject (the Loi Pacte of 22 May 2019) - appear to be pursuing two distinct paths, although directed towards the achievement of the same ends and, moreover, within the same European Union macro-system.

In the light of the foregoing, it is precisely the comparative examination - reinforced by the EAL approach - that makes it possible to ascertain (i) hypotetical improvements in a national regulatory framework; (ii) potential competitive disadvantages within the European territory; as well as (iii) the actual distinct balance between public intervention and private autonomy in the subject matter.

More specifically, the appropriateness of investigating this difference in regulatory solutions, among other things, stems from the general observation that, while the Italian Civil Code continues to lack a specific rule expressly requiring directors to take into account interests other than those of the shareholders, [Article 2247 of the Civil Code limiting itself to mentioning, as the purpose of the economic activity underlying a company's funding contract, the aim of profit ("with a view to sharing its profits")], the French legal system has opted for a general amendment of the definition of a company itself. Indeed, Article 169 of the Loi Pacte

[17] See F. Urbani, *Rassegna dei principali interventi legislativi, istituzionali e di policy a livello europeo in ambito societario, bancario e dei mercati finanziari*, in *Riv Soc.* 196 (2021) (translation from Italian by the author). Please note that the same issue has been addressed by me in *The Regulation on European Crowdfunding Service Providers for Business: a Commentary* (Cheltenham: Elgar Publishing, forthcoming 2022).

[18] On this topic, see F. Annunziata, *The Remains of the Day: EU Financial Agencies, Soft Law and the Relics of Meroni,* (November 19, 2021), in *EBI Working Paper Series No. 106/2021*, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3966980; N. Moloney, P.H. Conac, *EU Financial Market Governance and the Covid-19 Crisis: ESMA's Nimble, Responsive, and Speedy Response in Coordinating National Authorities through Soft-Law Instruments,* in 17 *Eur. Company & Fin. L. Rev.* 363-385 (2020).

amended Article 1833 of the French Civil Code, which merely provided that the company should be managed in the social interest, stipulating that it should pursue the interests of its shareholders while also considering social and environmental challenges. The foregoing with obvious consequences in terms of power and (efficient?) allocation of liabilities to board members (see below).

Nevertheless the environment is certainly taken into consideration by the Italian legal system, as of 9 February 2022 also at a constitutional level: in fact, a reform of the Italian Constitution, recently approved, introduced in Article 9, dedicated to the territory ("*paesaggio*"), and in Article 41, on economic initiative, an explicit provision for the protection of the environment and biodiversity.

In any case, a comparative and "efficientist" evaluation of the different choices adopted by the two legal systems, and of how these have been put into practice, may also usefully be included in the debate, which followed the recent Italian constitutional reform, on whether the need to introduce the environmental purpose at the level of primary legislation remains.

Such a topic also assumes importance in view of the similarities that characterize the regulations, given also that a greater and more complete harmonization, in terms of sustainability, may instead be noted (and deserves to be explored in depth) with regard *inter alia* to listed companies. The corporate governance codes adopted in various European legal systems, which listed companies are called to abide by and implement, in accordance with the "comply or explain" principle, tend to progressively promote a greater consideration of stakeholders' interests and, above all, of the values of environmental sustainability.

In particular, Article 1, 1.1, of the French *Code de gouvernement d'enterprise des sociétés cotées*, and Article 1, I, of the Italian Corporate Governance Code, both referring to the board of directors, emphasize the need, albeit with partly different terminology, for 'considering the social and environmental issues of [the company's] activities' ("*en considérant les enjeux sociaux et environnementaux de ses activités*") and to "pursue sustainable success" ("*perseguire il successo sostenibile*").

Lastly (and with reference to a Common Law system), it must be remembered that under section 172, letter (d), of the UK Companies Act of 2006, it is stated that "A director of a company must act in the way he considers, in good faith, would be most likely to promote the success of the company for the benefit of its members as a whole, and in doing so have regard (amongst other matters) to […] the impact of the company's operations on the community and the environment".

Thus, the distinction between civil law and common law systems appears to be smoother in the context of sustainability. This is a field within which the theory of legal families seems unable to perfectly explain different regulatory choices.

