Volume 8 – Part 2 – 2019 ISSN 2050-9014

LAW AND ECONOMICS YEARLY REVIEW

ISSUES ON FINANCIAL MARKET REGULATION, BUSINESS DEVELOPMENT AND GOVERNMENT'S POLICIES ON GLOBALIZATION

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FONDAZIONE CAPRIGLIONE Onlus

in association with

Queen Mary University of London

LAW AND ECONOMICS YEARLY REVIEW

www.laweconomicsyearlyreview.org.uk

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The "Law and Economics Yearly Review" is an academic journal to promote a legal and economic debate. It is published twice annually (Part I and Part II), by the Fondazione Gerardo Capriglione Onlus (an organization aimed to promote and develop the research activity on financial regulation) in association with Queen Mary University of London. The journal faces questions about development issues and other several matters related to the international context, originated by globalization. Delays in political actions, limits of certain Government's policies, business development constraints and the "sovereign debt crisis" are some aims of our studies. The global financial and economic crisis is analysed in its controversial perspectives; the same approach qualifies the research of possible remedies to override this period of progressive capitalism's turbulences and to promote a sustainable retrieval.

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ISSN 2050-9014

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FOCUS ON GLOBAL PERSPECTIVES

BANKING CRISES AND SYSTEMIC CRISES. THE ITALIAN CASE *

Francesco Capriglione**

ABSTRACT: *The recent events found in the occasion of banking crises make the urgent acknowledgement of the need to implement integration and/or modification to the current procedural forms for credit supervision. Indeed, the analysis of the limits of credit supervision urges to a "change of pace" that has to lead to the introduction of crucial changes in supervisory action.*

Within a social-economic context marked by complexity, research must be oriented towards the identification of the factors that allow the starting of a process that leads to an innovative redefinition of the organizational models of reference. The intention to clarify the actual delimitation of the operational areas currently granted to the national supervisory authority firstly implies that the national supervisory authority will in future avoid proposing a «self-referential» approach, a modus operandi which certainly prevents the objective of ensuring a «fair and prudent management» of the sector in a manner appropriate to its institutional duties. The difficult way of clarifying and simplifying the evaluation processes that are necessary to ascertain possible banking crises must be subordinate to a preventive action of the policy.

Considering these events, politics, scholars and policymakers should ask about the possible "drift" which must be avoided. What to do? To accept the present without forgetting the past, from which to draw adequate lessons for the start of a new path that aims to achieve a balanced composition between the current instability of the system. Perhaps this is the correct methodological approach that can help Italy get out of the difficulties with which, unfortunately, it is currently struggling!

*This contribution is intended for the 'Essays in honour of Mads Andenas.

**Editor in Chief.

SUMMARY: 1. Introduction. - 2. The management of the banking crises in Italy before the financial upheaval in 2007… - 3. *Follows*: …and the recent UE regulations. - 4. The so-called BRDD and the interventionistic orientation in Italy. - 5. The government of complexity: the criticism to the supervisory action of the national authority. - 6. *Follows* … in particular on the situation regarding Banca Popolare di Bari. - 7. The failure of the BCE - 8. For an interpretative hypothesis: the need to amend the EU regulatory framework... - 9. *Follows*: …. and to reactivate the relationship technic / politics in Italy - 10. Conclusions.

1. The negative implications which may be found in the banking system – in terms of its functionalities – are the most significant consequence of the recent financial crisis from 2007 and following years. The recession triggered in some European countries, amongst which Italy must be included, has led to growing difficulties for financial operators to meet their obligations towards members of the credit sector, causing clear defaults on maturities and therefore an excessive increase in non-performing exposures. The result has been a situation of malaise that rapidly expanded to the whole system, which in turn has had to deal with a succession of serious "banking crises" occurring with an unprecedented frequency.

Such crises have been characterized by a considerable amount of "liabilities" which – considering its value in the aggregate capital of a banking entity, has exceed the physiological limits (deducible from the provisions of the special regulations), making the continuation of intermediaries' activities in many cases difficult, if not impossible. This situation raises deep concerns about the Italian financial industry's resilience and leads us to reflect on certain aspects worthy of further study.

From a comparison between recent events with those having occurred in previous banking crises, there emerges a profound difference in crisis management methodology, attributable primarily to the particular regulatory framework that characterises the matters in question. Hence the need to move, in the study, from the analysis of the procedural norms provided for by past by Italian legisla-

tion in order to deal with cases pathological cases concerning credit institutions; from this verification it is possible, in fact, to identify what was the criterion used in the interventionist logic adopted at the time to better safeguard the rights of savers, while avoiding that the crisis of the individual bank could become imbalance factor in the entire sector.

From another point of view, the way the national and European supervisory authorities have applied the new regulation enacted by the European Union are taken into consideration, as the reasons for the aforementioned events. Its pervasive impact is assessed, bound to affect the paradigm of banking *governance*, as well as overturning the technical forms that for decades had prevented savers from being involved in crisis management. From a general point of view, it can be understood that this regulation is not in line with the regulatory logic that has long prevailed in the Italian banking system.

Therefore, the urgent acknowledgement of the need to implement integration and/or modification to the current procedural forms for credit *supervision*. Indeed, the analysis of the limits of credit supervision urges to a "change of pace" that has to lead to the introduction of crucial changes in supervisory action.

Basically, the mere presence of a high level of operational technicality – the traditional strength of supervisory bodies – is deemed to be not enough to ensure the purpose the lawmaker intended to pursue. This belief emerges in cases in which the interventions prove to be untimely and inconsistent with the possible negative implications resulting from corporate conduct that are not compliant with the prudential criteria (and shamelessly aimed at achieving unjustified profits). In other words, there is a growing need to take measures in order to create appropriate *supervisory bodies* to promptly tackle the misconduct of some banks; a scenario that may occur when banks intend to take advantage of the «situation of uncertainty» arising from the transition from one supervisory regime structured in a domestic key to another calibrated on the entire financial structure of the Euro Area.

In Italy, events occurred in recent years concerning the banking crises

highlighted, in fact, the need for more in-depth verifications as regards the behavioural (as well as technical) suitability of the banking management, which is often the main cause for serious capital losses that afflict the relevant entities, as well as - in some cases criminally relevant - guilty of unacceptable conduct to the detriment of unsuspecting savers.

It is clear that only an appropriate review of the "supervisory function" related to the basic principles of the liberal-democratic systems allows to clarify the identification of a conceivable, balanced essence (*rectius:* scope) of the powers recognized for this purpose by the law to the leading authorities of the sector.

In the difficult transition we are experiencing - within which the former central role of the national supervisory body has been replaced by a composite interventionist formula of some European authorities (hence the substantial resizing of the function of the former to that of mere co-partnership) - the search for an innovative regulatory scheme to avoid dangerous overlaps and / or reversal of roles is particularly urgent.

In this context there is a need to propose an interpretative hypothesis of the current legal and economic situation that may help to find solutions regarding the management of banking crises, in order to ensure a consistent adherence to the logic of the "controlled market" – from which, at present, the Italian credit system does not seem to have fully deviated).

This will need to take into account the fact that the pathologies that have affected such sector over the last five years show the trend of public interventionist forms towards a sort of "return to the past"; hence the unequivocal symptom of a substantial incompatibility of EU legislation with consolidated regulatory criteria that struggle to embrace change. Therefore, the intention to clarify the actual delimitation of the operational areas currently granted to the national supervisory authority firstly implies that the national supervisory authority will in future avoid proposing a «self-referential» approach, a *modus operandi* which certainly prevents the objective of ensuring a «*fair and prudent management*» of the sector in a manner appropriate to its institutional duties.

2. In order to fully examine the innovative nature of the legislation adopted by the European regulator to discipline the management of banking crises; first of all, it is necessary to have regard to the technical modalities with which the Bank of Italy has governed credit institutions until the entry into force of the regulatory framework that in the last decade has assigned to the EU authorities specific powers of intervention *in subiecta materia.*

In this regard, it is particularly important that the Banking Supervisory Body, from the very beginning of its function, has taken a participatory attitude towards members of the credit system. It is no coincidence that part of the doctrine, referring to the fundamental nature of the measures in question, has identified, at a systemic level, the conditions for classifying the Italian central bank as an «exponential» body of the interests of the sector[1]. This attitude was immediately translated into the intention not to burden, in any way, the charge of the banking crises on savers who had financial relations with the bank subject to repressive measures.

The special discipline system in place at the time made it possible to implement this project thanks to the unique "command centre" at the top of the control pyramid.

Indeed, from the issue of the so-called banking law (royal decree law 12 March 1936, no. 375 and subsequent amendments) to the changes in the supervision of the sector, implemented at the beginning of this millennium, the management of the crises of credit institutions has been carried out in such a way so as to avoid altering confidence in the system due to certain qualified individuals who have experienced a company pathology. The fact that the various forms of intervention, which give content to the supervisory action were concentrated only in the Bank of Italy, which at the same time also holds the "monetary power", has made it possible to adopt a solution that would link the coverage of the "losses" of

[1]See DE VECCHIS, *Commento* sub *art. 20 ff. l.b.*, in AA.VV., *Codice commentato della banca*, Milan, 1990, Volume I, p. 197.

banks in crisis to a provident expansion of the so-called “monetary base”.

The Supervisory Body has been able, for a long time, to conclude in a painless manner the extraordinary administration and compulsory winding-up procedures in which they were usually involved.

More specifically, the authority put an end to these procedures by initiating aggregations between the bank in crisis and others in the sector who were willing to “take over” the debts of the former subject to the recognition of relief measures consisting in obtaining from the Bank of Italy “extraordinary advances” at a subsidised rate (1%), intended to cover the negative imbalance between assets and liabilities borne by the transferee[2]. Obviously, this provision on financial resources – aimed at reducing the burden of “taking over” the bank's debts in crisis - was, in concrete terms, a real form of issuance intended to affect the quantity of existing money. Proof of this is the wording of the well-known ministerial decree of 27 September 1974, the so-called Sindona decree, (in the *Official Gazette* 2.10.1974, no. 256) aimed at circumscribing the responsibility of the Bank of Italy for an operation which, due to its high amount, could have exposed it to serious implications of a political nature[3]. This, of course, in addition to the need in the future to curb cases, *in subiecta materia*, of moral hazard by credit institutions willing to take excessive risks, in the knowledge that, in the event of a business disease, it would have been possible to rely on the (procedural) “safeguards” which, for decades, the sector authority had used in crisis situations.

This is the logical context within which the «extraordinary administration» procedure was applied, which was characterized by the significant “leading role” carried out by the Bank of Italy (oriented towards constant and pervasive control over its various phases). Hence the particular interpretation of the statutes of the

[2]The transferee bank would thus be able to benefit, through these advances on securities at a rate of 1%, from the amount that would allow for the receipt of profits differentials between the cost of funding and the income to be reused such as to zero the borne capital imbalance.

[3]See amongst others MINERVINI, *Il ristoro ex d.m. 27 settembre 1974 e il fondo interbancario di tutela de depositi*, in *Giur. comm.*, 1990, I, p. 5 ff.; ONADO, *Gli anni di piombo della finanza italiana. Ambrosoli, Baffi, Sarcinelli e la difesa della legalità*, 2009, p. 9, on the website *www.portale.unibocconi.it*.; SABBATELLI, *Tutela del risparmio e garanzia dei depositi*, Padova, 2012, p. 49.

special regulations, whose purpose was to avoid negative repercussions on the financial system; an objective that was made possible thanks to a generalized application of the "transfer of assets and liabilities" (as per art. 54, paragraph 7 of the Banking Law and art. 58 of the Consolidated Banking Act ("TUB")), used in the above mentioned aggregation processes.

The assumptions of the loss socialisation mechanism, which was in force at the time, are identified as defined in the literature because through it the financial interventions prearranged to rescue banks in crisis were charged to the community[4]. At the same time, we can see the reason behind the so-called rationalisation of the system, an interventionist technique with which, through a careful use of the power to favour (*rectius*: to advocate) aggregations among the qualified subjects, the authority of the sector has, on many occasions, redefined the structural structure of the banking system on the occasion of the collapse of some of its components.

For a complete assessment of the management of the banking crises that has arisen in Italy before the financial turmoil of 2007 and subsequent years, it is also necessary to have regard to the "legal order of the credit market" at the time, which was characterised by an intense system of controls that prevented the emergence of a competitive logic. And indeed, banking supervision, with the aim of ensuring the highest levels of stability in the sector, given the static and non-dynamic vision of the objective aimed at, has long resulted in a substantial constraint on the decision-making and operational freedom of intermediaries, determining a sort of harnessing «to be untied»[5].

The creation of excessive protective barriers (towards the outside) of the banks, realized on the basis of antithetical rules (of control) with respect to a mar-

[4]See CAPRIGLIONE, *Regolazione europea post crisi e prospettive di ricerca del diritto dell'economia: il difficile equilibrio tra politica e finanza*, in *Riv. trim. dir. proc. civ.*, 2016, p. 537 ff.
[5]See CIOCCA, *La nuova finanza in Italia*, Torino, 2000, *passim* particularly p. 53.

ket logic, gave space to a tendency to the casts of the same[6]. It determined, in fact, a pernicious distance from a correct entrepreneurial conception of the banking activity; that would highlight its capacity to propose itself on the market in profitable terms. Hence, the acknowledgement of a considerable delay in becoming aware of the need to make use, in the exercise of this activity, of organizational structures suitable for achieving high levels of efficiency and productivity.

The result was an economic and financial reality fully subject, in its evolutionary process, to the indications of the Supervisory Body which, in the performance of its functions, could avail itself not only of the powers expressly assigned to it by law, but also of the instrument of moral suasion which was particularly effective, being based on the contribution of the members of the sector[7]. This instrument has given rise, in the Italian experience, to the use of a "practice" of solicitation of credit institutions that have sometimes been subject to the request for specific obligations, sometimes more simply stimulated to behave in particular ways; hence its character of "informal control", unanimously recognized by the doctrine that has attested its consistency with the structure of the special discipline[8].

On the basis of the above, we can see the reasons why for a long time in Italy, banking crises have not had the disruptive effects of those (certainly less significant) recorded in the last five years, even when they were of particular intensity – e.g. those that hit Banca Privata Italiana in the 1970s, Banco Ambrosiano in the following decade and Banco di Napoli in the 1990s. The empirical analysis of the factual data, which can be found over a period of more than half a century, demonstrates that, in most cases of bank compulsory administration, the related

[6]See CAPRIGLIONE, *L'ordinamento finanziario verso la neutralità*, Padova, 1994, p. 136 ff. It speaks of "cast system" with reference to the operational and procedural mechanisms of the banking system SEPE, *Commento sub artt. 38-48 T.U.B.*, in AA.VV, *Commentario* cit., p. 720).
[7]Significant in this subject is the well-known essay by D. MENICHELLA entitled *Le esperienze italiane circa il concorso delle banche nella realizzazione dell'equilibrio monetario e della stabilità economica*, in *Bancaria*, 1956, p. 7 ff.
[8]See for all GUARINO, *Intervento al secondo convegno dell'Associazione italo-spagnola dei professori di diritto amministrativo*, *Atti* edited by Nigro M. - Retortillo, *La disciplina pubblicistica del credito*, Milan, 1970, p. 480.

procedures ended with forms of integration between the credit institution subject to "extraordinary administration" and another one belonging to the sector which - thanks to the appointed mechanism of “socialisation of losses” - became the recipient of "refreshments" against the willingness to take over the non-performing loans of the subject in crisis[9].

It is clear that the adoption of non-traumatic solutions from the point of view of the possible involvement of savers – together with the safeguarding of employment levels and the failure to disperse the start-up of the bank in crisis – has acted as a catalyst in making the *bail-out* technique well accepted, the divestment of which, as decreed by the European regulation, is a cause of uncertainty in the application of the new regulations, as will be explained below.

3. In the post-2007 crisis and beyond, the European regulator, after revising the top-level structure of the financial system, launched an ambitious project aimed at creating a unified banking environment based on three pillars (single supervision, European bank resolution mechanism and common deposit guarantee scheme), the last of which is still unimplemented[10].

The new regulatory reality, produced by the construction of the EBU, appears to be profoundly different from that which has long distinguished the disciplinary framework of each Member State and, in particular, that of Italy. It is characterised by the abandonment of the previous forms of intervention – which reflected, however, a spirit of solidarity, although they could be criticised from the point of view of 'social participation' in covering the losses of banks in crisis – and by the fact that they refer to a procedural technique aimed at ensuring that all

[9]See CAPRIGLIONE, *Nuova finanza e sistema bancario*, Milan, 2016, p. 48.
[10]See among the others WYMEERSCH, *The European Banking Union. A first Analysis, Universiteit Gent, Financial Law Institute*, WP, 2012-07, October 2012, p. 1; AA.VV., *Dal testo unico bancario all’Unione bancaria: tecniche normative e allocazione di poteri*, in *Quaderni di ricerca giuridica della Banca d’Italia*, no. 75; SARCINELLI, *L’Unione bancaria europea e la stabilizzazionen dell’Eurozona*, in *Moneta e credito*, 2013, p. 7 ff.; CAPRIGLIONE, *European Banking Union. A challenge for a more united Europe*, in *Law and economics yearly review*, 2013, I, p. 5 ff.; AA.VV., *L’Unione bancaria europea*, Pisa, 2016; IBRIDO, *L’Unione bancaria europea. Profili costituzionali*, Roma, 2017, *passim.*

market operators are objectively on an equal footing with a view to increasing effective competitive opportunities.

