

# ELFR

EUROPEAN LAW AND  
FINANCE REVIEW

Rivista Semestrale  
(Gennaio/Giugno 2026)

ISSN: 2975-0911

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# **TRUST, FREEDOM OF CONTRACT AND MACHINE INTELLIGENCE IN THE CAPITAL MARKETS**

**Paolo Gaggero**

# Trust, Freedom of Contract and Machine Intelligence in the Capital Markets (\*)

*(Fiducia, libertà contrattuale e machine intelligence nel mercato dei capitali)*

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## **ABSTRACT [En]:**

In markets, and especially the capital markets, trust – including collective trust – operates as immaterial infrastructure of exchanges. It is sustained by the centrality of individual freedom of contract, and therefore by the protection of the will to contract, which however is put under strain by financial complexity, standardisation, and machine intelligence, which all reconfigure decision-making processes, requiring the law to preserve the role traditionally assigned to consent.

**Keywords:** trust; freedom of contract; will to contract; machine intelligence; capital markets.

## **ABSTRACT [IT]:**

Nel mercato, specie dei capitali, la fiducia – anche collettiva – opera come infrastruttura immateriale dello scambio. Essa si nutre della centralità della volontà negoziale individuale, dunque della sua tutela, messa in tensione da complessità finanziaria, standardizzazione e *machine intelligence* che riconfigurano i processi decisionali, consegnando al diritto il compito di preservare il ruolo tradizionalmente assegnato al consenso.

**Parole chiave:** fiducia, libertà contrattuale; consenso; *machine intelligence*; mercato dei capitali.

**CONTENTS:** 1. Trust and the market. – 2. Trust as market infrastructure: capital markets and trust *inter absentes*. – 3. Collective trust and regulation: freedom of contract, financial complexity, and machine intelligence. – 4. Algorithmic trust and imputable will. – 5. Trust and law in the digital ecosystem.

## **1. TRUST AND THE MARKET.**

Trust is an indispensable precondition on which the market depends: in its absence, the market does not only encounter an obstacle to its functioning, but has its very existence put at risk. Trust presents itself not only as a precondition of efficiency, of vitality, of furtherance of market dynamics, but also as an ontological

prerequisite for the market's very existence. As a system of exchanges<sup>1</sup>, or more essentially a *locus* of exchanges<sup>2</sup>, the market rests on the expectation that the obligations assumed will be performed; accordingly, mistrust in the counterparty or in the proper performance of the contract undermines economic cooperation and jeopardises the allocative function of the market. Market cooperation requires that the creditor “act on the expectation” that the debtor will perform, even though the debtor has the possibility of deviating from the agreement<sup>3</sup>. Every exchange thus presupposes mutual reliance, an intangible credit placed in the promises made and in the certainty of performance. If mistrust germinates – in the counterparty, in performance, in the stability of the rules – the market loses its vital sap and dissolves into a web of suspicion.

It follows that trust must be the subject-matter of normative and institutional safeguards: trust, as an attitude and, in this sense, a fact of economic relevance, also acquires legal relevance. Indeed, it has long been highlighted that “trust in the law”, “trust through the operation of law” and “trust as defined by the law” are three distinct yet interconnected juridical dimensions to trust<sup>4</sup>. Moreover, trust must be safeguarded, nurtured

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\*Il contributo è stato approvato dai revisori.

<sup>1</sup> The idea of the system recurs among economists: cf., among others, B. JOSSA, *Il Keynes di Leijonhufvud: considerazioni critiche*, in *Riv. int. Scienze sociali*, 1972, 41 ff., and R.A. EPSTEIN and M.J. RIZZO, *The Ends of Capitalism: An Introduction*, in *Sup. Ct. Econ. Rev.* 2015, No. 23, 1 ff. The idea that “the market is a system of exchanges” emerges explicitly in the commercial law scholarship on negotiable instruments: starting from the conception of the market as a structured space of transfers, it has been argued that “the market is a system of exchanges and, therefore, only those acts whose systematic performance is capable of giving rise to a market activity fall within market operations” (see F. CHIOMENTI, *Il titolo di credito*, Giuffrè, Milano, 1977, 550). From an economic perspective, a similar definition is proposed by N.V. HUSARINA, H.O. HRATSIOTOVA and K.S. BRADUL, *Theoretical Essence of the Market: Functions, Forms, Structural Components and Market Infrastructure of Ukraine*, in *Economic Journal Odessa Polytechnic University*, 2023, no. 3, 23 ff., according to which “[t]he market is a sphere of exchange and a system of commodity-monetary relations between producers and consumers of material goods and services” (ibid., 23) and “represents a complex system of relations between all subjects that exchange all types of goods and resources, setting prices based on the interaction of supply and demand” (ibid., 24). In the extensive literature, see also L. DE ROSA, *Economisti meridionali*, Ist. Italiano Studi Filosofici, Napoli, 1995, e.g. 21; M. POLATO, *La securities exchange industry in Italia. Listing, trading e post trading nel mercato azionario*, Giappichelli, Torino, 2004, 18; A. FERRARI, E. GUALANDRI, A. LANDI and P. VEZZANI, *Il sistema finanziario: funzioni, mercati e intermediari*, 6th ed., Giappichelli, Torino, 2018, 2; and, more broadly, U. GOBBI, *Trattato di economia*, Società Editrice Libreria, Milano, 1919, passim. See also G. BARDEN, *Essays on a Philosophical Interpretation of Justice: The Virtue of Justice*, Edwin Mellen, Lewiston, 1999, 89.