VIII. THE WORLD IN A LAKE: THE PARADOX OF THE "COMMON GOOD" AND THE RENAISSANCE OF PRIVATIZATION

The topic under consideration, examined according to the approach given by CLE, allows to be addressed a key aspect of sustainability and EAL, namely its positioning between the public and private sectors.

The issue is central and may be analyzed under two distinct perspectives: the first relating to costs, the second inherent to solutions that, in this matter, may be offered precisely by a re-elaboration of the more classic distinctions between public and private operators (and the relevant areas of competence and influence), aimed at identifying new and more efficient solutions.

On both profiles, the CLE approach proves to be fundamental, even more so in view of the involvement of classic categories of law and a multitude of solutions in the reasoning in question, which, in comparative terms, could be observed also among countries belonging to the same legal families.

As far as the first subject is concerned, I consider crucial to offer a preliminary and critical remark: the subject of sustainability tends, first and foremost, to achieve objectives with a strong "public nature" (think of the environment and social issues). However this involves "offloading" the costs of the transition onto private operators.

The examples are manifold and, even before drawing attention to the more general theme of the efficiency of the rules (analyzed below), reference can be made either to "compliance costs", "disclosure costs" or, finally, to the more general category of "confusional costs" (this is how I'd call them) arising from a regulatory and operational framework still in (perpetual) development. In this framework, the economic analysis of law in its comparative dimension should permit a more careful examination of the various market failures (of the regulatory market), with the consequent reallocation of costs also to public entities (which, in many cases, appear to be anything but sustainable).

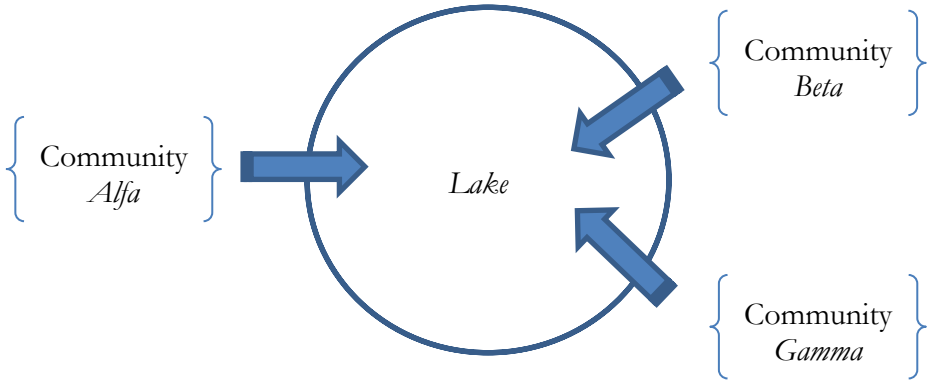
With reference to the subject matter, CLE could - and in my opinion should - lead to a serious reconsideration of some classic concepts, starting with the distinction between public and

private players and the mistrust with which the topic of privatization of public assets[19] is often approached.

In a framework in which, as it is evident and also due to technological evolution, there is a rapid progress towards the increasingly massive use of primary goods, privatization seems in fact to be a sensible remedy in order to avoid the risk of overgrazing and, therefore, excessively exploiting.

On this matter, one could consider the most classic of examples, typical of the economic analysis of law: that of the three fishing communities living on the shores of the same lake.

Figure 2. Commons management and sustainability.



In this context, where resources (fish) certainly do not abound, the various communities cannot continue their respective exploitation activities undisturbed, leading to the extinction of the resource itself. The solution, as is well known, should therefore be found in the privatization of the lake. In fact:

— in the case of a single owner, (i) such an owner would have incentives to slow down fishing activities, in recognition that overgrazing (short-term perspective) would lead to the cessation of activity at an early stage (long-term perspective); and (ii) the community, among the other two, wishing to increase its economic activity would be required to internalize the costs (no longer passed on to the others) by purchasing from the owner in question the relevant right to carry out particularly intense activity;

[19] On this topic see the explanations of Mattei, Gallarati, *supra* note 6; P. Gallo, *Introduzione al diritto comparato. Analisi economica del diritto* (Turin: Giappichelli, 1998) for further bibliographical references.