Directive 2014/59/EU (so-called BRRD) brings a radical change of perspective compared to the past, by highlighting the EU regulator's priority concern to prevent possible crisis situations for credit institutions. Hence the particular function of the interventions provided for by the legislation, which are designed during crisis situations to carry out actions to reduce their impact and avoid any imbalance in the performance of financial activity. As a consequence, in addition to the failure to use public money aimed at the "protection of the specific satisfying interests of the creditor class through the distribution of credit through bankruptcy" – in the past linked to the procedures applicable in the event of banking crises – the objective of an all-encompassing protection of savers/depositors, to which in the previous Italian disciplinary context particular importance was attributed, become impossible to be pursued[11].

The new regulation entrusts the activation of the intervention measures to a Single Resolution Board that operates in close liaison with the Commission and the Council, in order to ensure greater financial stability (EU Regulation no. 806/2014, so-called SRM). Regarding such European authority, the BRRD systemic framework provides for the establishment of national resolution bodies, whose personnel must be "structurally separate from and subject to separate reporting lines with respect to the personnel in charge of the supervisory functions" (Article 3, paragraph 3, of this Directive)[12].

Significant in this disciplinary context is the intention to keep separate the roles attributable to these authorities in order to "ensure operational independence and to avoid conflicts of interest between supervisory functions ...and ...'. (those) of resolution" (Article 3(3) Directive 2014/59/EU). Hence the separation of the resolution body due to the independence required by the specific nature of

[11]See ROSSANO - DI BRINA, *La crisi della banca e degli intermediari finanziari*, in AA.VV., *Manuale di diritto bancario e finanziario*, Milan, 2019, p. 462.
[12]See CAPRIGLIONE, *La nuova gestione delle crisi bancarie tra complessità normativa e logiche di mercato, in Riv. trim.dir. ec.*, 2017, I, p. 117.

the function carried out, as well as the specific responsibility it bears in carrying out tasks that require decision-making[13]. Indeed, the top management structure (to which the interventions to be carried out in the management of banking crises are attributable) appears oriented towards an effective separation of roles, perhaps desired by the regulator to avoid the prospect - well known in the Italian credit system - of an authority which, at the same time, carries out supervisory activities and takes the measures foreseen for the management of crises.

Therefore, a composite scenario is delineated within which different evaluations are intertwined and are carried out by different decisional centres: from the ECB (which acts as supervisory body pursuant to Article 18, paragraph 1, Reg. no. 806) to the Single Resolution Board (which is responsible for the formulation of the resolution schemes), to the Commission (guarantor of the non-alteration of adequate competitive conditions) and to the Council (which is responsible for checking the existence of the public interest at the start of the resolution procedure)[14]. It is difficult to reconcile the various positions which are set out in the definition of the operative choices, with "the risk... that we end up preferring to make concerted choices... to the detriment of more accurate and efficient solutions from the point of view of the synergies (with supervisory action) which can potentially be intercepted and exploited"[15].

The central aspect of the resolution procedure is the application of the "*bail-in*" tool, based on the use of the so-called *haircut* technique, i.e. the imposition, as a priority, of reductions in value on the holders of shares, subordinated debt and unsecured creditors (Article 53 of Directive 2014/59/EU). This measure, which can be activated after the unsuccessful recourse to early intervention

[13]See among the others MACCHIA, *Il Single Resolution Board*, in AA.VV., *L'unione bancaria europea*, cit., p. 321 ff.; DEL GATTO, *Il Single resolution mechanism*, *ibidem*, p. 284; ROSSANO D., *La nuova regolazione delle crisi bancarie*, Milano Assago, 2017, p. 64.
[14]See CANEPA, *Dai salvataggi bancari ai crediti deteriorati: la complessa applicazione delle regole sugli aiuti di stato fra flessibilità e rigidità*, in *Riv. trim. dir. dell'economia*, 2016, I, p. 258 ss.; ROSSANO D., *Gli aiuti di Stato alle banche e le ritrattazioni della Commissione: tra distorsioni della concorrenza e (in)stabilita finanziaria*, *ibidem*, 2016, II, p. 1 ff.
[15]See SUPINO, *Soggettività bancaria assetti patrimoniali regole prudenziali*, Milano Assago, 2017, p. 99.

measures (taken by the authority when the first signs of crisis occur), is one of the interventionist instruments aimed at preventing the expulsion of institutions in a pathological situation from the market. We refer, in particular, to the four procedural modalities that find expression in the possibility of using, alternatively or in combination, the «sale of business activities», the «separation of activities» (between a good and a bad bank), the constitution of a «bridge bank» and, precisely, the application of the «bail-in»[16].

The legislation has involved the bail in ordinary deposits, which are included in the area of 8% of total liabilities, while allowing the sector authorities to restrict, according to their characteristics, the deposits subject to this mechanism. It is clear that, in abandoning the previous authorising criterion of substantial exclusion of depositors from losses resulting from banking crises, the regulator did not want to proceed with their internalisation *tout court*, probably taking into account the complexity of the matter under consideration[17].

Finally, it should be noted that the European regulator wanted to avoid as much as possible the use of extraordinary forms of 'public financial support' in cases of banking crises (Article 31(2)(c) of Directive 2014/59/EU and Article 14 of Regulation No 806/2014). Therefore, recourse to it is in principle excluded except in certain cases where it is necessary to 'avoid or remedy a serious disturbance in the economy of a Member State and preserve financial stability' (Article 32(4)(d) of the BRRD). There is, therefore, a legislative rationale aimed at safeguarding the

[16]*See* the regulation no. 806/2014/UE, *considerando* no. 66 and the Article 15 ff.; see also CAPRIGLIONE-TROISI, *L'ordinamento finanziario dell'UE dopo la crisi. La difficile conquista di una dimensione europea*, Torino, 2014, p. 98; LOIACONO et al., *L'Unione bancaria e il possibile impatto dei nuovi strumenti di risoluzione delle crisi: un'analisi empirica*, in *federalismi.it*, 2015.

[17]In this regard, the provisions of Article 45 of Directive 2014/59/EU and 12 of Regulation No. 2014/806/EU, relating to the determination of the so-called Mrel (*Minimum Requirement for Own Funds and Eligible Liabilities*). These provisions, transposed into Italian law by Article 50, paragraph 1, of Legislative Decree No. 180, require banks to comply with "on an individual and consolidated basis, a minimum requirement for liabilities subject to bail-in", specifying on an individual and consolidated basis, after "the Bank of Italy regulates the characteristics of the eligible liabilities ... and the manner in which they are calculated" (paragraph 6).
It allows the Italian sectoral authority to determine *ex ante* a sort of "bail-in zone" from which bank deposits are likely to be left out.; on this point see also ROSSANO D., *Nuove strategie per la gestione delle crisi bancarie: il bail-in e la sua concreta applicazione*, in *Federalismi.it*, 1, 2016, p. 10 ff.

competitive system, which could be distorted or threatened by 'aid granted by a Member State or through State resources in any form whatsoever' capable of favouring certain undertakings or the production of certain goods (Article 107 TFEU, paragraph 1).

4. In this context, therefore, the way in which the Italian sector authority seems willing to act in the presence of banking crises takes on particular importance. On the systemic level, in fact, a sort of concern emerges in avoiding the probable traumatic consequences against the savers that may happen in the event that crises are managed in accordance with the provisions of the special legislation of the European Union.

However, the European Commission's position that «any state aid granted must be in line with EU state aid rules and the BRRD, regardless of whether the funds come from the National Resolution Fund, the Deposit Guarantee Scheme or direct state intervention»[18] is puzzling. It is evident, that the search for rapid solutions to banking crises could be hindered.

Hence the prompt reaction of an open-minded reading of Directive no. 59 of 2014 given in Italy by Decree-Law no. 237/2016 (so-called "*Salva Risparmio*"), converted into Law no. 15 of 17 February 2017, containing measures in favour of certain Italian banks in conditions of serious difficulty; such decree has been considered technically compliant with the European framework on State aid[19]. This is the start of a process aimed at identifying *exceptions* to the ban on state aid, which continued with the recapitalization of two distressed banks in Veneto (Popolare di Vicenza and Veneto Banca) provided for by Decree Law No. 99 of 25 June 2017 and, more recently, with the measures concerning Banca Popolare di Bari, provided for by Decree Law No. 142 of 16 December 2019.

[18]See the European Commission, Fact sheet on *Aiuti di Stato a favore della banca italiana Tercas e del settore finanziario in generale*, Bruxelles, 23 December 2015.
[19]See BARBAGALLO, *Audizione sul decreto legge 23 dicembre 2016 n. 237*, Joint Committees 6 of the Senate of the Republic (Finance and Treasury) and VI of the Chamber of Deputies (Finance), Rome, 17 January 2017.

In this regard, the indications that can be deduced from the lines of action adopted in the last years for the rescue of some banks in crisis highlight the prevalence of interventionist forms characterized by significant State participation. The position taken by the Italian Government is set in a context characterized by an *agere*, which can be defined contradictory regarding the ECB (to which the "declaration of the state of collapse" of the Veneto people is linked), the SRB (which in these cases did not consider the “presence of the public interest”, to which the adoption of the resolution is subject), as well as the European Commission (in favour of the use of measures complaint with EU rules on State aid); a line adopted by the said European institutions, which raises, silently, wide doubts as to the way in which the EU rules will be applied in the future. The comments of some German politicians (Ferber, Schaeuble) come to mind, who - considering this legislative guideline - have stated that, in this way, the UBE is being led to its “deathbed”[20].

In addition, there is also a financial support action, implemented by the FITD, in order to remove these banks from the storms of European regulation. In this way, a particular public-private partnership has been implemented, which on the one hand is intended to replace the solution formula introduced by EU regulation, but on the other hand renews the function of the Fund that has been now associated with banking supervisory action. And indeed, in the face of the prohibition of 'State aid' imposed by the EU Commission, which as mentioned above hinder the forms of crisis management based on the bail out, the achievement through the 'private contribution' of the members of the fund of an action of solidarity among the members of the credit sector seems possible.

However, the intrinsic limitations of such formula, which in fact places the burden of the bail-outs carried out in that way on large banks, cannot be ignored; whereas the fragility of the underlying construction is undeniable, since it is based on the results of a decision of the EU General Court which, in the Tercas Banca

[20]See the editorials entitled “*Popolari venete, ok dell’Ue al salvataggio. Berlino: Muore l’unione bancaria*” and El Pais*:* “*Così pagano i contribuenti*”, both viewable on the site *www.ilfatto quotidiano.it/2017/06/26/popolari-venete-okdellue-al-salvataggio-berlino-muore-lunionebancaria -el-pais- cosi-pagano-i-contribuenti*.

case, ruled out the possibility of "State aid"[21]. From here the decline of the same submitted to the sword of Damocles of a possible change in the jurisprudential direction (having the Commission appealed to the European Court of Justice on 29 May 2019).

It can be said that there is the adoption of a procedural mechanism preordained, in some ways, to recover from the past the so-called socialization of losses; hence the practice of «the absorption of dangerous companies or companies in difficulty by healthy organisms», as Guido Carli underlined[22]. On this point, it is worth remembering that in the past the prevention of losses of credit institutions in crisis from falling on blameless savers was possible; a *modus operandi* which the Italian regulator now seems to be nostalgically interested in and increasingly oriented towards renewing the applicability of despite the obstacles arising from the European regulatory system.

Some doubts are growing in presence of such substantial tension between EU legislation and the Italian regulatory framework; consequently, at a domestic level, doubts arise regarding to the effectiveness of a regulatory system, which has been formally accepted and disregarded in terms of its effective applicability. Indeed, the "crisis" becomes a catalyst for a process of regulatory revision aimed at innovating and seeking solutions that are appropriate to the specific realities on which the crisis has an impact, by highlighting the inadequacy of certain instruments identified at European level.

Therefore, such context requires to identify the reasons for what may be defined as a substantial conceptual dystonia between "norm and fact", so that to ascertain the hindering causes to a complete start of the procedural machine hypothesized by the European legislator; otherwise, it is necessary to take note of the irremediable inadequacy of the EU regulation, which is proving to be unsuita-

[21]See the judgement of 19/3/2019, joined cases T-9816, T-19616, T-19816 Republic of Italy c/ Commission.

[22]See *Attendance at the Ordinary Shareholders' Meeting of the ABI (Italian Banking Association)*, held in Rome on 29 February 1968, published in the volume *Scritti e conferenze di Guido Carli*, edited by Banca d'Italia, III, p. 249 ff.

ble or, in any case, of little significance in pursuing the aims of systemic rebalancing, which constitutes its main purpose.

This orientation of the survey appears to be necessary for a realistic identification of the supervisory tasks, as well as for the definition of the role attributable to the policy *in subiecta materia*. This must not disregard the shortcomings of the prodromal phase of operational link with the sector authority (in which the activation of the resolution procedure must be decided). The need to avoid dangerous "reactive forms" of the policy arises, where delays and/or indecisions in the supervisory action are ascertained; in particular, the possibility of undue interference in the definition of the top-level apparatus of the technical authority responsible for the sector, which would inevitably affect the independence of the latter.

5. As previously stated, that within a social-economic context marked by complexity, research must be oriented towards the identification of the factors that allow the starting of a process that leads to an innovative redefinition of the organizational models of reference[23]. In the financial sphere, because of the "failures" caused by the above-mentioned crisis of 2007 and following years, the pursue of this objective has been hard so far; these failures caused a EU's reaction, that reflected first in the policy of austerity adopted and, subsequently, in the introduction of stringent regulation which challenges the Member States' ability to maintain the balance they have been aiming for[24].

Indeed, in the immediate aftermath of the creation of the European Banking Union - which with the SSM has redefined the supervisory model and with the SRM has redesigned the management methods of banks in crisis - the difficulties for an adequate coordination of prudential policies (referred to the competent authorities of the sector) with the stability of the system were already perceived. The numerous attempts made by top management of the Italian credit system to

[23]See *Non luoghi. sovranità, sovranismi. alcune considerazioni*, in *Riv. trim. dir.ec*., 2018, I, p. 398 ff.
[24]See CAPRIGLIONE - TROISI, *L'ordinamento finanziario dell'UE dopo la crisi. La difficile conquista di una dimensione europea*, cit. p. 121 ff.

postpone the entry into force of the so-called 'mechanisms' are indicative of the lack of compatibility of the special discipline introduced in this way with the needs of a post-crisis reality[25]. The members of the sector are in fact forced to face increasing problems as they are burdened by large amounts of NPLs and UTPs, as well as to change their traditional business, as the previous forms of operation (based essentially on credit intermediation) have ceased to exist and, with them, the possibility of profitable results.

Regarding the particular situation in Italy, the serious recession that afflicted the country has caused delays in the return to normality of the economic system; therefore, unemployment, poverty and a general sense of indignation on the part of civil society were produced, often overflowing into striking forms of protest during some bank failures[26]. Hence the climate of uncertainty that characterises the credit system that reflected in critical assessments of the top-level authorities themselves, whose action sometimes seems unconvincing, especially following the transfer of supervisory powers to the ECB.

In the past, I more than once referred to the identity crisis that has been underlined with reference to the role played in recent years by the domestic supervisory body's agent, representing a basis of an attitude that has been considered resigning doctrine[27], sometimes leading to “delays” and “uncertainties” in decision-making, as expressly admitted by Governor Visco[28]. It is true that a sort of decision-making disquiet that prevents the prompt taking of measures, the timely adoption of which could avoid degenerative processes in situations of incipient pathology, does not escape careful observation. If we consider carefully, especially with reference to the way in which some banking crises have been managed, we have the sensation of proceeding with a «navigation on sight»!

[25]See VISCO, Speech at the 22nd Assiom Forex Congress, 30 January 2016 in which he suggested a “gradual and less traumatic transition” to the new procedure.
[26]See CAPRIGLIONE, *Mercato regole democrazia*, Milan, 2013, chapter VI, where the geopolitical reality of Europe is outlined, comparing the data that characterize Germany with those of other countries (Italy, Spain, Greece).
[27]See CAPRIGLIONE, *Nuova finanza e sistema bancario*, cit. p. 163 ff.
[28]See *Speech on World Savings Day 2017*, p… of the drafts.

Therefore, a distortion of the way supervision is exercised may be deduced, due to variegated causes. Its reasons are not very intelligible; therefore, it is due - perhaps erroneously - to the absence of a complete 'strategic' orientation or, worse, to the existence of insane forms of closeness with the members of the sector[29]. However, the observer feels a sense of insecurity in the face of events that highlight pathologies, which should be tackled without delay and with firmness; hence the general conviction that there are evident limits of the authority of the sector in dealing with the harshness of a path scattered with pitfalls, due in part to the "wide mesh" of a safety net that fails to fully achieve its mission. This, obviously, affects the charisma which, usually, has accompanied the performance of the vigilance function, determining a climate of growing uncertainty in which the discontinuity of an agent who, in the past, has been able to assure adequate levels of security to the credit sector.

With this in mind, I believe that research should be aimed, first and foremost, at investigating the reasons that are an obstacle to a rapid end to banking crises, allowing for an easy change in the forms of economic imbalance in the balance sheet, that are sometimes present in credit institutions, in disruptions that are likely to involve large sections of civil society.