<sup>2</sup> It is debated whether it is a *locus artificialis* or *naturalis*. In the former sense, which presupposes and endorses the logical priority of law over the market, see N. IRTI, *L'ordine giuridico del mercato*, Laterza, Roma – Bari, 1998, esp. 28, according to whom the form of the economy is one with its normative structure, with its intrinsic and constitutive legality (within a framework in which law appears exhausted in the content of sources that are *lato sensu* legislative), and cf. previously B. LEONI, *Obbligo e pretesa nella dogmatica, nella teoria generale e nella filosofia del diritto*, in *Studi in onore di Emilio Betti*, I, Giuffrè, Milano, 1962, 541 ff. (repr. in ID., *Scritti di scienza politica e teoria del diritto*, with an introductory essay by M. STOPPINO, Giuffrè, Milano, 1980), however radically critical of the identification of law with legislation alone, considered a source of negative consequences for the market (see ID., *Freedom and the Law*, D. Van Nostrand, Princeton, 1961, also in the Italian translation ID., *La libertà e la legge*, ed. by M.C. PIEVATOLO, with introduction by R. CUBEDDU, Liberilibri, Macerata, 1994; see also ID., *Diritto e politica*, in *Riv. internaz. fil. dir.*, 1961, 83 ff.). A different view is taken by G. ROSSI, *Diritto e mercato*, in *Riv. soc.*, 1998, 1443 ff., and see also P. SCHLESINGER, *Intervento*, in *Il dibattito sull'ordine giuridico del mercato*, Laterza, Roma – Bari, 1999, 29 ff., as to the capacity of the economy to express its own rules independently of legislative intervention, which is exemplified in relation to the black market and the grey market.

<sup>3</sup> Cf., e.g., A. DIEKMANN and W. PRZEPIORKA, *Trust and Reputation in Markets*, in F. GIARDINI and R. WITTEK (eds), *The Oxford Handbook of Gossip and Reputation*, Oxford University Press, New York, 2019, 383 ff.

<sup>4</sup> See P.O. MÜLBERT and A. SAJNOVITS, *The Element of Trust in Financial Markets Law*, in *German Law Journal*, 2017, 1 ff.

and defended all the more intensely where the market is characterised by a high degree of intermediation<sup>5</sup> and dealings between absentees, as occurs in the capital markets. There, physical distance and informational asymmetry<sup>6</sup> between parties render reliance even more fragile and mediated by a complex network of intermediaries; reliance is not, or at least not only, personal, but rather systemic, channelled through guarantee mechanisms and supervisory structures.

However, the law's ability to safeguard and promote trust lies above all in the fact that trust arises from, and is nourished by, the protection of freedom to contract, the expression of which constitutes the crossroads at which liberty and responsibility meet<sup>7</sup>. Hence why it is proper to inquire into the current role of freedom of contract in markets permeated by technological innovation, by the computerisation of infrastructures and by the incursion of machine intelligence devices which contribute, with a degree of autonomy, to the formation and performance of the contract.

## 2. TRUST AS MARKET INFRASTRUCTURE: CAPITAL MARKETS AND TRUST *INTER ABSENTES*.

In classical economic thought, the market has often been described as a machine capable of self-regulation through the interplay of supply and demand<sup>8</sup>. Especially in relation to this vision, particular relevance attaches to the fabric of trust which, by persuading parties to exchange goods, services and promises, amounts to a constitutive element of the market. It is this “spirit (or principle) of trust” that makes it possible to reduce complexity and to replace uncertainty with predictability<sup>9</sup>.

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<sup>5</sup> Among others, cf. J.H. DALHUISEN, *Dalhuisen on Transnational and Comparative Commercial, Financial and Trade Law*, vol. 6, *Financial Regulation*, 8th edn., Bloomsbury Publishing, Oxford – New York – Dublin, 2022, 376 f.; F. BULFONE and A. SMOLEŃSKA, *The internal and external Centralisation of Capital Markets Union regulatory structures: the case of Central Counterparties*, in A. HÉRITIER and M.G. SCHOELLER (eds.), *Governing Finance in Europe: A Centralisation of Rulemaking?*, Edward Elgar, Cheltenham – Northampton, 2020, 52 ff.; J. HUANG, *The Law and Regulation of Central Counterparties*, Bloomsbury Publishing, Oxford – Portland, 2010; and F. ANNUNZIATA, *La disciplina del mercato mobiliare*, 11th ed., Giappichelli, Torino, 2021, 355.

<sup>6</sup> On asymmetric contracts, see, for a leading account, V. ROPPO, *Contratto di diritto comune, contratto del consumatore, contratto con asimmetria di potere contrattuale: genesi e sviluppi di un nuovo paradigma*, in *Riv. dir. priv.*, 2001, 769 ff., and ID., *Dal contratto del consumatore al contratto asimmetrico (schivando il terzo contratto)?*, in G. Vettori (ed.), *Remedies in contract*, Cedam, Padova, 2009, 207 ff.

<sup>7</sup> Cf. V. SCIALOJA, *Responsabilità e volontà nei negozi giuridici. Prolusione al corso di pandette nella R. Università di Roma*, Stabilimento tipografico italiano, Roma, 1885, 6 ff., e.g. 22.

<sup>8</sup> On the preconditions, see, within the vast literature, A. LEIJONHUFVUD, *On Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory*, Oxford University Press, New York, 1968, 393; on the assumption of a dual role of the price mechanism, prices should disseminate the information necessary to coordinate economic activities and the plans of the dependent units engaging in commercial transactions, and prices should provide incentives to those units engaging in commercial transactions to adjust their activities so that they become mutually compatible overall.

<sup>9</sup> The reference is to the scholarship of N. LUHMANN, *Vertrauen. Ein Mechanismus der Reduktion sozialer Komplexität*, Enke, Stuttgart, 1968 (Id., *La fiducia*, Il Mulino, Bologna, 2002, Italian translation of the 2nd expanded ed., Enke, Stuttgart, 1973), where, within a sophisticated theory of (social) systems, trust is conceived as a structural mechanism for reducing complexity and assuming risk in interactions: a basic (relational) positive evaluative disposition towards others and towards the future, which supports coordinated action by becoming a criterion which regulates action that allows one to act without having to recalculate all risks each time, indispensable for coping with everyday life; a structural element of the dynamic functioning of social systems and a condition for the survival of society, implying the duty to take into account others' reliance, therefore mutual responsibility in relationships; a precondition for the reduction of uncertainty and

And, indeed, both in economic analysis and in systems theory, trust is described as a device for reducing complexity and stabilising expectations<sup>10</sup>. The two-tier monetary architecture itself – central bank and commercial banks – is today interpreted, when formulating regulatory policy decisions, as an institutional construct that “transfers” trust in central bank money to the entire financial system<sup>11</sup>. The law intervenes to render this trust juridically sound and credible, ensuring the certainty of obligations, the possibility of compelling performance, the sanctioning of non-performance and abuse and, more generally, regulating remedies and information duties<sup>12</sup>. The law does not create trust, but provides the systemic scaffolding that supports, promotes and protects it.