— in the case of three owners, those - among them - "forced" to suffer the excessive and, at this point, unlawful activity of one of the three, could reallocate (for example through a lawsuit) the loss suffered to the one who caused it through conduct contrary to law.

In such terms, and as pointed out by scholarship, if precise forms of ownership are lacking, the risk of overexploitation and, as a consequence, the 'tragedy of the commons' (resources) is extremely high, with the consequence that forms of individual exploitation are much more efficient, sustainable, and rational than collective ones. The foregoing, however, should also be read bearing in mind the opposite example of the tragedy of the anticommons, e.g. the risk and externalities arising from the disproportionate existence of property rights on the same asset[20].

It is true that, with reference to hypothesis (i) (e.g. single owner), if on one hand economic theory suggests allocation of the lake be made to a single subject, on the other hand it does not specify whether this subject should be public rather than private. Nonetheless, and based on past and comparative experience - and here the relevance of the CLE approach is crucial once again - the public allocation of the lake could entail further transaction costs and potential negative externalities, starting with the barriers posed by an inevitable widening and sophistication of the relevant rules (not to mention the problems likely to arise in terms of competition).

The issue of the lake, here-above briefly summarized, should be emblematic of the sustainability theme, particularly with regard to the solutions that could be envisaged regarding the "E" factor. This is a central element insofar as it dangerously straddles the line between "environmentalist" visions and the needs of an economy which sees its key in the exploitation of raw materials, today more than ever.

IX. ALLOCATION OF LIABILITIES AND INFORMATION ASYMMETRIES

The methodology provided by Comparative Law and Economics also offers valuable insights when dealing with a topic typical of economic analysis and critical of market and corporate law: that of the efficient allocation of liability.

In fact the evolution of the regulation of sustainability and the - perhaps confusing - pre-determination of environmental, social and governance factors not only presents a necessary element for the transition of markets towards sustainable structures and patterns, but also creates a further benchmark for assessing the correctness of the activities carried out by the players of the economic system and thus of their managers and board directors.

[20] Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, in 111 *Harv. L. Rev.* 621 (1997).

The point is crucial and must be investigated from a twofold perspective: that of corporate compliance with sustainable rules and that of management discretion in the hands of the executive directors.

Regarding the first perspective, a well known and growing concern regarding these phenomena is that they are more and more frequently catalogued under the label "greenwahisng". The topic is extremely important and makes it possible to question, first, the critical nature of a regulatory framework that not only allows, but perhaps even encourages, phenomena of this kind, and which is considered likely to be competitively advantageous with respect to the costs of compliance.

In other words, faced with the obvious difficulty of local and global enforcement of rules that are still in the making and, in any case, difficult to implement, and the high costs of complying with them, it is not surprising that abuse and misuse of the tools provided by sustainable regulation is a common occurrence. Furthermore, this can occur simply because it is more efficient (hence less costly) to bear the cost of a possible sanction (assuming it is eventually imposed) rather than to adapt *ex ante* to a regulatory set of overly complicated implementation. In this respect, therefore, CLE proves to be of central importance, inasmuch as it is capable - perhaps uniquely and even more so after the unfortunate experience of the so-called corporate social responsibility[21] - of designing suitable instruments to correctly balance prescriptions and sanctions and thus avoid passing on to third parties the costs of the transition[22].

With reference, instead, to the second topic, one of the weak points of the current regulatory framework and, more generally, of the discussions that take place daily about sustainability, refers to the need for directors of companies - mostly listed and therefore large - to pursue (not so clear) ESG factors.

The issue, which is part of the broader debate between shareholders and stakeholders' interests[23], with consequences for corporate governance[24], and which assumes particular

[21] See S.L. Gillan *et al.*, *Firms and Social Responsibility: A Review of ESG and CSR Research in Corporate Finance*, in 66 *J. Corp. Fin.* 101889 (2021).

[22] As part of its Green Deal, the European Commission issued in March new proposals to make sustainable products the norm. The Plan also includes proposed changes to the Unfair Commercial Practices Directive, as to update the EU consumer rules to empower consumers for the green transition and ban greenwashing. The proposal is available at https://ec.europa.eu/info/publications/proposal-empowering-consumer-green-transition-and-annex_en.