A central aspect of this analysis seems to be the fact that, at present, the action of the supervisory authority (national and European) is subject to a variety of conditions that prevent it from finding timely and effective remedies to prevent certain business situations, no longer based on the criterion of "sound and prudent management", from degenerating into a crisis. Among these conditioning factors, the onerous responsibility of avoiding possible interruptions in the flow of financing provided by banks to the production sectors, which in times of crisis draw from the latter the lifeblood that allows them to "continue to exist", is of

[29]This news has been widely reported in the media, see *ex multis* the editorials entitled *Popolare di Bari, i vertici "registrati": "Nessun commissariamento, Bankitalia ci è vicina. Qui c'erano conti truccati",* available on www.repubblica.it/economia/2019/12/17/news/ banca_popolare_di_bari_de_bustis on _bankitalia; *Bari, l'accusa dei Pm: "Conflitto d'interessi per la Banca d'Italia"* available on *https:// rep.repubblica.it/pwa /generale /2020/02/01 /news/bari_l_accusa_dei_pm_ conflitto_d_interessi-per-la-banca_d_italia.*

primary importance. In other words, the authority feels the weight of decisions which - as can be seen from the bank bailouts of recent years - seem destined to cause considerable disruption and upheaval to the economy, causing the productivity of entire industrial districts to collapse or even undermining the development of large areas of the country.

It is clear, therefore, that the line of conduct followed by the authority must be considered strictly related to the acquired awareness that the banking system, since the crisis of 2007, has assumed a function of responsible support to the economic process, reducing the growing difficulties in which it finds itself; a function which, unfortunately, has ended up degrading into ambiguous assistance - Faced with the assumption of such an innovative role - in some ways referable to the tried and tested practices of the "social shock absorbers" - one understands, and perhaps justifies, the "delays" and the "uncertainties" of the decision of the Supervisory Body, which have been mentioned before. In this context, credit supervision - assessed because of strict formal criteria - may appear to be lacking in terms of efficiency and the pursuit of the objectives related to this institutional function. From this point of view, there is a sharp contrast between the results of the action carried out and the commitment of the structures, which certainly (following a centuries-old tradition) do not spare themselves in their work, trying to propose an activity of optimal technical standard.

Moreover, in an evaluation referring to the factual data of concrete reality, limits are identified in the control activity, which sometimes contribute to aggravate the discomfort of the system. Examples of this kind can be found in cases where, in the presence of serious company pathologies, the authority suggests - and allows - banks, critically assessed during the inspection, to proceed with merger operations with others previously judged to be of dubious stability. Moreover, according to a logic that disregards the many negative consequences that such an operation may have and, therefore, pays little attention to the circumstance that the credit institution requested for this purpose in order to cover losses (which was forced to take over), unsustainable "capital increases" are therefore carried

out, sometimes with “reckless operations”. In other words, the rescue of an authorised person ends up by initiating a process that will turn out to be destructive after some time for the bank asked to help them. Emblematic, in this regard, is the recent event that involved “Popolare di Bari”.

In Italy, especially in the last decade, the authorities have implemented numerous interventions in support of the financial system in crisis, calibrated on the interventionist model outlined above. The need to overcome the rigidity of European regulation has sometimes made the search for innovative ways of solving "failures" caused by the bad management of unscrupulous operators more complex. Consequently, the emergence of a substantial inadequacy of the forms of 'control' has been produced, due to the causes specified above, which are the object of criticism formulated in different places[30]. Indeed, these criticisms are based on a question which must be answered unequivocally by considering the measures taken by the authority to be unsatisfactory; also in relation to the fact that the authority's activity - without prejudice to the correctness of the intentions from which it is based - sometimes appears to be poorly efficient because of the “disconnections” which characterise the timing of the measures adopted.

From another point of view, the behavioural line followed by the Bank of Italy in the presence of a significant number of cooperative credit banks in crisis appears unconvincing - and appears to not forward-looking regarding the territory’s needs. The support given to the legislative reform of the sector, which ended with the creation of the cooperative banking group, governed by Law No. 49 of 2016, has allowed the appointed authority to get rid of the long-standing problem of BCC supervision, with the obvious consequence of divesting the management of pathological situations in which the latter may incur. It is well known, in fact, that

[30]See also the different solutions with which substantially similar cases are dealt with. In this context, is significative the well-known case of the four Italian banks that have been treated unevenly if compared to similar situations in the past. See PELLEGRINI in an interview available on the website *http://www.adnkronos.com*/ of 15 December 2015, which asks why, in that circumstance, “*the same procedure was not followed only a few months ... (before) ... for the Tercas case, refusing - at European level - the interpretation that the Commission gave to the notion of State aid to the intervention of the Interbank Guarantee Fund*”.

the recent creation of two cooperative credit groups (ICCREA and CCB), to be counted among the significant banks - in delegating to the ECB the control over them (now deprived of its operational specificity resulting from the link with the territory) - has marked an attitude of the authority that certainly seems inconsistent with its leading role.

To conclude on this point, it is possible to state that we are in the presence of an *agere* that, as a whole, may give rise to perplexity, caused by a sort of tendency of the structure to detach itself from the top of the institution, as it is argued in cases where: (i) the apparatus is not very careful to connect with the same, or rather, it is placed in an uncritical acquiescence in the face of the requests/proposals of the same; (ii) it does not give prompt response to solicitations and inputs of various kinds, advanced by members of the sector and civil society, who turn to it in the confident hope of obtaining adequate protection of their rights.

On reflection, however, the supervisory body's action may be hindered by causes not attributable to it. The circumstance of having to face some unscrupulous operators (who, at times, also carry out criminal acts) identifies an exemption for the authority which cannot be considered responsible in any way if, despite its commitment, fails to prevent (or eliminate) the negative effects of some unfair conduct which, not infrequently, characterize the exercise of banking activity. On the contrary, I do not believe that the presence of limits in the supervision is excluded by the narrative, ostentatious by the authority, concerning the observance, in certain cases, of an appropriate operative line; a behavioural modality to be considered innate to the essence of the institutional function performed. Therefore, any justifications that refer to the correctness of the activity carried out appear dystonic and without reason[31].

Consequently, in an attempt to answer the questions formulated above, it

[31]*Interview with Governor Ignazio Visco at Corriere della Sera - 23 December 2019*, available on *https://www.bancaditalia.it/media/notizia/intervista-del-governatore-ignazio-visco-al-corriere-della-sera-23-dicembre-2019.*

should be noted that the creation of the European Banking Union has been accompanied by a growing affirmation of the technique, which is primarily the responsibility of the European Central Bank[32]; therefore, the European regulator has, in fact, recognised a role, which we could define as subordinate, to the domestic authorities belonging to the Euro Area (which have been entrusted with a function of substantial "collaboration" with the European authorities)[33]. Related to this systemic change in supervision is the trend towards *self-referentiality* on the part of the authorities at the top of the national legal systems, which feel bound only/prevalently to the ECB's "guidelines" and removed, to a certain extent, from compliance with commitments that in the past had given content to their activities. The disciplinary construction provided for this purpose by the EU lawmaker, as will be pointed out below, reinforces this conviction, focusing on a scenario in which an appropriate redefinition of the relations between the centre and periphery of the European financial system appears indispensable, aimed at considering the different needs of complexity.

It is understood, therefore, that the difficult way of clarifying and simplifying the evaluation processes that are necessary to ascertain possible banking crises must be subordinate to a preventive action of the policy. A recovery of the role of the latter in the "governance" of credit is assumed, in order to reach (through an adequate use of the cognitive instruments available) a judgement based on a coherent reconstruction of the system of "principles-institutions-rule". In this regard, the considerations formulated by the doctrine on the issue on the structural lack of democratic legitimacy typical of independent administrative au-

[32]See *ex multis* DE CARO, *Integrazione europea e diritto costituzionale*, in AA.VV., *Corso di diritto pubblico dell'economia,* Padova, 2016, p. 65 ff.; CAPRIGLIONE, *Unione monetaria, ruolo della BCE, SSM, SRM, ibidem*, p. 593 ff; DI GASPARE, *Autonomia in dipendenza della Banca d'Italia?,* in *Dir. pubbl.*, 2016, p. 763 ff.

[33]See on this point, among the others, the analysis by WYMEERSCH, *The European Banking Union. A first Analysis*, *Universiteit Gent*, Financial Law Institute, WP, 2012-07, October 2012, p. 1 ff.; AA.VV., *Dal testo unico bancario all'Unione bancaria: tecniche normative e allocazione di poteri* [Proceedings of the conference organized by the Bank of Italy, Rome, 16 September 2013], in *Quaderni di ricerca giuridica della Banca d'Italia,* no. 75; CAPRIGLIONE, *L'Unione bancaria europea*, Torino, 2013; AA.VV., *L'unione bancaria europea*, Pisa, 2016; IBRIDO, *L'unione bancaria europea. Profili costituzionali*, Rome, 2017.

thorities should be noted[34]. Indeed, the management of banking crises, as currently regulated and administered at European and national level, seems to be a clear expression of that long-standing problem.

Only by restoring a coherent link between politics and technology will it be possible to achieve adequate levels of institutional balance so as to avoid the (in my opinion justified) reactions of the former, which - in the case of Italy - could be oriented towards the adoption of measures aimed at recovering a priority position in the *subiecta materia*, as in the past recognised by the national legislator. It is hardly the case to point out that, in view of the above mentioned purpose, the policy could draw cues and/or arguments now from the decisional "delays" of the Central Bank, of which it has been said, now from its conduct that lends itself to evaluations that imply the possibility of identifying shortcomings and limits. Hence the need to configure, in crisis management, forms of preventive convergence - and, therefore, of "joint responsibility" - between the above activities.

6. In this context, it is possible to draw useful indications regarding the current methods of intervention of the banking supervisory authority - and, therefore, to support the theory of the possible configuration of limits in the activity carried out by the same - the recent case of the commissioner/rescue of Banca Popolare di Bari. In the absence of general criticism of the actions of this authority, it is necessary to dwell on the events in question, in order to assess the interpretation of the same by the Bank of Italy and to try to identify the necessary innovations to be introduced in the exercise of supervision.

We refer, in particular, to the fact that the measure of extraordinary administration of this bank has uncovered a "Pandora's box", bringing to the public's attention events and behaviour which, in silence, amaze the unsuspecting savers who have placed their trust in this bank, trusting in its status as a "supervised institution". Upstream of such a reality - characterized by the abandonment of the

[34]See CLARICH, *Autorità indipendenti. Bilancio e prospettive di un modello*, Bologna, 2005, p. 62 ff.

rules of operational correctness and by a managerial activity which has resulted in the waste of money resulting from the “collection” (implemented also by means of improper forms of capital subscription) - it seems that one must take into account the precarious conditions of the southern entrepreneurial sector, exhausted by the financial crisis and, more generally, the serious difficulties in which the various productive sectors of southern Italy find themselves.

This situation has, in fact, led to an insane convergence between different interests, the mixing of which, in my opinion, has given content to an action that identifies the primary cause of today's events. And indeed, on the one hand, there is the interest of politics to overcome the criticality of its inertia by resorting to the intervention of the banking sector, which is called upon to carry out an action of support for the economic system, to be implemented also by resorting to improper methods of the credit *agere*. Hence, solicitations and conditioning of various kinds to the financial management, which in turn intends to perpetuate its power and increase its size, pursuing a delusional dream of omnipotence. The meeting of these interests becomes a prerequisite for a series of activities which, on the one hand, succeed in carrying out the planned purpose of support and, on the other hand, deceive large sections of civil society and destroy wealth.

In such a scenario, the analysis of the measures adopted by the Supervisory Body must be considered central to the investigation, which - although compliant with the regulations in force - raise some doubts regarding both their lack of consistency with the respect of prudential criteria and the timing that characterized the opening of the procedure in question.

More specifically, certain aspects need to be pointed out regarding the incorporation of Tercas Banca on the occasion of which the adoption (by the Bank of Italy) of a behavioural line in accordance with the intervention logic mentioned above interacted on the coherence of the operation. The latter, in fact, does not appear to be consistent with the “judgement” on the Popolare formulated by the Supervisory Body in a short time beforehand (during some inspections that took place from 2009 to 2013). This conviction is authoritatively confirmed by the con-

siderations made by a member of the Italian central bank in a recent parliamentary hearing, commenting on Legislative Decree no. 142 of 16 December 2019, which provided for the capital strengthening of MCC with capital contributions from the MEF up to the amount of 900 million during this year[35].

Indeed, during said hearing it was specified that in the inspections carried out at the Popolare in 2009 and 2010 critical issues had emerged such as to induce the authority to impose a ban on the bank to "expand its business"; whereas in a subsequent clarification it was stated that these issues, although mitigated in the results of a 2013 inspection, were still of significant importance (i.e. weaknesses in terms of governance, strategic and credit risk management and control functions, as was pointed out in Parliament).

Consequently, on the basis of the ordinary prudential criteria linked by the special legislation to sound and prudent management, the authority should have refused to grant the acquisition authorisation, which took place instead in 2014. It is clear that the intention of the Bank of Italy to 'close' the Tercas Banca affair has been a good idea to adopt a careful cautious approach, making it possible to disregard routes that are likely to be less risky! Certain unforeseeable events (i.e. the qualification of the FITD intervention in favour of BPB as State aid, the failure to transform Popolare di Bari into a company limited by shares ("S.p.A."), the suspension ordered in December 2016 by the Council of State of the implementation of the reform of the cooperative banks), which occurred after the authorisation, do not constitute an exemption from liability because the financial commitments undertaken by Popolare di Bari (to deal with the acquisition of Tercas Banca) have only aggravated a situation made already precarious by inadequate managerial management (of which the Supervisory Body had already become aware during the inspections carried out in the years prior to the operation in question).

In view of the above, it seems necessary to analyse the observations on the

[35]See PERRAZZELLI, *Esame del disegno di legge C. 2302, di conversione in legge del decreto-legge n. 142 del 2019, recante misure urgenti per il sostegno al sistema creditizio del Mezzogiorno e per la realizzazione di una banca di investimento*, Chamber of Deputies VI Commission (Finance), 9 January 2020.

subject made at the above-mentioned parliamentary hearing in order to understand how the Bank of Italy's defensive line, which can be deduced from the reconstructive structure of the events under observation, conceals a substantial situation of discomfort.

In this regard, it should be noted immediately that the overall content of the arguments set out in that forum is aimed at highlighting the difficulties of the interventionist action carried out by the Supervisory Body, which to this end referred to the existence of a «regulatory framework ...(which) ... does not provide for an adequate system for crisis management of medium and small banks»[36]. Similarly, aimed at demonstrating the consistency of this action with the environmental reality to which it is addressed, reference appears to be made to the logic underlying the operational line followed: (i) to avoid, for companies in crisis, recourse to liquidation operations that produce "destruction of value", (ii) to seek possible «market solutions»[37].

There is an interpretation of the explanatory modalities of the control function which, from a concrete point of view, is at odds with the criterion of "free competition", which - as is well known - is fundamental in the construction of the EU (for which the liquidation, even though it has been reduced as a result of the BRRD, must be one of the forms of conclusion of banking crises)[38].

Moving on, then, to the examination of the lack of synchrony between the ascertainment of the crisis situation and the adoption of the related intervention

[36]See PERRAZZELLI, *Esame del disegno di legge C. 2302, di conversione in legge del decreto-legge n. 142 del 2019* cit., p. 10 of the drafts.
[37]See PERRAZZELLI, *Esame del disegno di legge C. 2302, di conversione in legge del decreto-legge n. 142 del 2019*, …. loc. ult. cit.
[38]And indeed, the new European regulation, while significantly circumscribing the identification of the conditions legitimising the possibility of resorting to compulsory liquidation (relegating it to a *"no-fly zone"*), leaves a formal link between it and the resolution action (Article 32(5) of Directive 2014/59/EU), to which recourse may be had "if the liquidation of the institution under ordinary insolvency proceedings does not allow it to achieve ... to the same extent" the objectives pursued; see ROSSANO D., *La nuova regolazione delle crisi bancarie*, cit., p. 82, which refers to the point in recital 45 of the BRRD that "in principle, a failing institution should be wound up under normal insolvency proceedings".

measures, on which the general criticism of the mass media[39] appear to be focused, the reasons given by the exponent of the Bank of Italy to justify the operational line of the latter appear unconvincing. In fact, the reasons given by the Bank of Italy's representative for justifying the Bank's line of action appear to be unconvincing. In fact, they refer to the "particularly strong" nature of the commissioning procedure, which leads to the conclusion that the Supervisory Body, in finding the relative assumptions, considered that it should only adopt them «when the losses have reduced the levels of capital below the minimum levels established by the prudential rules»[40].

On second thought, this reconstructive hypothesis of the banking discipline complex does not fully assess the extent of the change in recent years required by EU legislation. Contrary to what was provided for in the previous regulation, the extraordinary administration of banks, referred to in Article 70 of the Consolidated Banking Act, is now part of the early intervention mechanism, i.e. the measures aimed at carrying out, in the face of the emergence of indications of a potential deterioration, an action aimed at reducing its scope (and, therefore, at avoiding that it may lead to an imbalance in the regular performance of lending activities)[41]. From here its limited degree of "invasiveness", which is correlated to the limited gravity of the problem to which it is functionalized.