When trust deteriorates, transaction costs increase<sup>13</sup>, needs for verification and control intensify, and the

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complexity and a factor guiding decisions, grounding a structure of expectations that promotes risk-taking. See also ID., *Rechtssystem und Rechtsdogmatik*, Kohlhammer, Stuttgart, 1974, also in the Italian translation ID., *Sistema giuridico e dogmatica giuridica*, Il Mulino, Bologna 1978, where trust underlies the stabilisation of normative expectations and the conception of law as a device for the generalisation of expectations (cf. M. FINCO, *Diritti fondamentali e diritti umani: il contributo della sociologia di Niklas Luhmann*, in *Revista Diritto Mackenzie*, 2017, 152 ff.); and N. LUHMANN, *Familiarità, confidare e fiducia: problemi e alternative*, in D. GAMBETTA (ed.), *Le strategie della fiducia. Indagini sulla razionalità della cooperazione*, Einaudi, Torino, 1989, 123 ff. Cf. also A. PINTORE, *Il dovere della sfiducia*, in *Teoria e storia del diritto privato*, special issue ed. by D. MANCUSO and V. GIORDANO, *Ombre del diritto*, 2022, 1 ff., and T. GRECO, *La legge della fiducia*, Laterza, Roma-Bari, 2021, as well as P. DASGUPTA, *La fiducia come bene economico*, in D. GAMBETTA (ed.), *Le strategie*, cit., 63 ff., É. LAURENT, *Économie de la confiance*, La Découverte, Paris, 2012 (Italian translation ID., *L'economia della fiducia*, Castelvecchi, Roma, 2013), and I. CUCCO, *Fiducia e diritto. Una prospettiva di ricerca tra antropologia culturale e sociologia giuridica*, in *Riv. trim. sc. amm.*, 1 ff., <https://doi.org/10.32049/RTSA.2024.4.07>.

<sup>10</sup> Cf. OECD, *Government at a Glance 2025*, Paris, 2025, esp. ch. 2, <https://doi.org/10.1787/0efd0bcd-en>, and A. DIEKMANN and W. PRZEPIORKA, *Trust*, cit., 383 ff.

<sup>11</sup> Cf., within the interpretations of the Bank for International Settlements, A. CARSTENS, *Trust and macroeconomic stability: a virtuous circle*, Mayekawa Lecture, IMES Conference, Tokyo, 27 May 2025, 1 ff., available at the web address corresponding to the URL <https://www.bis.org/speeches/sp250527.htm>, and ID., *Trust and public policies*, Speech at High-level seminar on central banking: past and present challenges, São Paulo, 19 May 2023, 1 ff., <https://www.bis.org/speeches/sp230519.htm>.

<sup>12</sup> Cf., e.g., R.J. COLOMBO, *The Role of Trust in Financial Regulation*, in *Vill. L. Rev.*, 2010, No. 55, 577 ff.

<sup>13</sup> On the notion, see J.R. COMMONS, *Institutional Economics*, Macmillan, New York, 1934, which suggests conceiving of the transaction as the unit of institutional analysis, and especially R.H. COASE, *The Nature of the Firm*, in *Economica*, 1937, No. 4, 386 ff., which introduces the idea of the costs of using the price mechanism (cf., e.g., C. DAHLMAN, *The open field system and beyond: a property rights analysis of an economic institution*, Cambridge University Press, Cambridge – New York – Melbourne, 1980, 77, and H.B. MALMGREN, *Information, expectations, and the theory of the firm*, in N.J. FOSS (ed.), *The theory of the firm: critical perspectives on business and management*, vol. II, Routledge, London – New York, 2000, 256 ff., and therein, 257), and R.H. COASE, *The Problem of Social Cost*, in *Journal of Law and Economics*, 1960, No. 3, 1 ff., which places transaction costs – and their role – within the relationship between market, externalities and public intervention. For a development of the theory, among others see especially O.E. WILLIAMSON, *Markets and Hierarchies: Analysis and Antitrust Implications*, Free Press, New York, 1975, ID., *Transaction-Cost Economics: The Governance of Contractual Relations*, in *Journal of Law and Economics*, 1979, No. 22, 233 ff., ID., *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, Free Press, New York, 1985, for a systematic exposition of transaction cost economics in which the concepts of asset specificity, bounded rationality, and opportunism emerge (cf. P. BROMILEY and J. HARRIS, *Trust, transaction cost economics, and mechanisms*, in R. BACHMANN and A. ZAHEER (eds.), *Handbook of Trust Research*, Edward Elgar, Cheltenham – Northampton, 2006, 124 ff., and therein, 129), and, again, O.E. WILLIAMSON, *Transaction Cost Economics*, in R. SCHMALENSEE and R.D. WILLIG (eds.), *Handbook of Industrial Organization*, vol. 1, Elsevier, Amsterdam – New York – Oxford – Tokyo, 1989, 135 ff. On the topic, for other classic contributions within the institutional economics perspective, see also D.C. NORTH, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge – New York – Melbourne – Madrid – Cape Town, 1990, for the systematic use of the category of transaction costs to explain institutions and economic development, as well as A.A. ALCHIAN and H. DEMSETZ, *Production, Information Costs, and Economic Organization*, in *Am. Ec. Rev.*, 1972, No. 62, 777 ff.

logic of exchange is supplanted by a defensive logic.<sup>14</sup> The market then becomes inefficient not due to a lack of competition, but due to an excess of suspicion.<sup>15</sup> Hence the systemic relevance of trust, which is today underscored also by economic policy authorities, who regard it as a condition for the effectiveness of monetary, fiscal, and regulatory policies taken as a whole.<sup>16</sup>