[23] On this topic see L.A. Bebchuk, R. Tallarita, *The Illusory Promise of Stakeholder Governance*, in 106 *Cornell L. Rev.* 91-178 (2020); O. Hart, L. Zingales, *Companies Should Maximize Shareholder Welfare Not Market Value*, *ECGI - Finance Working Paper* no. 521/2017; C. Mayer, *Prosperity: Better Business Makes the Greater Good* (Oxford: Oxford University Press, 2018).

[24] See, again, N. Garoupa, T. Ulen, *supra* note 4. Reference can be made to the business law field, see A. Engert *et al.*, *Business Law and the Transition to a Net Zero Economy* (Munich: Beck, 2022). With reference to corporate law, see M. Gelter, *Comparative Corporate Governance: Old and New*, *ECGI Law Working Paper* no. 321/2016.

centrality also in view of the (un)fortunate formulations of the Italian Corporate Governance Code (which, as noted above, mentions the "sustainable success"), could lead to "catastrophic" consequences: beyond theoretical issues, it is in fact evident that the disproportionate - and on closer inspection, unjustified - extension of behavioural duties and managerial objectives upon the directors, corresponds to an equally (too) broad (and costly) extension of the liabilities potentially falling upon them, in contrast with some cornerstones of the subject matter, as designed by corporate law.

Cornerstones that clearly make management responsible, however, in the awareness that it must recognize the necessary decision-making autonomy (the so-called business judgment rule) in the pursuit of the company's interests and in "strict" compliance with that principal and agent relationship that exists solely and exclusively towards shareholders and not towards third parties or the community[25]. In this regard, Articles 25 and 26 of the proposed Directive on Corporate Sustainability Due Diligence (CSDD)[26] are of particular concern due to their vagueness regarding the role and duties of companies' directors. Vagueness that could prove counter-productive as to abovementioned directors' necessary autonomy in decision making when managing a company. Heterodox solutions with respect to the one outlined above, for instance because the latter are intended to guarantee greater attention to stakeholders, could improperly subvert the reference framework, with the consequence of designing an asymmetric system, characterized by an undue allocation of risks and liabilities and, therefore, by excessive costs of the office with respect to the real "gain" deriving from it. This, too, is a profile that represents the ground for serious comparative and legal-economic analysis and, hopefully, free of moral bias.

X. FINAL REMARKS

In conclusion, the need to rediscover the centrality of the comparative law and economics approach in the study - and preparation - of a sustainable transition is, in my view, evident. The risk of adopting other methods of study and research is, in a nutshell, that of dwelling on a parceled-out examination of the issue and not paying attention to the real theme: that of the

[25] On this topic see A. Orowitz, R. Kumar, H*ow Investors are Assessing Directors on ESG Matters,* in *Harvard Business Law Forum*, 11th April 2022; S. Bainbridge, *Don't Compound the Caremark Mistake by Extending it to ESG Oversight*, in *UCLA School of Law, Law-Econ Research Paper* no. 21-10.

[26] The text of the Proposal is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0071. See also P. Davies *et al.*, *Commentary: The European Parliament's Draft Directive on Corporate Due Diligence and Corporate Accountability*, April 2021 at https://ecgi.global/news/commentary-european-parliament%E2%80%99s-draft-directive-corporate-due-diligence-and-corporate.

transaction costs of transition. Clearly high costs and, therefore, to be allocated with the utmost care among the actors involved, in a global and necessarily interconnected framework. At the risk of espousing an excessively pragmatic and 'efficientist' vision, the central point of the question will then be that of the convenience of one solution over another, in terms of a costs/benefits analysis, and of the distribution of negative externalities. This is a key element, to which only the methodological path outlined here seems capable of providing an adequate response.

It is true that, as recently pointed out by important scholars, "the relationship between comparative law and law and economics has been, in a word, uneasy. They are like relatives who can trace some familial connections but for whom those connections have not been enough to overcome a visceral dislike. Periodically they must come together, but no such meeting has been a cause for rejoicing and "How long has it been?"[27]. This, however, must not interrupt the path of mutual influence and inter-sectorality, even about such crucial matters as it is sustainability. A subject that, it is certainly true, is anything but local and sectorial in its scope.

[27] N. Garoupa, T. Ulen, *supra* note 4.