It follows that extraordinary administration in its current configuration is distinct from the procedures (termination and liquidation) applicable in cases of

[39]See *ex multis* the journals entitled *Popolare Bari, ecco contraddizioni e rivelazioni (su come agisce l'Ue) di Bankitalia*, available on *https://www.startmag.it/economia/popolare-bari-bankitalia-visco-perrazzelli*; *Così Popolare Bari cercava di vendere i bond che non voleva nessuno*, visionabile su *https://24plus.ilsole24ore.com/art/cosi-popolare-bari-cercava-vendere-bond-che-non-voleva-nessuno-a-inizio-2019-ACQbO29; Parole e capriole di Bankitalia su Popolare di Bari e non solo*, visionabile su *https://www.startmag.it/economia/parole-e-capriole-di-bankitalia-su-popolare-di-bari-e-non-solo/ Banca Popolare di Bari: necessario prevedere subito forme di indennizzo per i risparmiatori*, available on *https://iduepunti.it/14-01-2020/banca-popolare-di-bari-necessario-prevedere-subito-forme -di-indennizzo-i-risparmiatori*; *Popolare Bari e Tercas, tutti i rapporti fra Jacobini, De Bustis e Bankitalia*, available on *https://www.startmag.it/economia/popolare-bari-tercas-bankitalia.*

[40]See PERRAZZELLI, *Esame del disegno di legge C. 2302, di conversione in legge del decreto-legge n. 142 del 2019,…* cit., p. 14 of the drafts.

[41]See the in-depth analysis on it by CAPRIGLIONE - SUPINO, *Commento sub art. 70 of the Consolidated Banking Act*, in AA.VV., *Commentario al testo unico delle leggi in materia bancaria e creditizia*, Milan, 2018, p. 989 ff.

significant gravity. The regulation in force - today, pre-ordained to the objective of "prevention" and, therefore, innovative with respect to the traditional repressive measures - is the bearer of a normative option that does not legitimise evaluations ascribable to the prescriptive contents of the procedures applicable in the past, even though the *nomen iuris* of the latter has sometimes remained unchanged.

Therefore, the shared consideration of the Bank of Italy's representative according to which «when an extraordinary administration is activated, it is necessary that there are concrete prospects for a solution to the crisis»[42], it should have been a prelude to the application of this procedure in the immediate future, i.e. without waiting for the deterioration caused by the state of crisis to make it particularly difficult to pursue the objective for which it is intended.

Similarly, the reasons given to justify the non-use of the removal power, by the special regulations (art. 53-*bis*, paragraph 1, letter e, of the Consolidated Banking Act) recognized to the supervisory authority for the restoration of the company's balance, appear "cryptic". Indeed, the considerations made by the Bank of Italy representative for the adoption of this measure must be considered decisively contradictory. This is because, in view of the shared reference to the necessary existence of «objective evidence, capable of proving that the continued presence in office of the member is detrimental to the sound and prudent management of the bank»[43]. It is argued that this «circumstance ... does not apply to more complex and complex situations, such as that of the BPB, where governance problems originated in a wider and more widespread context of criticality». It does not escape the reader, in fact, that the reference to such a business context denotes an intrinsic negativity that should motivate the intervention of the authority, while in the construction of the above-mentioned construction it becomes a prerequisite for a reductive assessment of the causes of inadequacy of the exponents to be removed.

[42]See PERRAZZELLI, *Esame del disegno di legge C. 2302, di conversione in legge del decreto-legge n. 142 del 2019*, op. loc. ult. cit.
[43]See PERRAZZELLI, *Esame del disegno di legge C. 2302, di conversione in legge del decreto-legge n. 142 del 2019,…* cit., p. 15.

Therefore, the numerous criticisms, also raised in the political forum, in which an *agere* of the authority without a proper graduation of the intensity of the supervisory action, who, starting from a courageous application of the so-called removal, could perhaps have stopped the escalation of a drift that has upset the economic and financial system in southern Italy, seem to be acceptable.

7. In order to fully assess the limits that have characterised the activity of the supervisory bodies in the face of the growing number of banking crises in recent years; also, it is necessary to consider the ECB's behavioural line. It does not escape the observer that the latter, in the face of the events that occupy us, has maintained a substantially silent attitude; this is difficult to understand since, according to special regulations, it could have "made its voice heard" by taking appropriate measures to stop the deterioration of the situation of Italian banks in crisis, among which the events concerning the Popolare di Bari[44] are particularly serious.

It is hardly necessary to recall, in fact, that following the introduction of the Single Supervisory Mechanism (SSM), which assigned specific supervisory tasks to the ECB on the so-called significant banks, credit institutions not falling into this category, while remaining under the supervision of national authorities, have become the subject of checks by a special Directorate-General (operating within the SSM). In this way, the European Central Bank can assess the activities carried out by non-significant banks in view of the possibility (provided for by art. 6, paragraph 5, letter b, EU Regulation no. 1024/2013) to extend its control to them "when necessary to ensure the consistent application of high supervisory standards" [45]. It is no coincidence that a member of the ECB, who later became a member of the SSM Supervisory Board, specified that «supervision should cover all

[44]See the journal entitled *Per la Banca Popolare di Bari l'UE resta alla finestra* available on *www.eunews.it/2019/12/16/la-banca-popolare-bari-lue-resta-alla-finestra/124362*.
[45]See on this point CAPRIGLIONE, *Considerazioni a margine di un provvedimento della Banca d'Italia sulla «entrata in funzione del Single Supervisory Mechanism»*, available on *www.apertacontrada.it/2014/11/18/considerazioni-a-mar-gine-di-unprovvedimento-dellabanca-ditalia-sullentrata-in-funzione-del-single-supervisorymechanism.*

banks, although in a different, diversified form, but all banks in the euro area»[46].

In the presence of such an unequivocal assignment of precise powers of intervention, it is surprising - as has been said - the orientation of the appointed European supervisory authority; a position, however, shared by the EU summits according to which, in the case of the Popolare di Bari, supervision "is the Bank of Italy's and not the ECB's"[47]. This line of action - as indicated by Commissioner Vestager's Competition Commissioner's spokesperson - is also confirmed by the Commission's willingness to remain neutral, having "taken note of the Italian government's decisions on Banca Popolare di Bari" and given its willingness to the Italian authorities "to discuss the terms of the instruments on the basis of the EU rules"[48].

Therefore, one wonders what the reason is for the ECB to give up the powers granted to it by the European regulator. Probably upstream of such an attitude is the intention to limit its intervention only to cases of "declared instability", which, regarding the People of Bari, the massive intervention of the Italian Government has prevented (at least formally) that could be ascertained.

However, it has to be considered that this orientation is not very consistent with the expansive line of such technical authority which, in recent years, has significantly consolidated its operational power sphere. In this view, the extension of the ECB's powers has also been explicitly recognised by the European Court, according to which - as one careful commentator pointed out – «after the adoption of EU Regulation No. 1024 of 2013, national supervision is a decentralised mode of implementation of an exclusive competence of the European Central Bank»[49].

Probably, at a general strategic level, it has not yet been adequately clari-

[46]See ANGELONI, Speaking at the conference *Verso un'Autorità di vigilanza per l'Area dell'Euro* organized by the Federation of Banks, Insurance and Finance (Rome, 25 October 2012), published in *Collana FeBAF*, no. 1 of 2013, p. 7.
[47]See the journal entitled *Per la Banca Popolare di Bari l'UE resta alla finestra,* visionabile su *ww.eunews.it/2019/12/16/la-banca-popolare-bari-lue-resta-alla-finestra/124362.*
[48]See the journal *Per la Banca Popolare di Bari l'UE resta alla finestra,* cit.
[49]See European Court, judgment in the case T-122/15 Landeskreditbank Baden-Württemberg – Förderbank / BCE, published in *Rivista Trimestrale di Diritto dell'Economia*, 2017, II, p. 45 ff, on a note by LEMMA, *"Too big to escape": a clarification of significant relevance on the scope of the Single Supervisory Mechanism*, p. 75 ff and, in particular, p. 81.

fied (i) what the effects of an increasingly strong link between European and individual Member States' finance should be, and (ii) what the limit is that makes it necessary/indispensable for the ECB to intervene in the affairs of individual EU countries in order to avoid deflagrating consequences that could have a negative impact on the whole "Europe system". Meanwhile, the trend towards further growth in the role of this technical authority is confirmed by its indications in an opinion on «a proposal ... of the European Parliament and of the Council amending Regulation (EU) No 1093/2010 establishing a European Supervisory Authority (European Banking Authority)»[50]. More specifically, in the field of anti-money laundering supervision, while recognising that this is outside the ECB's field of competence, the ECB claims the right to acquire the data concerned «for the purpose of carrying out ... (its) ... tasks ... relating to the prudential supervision of credit institutions»[51].

It is clear that the inclusion in the Union's regulatory framework of a specific ECB presence in the fight against money laundering marks an important step towards the centrality of a command that ranges in all directions and which seems destined to encompass all forms of supervision over financial activity. Hence the legitimate expectation of an action aimed at finding appropriate remedies even during banking crises that the domestic authorities are unable to prevent and/or govern in an appropriate manner. On the contrary, the critical points of the system are knots that will not fail to come to the fore!

8. Following the above considerations a series of questions to the scholar arises regarding the validity of the banking sector set by the EU summits after the 2007 financial crisis. The post-crisis regulation seems, first, inconsistent with Italy's economic and financial reality, while this last - after more than half a century of poor management of credit deterioration - is unavailable to accept *tout court* a replacement of the previous mechanisms of supervision.

[50]See the opinion made by the ECB on 7 December 2018 on this proposal (CON/2018/55).
[51]See the opinion made by the ECB on 7 December 2018, paragraph 1.2.

One can warn if the forms of intervention practiced by the national authority can be considered satisfactory. These activities - without prejudice to the correctness of the intent from which they are based - sometimes appears inefficient because of the weak decision-making process which takes place within its structure.

A reality leads to easy criticisms regarding the timing of the measures adopted. The frequency which, in the last five years, has characterized the rise of banking crises is an indirect confirmation of the significant limits that marks forms of public supervision; therefore, the foreseeable prospect of systemic imbalances intended to curb the country's economic progress.

The reflection on the *quid agendum* back to the identification of the causes which, on the one side, make the current model of supervision inadequate (compared to that existing in Italy in the period prior to the creation of the EIB), on the other they allow to identify the existence of possible shortcomings in the supervisory role of the national authority.

In this context, the controversial discipline of the BRRD and, in particular, the rules on *bail-in* have seen Italy at the forefront of making radical proposals to revise it[52]. It follows that the onerous adherence of European legislation - and, therefore, the relationship of substantial subjection in which the Italian supervisory authorities pay towards the ECB and the other institutions of the Union - identifies a first field of investigation in which the effects of the internalization of losses must be compared with those of an unconditional public guarantee on bank liabilities.

In this regard, in the EU the fact that the rescue operations of some banks in crisis have resulted in 'enormous efforts' for the public budget has been negatively assessed, calling into question the «fiscal sustainability of systemic crises,

[52]See the European Commission, Report of the Commission to the European Parliament and the Council on the application and revision of Directive 2014/59 / EU (Bank Recovery and Resolution Directive) and Regulation (EU) No. 806/2014 (Mechanism regulation for a single resolution), Brussels, 30 April 2019 COM (2019) 213 *final*.

especially in countries with high public debt»[53]. In particular, it was considered contrary to the market the fact that to the holders of subordinated loans and even some groups of minority shareholders were recognized the possibility, in the presence of serious bank failures, of recovering (at least in part) their property rights. This conviction did not prevent, however, from recognizing the opportunity to prepare a new regulatory package, in which significant space is given to the revision of the minimum requirement of liabilities subject to devaluation or forced conversion into capital (MREL)[54].

These reflections made at European level do not take into account the fact that the crises of systemically important Italian banks (firstly MPS) should have been subject to the European interventions, with a mutualisation of rescue costs (within the second pillar of the banking union). Instead Italy was forced to intervene by placing the financial charges on the taxpayers (Decree-Law 23 December 2016, the so-called "*Salva Risparmio*", which establishes a fund of 20 billion euros to save banks in difficulty). It is the nominated criticisms of Italy are therefore surprising, given the contradictory attitude of the EU, which first refrains from providing adequate aid, then negatively assesses the bailouts carried out independently due to their cost.

The above topics - although take into account the criticisms are focused on the regulatory aspect of the bail-in - are aimed at safeguarding the ordering criterion, based on the BRRD, concerning the preservation of business continuity and, therefore, to preserve value. From such considerations lies the reason why the «review of the rank of creditors in the insolvency of financial institutions, through the introduction of a new class of bonds (so called *Senior non-preferred*)» is considered adequate for the purposes of the change as well as the possibility of achieving suitable levels of protection for «retail investors» after ascertaining their

[53]See ENRIA, *Il "pacchetto bancario" CRD 5/CRR 2/ BRRD 2*, report to the Senate of Republic Italian, 5 July 2017, p. 5.
[54]See CROSETTI, *Verso la BRRD II. Analisi delle proposte di armonizzazione del requisito minimo di passività ammissibili con le indicazioni del Financial Stability Board in materia di Total Loss Absorbing Capacity*, on *http://www.amministrazioneincammino.luiss.it/2018/01/18/verso-la-brrd-ii/*

awareness of the «risk of different forms of investment»[55]. Hence the prospect of rules which, on a substantial level, leave the system established in the BRRD almost unchanged: they appear to be limited to declining a principle of *proportionality* in its application, to mitigate their rigor in certain cases.

In other words, a simplification of the disciplinary complex is targeted, correlating its scope to the simpler business models of some banks (mainly local and medium/small ones), avoiding amplifying their operating and administrative costs. We therefore understand the reason why the reorganization measures of credit institutions limited to certain «amendments to implement the Total Loss Absorption Requirement (TLAC) ...for systemically important banks ...and to specify the characteristics of the Minimum Requirement for Impairment or Forced Conversion into Equity (MREL) for other banks»[56].

In my view, the view expressed in the abovementioned reforms does not allow to solve the problem that the European regulation still raises in countries like Italy. For decades, the latter benefited from an interventional context based on the logic of a "controlled market"; this - as anticipated - allowed the members of the credit sector to escape the application of the typical measures of a competitive system. Therefore, the authorities were able to cope without excessive trauma the rescue of the banks in crisis and the savers, involved in situations of banking pathology, to overcome their harshness without negative consequences.

Hence the affirmation of a financial «culture», contrary to that which characterizes some EU countries, advocating the new European regulation. On closer consideration, the latter has not evolved in the sense of accepting mechanisms that upset the foundations of the previous discipline. This results in the substantial, generalized refusal of the *resolution* of the banks mentioned above and, therefore, of the application of the remedies that strongly affect the overall reality of the same, affecting not only the shareholders but also the subjects who have in any case-maintained relations with them.

[55]See ENRIA, *Il "pacchetto bancario" CRD 5/CRR 2/ BRRD 2*, cit., p. 7.
[56]See ENRIA, *Il "pacchetto bancario" CRD 5/CRR 2/ BRRD 2*, cit., p. 4.

In order to fully assess the disruptive effect brought about by the disciplinary changes in question, it should be reminded that in Italy the acquisition of participatory shares in the capital of banks (especially those with a cooperative structure) by small savers identifies a method of investment not unlike that achieved through the assumption of covered bonds. The fiduciary element that links this particular 'category of shareholders' to the bank makes it possible to believe that, in these cases, the transactions have an essence different from that attributable to their formal configuration and, therefore, to the *nomen iuris* that distinguishes them. Moreover, the same legislator intended to recognize peculiar specificities to such participatory interventions, to differentiate them with respect to those of ordinary institutional investors; in this sense it guides the particular quantitative limitation of shares of popular banks held by investors[57]. It is evident that - as has been argued by a large part of the doctrine - the presence in the capital of these banks of entities that pursue exclusively investment purposes aims «to reconcile the needs of capitalization with that of *cooperative democracy*, since these bodies do not create … those same risks of concentration of decision-making power that other legal entities that participate in the capital of popular banks could create»[58].

Similarly, it must be considered that some ethically incorrect bank operators engage in behaviour that does not respect the rules of transparency or profit from situations of need of the negotiating counterparty[59]. In these cases - and in those granting the credit conditional on the (partial) use of the same for the purchase of equity and / or bonds (issued by the bank to increase its capital structure) - a rigorous application of the legislation in question, resolves unequivocally in an evident situation of iniquity, perpetrated to the detriment of those who acted in

[57]Please note that pursuant to art. 30, paragraph 2 of the Consolidated Banking Act ("TUB"): "No one, directly or indirectly, can hold shares in excess of 1 per cent of the share capital, saves the statutory right to provide for more limited limits, in any case not less than 0.5 per cent".

[58]So SCHIUMA, *Le banche popolari e l'organizzazione «cooperativa» delle società per azioni*, on *Riv. dir. civ.*, 1996, II, pp. 338-339.

[59]This is a behavioural practice on which I dwelt in distant times when I specified that «an ethically correct behaviour of intermediaries ... cannot ignore the interpretation of customer needs», so that «it cannot go beyond the will of costumer, preventing the free determination of those who can be subject to market conditions», see my *Ethics of finance and ethical finance*, Bari, 1997, p. 51.

contexts that have seen them deprived of their decision-making autonomy. It follows that the safeguarding, in absolute terms, of the "no creditor worse off" principle, preordained to the equation of all creditors in the resolution[60], must not represent an insurmountable totem, which ends up conditioning the search for innovative solutions to the problem in question.

A more in-depth review of the BRRD and, with this, of the other disciplinary measures that, in recent years, have changed the banking crisis management regime, on my view, identifies the unavoidable starting point for initiating suitable reforms to make the special legislation in question compatible with the Italian financial reality. Naturally any desirable intervention by the European regulator will have to take into account the particular expectation of the small savers (who have entrusted their availability to banks which then ran into crisis situations) not to go against certain losses. Similarly, customers whose operations have been subject to the purchase of equity securities (i.e. bonds issued by credit institutions that have used coercive means against them) deserve protection.