The capital markets are paradigmatic in highlighting this dimension of trust: no sector more than the capital markets demonstrates how trust has become a public – or at least a common – good.<sup>17</sup> In such markets, exchange takes place almost exclusively between absentees, through a dense network of intermediaries, platforms, clearing houses and post-trading infrastructures.<sup>18</sup> Within such markets, the distance between investor and issuer is, frequently, virtually total; information circulates in mediated, standardised and often asymmetric form. The trust relationship is not so much personal as institutional and systemic, resting on the quality of legal rules, the soundness of supervised intermediaries, the transparency of intermediaries, and the oversight exercised by authorities – that is, on the ability of national and supranational authorities to manage micro- and macro-prudential risks.<sup>19</sup>

Trust accordingly assumes a systemic dimension and an infrastructural character: it is embedded in clearing and settlement circuits, in compliance protocols, in due diligence procedures. And it must be preserved, since it is anything but indestructible, as demonstrated recently by the financial crises which have taken place in the last few decades and have shown that the loss of trust, once triggered, spreads rapidly and pervasively, overwhelming institutions and retail investors alike.<sup>20</sup>

Legal scholarship on financial markets has perceptively captured how the function of regulation is also

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<sup>14</sup> See A. DIEKMANN and W. PRZEPIORKA, *Trust*, cit., 383 ff.

<sup>15</sup> On the influence of the “transactional atmosphere” on exchanges and the relevant costs, cf. O.E. WILLIAMSON, *Markets and Hierarchies: Analysis and Antitrust Implications*, Free Press, New York, 1983, 38 f. (orig. ed. 1975, cit.).

<sup>16</sup> Cf. A. CARSTENS, *Trust and macroeconomic*, cit., 1 ff., and ID., *Trust and public policies*, cit., 1 ff.

<sup>17</sup> On the confusion between the two categories, from a historical perspective see F. SCHUPFER, *Il diritto privato dei popoli germanici con speciale riguardo all'Italia. II. Possessi e domini*, Casa editrice S. Lapi, Città di Castello, nonché E. Loescher e C., Roma – Torino – Firenze, 1907, 67. On the shift from public goods to common goods as a result of privatisation, see J. ZIEGLER, *Les nouveaux maîtres du monde et ceux qui leur résistent*, Fayard, Paris, 2002, also in the Italian translation by M. FIORINI, *La privatizzazione del mondo*, Net, Milano, 2005, 90.

<sup>18</sup> In addition to the bibliography cited above, see ESMA, *Artificial intelligence in EU securities markets*, Paris, 2023, 3 ff., available at the web address corresponding to the URL [https://www.esma.europa.eu/sites/default/files/library/ESMA50-164-6247-AI\\_in\\_securities\\_markets.pdf](https://www.esma.europa.eu/sites/default/files/library/ESMA50-164-6247-AI_in_securities_markets.pdf). For a related discussion, see also Esma, *ESMA Digital Strategy 2026–2028*, 13 January 2026, ESMA65-955014868-12887, [https://www.esma.europa.eu/sites/default/files/2026-01/ESMA65-955014868-12887\\_ESMA\\_Digital\\_Strategy\\_2026\\_-\\_2028.pdf](https://www.esma.europa.eu/sites/default/files/2026-01/ESMA65-955014868-12887_ESMA_Digital_Strategy_2026_-_2028.pdf).

<sup>19</sup> Cf. ESMA, *Artificial intelligence*, cit., 3 ff., and EBA, *Machine learning for IRB models. Follow-up report from the consultation on the discussion paper on machine learning for IRB models*, August 2023, EBA/REP/2023/28, 3 ff., available at the web address corresponding to the URL [https://www.eba.europa.eu/sites/default/files/document\\_library/Publications/Reports/2023/1061483/Follow-up%20report%20on%20machine%20learning%20for%20IRB%20models.pdf](https://www.eba.europa.eu/sites/default/files/document_library/Publications/Reports/2023/1061483/Follow-up%20report%20on%20machine%20learning%20for%20IRB%20models.pdf).

<sup>20</sup> For an overview, in the extensive literature, see F. CAPRIGLIONE, *Crisi a confronto (1929 e 2008). Il caso italiano*, Cedam, Padova, 2009; ID. and G. SEMERARO, *Crisi finanziaria e dei debiti sovrani. L'Unione Europea tra rischi ed opportunità*, Utet, Torino, 2012; F. CAPRIGLIONE and A. TROISI, *L'ordinamento finanziario dell'UE dopo la crisi. La difficile conquista di una dimensione europea*, Utet, Torino, 2014.

to “restore” or “strengthen” trust following the occurrence of market crises, thereby giving credibility to the promises of stability and integrity<sup>21</sup>. In this light, European authorities (ESMA, EBA, the ECB and national authorities) seem to increasingly conceive stability as a dynamic equilibrium between innovation, competition, and the protection of investor reliance<sup>22</sup>.

So the regulation of the capital markets protects savings also by preserving the collective capacity to believe in economic institutions. And trust is an intangible asset the erosion of which has effects as ruinous as a liquidity crisis, which after all can be triggered by such erosion<sup>23</sup>.

### 3. COLLECTIVE TRUST AND REGULATION: FREEDOM OF CONTRACT, FINANCIAL COMPLEXITY AND MACHINE INTELLIGENCE.

This collective trust, furthermore, is rooted in an individual element, namely freedom of contract. It is in the freedom to wish, to choose and to assume – to “will” – obligations, under conditions allowing reasonable awareness to mature<sup>24</sup>, that trust takes hold and, with it, the economic and legal foundation of the market.

Against this backdrop, freedom of contract represents the intersection of the subjective and systemic dimensions. Freedom of contract is, so to speak, the micro-element of the macro-system of trust: its effectiveness implies that the exchange act is the expression of personal autonomy, that is, of a conscious and tendentially rational choice<sup>25</sup>. Although contractual freedom is not absolute<sup>26</sup>: the law regulates it, sets limits,

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<sup>21</sup> Cf. P.O. MÜLBERT and A. SAJNOVITS, *The Element*, cit., 1 ff., and R.J. COLOMBO, *The Role*, cit., 577 ff.