It is not my responsibility to indicate, here, what and how many changes can be introduced in the European regulatory system; moreover, what seems indispensable is the removal of the constraints that today characterize its essence. This is necessary in order to allow national authorities an adequate flexibility aimed at mitigating their rigid profiles and making it possible to search for solutions compatible with the level of financial culture of the reference countries. In the presence of an economic pluralism, such as that based on the Union, the regulator must aim at respecting the differences existing between the Member States and, at the same time, take care to avoid inequalities, in line with the well-known maxim *in varietate concordia.*

In the light of these criteria, a fair balance must be sought between innovation based on the market and safeguard of the protections that have characterized some national realities. This is the way forward so the past is not overwhelmed by

[60]See for all ROSSANO D., *La nuova regolazione delle crisi bancarie*, cit., p. 110 ff.

the future and regulatory harmonization is not transformed into a disaggregating factor in the Europeanization process!

9. Turning to the examination of the interventional capacity of the Italian supervisory authority, it should be immediately specified that even in the past there have been situations in which doubts have arisen on the behavioural line of the Bank of Italy during events that determined even then a system crisis.

In the presence of such events, regarding the top management of the supervisory authority I affirmed that the «power ... in the presumption of its absoluteness» sometimes ends up «posing as self-referential ...(becoming)…assumption of hypothesis of identification between the person and the institution»[61]. I was referring to the situation in which the head of the Institute - in order to pursue the "overall" balance of the credit system autonomously - had detached itself from the structure, advocating any decision he deemed conferred on the strategic plan pursued. In this view, the doubt of the lack of a necessary independence of the central bank from the interests in the field is understandable.

In the current historical moment, the systemic crisis - to which I referred in the previous pages - is attributable to causes quite different from those which at the time induced me, with deep regret, to express a critical judgment towards the institution in which I have worked for about thirty years and to which I am deeply devoted, owing to it my cultural and professional training.

What characterizes the present situation, to consider carefully, is an opposite reality, that is in many ways different from the reality found at the beginning of the millennium. Currently, there is a sort of immobility (easily exchanged for inefficiency) and, consequently, a substantially resigned line of the sector authority, to which I have referred several times in this paper.

The cause of this attitude is very likely to be attributable to the criticalities of the current changes, determined by the transfer to the European Central Bank

[61]See CAPRIGLIONE, *Crisi di sistema ed innovazione normativa: prime riflessioni sulla nuova legge sul risparmio (l. no. 262 of 2005)*, on *Banca e borsa*, 2006, I, p. 33.

of the banking supervision, recently implemented. As you know, this event was followed by a downsizing of the powers of the national supervisory authority, which was accompanied - perhaps unconsciously (for an excessively reductive interpretation of its role) - a sort of discouragement from the authority; hence the abandonment of an interventionist activism that, in the current situation, could have led to positive results, however not separated from an increase in responsibility. In this context, the silent attitude, that sometimes appeared excessively cautious and even *late* (held by the authority in question) – to which I have repeatedly referred to in the investigation – is explained.

Accordingly, some observers believe that because of the identity crisis, ascribed to the Bank of Italy by many, it was a weakening of its action, with obvious negative implications on its ability to influence. This did not mean, however, abandoning the method of rigor and operational correctness traditionally followed by the institution; so that the words of the Governor Visco must be considered justified, who - faced with some media attacks - wanted to express the senses of his disappointment by specifying, that «the supervisory action ... is conducted within the powers assigned to the authority of control and in full compliance with the nature of the banking business, as well as the legal provisions, without managerial will or connivance»[62].

However, there is a *complex situation* that needs to be clarified. Indeed, the fact that the deplorable conduct of some of bankers is, at present, subject to evaluation by the judicial authorities does not seem to be decisive for the *mala gestio* of these. Likewise, it does not satisfy the need felt by the supervisory authority to represent its "innocence" *coram populo,* specifying that it has done «the maximum to constantly keep under control the different situations» and its intention to evaluate «if there have been errors» by the Bank of Italy itself[63]. Therefore, the need to rethink the supervisory model urges, in order to look for a scheme in

[62]See Speech at the 26th ASSIOM Forex Congress, Brescia 8 February 2020, printing drafts, p. 11.
[63]See *Interview with Governor Ignazio Visco in Corriere della Sera - 23 December 2019, on https://www.bancaditalia.it/media/notizia/intervista-del-governatore-ignazio-visco-al-corriere-della-sera-23-dicembre-2019/*

which the renewed structure of European measures is accompanied by a more congruous relationship between politics and technics, to be reformulated in terms that take into account the pre-eminent role played by the second following the changes in the regulations introduced in the EU.

Consequently, today seems necessary to anachronistically consider an eventual regulatory proposition focused on the relationship of political direction/administrative activity, which, as known, characterized in the pre-crisis era the exercise of limited supervision in a domestic context[64]. At present, the supervision has lost the previous direct connection to the inputs of the national policy; except for the fulfilment of an obligation to report to the representative bodies of the top management of the banking system, which are so implicitly subject to control. Therefore, the need to find an organizational formula that redefine the terms of social control and the rate of democracy in the choices of the technical authority. Perhaps, it seems an optimal way to allow the Bank of Italy to recover the 'splendour' of the past, leaving the 'shoals' in which, according to many, the authority is at present in danger of running aground. The danger of reputational damage to the national supervisory body would certainly be averted with an impact also on Italy's reliability.

It is necessary to assume a regulatory construction within which no space is given to the possibility of delays and omissions, which in recent times have been found in public intervention in the banking and financial sector, replacing them with timeliness of the action and its responsiveness to the standards for a transparent link with the policy indications. However, such statements do not intend to neglect the need to conform the contents of the supervision to the indications formulated in the EU.

In this context, a re-evaluation of the role of the ICRC, abandoned in the

[64]See on this point my work *Intervento pubblico e ordinamento del credito*, Milan, 1978, *passim*, but in particular chapter II.

"port of the mists", means rethinking its objectives and functional modalities[65]. This is a significant commitment that politics could, however, face in order to activate a dialectical process with technics and thus confer continuity and adequate levels to interaction with the latter. On this view, having recourse to a re-evaluation of the role of the ICRC, to the present abandoned in the «port of the mists», means rethinking its objectives and functional modalities. In this way, dangerous reactive forms of the public authorities could be avoided in the face of the persisting banking crises, avoiding that easy ideas are taken from these for the adoption of reforms of the regulatory model of the Bank of Italy; reforms that are likely to compress (if not even frustrate) their autonomy.

Indeed, a correct interpretation of the ways in which change cannot be separated precisely from the conservation of the *autonomy* of the Bank of Italy. This institutional prerogative - currently strengthened by the technical function assigned to it by the Union - feeds on the high qualification that characterizes the action of this body, to which great authority is recognized by reason of an irreproachable line of conduct; all elements that have allowed it to be framed in an area characterized by the generalized trust of civil society.

Consequently, in order to maintain its prerogatives, the authority must conform its activity to criteria that exclude any criticism or charge against it. This implies a careful use of 'administrative discretion' which, in order not to overflow in «excess of power», must avoid incurring contradictions. The latter could result from the delayed adoption of an extraordinary administration measure, despite the existence of previous assessments which show that, in times significantly prior to the commissioner, the supervisory authority was aware of numerous elements (i.e. 'operational stasis', 'managerial stalemate' of the entity and 'strong conflicts' between the management and control bodies of the same), from which the presence of the conditions would have been easy to be deduced, as provided by Arti-

[65]On the current interventional limits of the ICRC, see SEPE, *EBU and the National Credit Authorities' structure: the Italian case. The role of CICR in the new institutional context,* on Law and Economics Yearly Review, 2015, p. 161 ff.

cle 70 of the Consolidated Banking Act, for the issue of the related provision. Not to mention other criticisms that have been raised in cases of banking crises with regard to a hypothetical improper use of technical discretion[66], mention should be made of the limited use of the 'removal' power introduced by Article 53-*bis*, letter e), of the Consolidated Banking Act, which (in a logic of prevention) allows the supervisory authority to intervene - as previously highlighted - in a timely manner, when there is a danger of bad governance, removing the persons responsible for it[67].

Naturally the search for adequate reforming lines of the Italian banking system should take place after agreements with the European authorities and, if necessary, together with the strengthening of the link between the Italian public intervention mechanisms and the European ones. Perhaps, useful indications in this regard could come from an adequate reform of the ESM, which is at the centre of the political debate aimed to shed light of the direction and scope of the related interventions. I refer to a possible, rational use of its financial resources for the direct recapitalization of banks, thus rejecting projects that intend to redefine its functions having regard to a hypothetical tightening of its intervention powers[68].

It is clear that any reform project must fit into a more general plan - which seems to have been initiated by the new European Commission - of economic governance; a design that finally faces and overcomes the «limp» between the government of monetary policy and that of economic policy, recomposing their unity of direction.

10. The above considerations show an Italian scenario within which the

[66]See *supra* note no. 39.

[67]See PILATI, *Commento sub art. 53 bis of the Consolidated Banking Act*, on AA.VV., *Commentario al testo unico delle leggi in materia bancaria e creditizia*, cit., I, p. 630 ff.

[68]It should be noted that the possibility of benefiting from the ESM could be problematic for high debt countries, forced to forcefully reduce it to access the funds as one of the clauses to access the ESM is that of not having excessive imbalances, a requirement which unfortunately sees Italy lacking; see the editorial published by ANSA with the title *MES, ecco cosa cambia con la riforma del Salva-Stati*, on *http://www.ansa.it/sito/notizie/economia/2019/11/23/mes-ecco-cosa-cambia-con-la-riforma-del-salva-stati-_94699117-8369-4640-8d8e-fedc8213987b.html*.

banking crisis, as we have attempted to demonstrate, identifies the epiphany of a systemic crisis. The first acts as a catalyst for the emergence of the difficulties in which the banking sector is debated. The banks are between the need to conform with the regulatory framework imposed by the EU and the growing tendency to disregard its principles in various ways. In particular, it is generally considered that if a return tout court to generalized mechanisms of bailouts is no longer possible, however it is necessary that the European tools must be partly changed.

Few uncertainties and contradictions reflect in the action of the national supervisory authorities, which in some cases is inconsistent with the needs of a sector that still experiences the negative effects of the 2007 financial crisis. A *mala gestio* of banks is evident that even if, on one hand encourages the economic crime, on the other hand supports failing firms, which are likely to default, through uncontrolled faulty ratings. In this context, the confidence of civil society towards the top management of the domestic financial institutions also risks being compromised. As discussed, it is subject to a media campaign which certainly does not affect its ethical and professional integrity, but nevertheless highlights certain disconnected decisions and delays which represent an evident sign of inefficiency.

Considering these events, politics, scholars and policymakers should ask about the possible “drift” which must be avoided. What to do? To accept the present without forgetting the past, from which to draw adequate lessons for the start of a new path that aims to achieve a balanced composition between the current instability of the system. Perhaps this is the correct methodological approach that can help Italy get out of the difficulties with which, unfortunately, it is currently struggling!

DATA, BIG DATA AND STATE AID

José Luís Bolzan de Morais [*] - Francesco Gaspari [**]

ABSTRACT: *The research aims at investigating if, how and to what extent the EU competition legal system (especially State aid) affects big data.*

After having clarified the crucial role that big data are called to play within the digital economy, the paper focus on the concept of big data. In this respect, it is pointed out as, on one hand, big data are able to generate added value in a variety of ways, with numerous positive examples, entailing significant opportunities for citizens. On the other hand, the advantages offered by big data come with many challenges, including the ownership misuse, and they entail significant risks, especially with regard to the protection of fundamental rights.

In its main part, the paper analyses the legal nature of big data, as well as the data mobility regimes, before specifically analysing whether – and to what extent – competition law-related matters may affect big data (for instance, whether big data can be seen as an essential facility).

Given the public relevance of big data, as widely pointed out in the study, some specific cases in which State aid issues may arise are identified.

The complexity of the research lies on the fact that currently a clear legal framework within which big data are regulated does not exist, either at the EU level or at domestic levels. The need for an ad hoc regulation of big data is

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Paragraphs 1.1 and 1.2 have been written by José Luís Bolzan de Morais; the other paragraphs have been written by Francesco Gaspari. The Authors want to thank Professors Andrea Biondi, Roberto Miccù and Valerio Lemma for their valuable comments on previous drafts. Any mistakes or omissions remain the Authors'.

required given, inter alia, the importance that it plays for purposes of general interest and for the protection of goods having public relevance.

The lack of a specific regulation is (improperly) covered by different administrative actors within initiatives (especially at domestic level, for instance, independent administrative authorities, administrative agencies) with different degrees of competences in the field of big data.

The paper concludes putting forward some regulatory solutions within the EU legal system.

1. 1.1. Offered as a new civilizing stage coined in the struggle against monarchical absolutism, the Rule of Law has relied on important institutes of this new time, such as the political representation, the mechanisms for controlling legislative production, the political parties and the liberalism as the ideology of the market, proposing the breaking of arbitrariness and the promotion of equality – even if initially only formal – and freedom – above all individuals.

Alongside these promises was the rise of capitalism with the absurd concentration of wealth of the few, with the deepening of social inequality reaching many at a diametrically opposite pace between one social extreme and another, realizing that freedom and equality were shown to be only formal principles.

However, it has been pointed out that the project of modernity was not totally unsuccessful, as from it the legal phenomenon emerged as a manifestation of sovereign political will, materialized through democratic procedures, the rationalization of law by the principles of publicity, legal certainty, normative hierarchy and the rule of law against arbitrariness[1].

According to such author, the great achievement of modernity lies in the factual limitation of material inequality and in the protection of freedom, locating human rights as an ethical reference of a democratic society, committed to the values of the individual, its autonomy and dignity. However, he acknowledges that globalization, the increasing complexity of social and political processes associated with scientific advances, the cyber revolution and the very inadequacy of the State structure in view of the irreversible integration that announced itself (in Europe), contributed to the crisis environment around the modernity project and its legal system[2].

The author further notes that the crisis is favored by the emergence of new technologies, which eventually revealed other sources of legal production with the multiplication of actors in the above and infra-mentioned scenario, the decision-making polycentrism, the tendency of deregulation, the delegation, in short, a new structure of legal normativity in a network, with the regression of the principles of unity, rationality and statehood[3].

For this author, the transformation of ordering, particularly in the structure of normative production, and as a consequence in the human rights system, causes political theory to lose its explanatory capacity in the face of the pressure of this vast set of phenomena that limit the State's scope of action as the main actor of the legal-political order. As noted, it is the advent of postmodern law characterized by the decline of practical reason as an element of human

[1]A. de Julios-Campuzano, *Nuevos horizontes de los derechos humanos: la crisis de la modernidad jurídica en la sociedad tecnológica*, in *Revista de Direitos e Garantias Fundamentais*, Vol. 19, No. 3, 2018, p. 19, available at http://sisbib.emnuvens.com.br/direitosegarantias/article/view/1697.
[2]See DE JULIOS-CAMPUZANO, *Nuevos horizontes de los derechos humanos*, cit., p. 20.
[3]See DE JULIOS-CAMPUZANO, *Nuevos horizontes de los derechos humanos*, cit., p. 20.

knowledge and doing.

One of the causes of this transformation is the growing level of insecurity that affects the development of scientific knowledge, causing the growing sense of risk in the management of the technical means that scientific advances provide – generating the impression of unprotection in the face of possible technological disasters. Another cause is the explosion of ignorance as the horizons of knowledge widening, because there is a feeling that the more one knows the more one becomes aware that much remains to be known. In this wake comes the other cause, the resizing of the traditional knowledge-power relationship, throwing the legal categories of modernity into obsolescence.

The protection of human rights in this risky society, of course, is going through a particularly critical period in the redefinition of the social sciences, with the intensification of economic change through new technologies, the frantic expansion of capitalism and the creation of inaccessible transnational macro economic powers, inaccessible to the democratic control by citizens. We speak about another phase in the development of capitalism.

As has been pointed out, it is the age of digital industries, technoliberalism, that reveals purely the commodification of life, with sensors placed across the surface of existence to monetize behavioral knowledge and make it profitable. The functionality of this technological environment is the algorithmic or automated organization of increasingly large sectors of society, denying its spontaneity, creativity and self-determination capacity[4].

This is what some scholar calls watchful capitalism, "*a new kind of economy that reinvents us through the prism of its own power and its means of behavioral change*"[5].

Another scholar refers to the data tsunami, warning about the dangers of

[4]See SADIN, *La Vie Algorithmique. Critique de la raison numérique*, Paris, 2015, as well as, of the same author, *L'Intelligence artificielle ou l'enjeu du siècle. Anatomie d'un antihumanisme radical*, Paris, 2018.

[5]See ZUBOFF, *Tua escova de dentes te espiona: Um capitalismo de vigilância*, Le Monde Diplomatique, Edition 138, 3 January 2019, available at https://diplomatique.org.br/um-capitalismo-de-vigilancia/.

uncontrolled technological development in the face of biometric algorithms that can interpret emotions and replace human decision-making, revealing the challenge for western democracy[6]. As he notes, the digital revolution leads to the dystopian risks associated with the technocratic elite that dominates it and has a vision of reformulation of the idea of man by transhumanism[7]. It is a technical vision stripped of any kind of reflection or humanistic content, focused on pushing boundaries, breaking the foundations of civilization.