<sup>22</sup> Cf., again, ESMA, *Artificial intelligence*, cit., 3 ff., and EBA, *Machine learning*, cit., 3 ff.

<sup>23</sup> On the (two-way) link between crises of trust and liquidity crises, in the extensive literature one may refer to C. VAN DER CRUIJSEN, J. DE HAAN and D.-J. JANSEN, *Trust and Financial Crisis Experiences*, in *Soc Indic Res*, 2015, No. 127, 577 ff.; B. BOSSONE, *Liquidity and capital under uncertainty and changing market sentiment: A simple analysis*, in *Review of Financial Economics*, 2014, No. 23, 98 ff.; ID., *On Trust, Uncertainty and Liquidity*, in *Quaderni di Economia e Finanza*, 1997, no. 2, 109 ff.; L. GUIISO, *A trust-driven financial crisis. Implications for the future of financial markets*, in *The EEAG report on the European economy 2010*, CESifo Group, Munich, 2010, 53 ff.; D. COLANDER et al., *The financial crisis and the systemic failure of academic economics*, in *Kiel Working Paper*, No. 1489, 2009, 2 ff.; F. ROTH, *The Effect of the Financial Crisis on Systemic Trust*, in *Intereconomics*, 2009, No. 44, 203 ff. For a related perspective, see also A. SHLEIFER and L.H. SUMMERS, *Breach of Trust in Hostile Takeovers*, in A.J. AUERBACH (ed.), *Corporate Takeovers: Causes and Consequences*, University of Chicago Press, Chicago, 1988, 33 ff., and P. KRUGMAN, *End This Depression Now!*, W W Norton & Co, New York, 2012.

<sup>24</sup> Cf. T.H. GREEN, *Liberal Legislation and Freedom of Contract. A Lecture*, Slatter and Rose, Oxford - London, 1881; P.S. ATIYAH, *Freedom of Contract and the New Right*, in Id., *Essays on Contract*, Clarendon Press, Oxford, 1990, 355 ss.; D. KIMEL, *From Promise to Contract: Toward a Liberal Theory of Contract*, Bloomsbury Publishing, Oxford, 2003, 117 ff.

<sup>25</sup> Behavioural economics has indeed warned of the risk of cognitive failures and bounded rationality, which justify supplementary rules aimed at mitigating information asymmetries in order to safeguard the effectiveness of consent, typically favouring forms of weak paternalism designed to ensure a choice architecture that allows individuals to pursue their own goals as they themselves perceive them: cf. C.R. SUNSTEIN, *Why Nudge? The Politics of Libertarian Paternalism*, Yale University Press, New Haven – London, 2014, 19 f., also in the Italian translation ID., *Effetto nudge. La politica del paternalismo libertario*, Università Bocconi Editore, Milano, 2015.

<sup>26</sup> See, for a leading account, G. ALPA, *Il contratto in generale*, I, *Fonti, teorie, metodi*, in *Tratt. dir. civ. e comm.*, formerly directed by A. CICU, F. MESSINEO, L. MENGONI, continued by P. SCHLESINGER, Giuffrè, Milano 2014, according to whom the manifestation of the parties’ will is only the nucleus of the contract, which is then enriched by everything that the legal system requires to be included in a contract (ibid., 389). The problem of freedom without equality resolves itself into that of reconciling freedom and control, reproposing under different guises the ancient relationship between freedom and authority (ibid., 412): autonomy is born limited and from the contract as manifestation or declaration of will, the so-called “intended”, one must distinguish the contractual regulation, composed of intended + normatively determined

contemplates presumptions, and establishes protections against deception and manipulation.

The validity of the contract presupposes that one can recognise a manifestation of the will to contract which is attributable to a subject capable of understanding and of willing, albeit within the bounds of limited rationality.<sup>27</sup> Given the conceptual distance between decision, autonomy and will, not just any decision can suffice. As the market evolves towards greater complexity, freedom of contract finds itself constrained: it must confront standardised contractual instruments, financial “products” characterised by technical opacity which may be considerable (*i.e.*, for reasons that pertain to the technical-specialistic complexity of the structures and the language) and automated procedures that do not only narrow the actual scope of freedom of choice.<sup>28</sup> Contractual standardisation, technical sophistication of products and multilevel intermediation place the genuineness, the authenticity of the will to contract under strain, exposing it to the risk that the content of expressions of one’s will is influenced by informational asymmetries and structural opacity.<sup>29</sup>

The problem is not only the classic one of vitiated consent, but also that of an intent formed in contexts that are structurally affected by market architecture and, in a wider sense, the rules of the game that is played within the market<sup>30</sup>. Hence the importance of conduct-of-business rules, disclosure obligations, and suitability and appropriateness controls, through which the European legislator seeks to preserve a space of actual self-determination<sup>31</sup> even in the context of that sector of the capital markets which consists of transactions with

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(*ibid.*, 138). Thus, the contract becomes the contractual regulation (*ibid.*, 127), an instrument of freedom but also of equalisation (*ibid.*, 5).

<sup>27</sup> Cf. P.O. MÜLBERT and A. SAJNOVITS, *The Element*, cit., 1 ff.

<sup>28</sup> See, e.g., M. LIBERTINI, *I titoli di credito nella dottrina giuscommerciale italiana*, in *ODC*, 2017, no. 3, 1 ff. and, therein, 12, according to whom markets are less and less places in which voluntary exchanges “among equals” take place, and increasingly become places in which certain firms offer their products or services, in standardised ways, to potential users, who exercise their freedom of choice among the various offers available in the market.

<sup>29</sup> Cf. P.O. MÜLBERT and A. SAJNOVITS, *The Element*, cit., 1 ff., and R.J. COLOMBO, *The Role*, cit., 577 ff.

<sup>30</sup> Cf. A. DIEKMANN and W. PRZEPIORKA, *Trust*, cit., 383 ff.

<sup>31</sup> Thus anticipating (or preventing) recourse to the classical remedies that allow the contractual obligation to be denied even though the formal requirements for the bond are present. For instance, in the United States experience, while starting from recognition of the principle of freedom of contract, it is where there is an intrinsic adequacy of the contractual relationship between the parties that courts have no hesitation in enforcing contracts without regard to inequalities, unfairness, imbalances or ex post grievances; otherwise, even where the formal requirements of offer, acceptance and consideration are present, courts resort to the doctrines of unconscionability, economic duress and undue influence to deny the binding effect, showing that the underlying obligation of good faith and fair dealing – notwithstanding the aforementioned principle, which might make it appear of occasional relevance – is not exceptional in nature, since fairness constitutes a condition for the legitimacy of an otherwise valid agreement. Cf., e.g., *Williams v. Walker-Thomas Furn. Co.*, 350 F.2d 445 (Ct. App. DC Cir., 1965), on unconscionability; *Odorizzi v. Bloomfield School Dist.*, 246 Cal. App. 2d 123 (Ct. App. California, 1966) on undue influence; and *Austin Instr., Inc. v. Loral Corp.*, 29 N.Y. 2d 124 (Ct. App. New York, 1971), on economic duress. Such relational adequacy rests on the existence of conditions for the conscious manifestation of consent, hence on the genuineness of intent and the willingness to assume contractual obligations, which does not depend on, does not presuppose, nor is necessarily ensured by the actual negotiability of the contractual terms, the absence of which does not exclude the bilateral nature of consent, of which, conversely, the conduct of bilateral negotiation is not an unequivocal or absolute indicator. As regards – in particular – standard form contracts, typically standardised through the unilateral drafting of general terms and conditions, that is, in situations in which, in fact, relational adequacy may be weakened, if not entirely lacking, due to significant asymmetries between parties only formally equal within the contractual relationship, those conditions are entrusted to legal constraints external to the relational foundation of the contractual regulation: to regulation, expressed through disclosure obligations, mandatory rules of conduct, supervisory controls aimed at protection and public enforcement, and to a careful interpretation, all of which cooperate in providing external limits to private powers (cf. O. BEN-SHAHAR and C.E. SCHNEIDER, *More Than You Wanted to Know: The Failure of Mandated*

retail rather than professional investors and, therefore, of mass investment<sup>32</sup>.

All the more so in a context where so-called digital contracting is widespread and weakens human relations<sup>33</sup>.

All the more so, that is, in the digital space, where contracting is often mediated, if not actually replaced, by IT processes<sup>34</sup>. And where machine intelligence is perceived as a new protagonist of the contractual relationship. With respect to the technological construct, we are faced with a paradigm shift: such construct is no longer merely a technical-infrastructure organisational tool, since the computerisation of the market does not concern only – for example – the speed of entry into, and performance of, transactions<sup>35</sup>. Machine intelligence reconfigures contracting in that it operates as a device capable of gathering information, formulating proposals, executing contracts, and – prospectively – adapting them dynamically to changing circumstances: it thus presents itself as a co-decision-maker.

#### 4. ALGORITHMIC TRUST AND IMPUTABLE WILL.

The irruption of machine intelligence into the processes of formation, performance and oversight of contracts in the capital markets introduces a further level of complexity. The use of constructs provided by artificial intelligence in the provision of investment services, while on the one hand promising greater efficiency, on the other hand entails risks associated with algorithmic biases, decision opacity, and a (possibly) excessive reliance on automated tools<sup>36</sup>. So, for instance, the use of machine learning in internal models for evaluating credit risk gives rise to delicate issues of transparency, auditability, and human oversight<sup>37</sup>.

In this scenario, the algorithm tends to assume a central role in shaping the will to contract: both where the algorithm remains confined to the area of recommendations, of the formulation of scenarios which may be accepted or rejected, and, *a fortiori*, where it is the tool entrusted with decisions that are instrumental to completing the initial volitional act and thus called upon to perform an immediately duty-creating function. In both cases, with varying intensity, the algorithm tends to present itself as a co-decision-maker, influencing the selection of counterparties, the assessment of risk, the determination of prices and, looking ahead, the very

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*Disclosure*, Princeton University Press, Princeton – Woodstock, 2014, passim, and M.J. RADIN, *Boilerplate: The Fine Print, Vanishing Rights, and the Rule of Law*, Princeton University Press, Princeton – Woodstock, 2013, passim).

<sup>32</sup> Cf. ESMA, *Artificial intelligence*, cit., 3 ff., and ID., *Public Statement. On the use of Artificial Intelligence (AI) in the provision of retail investment services*, 30 May 2024, ESMA35-335435667-5924, 1 ff., available at the web address corresponding to the URL [https://www.esma.europa.eu/sites/default/files/2024-05/ESMA35-335435667-5924\\_Public\\_Statement\\_on\\_AI\\_and\\_investment\\_services.pdf](https://www.esma.europa.eu/sites/default/files/2024-05/ESMA35-335435667-5924_Public_Statement_on_AI_and_investment_services.pdf).

<sup>33</sup> Digital contracting weakens human relations, e.g., for B. FRISCHMANN and M.Y. VARDI, *Better Digital Contracts with Prosocial Friction-in-Design*, in *Jurimetrics Journal*, 2025 (Fall), No. 65, 1 ff.

<sup>34</sup> See, among others, E. BATTIELLI, *Questioni aperte in materia di contrattazione nelle piattaforme online*, in *Contratti*, 2022, 563 ff., and C. CAMARDI, *Contratti digitali e mercati delle piattaforme*, in *Jus Civile*, 2021, 901 ff. More broadly, F. RUGGERI, *Poteri privati e mercati digitali. Modalità di esercizio e strumenti di controllo*, Roma Tre-Press, Roma, 2023.

<sup>35</sup> Cf. the tormented reflection of P. VIRILIO, *La bombe informatique*, Galilée, Paris, 1998.

<sup>36</sup> Cf. ESMA, *Public Statement*, cit., 1 ff., and ID., *Artificial intelligence*, cit., 3 ff.

<sup>37</sup> See EBA, *Machine learning for IRB models. Follow-up report from the consultation on the discussion paper on machine learning for IRB models*, cit., 3 ff.

dynamics of contract performance.<sup>38</sup>

This does not mean that the will to contract can no longer be regarded as the free and conscious expression of the party merely because its expression is heavily mediated by systems that select, filter and pre-structure available options.<sup>39</sup> It does, however, invite inquiry into the appropriate safeguards.