The problem identified by some scholars is the evolution to the cognitive model based on the depletion of political power, the neutralization of democracy, and an unprecedented process of concentration of wealth and monopolistic power, widening inequality. It is a political revolution that crushes the idea of citizenship by adulthood, proposing an assisted freedom that replaces the law with algorithms[8].

Someone warns that we are sleepwalking towards a "*new transnational dystopia*"[9]. In his opinion, "*the internet is a threat to human civilization*" because instead of presenting itself as a "*tool of emancipation, it is being transformed into the most dangerous facilitator of totalitarianism*", enabling the transfer of power to intelligence agencies such as the NSA, and "*your transnational corporate allies who will not be held accountable for their actions*"[10].

In other words, unlike the Rule of Law – with all its deficits – in which equilibrium is exercised through its own powers (checks and balances), with the

[6]See LASSALE, *Ciberleviatan: el colapso de la democracia liberal frente a la revolución digital*, Barcelona, 2019, p. 51.
[7]In this perspective, five goals can be identified: make ourselves immortals, increase human capabilities, colonize the cosmos, create artificial life and develop artificial intelligence: see: COPÉ, *L'IA va-t-elle aussi tuer la démocratie?* Paris, 2019, p. 30. Transhumanism – term coined by the British biologist and writer Julian HUXLEY in 1927 (in the book *Religion without Revelation*, London), is a cultural movement supporting the use of new scientific findings and emerging technologies to enhance physical and cognitive skills and, thereby, to improve those aspects of human condition deemed as undesirable, e.g. diseases and ageing, also in the view of a post-human transformation: see N. Bostrom, *A History of Transhumanistic Thought*, in *Journal of Evolution & Technology*, Vol. 14, April 2005.
[8]See LASSALE, *Ciberleviatan*, cit., p. 71.
[9]See ASSANGE, APPELBAUM, MÜLLER-MAGUHN, ZIMMERMANN, *Cypherpunks: liberdade e o futuro da internet*, São Paulo, 2013, *Introduction*.
[10] *Ibidem*.

revolution 4.0 there is no accountability within the known formal structures, which prevents any kind of control.

Another scholar demonstrates the new colonization of the psyche by the intelligent power of algorithms. He is friendly, does not act directly against the will of the subject submitted to him. Its tactic is to "*produce positive emotions and exploit them*" by inviting "*to share unceasingly*", encouraging "*opinions, communicating needs, desires and preferences*"[11] to enable the appropriation and psychological manipulation that flows into politics.

Just in that invisible softness that colonizes thought, "*the intelligent power is more effective than anyone who orders, threatens, and prescribes*." Like the fever of a globalized society, "*enjoying is your sign*"[12].

Another scholar[13] exemplifies with the goldfish metaphor, which only has attention span for eight seconds, after which its mental universe resets itself. This species was supposed to live in shoals, last between twenty and thirty years, and grow to the size of eight inches, but the aquarium atrophied it.

According to this author, Google has estimated that the capacity to concentrate of humans, in millennial generation, outnumbers the goldfish in just one second. Over the lapse of nine seconds the human brain needs a new stimulus. This is how humans become the goldfish subject to the carousel of addictive alerts and instant messages.

This attention economy destroys relations with the public space, knowledge, truth, information, and democracy[14]. Humans are mesmerized by the big screen that the network has transformed into, which plays with their emotions, placing them in a kind of aquarium, manipulated and pressed by the "likes" and instant visibility devices. With such techniques, the sociability of the subjects is completely altered.

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[11]See HAN, *Psicopolítica. O neoliberalismo e as novas técnicas de poder*, Belo Horizonte, 2018, p. 27.
[12]*Ibidem*.
[13]See PATTINO, *La civiliation du poissson rouge*, Paris, 2019, pp. 13, 14, 15.
[14]See PATTINO, *La civiliation*, cit., p. 17.

With each like, just as Bruno Patino's goldfish, the citizen is imprisoned by the network, which also diffuses the feeling that there are no limits and that instantaneity is the only way to put himself in the scene, even as an object, turned into what the virtual market means is the way or the paradigm.

Such a process of "*numerization/quantification of life*" brings about a destabilization, "*since the power ends up being 'dispersed' in an extremely flexible and constantly changing network*"[15].

What can be understood in this state of the art is that the organization of society provided by the 18th Century Liberal Rule of Law, which surpassed the twentieth-century totalitarian movements and reinvented itself as a post-war Democratic Rule of Law, is completely impacted by the dizzying technological revolution that calls for institutions compatible with the present.

It is the civilizing crossroads that challenges the legitimacy of the liberal model institutions, giving way to a (neo) authoritarianism, losing the democratic sense. Along with this comes a strong ethical crisis, with the appropriation of public goods by large business groups, in exacerbated radicalization of predatory individualism.

This is the background of this paper, taking as a reference the emergence of risks peculiar to the dystopian possibilities of big data and the circumstances for the establishment of regulatory mechanisms.

Specifically, the research aims at investigating if, how and to what extent the EU competition legal system (especially State aid) affects big data[16].

The complexity of the research lies on the fact that currently a clear legal framework within which big data are regulated does not exist. This lack of regulation at the EU level (and at domestic levels) makes the objective of the full implementation of the EU digital single market a priority.

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[15]See BOLZAN DE MORAIS, *O Estado de Direito "confrontado" pela "revolução da internet"!,*in *Revista Eletrônica do Curso de Direito da UFSM*, Vol. 13, No. 3, 2018 pp. 885-886.

[16]However, aspects and issues related to big data divide, personalised prices, algorithms and other competition related-matters are not examined in this study, unless an analysis of specific points is required as instrumental for our research.

1.2 Globalization and the so-called "information society" have an increasing impact on people's life. *Information* is deemed as a preliminary condition for implementing democratic State's principles[17]. As has been pointed out, "*[t]he world's most valuable resource is no longer oil, but data*"[18]; and big data represent a new and significant class of economic assets that fuel the information economy[19].

Soon every single aspect of our day to day life will be connected and everything will be smart, not only phones, but also vehicles, houses, cities, financial technology (or FinTech)[20], as well as insurance technology (InsurTech)[21]. The Internet of Things (IoT), the Internet of Beings (IoB) and the analysis of big data will align with artificial intelligence and biometric systems: we will live in a smart planet[22]. This is likely to increase the quality of life and life expectancy[23].

As indicated in a 2017 EU Commission Communication[24], the value of the EU data market was estimated in 2016 at almost EUR 60 billion, showing a growth of 9.5% compared to 2015. According to a study, the EU data market could

[17]As stated by the Italian Constitutional Court: see judgments 12 April 2005, No. 151; 15 October 2003, No. 312; 12 February 1996, No. 29.

[18]*The Economist's*, 6 May 2017. See also Communication from the Commission, *Completing a trusted Digital Single Market for all - The European Commission's contribution to the Informal EU Leaders' meeting on data protection and the Digital Single Market in Sofia on 16 May 2018*, COM(2018) 320 final, 15 May 2018, point 1, which points out that "*[d]ata is now a central asset in the digital society*".

[19]See RUBINFELD, GAL, *Access Barrier to Big Data*, in *Arizona Law Review*, Vol. 59, 2017, pp. 339 ff., esp. p. 341; G. Sivinski, A. Okuliar, L. Kjolbye, *Is big data a big deal? A competition law approach to big data*, in *European Competition Journal*, Vol. 13, Nos. 2–3, 2017, pp. 199 ff.

[20]On FinTech see CAPRIGLIONE, *Considerazioni a margine del volume: il tramonto della banca universale?*, in *RivistaTrimestrale di Diritto dell'Economia*, No.1/2018, pp. 1 ff., esp. pp. 22-23; LEMMA, *Fintech regulation: the need for a research*, in *Open Review of Management, Banking and Finance*, Vol. 4, Issue 2, 2018, pp. 38 ff.

[21]On InsurTech see A. Engst, V. Lemma, *Insurtech and interoperability of fintech firms*, in *Open Review of Management, Banking and Finance*, Vol. 4, Issue 2, 2018, pp. 6 ff.

[22]See Communication from the Commission, *A Digital Single Market Strategy for Europe*, COM(2015) 192 final, 6 May 2015, Point 1. See also Communication from the Commission, *Completing a trusted Digital Single Market for all*, cit., *passim*.

[23]See European Parliament Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics.

[24]Communication from the Commission, *Building a European Data Economy*, COM(2017) 9 final, 10 January 2017; see also Commission Staff Working Document *on the free flow of data and emerging issues of the European data economy Accompanying the document Communication Building a European data economy*, SWD(2017) 2 final, 10 January 2017.

potentially amount to more than EUR 106 billion in 2020[25]. Also more recently, the Commission has stated that "*[t]he value of the European data economy has the potential to top EUR 700 billion by 2020, representing 4% of the EU economy*"[26]. Moreover, it has added that "*[b]ringing down the Digital Single Market barriers within Europe could contribute an additional EUR 415 billion to European Gross Domestic Product*"[27].

Within the digital economy, big data are called to play a crucial role. For instance, cities, as they are "online", produce and value big data coming from the urban environment. As has been recently pointed out, big data analytics generates added value in a variety of ways, with numerous positive examples, entailing significant opportunities for citizens, e.g. in the areas of healthcare, the fight against climate change, the reduction of energy consumption, improvements to transport safety and the enablement of smart cities, thereby improving business optimisation and efficiency and contributing to improved working conditions and detecting and combating fraud[28].

However, the advantages offered by big data come with many challenges, including the ownership misuse[29], and they entail significant risks, especially with regard to the protection of fundamental rights, such as, inter alia, the right to privacy, data protection and data security, freedom of expression and non-discrimination[30].

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[25]*IDC and Open Evidence, European Data Market*, final report, 1 February 2017 (SMART 2013/0063).

[26]Communication from the Commission, *Completing a trusted Digital Single Market for all*, cit., point 1. See also European Commission, *Final results of the European Data Market study measuring the size and trends of the EU data economy*, 2 May 2017, available at https://ec.europa.eu/digital-single-market/en/news/final-results-european-data-market-study-measuring-size-and-trends-eu-data-economy.

[27]Communication from the Commission, *Completing a trusted Digital Single Market for all*, cit., point 3.

[28]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data: privacy, data protection, non-discrimination, security and law-enforcement*, in O.J. 27 July 2018 (C 263/82), whereas "H".

[29]See WILLIAMSON, *Big data and the implications for government*, in *Legal Information Management*, 2014, 253 ff. See also G. Sivinski, A. Okuliar, L. Kjolbye, *Is big data a big deal?*, cit., pp. 199 ff.

[30]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., whereas "I".

The need for an *ad hoc* regulation of big data is required also given the importance that it plays for purposes of general interest and for the protection of goods having public relevance.

The lack of a specific regulation is (improperly) covered by different administrative actors within initiatives (especially at domestic level, for instance, independent administrative authorities, administrative agencies, etc.) with different degrees of competences in the field of big data[31].

Specific initiatives have been undertaken at the EU level, like, inter alia, in the transport[32], the smart city[33], the healthcare[34] and the energy[35] sectors (just to mention a few), in which it is clear that technology and digitalization may have an extraordinary impact on people life and activity.

At the EU level, other initiatives concern, inter alia, the Communication from the European Commission "*Towards a common European data space*" published on 25 April 2018[36] that provides further guidance on the business-to-business and business-to-government exchange of data in addition to the 2017 Communication on "*Building a European Data Economy*"[37], the 2018 EU Regulation on ETIAS[38].

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[31]On these initiatives we will focus more specifically on *infra*.

[32]See, among the most recent ones, Communication from the Commission, *On the road to automated mobility: An EU strategy for mobility of the future*, COM(2018) 283 final, 17 May 2018; European Parliament Resolution of 13 March 2018 on a European strategy on Cooperative Intelligent Transport Systems (2017/2067(INI)). See also the guiding principles laid down in the Cooperative Intelligent Transport Systems platform report of January 2016, available at https://ec.europa.eu/transport/sites/transport/files/themes/its/doc/c-its-platform-final-report-january-2016.pdf.

[33]See GASPARI, Smart city, *agenda urbana multilivello e nuova cittadinanza amministrativa*, Napoli, 2018.

[34]Commission recommendation (EU) 2019/243 of 6 February 2019 *on a European Electronic Health Record exchange format*, in O.J. 11 February 2019 (L 39/18), point 18, where it has been observed that "*[d]igitising health records and enabling their exchange could also support the creation of large health data structures which combined with the use of new technologies, such as big data analytics and artificial intelligence can support the search for new scientific discoveries*".

[35]See Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 6.2, pp. 25 ff.

[36]COM (2018) 232.

[37]COM(2017) 9, already mentioned above.

[38]Regulation (EU) 2018/1240 of the European Parliament and of the Council of 12 September 2018 establishing a European Travel Information and Authorisation System (ETIAS), in *O.J. 19 September 2018 (L 236)*. The Regulation applies to specific categories of third-country nationals

For our research, a significant initiative is Regulation (EU) 2018/1807 of the European Parliament and of the Council of 14 November 2018 *on a framework for the free flow of non-personal data in the European Union*[39], which is expected to take away unjustified data localization restrictions, enhancing the freedom of businesses to store or process their non-personal data anywhere they want within the EU. Such a Regulation shows very limited aims, given that, as stated by the Commission in its Explanatory Memorandum, "*[t]he proposed Regulation should positively impact on the freedom to conduct a business (Article 16) as it would contribute to eliminating and preventing unjustified or disproportionate barriers to the use and provision of data services, such as cloud services, as well as configuration of in-house IT systems*"[40].

Moreover, the Commission is exploring separately the issues of accessibility and re-use of public and publicly funded data and privately held data which are of public interest and liability in cases of damage caused by data-intensive products[41].

2. Thanks to the internet the amount of data that we create is growing at an unprecedented rate. In the past, data were primarily created by the corporate and public sector, held privately and used internally. The rise of internet-based networks has changed this so that data are now more available and the further evolution of the internet into the social web has led to a massive growth in "data"

(as listed in Article 1) and the access to the ETIAS Information System is reserved exclusively for duly authorised staff of the ETIAS Central Unit and of the ETIAS National Units, as laid down in Article 13 of such Regulation.

[39]In O.J. *28 November 2018* (*L 303*).

[40]Proposal for a regulation of the European Parliament and of the Council *on a framework for the free flow of non-personal data in the European Union*, COM(2017) 495 final, 13 September 2017, Explanatory Memorandum, p. 9.

[41]COM(2017) 228 final, 10 May 2017, *on the Mid-Term Review on the implementation of the Digital Single Market Strategy A Connected Digital Single Market for All*. See also European Commission, *Proposal for a directive of the European Parliament and of the Council on the re-use of public sector information (recast)*, COM(2018) 234 final, 25 April 2018. The new Directive was adopted in June 2019: Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 *on open data and the re-use of public sector information (recast)*, O.J. 26 June 2019 (L 172/56). The 2019 Directive shall be transposed by Member States by 17 July 2021 (Article 17, par. 1), date from which it will repeal Directive 2003/98/CE (Article 19).

production. And most of this is created by individuals on platforms such as Facebook, You Tube and Twitter[42].

"Big data" is a generic name for data that share several characteristics with regard to their aggregation, rather than content[43]. Such data refer to increasingly large data sets that companies collect from activity on the web, including on social networking sites and connected devices. Companies that collect many data are able to achieve a better understanding of the real world that gives them a competitive advantage over rivals that do not have access to the same big data[44].

However, big data are not simply about the scale of the data but the scale of the inter-connectedness, the relationships that exist between large and sometimes disparate data sets. So, "big data" are data linked together, to create a digital picture that is bigger than the sum of the parts[45].

Big data do not consist of a huge amount of the *same* product because, with the exception of duplicates, digital data are different from each other[46]. This means that big data of one company do not coincide with big data of another company[47].

Under a conceptual point of view, the EU Commission[48] points out that "*[b]ig data refers to large amounts of data produced very quickly by a high number of diverse sources. Data can either be created by people or generated by machines, such as sensors gathering climate information, satellite imagery, digital pictures and videos, purchase transaction records, GPS signals, etc. It covers many sectors, from healthcare to transport and energy*".

[42]See WILLIAMSON, *Big data*, cit. See also D. L. Rubinfeld, M. S. Gal, *Access Barrier to Big Data*, cit., p. 341, as well as M. Delmastro, A. Nicita, Big data. *Come stanno cambiando il nostro mondo*, Bologna, 2019, pp. 7 ff.
[43]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 345.
[44]See MAYER-SCHONBERGER, CUKIER, *Big Data: A Revolution That Will Transform How We Live, Work and Think*, 2013.
[45]See WILLIAMSON, *Big data*, cit.
[46]See COLANGELO, MAGGIOLINO, *Big data as misleading facilities*, in *European Competition Journal*, Vol. 13, Nos. 2-3, 2017, pp. 249 ff., esp. p. 251.
[47]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 346.
[48]*Digital single market - Big Data*, available at https://ec.europa.eu/digital-single-market/en/big-data. On the definition of *big data* see also OECD, *Data driven innovation. Big data for growth and well-being*, 6 October 2015.

However, big data have been defined in different ways, but none of such definitions has ever focused on the content (namely, on products and services for the design of which big data can be used), even though the value of big data lies just in those innovations and not elsewhere[49].