Traditional (at least Italian) dogmatics on “atto negoziale” rests on the attribution of intent to a person<sup>40</sup>, natural or legal, according to well-established criteria of imputability and responsibility.<sup>41</sup> The use of AI systems is not incompatible with this traditional framework, since one may conclude that the decision of the AI system expresses the requisite intent by participating in the fixing of contractual terms which are deliberately completed *per relationem*. Where agreement is formed through the intermediation of machine intelligence, the will to contract does not vanish: it is situated among the prior facts, constituting an antecedent which makes it possible to attribute the contract to the person who chose to rely on the technological instrument as a projection of that person’s freedom. And this holds even where the outcome – the contract – appears to be predominantly technical in nature and even if it results from the application of probabilistic logics that are not always decipherable.

The fact that these are (at least partially) autonomous decisions, trained on historical data and liable to evolve over time.<sup>42</sup>, may also – and if anything – have an impact in areas where the notions of “error” or “negligence” operate, notions which may acquire new connotations when confronted with phenomena of technical opacity and statistical complexity.<sup>43</sup> But the use of machine intelligence in contracting does not seem to call into question the classical legal model which links the validity of the contract to the ability to recognise an attributable intent<sup>44</sup>. Attribution is not precluded in the case of automated or more or less autonomous decisions entrusted to machine intelligence, so that it is not on this account that trust in the contractual bond may lose its foundation. There are no insurmountable obstacles to recognising the continuing centrality of the

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<sup>38</sup> Cf. ESMA, *Artificial intelligence in EU investment funds: adoption, strategies and portfolio exposures*, 25 February 2025, ESMA50-43599798-9923, available at the web address corresponding to the URL [https://www.esma.europa.eu/sites/default/files/2025-02/ESMA50-43599798-9923\\_TRV\\_Article\\_Artificial\\_intelligence\\_in\\_EU\\_investment\\_funds.pdf](https://www.esma.europa.eu/sites/default/files/2025-02/ESMA50-43599798-9923_TRV_Article_Artificial_intelligence_in_EU_investment_funds.pdf), and Id., *Artificial intelligence in EU securities markets*, cit., 3 ff.

<sup>39</sup> See the white paper by ASSOGESTIONI, *AI in asset management: from vision to action. Strategies, policies and new perspectives in Italian Asset Management*, ed. by R. D’APICE, June 2025, 9 ff., available at the web address corresponding to the URL [https://www.assogestioni.it/sites/default/files/docs/assogestioni\\_whitepaper\\_ai\\_in\\_asset\\_management\\_june2025\\_en\\_0.pdf](https://www.assogestioni.it/sites/default/files/docs/assogestioni_whitepaper_ai_in_asset_management_june2025_en_0.pdf), and EBA, *Machine learning*, cit., 3 ff.

<sup>40</sup> But see F. FISICHELLA, *La teoria dei contratti nella filosofia del diritto. Studi*, De Stefano, Messina, 1890, 67. More broadly, v. F. GALGANO, *Il negozio giuridico*, nel *Tratt. dir. civ. e comm.*, previously directed by A. CICU, F. MESSINEO, L. MENGONI, and continued da P. SCHLESINGER, 2<sup>nd</sup> edn., Giuffrè, Milano, 2002, 27 ff. and *passim*.

<sup>41</sup> See P.O. MÜLBERT and A. SAJNOVITS, *The Element*, cit., 1 ff. In the extensive literature, also from a historical perspective, see the volume edited by T. DALLA MASSARA, *Individual Will and the Civil Law Tradition. Rethinking Lex Privata*, Giappichelli e Routledge, Abingdon – New York – Torino, 2026.

<sup>42</sup> Cf. EBA, *Machine learning*, cit., 3 ff.

<sup>43</sup> Cf. ASSOGESTIONI, *AI in asset management*, cit., 9 ff.

<sup>44</sup> For an overview, see A. GENTILI, *Le invalidità*, in E. GABRIELLI (ed.), *I contratti in generale*, vol. II, Giappichelli, Torino, 2026, 1501 ff., esp. 1544 ff.

will to contract even when mediated by technology, it being sufficient to acknowledge forms of “assisted” or “programmed” will. This renders otiose the question of whether individual autonomy can survive the machine, it being irrelevant that, by a voluntary individual choice, contractual elements are completed in an environment in which the choice is executed by algorithms that encounter more or less limited possibilities and alternatives.

Correlatively, it seems that a form of trust in algorithms may be emerging. Investors, intermediaries and supervisory authorities may be induced to rely on the quality of the code, the robustness of the data and the governance procedures surrounding AI systems.<sup>45</sup> In this perspective, what matters is not only the risk that the “machine” may discriminate, manipulate or exclude, but more generally the phenomenon by which trust, hitherto grounded in the counterparty’s word or in the authority of the institution, should move towards the reliability of code and IT processes, thereby calling for transparency in those respects.

On this point, the most recent assessments of supervisory authorities, particularly attentive to the opportunities and limits of SupTech,<sup>46</sup> insist on the need for AI to remain a “support tool” and not to replace human judgement, precisely in order to maintain a final guarantee of responsibility and controllable discretionary assessment.<sup>47</sup>

Yet the issue is broader, in the sense that the law is called upon to safeguard not only the parties’ will as to the content of the contract, but also the epistemic soundness of the process that generates it. At least at the level of the establishment and maintenance, as noted, of an area of actual self-determination through the imposition of the conditions functionally conducive – at least in the abstract – to the conscious manifestation of consent.

## 5. TRUST AND LAW IN THE DIGITAL ECOSYSTEM.

The protection of trust in digitalised capital markets is increasingly furthered by safeguarding freedom of contract in an environment where the will to contract itself is assisted, filtered and at times induced by technical IT devices.<sup>48</sup> Accordingly, the law is also called upon to shape the process by which the content of the economic and legal transaction is decided, providing for safeguards to transparency, to controllability, and to the possibility of a meaningful human intervention.