Other scholars[50] point out that the concept of big data is as popular as its meaning is nebulous. According to these authors, the term "big data" has been used with several and inconsistent meanings and lacks a formal definition. They are of the opinion that we should stop using the expression "big data", and should talk of digital data sets – data sets that certainly may be huge in volume, high in velocity, diverse in variety, exhaustive in scope, fine-grained in resolution, relational in nature, scalable in size and flexible in composition[51]. In this respect, it is worth mentioning that also the Organisation for Economic Cooperation and Development (OECD) prefers using the expression "data-driven innovation" instead of that of "big data".

3. 3.1 In order to properly examine the legal nature and the mobility (or movement) of big data we should understand who, how and for what reasons data are produced.

Data are generated by diverse "sources", like the network users which leave traces (digital footprint) of their online activities[52]. In this respect, a clear picture on the different ways to create/gather data is contained in a 2011 WEF report[53], and in a 2013 OECD paper[54], as then "ratified" and applied in other

[49]See COLANGELO, MAGGIOLINO, *Big data*, cit., p. 253, note 11. See also RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 346; ZIKOPOULOS, EATON, DEROOS, DEUTSCH, LAPIS, *Understanding Big Data*, MacGraw-Hill, 2012.

[50]See DE MAURO, GRECO, GRIMALDI, *A Formal Definition of Big Data Based on Its Essential Features*, 65 Library Review, 2016, p. 122.

[51]For the description of these big data features, see RUBINFELD, GAL, *Access Barrier to Big Data*, cit., pp. 345 ff.; KITCHIN, *The Data Revolution. Big Data, Open Data, Data Infrastructures and Their Consequences*, Sage Publications, 2014, p. 68; WILLIAMSON, *Big data*, cit.

[52]See DELMASTRO, NICITA, Big data, cit., p. 10; SORO, *Democrazia e potere dei dati. Libertà, algoritmi, umanesimo digitale*, Milano, 2019, p. 36.

[53]See World Economic Forum (WEF), *Personal Data: The Emergence of a New Asset Class*, January 2011, p. 7.

analyses, such as the 2016 joint report on big data by the French Competition Authority and the German Federal Cartel Office[55].

Data can be divided into three types: "volunteered data", "observed data", and "inferred data"[56].

Firstly, data can be *volunteered* or *surrendered* by individuals. These data are shared intentionally by users[57]. According to the 2016 joint report, this typically occurs when an online shop asks the consumer to give his address, payment details and e-mail-contact in order to process the purchase and the consumer will provide these data by entering them into some type of form. Social networks as well as social communication services rely on their users inputting all kinds of (mostly personal) data. This may include personal information such as name, address, educational background as well as personal messages, photos, videos, comments on recent news, shopping preferences etc. General or specialized search engines rely on their users entering search terms and thereby revealing information about their interests[58].

Data can also be gathered by simply tapping sources (openly) available on the internet or by observing the user's behavior, even without his or her knowledge[59]. For instance, internet browsing preferences, location data when using cellular mobile phones or telephone usage behaviour[60].

Moreover, data can be generated by inferring new information using already existing data. Inferred are data about individuals based on analysis of volunteered or observed information[61]. For instance, an online fashion shop could analyze the individual products a visitor has been viewing to infer – albeit with

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[54]OECD, *Exploring the Economics of Personal Data. A Survey of Methodologies for Measuring Monetary Value*, *OECD Digital Economy Papers*, No. 220, Paris, 2013, p. 10.
[55]Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, 10 May 2016, pp. 6-7.
[56]See WEF, *Personal Data*, cit., p. 7.
[57]See WEF, *Personal Data*, cit., p. 7.
[58]Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 6.
[59]Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 7.
[60]See WEF, *Personal Data*, cit., p. 7; OECD, *Exploring the Economics of Personal Data*, cit., p. 10.
[61]See WEF, *Personal Data*, cit., p. 7.

some margin of error – whether the visitor is male or female. A firm which has different web services may combine the user data of these services in order to get new information about the user's behaviour[62].

Other ways through which data are generated can be identified. For instance, data can be generated by public bodies (e.g. land and real estate registers data, healthcare data, climate data, but also geo-spatial information, satellite data, etc.), or through the reuse of public information or through public funds/resources/budgets (also from the EU)[63].

In general, at least within the EU legal system, as for the legal regime of data, we could distinguish three types/categories of data: (i) personal data[64]; (ii) non-personal data[65]; (iii) public data or data having public relevance[66].

Currently, the "ownership" of data is recognized to persons[67] with regards to personal data, as regulated by Regulation (EU) 679/2016, and by Directive 680/2016, as well as by Regulation (EU) 1725/2018, for which the free mobility (or movement) of data represents the general principle, with a view to balance private and public interests, which however tends to privilege the market[68].

Within the EU law, the protection of natural persons in relation to the processing of personal data is a fundamental right[69]. Article 8, par. 1 of the Charter of Fundamental Rights of the European Union and Article 16, par. 1 of the Treaty

[62]In all those cases, the company itself has control about the collection of data because it is involved in the relationship with the (prospective) customer ("first party data"): Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 12. See also OECD, *Exploring the Economics of Personal Data*, cit., p. 10.
[63]See Commission Staff Working Document *on the free flow of data*, cit., Part 3, esp. point 1.
[64]As defined in Article 4, No. 1, Regulation (EU) 2016/679.
[65]They are all data different from personal data *ex* Article 4, par. 1, Regulation (UE) 2016/679.
[66]In this work we are referring especially to Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 *on the re-use of public sector information*, in *O.J. 31 December 2003 (L 345).*
[67]See Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (c) (i), p. 33. Differently, data processed or stored in databases are covered by Intellectual Property Rights (IPRs), with the exception of raw data: see RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 368, according to which Intellectual-property protection creates a direct (legal) barrier.
[68]Data protection regulations represent a legal barrier on data-collection activities in the EU and in other jurisdictions: see RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 360.
[69]More in general, on fundamental rights implications of big data see European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit.

on the Functioning of the European Union (TFEU) provide that everyone has the right to the protection of personal data concerning him or her. This right is also guaranteed under Article 8 of the European Convention for the Protection of Human Rights and Fundamental Freedoms.

More in details, Regulation 679 affirms the principle that personal data belong to people who such data refer to[70]. Regulation 1725/2018 (Article 22) and Regulation 679/2016 (Article 20) make provision for the "*[r]ight to data portability*", and lays down that "*[t]he data subject shall have the right to receive the personal data concerning him or her, which he or she has provided to a controller, in a structured, commonly used and machine-readable format and have the right to transmit those data to another controller*"[71]. Data belong to persons/subjects, and as a general rule only those can authorize their data processing by another person[72]. Only with a valid consent, data collection, organization, storage, or analysis generally transforms data into something similar to a private good[73], relevant also within a competition context[74]. If the data subject has not given consent to the processing of his or her personal data, the

[70]According to whereas 7 of Regulation 679/2016, "*[n]atural persons should have control of their own personal data*".

[71]See also whereas 68 of Regulation 679/2016 and whereas 41 of Regulation 1725/2018: "*[t]o further strengthen the control over his or her own data, where the processing of personal data is carried out by automated means, the data subject should also be allowed to receive personal data concerning him or her which he or she has provided to a controller in a structured, commonly used, machine-readable and interoperable format, and to transmit it to another controller*". On data portability right see HOFFMANN, JOHANNSEN, *EU-Merger Control & Big Data. On Data-specific Theories of Harm and Remedies*, Max Planck Institute for Innovation and Competition Research Paper No. 19-05, 31 May 2019, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3364792, pp. 44 ff.; JANAL, *Data portability – A tale of two concepts*, in *JIPITEC*, Issue 8 (1), 2017, pp. 59 ff., available at https://www.jipitec.eu/issues/jipitec-8-1-2017/4532; DE HERT, PAPAKONSTANTINOU, MALGIERI, BESLAY, SANCHEZ, *The right to data portability in the GDPR: Towards user-centric interoperability of digital services*, in *Computer Law and Security Review*, Vol. 34, Issue 2, 2018, pp. 193 ff. On the data portability, big data and competition policy see WEBER, *Data portability and big data analytics: New competition policy challenges*, in DI PORTO (Ed.), *Big data e concorrenza*, in *Concorrenza e mercato*, Vol. 23, 2016, pp. 59 ff.

[72]See whereas 19 and 26 of Regulation 1725/2018; whereas 32 and 42 of Regulation 679/2016.

[73]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 373. See also M. Delmastro, A. Nicita, Big data, cit., p. 30 ff.

[74]See HOFFMANN, JOHANNSEN, *EU-Merger Control & Big Data*, cit., p. 45, who carry out a deep analysis of the impact of data portability, as laid down in Article 20 of GDPR, on competition.

processing is deemed as unlawful[75].

As for big data, given the complexity of their use, the information provided to data subject shall be based on the principle of transparency of data processing[76]. As a consequence, "*this information shall be comprehensive of the outcome of the assessment process described in Section IV.2 and might also be provided by means of an interface which simulates the effects of the use of data and its potential impact on the data subject, in a learn-from-experience approach*"[77]. The Council of Europe then points out that "*[w]hen data have been collected on the basis of the data subject's consent, controllers and, where applicable, processors shall provide easy and user-friendly technical ways for data subjects to react to data processing incompatible with the initial purposes and withdraw their consent*"[78].

An interesting example involves the use of *cookies* as a means of collecting information[79]. *Tracking cookies* are technological devices that allow website

[75]Article 5, par. 1, d), Regulation 1725/2018; whereas 32 and 40, as well as Articles 4, point 11, 6, par. 1, a), and 7 Regulation 679/2016. Article 6 of such Regulation lists the other cases in which data processing is deemed as lawful. See H. Ursic, B. Custers, *Legal Barriers and Enablers to Big Data Reuse. A critical assessment of the challenges for the EU law*, in European Data Protection Law Review, Vol. 2, Issue 2, 2006, pp. 209 ff., esp. par. II.1. This principle has been applied also in the recent Bundeskartellamt's Facebook proceeding of 7 February 2019, in which the German antitrust Authority prohibits Facebook from combining user data from different (Instagram, WhatsApp and third party) sources without a voluntary consent given by users. According to the German antitrust Authority, "*[t]his combination of data sources […] enabled Facebook to build a unique database on each individual user*". More in details, according to Facebook's terms and conditions, "*these data can be combined with data from the user's Facebook account and used by Facebook, even if users have blocked web tracking in their browser or device settings*". In the authority's assessment, "*these terms and conditions are neither justified under data protection principles nor are they appropriate under competition law standards*". For further information on such proceeding see the background paper available at https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Pressemitteilungen/2019/07_02_2019_Facebook_FAQs.html.

[76]Council of Europe, *Guidelines on the protection of individuals with regard to the processing of personal data in a world of Big Data*, T-PD(2017)01, 23 January 2017, point 5.1.

[77]Council of Europe, *Guidelines on the protection of individuals*, cit., point 5.1.

[78]Council of Europe, *Guidelines on the protection of individuals*, cit., point 5.2, which further states that "*[c]onsent is not freely given if there is a clear imbalance of power between the data subject and the controller, which affects the data subject's decisions with regard to the processing. The controller should demonstrate that this imbalance does not exist or does not affect the consent given by the data subject*" (point 5.3).

[79]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 361. See also CHESTER, *Cookie Wars: How New Data Profiling and Targeting Techniques Threaten Citizens and Consumers in the "Big Data" Era*, in S. Gutwirth et al. (Eds.), *European Data Protection: In Good Health?*, Springer, 2012, pp. 53 ff., as well as the opinion of Advocate General Bot delivered on 24 October

owners to expand their data collection to activities of the users on other websites by inserting links to databases[80]. A cookie "allows the website to 'remember' the user's actions or preferences over time"[81]. Under EU regulations, the user must give permission for the use of cookies in each and every site he enters (opt-in mechanism), thereby creating a legal barrier for data collection[82].

With regards to non-personal data, that include raw machine-generated data, aggregate and anonymised datasets used for big data analytics, data on precision farming that can help to monitor and optimise the use of pesticides and water, or data on maintenance needs for industrial machines[83], Regulation 1807/2018 has affirmed their free flow, on the assumption that, as non-personal (and namely, not referred to a specific person) data, they belong to no-one.

As for public data, according to Directive 2003/98, these data belong to the "public sector", which "*collects, produces, reproduces and disseminates a wide*

2017 (in C-210/16, *Wirtschaftsakademie Schleswig-Holstein*, par. 5), according to which "*[c]ookies are text files that are downloaded onto an Internet user's computer whenever he or she visits a website*".

[80]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 361. See also O. Lynskey, *Track(ing) changes: an examination of EU regulation of online behavioural advertising through a data protection lens*, *in European Law Review*, 36 (6), 2011, pp. 874 ff., esp. pp. 875-876.

[81]Opinion of Advocate General Szpunar delivered on 21 March 2019, C-673/17, *Planet49*, par 37.

[82]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 361. According to the mentioned opinion of Advocate General Szpunar of 21 March 2019 (case C-673/17, *Planet49*, par. 122), there is no valid consent by users in a situation (such as that of the main proceedings) "*where the storage of information, or access to information already stored in the user's terminal equipment, is permitted by way of a pre-ticked checkbox which the user must deselect to refuse his consent and where consent is given not separately but at the same time as confirmation in the participation in an online lottery*". Moreover, the Advocate General points out that "*[t]he clear and comprehensive information a service provider has to give to a user, under Article 5(3) of Directive 2002/58, includes the duration of the operation of the cookies and the question of whether third parties are given access to the cookies or not*". Furthermore, the consent of the data subject has to be given, and information provided, before the data are collected and transferred: see opinion of Advocate General Bobek delivered on 19 December 2018, case C-40/17, *Fashion ID GmbH & Co. KG v. Verbraucherzentrale NRW e.V.*, par. 140. The Advocate General does not agree with the view according to which "*upon opening a Facebook account one accepts in advance any data processing with regard to any online activity of such 'Facebook users' by any third party having whatever connection with Facebook*". Such an argument "*would in effect mean that by opening a Facebook account, a user has actually waived any protection of personal data online vis-à-vis Facebook*" (par. 138). Also the European Parliament has recently outlined the issue of "*informed consent*" with regards to cookies. It has pointed out that "*the routine acceptance of cookies and agreement to terms and conditions […] are not well understood in exchange for access to information or services*": European Parliament, European Parliamentary Research Service (EPRS), *Why artificial intelligence matters*, March 2019, p. 4.

[83]Regulation 1807/2018, whereas 9.

range of information in many areas of activity, such as social, economic, geographical, weather, tourist, business, patent and educational information"[84]. Therefore, Directive 2003/98 consistently, given the public "ownership" of such data, lays down that "*[t]he decision whether or not to authorise re-use will remain with the Member States or the public sector body concerned*"[85].

Public sector bodies collect, produce, reproduce and disseminate documents to fulfil their public tasks. Many of such data are necessary to States to exercise functions linked to national or public security[86] or however activities regarding public functions having sovereign nature (e.g., military/army/navy data, tax data, healthcare data[87]). On such data the EU has no power of legislative intervention[88], as those sectors fall outside the principle of conferral *ex* Article 5, TUE and *ex* Article 3 of TFEU (except for the possibility to apply Article 352 TFEU) and of the principle of shared competences *ex* Article 4 TFEU.

Within the EU legal system, we can, therefore, identify three different legal regimes concerning the "ownership" of data: private, for personal data; *public*, for public data; and *no-one* "ownership", for non-personal data.

These different legal regimes of data have (or may have) a significant impact on the mobility regime, on one hand, and on the competition system, on

[84]See whereas 4. See also whereas 6, 8 and many other provisions therein.
[85]Whereas 9. In the 2019 Directive (Directive (EU) 2019/1024 *on open data and the re-use of public sector information*, cit.), this provision seems to be limited to documents produced by public undertakings only: see whereas 26. The 2019 Directive seems to introduce a general obligation on Member States to allow re-use of documents. According to Article 5, par. 1 of such Directive, "*[…] public sector bodies and public undertakings shall make their documents available in any pre-existing format or language […]*".
[86]Whereas 19 of Regulation 1807/2018 clarifies that the concept of 'public security', within the meaning of Article 52 TFEU and as interpreted by the Court of Justice, covers both the internal and external security of a Member State, as well as issues of public safety, in order, in particular, to facilitate the investigation, detection and prosecution of criminal offences. It presupposes the existence of a genuine and sufficiently serious threat affecting one of the fundamental interests of society, such as a threat to the functioning of institutions and essential public services and the survival of the population, as well as the risk of a serious disturbance to foreign relations or the peaceful coexistence of nations, or a risk to military interests.
[87]These tasks are of exclusive competence of States (see for instance, Article 117, par. 2, Italian Cost.).
[88]See whereas 12, Regulation 1807/2018, according to which the Regulation should not affect data processing in so far as it is carried out as part of an activity which falls outside the scope of Union law. In particular, it should be recalled that, in accordance with Article 4 of the Treaty on European Union (TEU), national security is the sole responsibility of each Member State.

the other hand.

However, before entering *in medias res*, we should take stance over some theoretical points concerning the legal nature of big data.

3.2 No specific law grants ownership to big data as such[89].

As has been noted by the EU Commission, "*[r]aw machine-generated data are not protected by existing intellectual property rights since they are deemed not to be the result of an intellectual effort and/or have any degree of originality*"[90].

An example of big data is data recorders stored in cars. As has been pointed out[91], these recorders store thousands of pieces of technical data as to the car, its "behaviour", the efficiency of the brakes, etc. These data are not related to a specific person[92]. They are important for the car producers in the long run to check whether their cars have been developed in an appropriate and especially secure way. But who is the owner of these data?