In relation to activities and relationships located in a digital dimension, the preservation of trust is furthered by unprecedented forms of regulation and supervision that concern technological devices and processes of an IT character as well as their applications. Intermediaries and authorities become custodians of complex IT ecosystems in respect of which trust is built and maintained no longer only *ex post*, at the

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<sup>45</sup> Cf. ESMA, *Public Statement*, cit., 1 ff., and ID., *Artificial intelligence in EU securities markets*, cit., 3 ff.

<sup>46</sup> Among others, see G. SCOPINO, *Algo Bots and the Law. Technology, Automation, and the Regulation of Futures and Other Derivatives*, Cambridge University Press, Cambridge – New York – Port Melbourne – New Delhi – Singapore, 2020, 183.

<sup>47</sup> See P. DERIU and S. RACIOPPI, *Riflessioni in tema di intelligenza artificiale e attività di vigilanza*, with presentation by A. Lalli, in *Quaderni Fintech*, No. 15, 2025, 11 ff.

<sup>48</sup> Cf. EBA, *Machine learning*, cit., 3 ff., and ESMA, *Public Statement*, cit., 1 ff.

performance stage, by reason of performance, by the degree of the certainty of performance, but also *ex ante*, through validation or certification, traceability and auditing of IT algorithms and, earlier still, the adoption of the paradigm of including by design, within such algorithms, features deemed to be desirable such as security<sup>49</sup>.

This is a transformation, or at least an evolution, which is not only a prerequisite of the prototype of regulation that emerges from the combination of *ex post* supervision and *ex ante* responsibility, which is thereby justified and recommended, but which is also a stimulus for rethinking such regulatory prototype. The above-mentioned combination, beyond the appearance of a static quality which it may reflect, tends to become – to blur into – a circular model of continuous interoperability between rules, instruments, and behaviour, which it supplements.

It is a systemic paradigm of trust in which trust itself becomes the object of multi-level regulation, embedded in IT protocols and compliance standards.

In this perspective, the interplay between financial markets regulation, AI regulation and supervision, and data protection law delineates a modern, complex juridical dimension in which trust is no longer solely a product of (the positing of) substantive rules, but also of technical standards, audit processes and mechanisms of algorithmic accountability. This is necessary to prevent technological innovation from provoking a deficit of will and, consequently, a silent yet profound erosion of the trust that sustains the market.

Faced with automating technology, the law ought to prevent radical de-humanisation<sup>50</sup>. Even in relation to the digitalised market, trust remains an act of mutual belief, a human phenomenon which is up to the law to foster by ensuring the conditions for the (in this sense legal) genesis of trust, which is always relational, since it implies that someone, while able to doubt, chooses to rely.

In the face of innovation, defending intent means defending the human dimension within the digital market. Not out of nostalgia for an analogue past, but in order to safeguard the principle of personal responsibility that gives meaning to the contract as an instrument of free and conscious cooperation. With the obvious twofold limit by virtue of which, on the one hand, one person's freedom to want must confront that of the other person, not only as to the content of the contractual regime, but also as to the negotiating techniques chosen to enter into the contract. And by virtue of which, on the other hand, from a classically liberal perspective, if one wants to preserve the meaning itself of contract, its ontological status among economic institutions, the law must establish the conditions for expressing a conscious consent without prejudice to the principle of self-responsibility. While it is – as a general rule – not appropriate for the law to manufacture the contract for the parties, and even less so for such manufacturing to be done – even *a posteriori* – in the applicative phase by judicial

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<sup>49</sup> A sometimes normative model, following the example offered by the Digital Operational Resilience Act or DORA (Regulation of the European Parliament and of the Council 14 December 2022, no. 2022/2554): see, *inter alios*, J. HINCHLIFFE and A. SCHEEN, *Integrated Operational Risk Management. Tools, Techniques and Meeting Regulatory Expectations*, Wiley, Hoboken, 2025, 119, and cf. E. BEULEN and M.A. DANS, *Data Analytics and Digital Transformation*, Routledge, Abingdon – New York, 2024, § 14.1.

<sup>50</sup> Cf. G. OPPO, *Disumanizzazione del contratto?*, in *Riv. dir. civ.*, 1998, I, 525 ff., in reply to N. IRTI, *Scambi senza accordo*, in *Riv. trim. dir. proc. civ.*, 1998, 347 ff. See then ID., *“È vero ma...” (Replia a Giorgio Oppo)*, in *Riv. dir. civ.*, 1999, I, 273 ff.

creationism.<sup>51</sup>

Over these years of acceleration in the evolution of information technology and in the circulation of the relevant constructs, trust has migrated, expanding from individuals to institutions, from institutions to systems, and from systems, finally, to IT algorithms. However, in the context of the market, although trust may take different forms, the essential core on which it rests seems to remain unchanged: the possibility of attributing meaning to a promise, of recognising a will behind an act<sup>52</sup> and, consequently, to place one's trust in performance.

For this reason, the digital transformation should not be permitted to dissolve the very idea of freedom of contract into neutral automatism, recognising the task of the law as being that of safeguarding trust as the market's (economic and moral) infrastructure, even when technical forms of contracting change radically. So that the market, though transformed by technology, may continue (or return) to be what it is ontologically, naturally meant to be: the place, fragile and fertile, where each person's freedom encounters the trust of others.

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<sup>51</sup> See L. FERRAJOLI, *Contro la giurisprudenza creativa*, in *Questione giustizia*, 2016, No. 4, 13 ff., and M. LUCIANI, *Ogni cosa al suo posto. Restaurare l'ordine costituzionale dei poteri*, Giuffrè, Milano, 2023, passim, and, earlier, ID., *Interpretazione conforme a costituzione*, in *Enc. dir. Annali*, IX, Giuffrè, Milano, 2016, 391 ff.

<sup>52</sup> More broadly, cf. A. GENTILI, *Senso e consenso. Storia, teoria e tecnica dell'interpretazione dei contratti*, 2 vols., esp. vol. I, *Storia e teoria*, Giappichelli, Torino, 2015, passim.