With regards to "in-vehicle data", some scholars conclude that there is a new property right in data arising which has nothing to do with data protection or database rights. Recalling a 2013 Decision issued by the Court of Appeal of Nuremberg, he observes as the Court makes reference to a lot of voices in the legal literature which stick to the theory of the so-called "*Skripturakt*". According to this theory, the person who generates the data gets the right to the data[93].

Based on the so-called "extended vehicle concept", car manufacturers

[89]For a definition of "data ownership" see EU Commission, *Study on emerging issues of data ownership, interoperability, (re-)usability and access to data, and liability*, prepared for the European Commission DG Communications Networks, Content & Technology by Deloitte, Final Report, Luxembourg, 2018, pp. 75-76, in which "*data ownership*" is understood as "*an alienable legal construct permitting one or more persons (the 'owners') to control access to or use of a single piece or set of data elements to the exclusion of others*".

[90]Communication from the Commission, *Building a European Data Economy*, cit., par. 3.2, p. 10. See also Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 3.

[91]See HOEREN, *Big data and the ownership in data: recent developments in Europe*, in *European Intellectual Property Review*, Vol. 36(12), 2014, pp. 751 ff.

[92]However, see WANG, *Big Data Regulatory Debates in the EU*, in 28 *European Business Law Review*, Issue 4, 2017, pp. 593 ff., esp.. p. 605, according to which data collected by a "black box" placed into a vehicle are related to a specific person, but they can be combined and used anonymously to, inter alia, help develop competitive insurance packages to other customers.

[93]See HOEREN, *Big data and the ownership in data*, cit., p. 753.

argue that all data produced in the car are directly transmitted to proprietary servers of the original equipment manufacturers (OEMs), granting them an exclusive ("monopolistic") control of these data[94].

However, with regards to the access to privately-held non-personal or anonymised data, the EU Commission has pointed out that in-vehicle data – for the specific purpose of opening up the market for after-sales services (maintenance and repair)[95] – do not have to be provided for free, but is subject to a regulated regime[96].

Some scholars[97] argue that, legal systems generally differentiate between *raw* data and *databases* (or processed data). Raw data refer to basic, unprocessed data, such as internet traffic[98]. Generally, raw data, including private data, are not seen as owned by anyone[99]. According to this view, there is no market that requires generic big data, as such[100].

According to a recent study[101], if – within the so-called "zero price market"[102] – we look at the free services users not as consumers but rather as

[94]On this view see KERBER, *Data Governance in Connected Cars: The Problem of Access to In-Vehicle Data*, 9 *JIPITEC*, 2018, pp. 310 ff., esp. p. 311.
[95]As specifically regulated by Regulation (EC) 715/2007 of the European Parliament and of the Council of 20 June 2007 *on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information*.
[96]Article 7 of the Regulation, concerning *Fees for access to vehicle repair and maintenance information*.
[97]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 362. TJONG TJIN TAI, *Data ownership and consumer protection*, in *Journal of European Consumer and Market Law*, Issue 4/2018, pp. 136 ff., distinguishes between (i) data as information, and (ii) data as data files, stating that ownership should only apply to data files, not to information.
[98]Similarly, COLANGELO, MAGGIOLINO, *Big data*, cit., pp. 277 ff. distinguish big data from information. These authors explain, by making a simile, that big data are like the papers that a lawyer collects after discovery, while information is like the evidence that that lawyer can extract from those papers by analysing them.
[99]Approximately 75% of that data generated by people every day unstructured, meaning that it comes from sources such as text, voice and video, rather than the more familiar kind of structured and often proprietary data that is held in traditional databases: see A. Williamson, *Big data*, cit., who also explains that of this data, it has been estimated that only 34% of it is "useful", as there is a lot of machine-generated data that has no value beyond its original use, for example.
[100]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 346.
[101]See POSNER, WEYL, *Radical Markets. Uprooting Capitalism and Society for a Just Society*, Princeton University, 2018.
[102]OECD, Directorate for Financial and Enterprise Affairs Competition Committee, *Quality Considerations in Digital Zero-Price Markets*, Background note by the Secretariat, 28 November

producers, as "data workers", it would be possible to identify an exploitation scenario, in which the work of data providers, like the one of housewives, is taken for granted and not remunerated, thereby creating a new paradigm of *extractive capitalism*[103].

The aim of this study is to show that there is a need to more equally distribute the benefits stemming from the digital economy, by attributing a *quid* also to whom produce data[104]. Such an approach, in principle fully sharable for its aim, assumes that data have an economic value and are owned (*recte*: produced) by private persons; as a consequence, the "worker" who transfers her/his data shall be remunerated. Alternatively, and within such perspective, we may add that the "data worker" could sell his/her data directly to the buyer (for instance, advertising agencies), cutting one of the middlemen in the transaction (the 'free' service provider that collects his/her data), or to companies that are interested in advertising their products to him/her directly without any intermediary intervention in the transaction[105].

2018. A whole range of products and services are provided free of direct charge in exchange for the ability to harvest users' data: see GAL, RUBINFELD, *The Hidden Costs of Free Goods: Implications for Antitrust Enforcement*, in *Antitrust Law Journal*, Vol. 80, 2016, pp. 521 ff., esp. 526-527. See also STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, in *CPI Antitrust Chronicle*, Nos. 2–3, May 2015, p. 2; KUP, MIKEŠ, *Discussion on big data, online advertising and competition policy*, in *European Competition Law Review*, 39 (9), 2018, p. 393.

[103]See SORO, *Democrazia*, cit., p. 45.

[104]A similar approach is adopted by some German scholars, who propose to allocate ownership rights to the party that contributes most to the value to the dataset: see, among others, WIEBE, *Who owns non-personal data? Legal aspects and challenges related to the creation of new 'industrial data rights'*, Slides presented at the GRUR conference on data ownership, Brussels, 2016.

[105]The commodification of personal data raises many questions, among which ethical and digital divide issues. From one side, allowing individuals to sell or license their data means giving a monetary value to fundamental rights. The commodification of personal data is viewed as the commodification of a human being and its identity. On the commodification of personal data see PRINS, *Property and Privacy: European perspectives and the commodification of our identity*, in GUIBAULT, HUGENHOLTZ (Eds.), *The Future of the Public Domain*, the Netherlands, 2006, pp. 223 ff.; N. Purtova, *Property in Personal Data: A European perspective on instrumentalist theory of propertisation*, in *European Journal of Legal Studies*, Vol. 2, Issue 3, 2010. From the other side, the commodification at stake implies that prosumers have gained a significant level of digital literacy, that is not (yet) the case in the EU, according to recent data published by the European Commission. According to the Digital Economy and Society Index (DESI), report 2018, *Human Capital. Digital Inclusion and Skills*, p. 8, in 2017, 43% of the EU population had an insufficient level of digital skills, while 17% of the EU population had no digital skills at all, the main reason being that they did not use the internet or did so only seldom.

Otherwise, the figures of producer and consumer will merge into a "prosumer"[106], letting online sites exploiting data and datasets thereby created[107].

Other scholars propose another possible solution consisting of creating a new data producer right, with the objective of enhancing the tradability of non-personal or anonymised machine-generated data as an economic good[108].

This solution raises a number of questions[109], starting with the scope of the right. In this respect, someone believes that such a right could be envisaged as a right *in rem*, assigning the exclusive right to utilise certain data, including the right to license its usage. As has been properly outlined, such right would not be conceivable with regard to personal data as the protection of the latter is a fundamental right in itself under which natural persons should have control of their own personal data[110]. Alternatively, instead of creating the data producer right as a right *in rem*, it could be conceived of as a set of purely defensive rights[111]. This approach aims at enhancing the sharing of data by giving at least the

[106]The term "prosumer" was coined by the philosopher TOFFLER in his book *The Third Wave*, New York (USA), 1980.

[107]See HUMPHREYS, GRAYSON, *The intersecting Roles of Consumer and Producer: A critical perspective on Co-production, Co-creation and Prosumption*, in *Sociology Compass*, Vol. 2, 2008, pp. 808 ff. Many online sites (especially social networks) are based on prosumers, given that they gain value as more people join them and interact with each other and create communities, video platforms such as YouTube gain their importance as they encompass an ever-increasing number of communities and video not only funny cats or people, but the platform is valued for starting trends among the youth and new cultural phenomena: see DUNCUM, *Youth on YouTube: Prosumers in a peer-to-peer participatory culture*, in *The International Journal of Arts Education*, Vol. 9, Issue 2, 2011, pp. 24 ff. There are sites (like Wikipedia) that are entirely created by prosumers, who create and edit the content and enrich the website. However, against the idea that this is an exploitation of the prosumer see JURGENSON, RITZER, *Production, Consumption, Prosumption: The nature of capitalism in the age of the digital 'prosumer'*, in *Journal of Consumer Culture*, Vol. 10, No. 1, 2010, pp. 13 ff.

[108]See ZECH, *Information as a tradable commodity*, in DE FRANCESCHI (Ed.), *European Contract Law and the Digital Single Market. Implications of the Digital Revolution*, Cambridge, Antwerp, Portland, 2016, pp. 51 ff. On the debate on data producer's right for non-personal or anonymised data see Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (c), pp. 33 ff.

[109]For a deeper analysis of which see Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (c), pp. 33 ff.

[110]Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (c) (i), p. 33.

[111]It seems to support such a view KERBER, *A New (Intellectual) Property Right for Non-Personal Data? An Economic Analysis*, in *Gewerblicher Rechtsschutz und Urheberrecht. Internationaler Teil (GRUR Int)*, No. 11, 2016, p. 989.

defensive elements of an *in rem* right[112], and therefore it equates to a protection of a *de facto* "possession", rather than to the concept of "ownership"[113].

Others are of the opinion that the answer to the question concerning big data ownership is multi-faceted, and three different perspectives – traditional property, intellectual property, contract – are identified[114]. According to this view, these perspectives are not mutually exclusive and can be used in different contexts, according to which situation is considered prevailing.

According to the EU Commission, given that a comprehensive policy framework does not currently exist at national or Union level in relation to raw machine-generated data which does not qualify as personal data, or to the conditions of their economic exploitation and tradability, the issue "*is largely left to contractual solutions*", being the use of existing general contract law and competition law instruments available in the Union deemed by the Commission as "*a sufficient response*"[115]. This conclusion conceives big data as a private matter, to be regulated between parties of a contract.

3.3. However, other regulatory and interpretative options may be put forward.

One may uphold that big data (such as internet traffic, "first party data"[116], non-personal data and, more in general, raw data) cannot be owned by anyone (private person), being they public goods owned by the State/public administration or they can be seen as a commons, belonging to all (the Community)[117].

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[112]For instance, the capacity for the *de facto* data holder to sue third parties in case of illicit misappropriation of data: see Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (c) (i), pp. 33-34.
[113]See ZECH, *Information as a tradable commodity*, cit., p. 63.
[114]See ZENO-ZENCOVICH, G. Giannone Codiglione, *Ten legal perspectives on the "big data revolution"*, in F. Di Porto (Ed.), *Big data e concorrenza*, cit., pp. 29 ff., esp. p. 32.
[115]Communication from the Commission, *Building a European Data Economy*, cit., par. 3.2, p. 10.
[116]See Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 12.
[117]According to some scholars, data concerning our digital footprint belong directly to the public dimension (public domain), which all can have access to, due to the fact that sach data have been revealed: see DUCH-BROWN, MARTENS, MUELLER-LANGER, *The Economics of*

The "public view" of big data is based, inter alia, on the consideration that the big amount of data should be designed to serve mankind[118]. Big data have social functions, and should be used by governments for public policy purposes[119], such as, inter alia, prevention of corruption, conflicts of interest, tax fraud and money laundering, and also to promote competition within the social market economy[120], as well as to identify and monitoring differences in access healthcare and diseases caused (also) by environmental pollution by geographic area[121], and – more in general – to increase the well-being of all people[122].

Also for commercially-held information, the EU Commission has pointed out as in a number of scenarios, public sector bodies could significantly improve their decision making using such information, notably for reasons of public health policy, spatial and urban planning, natural and technological risk management, managing energy supply grids or protecting the environment[123].

Governments can (*recte*: should) solicit such data to private firms to carry out their tasks. It is clear that this request cannot fall within the essential facility doctrine (EFD) logic, in case the company refused to provide the relevant big

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Ownership, Access and Trade in Digital Data, European Commission Joint Research Centre (JRC), Digital Economy Working Paper, 2017, available the JRC website. *See also J. Drexl*, *Designing competitive markets for industrial data: Between propertisation and access*, Max Planck Institute for Innovation and Competition Research Paper No. 16-13, *2016.*

[118]A similar principle is laid down in Regulation 679/2016, according to which "*[t]he processing of personal data should be designed to serve mankind*" (whereas 4).

[119]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., whereas "H", according to which "*the public sector can benefit from greater efficiency thanks to greater insights into the different levels of socio-economic developments*". See also DELMASTRO, NICITA, Big data, cit., pp. 141 ff.

[120]On which the European Union is based: see LIBERTINI, *A 'Highly Competitive Social Market Economy' as a Founding Element of European Economic Constitution*, in *Concorrenza e mercato*, 2011, pp. 491 ff.

[121]In this regards see the Italian Law 22 March 2019, No. 29, establishing the *National Network of cancers' registers and of oversight systems and of epidemiological report for the health control of population* (O.J. 5 April 2019, No. 81).

[122]See DELMASTRO, NICITA, Big data, cit., p. 27. For an overview of the different ways in which big data and open data are used in the public sector, see MUNNÉ, *Big Data in the Public Sector*, in J. M. Cavanillas et al (Eds.), *New Horizons for a Data-driven Economy*, Springer, 2016, p. 195.

[123]Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (b), p. 32; Communication from the Commission, *Building a European Data Economy*, cit., par. 3, p. 8.

data[124], as in these situations there is no market, but public functions to carry out[125].

A possible solution to make the release of the required big data possible and lawful would be legislative measures. A similar solution has been adopted in France, where the recent French open data legislation has put in place the possibility for the government to request commercial players to give access to data, they hold for the purpose of establishing public statistics[126]. The notion of "public interest data" introduced in French legislation could be developed at European level, so as to give access to all relevant data to public sector bodies[127].

Another possible interpretative option consists of considering non-personal data as something that nonetheless derive, inter alia, from persons or (mainly) from human activities and therefore are indirectly personal.

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[124]On the EFD applied to data see KUP, MIKEŠ, *Discussion on big data*, cit., p. 396; COLANGELO, MAGGIOLINO, *Big data*, cit., pp. 13 ff.; RICHTER, SLOWINSKI, *The data sharing economy: on the emergence of new intermediaries*, in *International Review of Intellectual Property and Competition Law*, 2019, pp. 5 ff., esp. p. 19; PITRUZZELLA, *Big data, competition and privacy: A look from the antitrust perspective*, in DI PORTO (Ed.), *Big data e concorrenza*, cit., pp. 15 ff., esp. pp. 22 ff. This point is treated more extensively *infra*.

[125]See COLANGELO, MAGGIOLINO, *Big data*, cit., p. 17.

[126]Article 19, Loi No. 2016-1321 du 7 octobre 2016 pour une République numérique, JO République Française No. 0235 of 7 October 2016. See Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (b), p. 32, as well as *J. Drexl, Designing competitive markets for industrial data*, cit., p. 61. Also in Germany, with the reform of the German Act against Restraints of Competition, entered into force on 9th June 2017, the German competition law was adapted to the digital era. It introduces and deals with problems concerning, inter alia, data access and competitive pressure from innovation.

[127]Specific obligations to licence provisions are foreseen in Regulation 715/2007, cit. (Articles 6-9). As specified in its whereas 8, "*[u]nrestricted access to vehicle repair information, via a standardised format which can be used to retrieve the technical information, and effective competition on the market for vehicle repair and maintenance information services are necessary to improve the functioning of the internal market, particularly as regards the free movement of goods, freedom of establishment and freedom to provide services*". Another obligation to licence is laid down in Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 *on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC* (Articles 35 and 36), in which access is to be given, respectively, to "*payment systems*" and to "*credit institutions' payment accounts services*". Another example is given by Regulation 2006/1907 of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Title III, concerning *Data Sharing and Avoidance of Unnecessary Testing*, Articles 25 ff.). In this context, sharing of information on substances should be provided for in order to, inter alia, reduce testing on vertebrate animals (whereas 33, 49, 50, 51). See also Commission implementing Regulation (EU) 2016/9 of 5 January 2016 on joint submission of data and data-sharing in accordance with Regulation (EC) No. 1907/2006 establishes detailed rules on the conditions under which data have to be shared.

This conclusion stems from the interpretation concerning the precise scope of Article 20 of Regulation 679/2016[128] in terms of the personal data which is eligible to be ported. Literally, the provision makes provision for a right to port any data which the data subject has "provided" to the controller. The question remains what is to be considered as "provided" by the data subject in any given situation[129]. The Article 29 Working Party[130] issued guidelines on this specific point and applied a broad definition. According to these guidelines, the categories that can be qualified as "*provided by the data subject*" are not only "*[d]data actively and knowingly provided by the data subject*", for example, mailing address, user name, age, etc., but also "*[o]bserved data provided by the data subject by virtue of the use of the service or the device*", such as a person's search history, traffic data and location data. It may also include other raw data such as the heartbeat tracked by a wearable device[131].

By contrast, data created by the data controller on the basis of data provided by the data subject would fall outside the scope of the right to data portability. This is the case for "inferred data" and "derived data" that are created by the data controller on the basis of the data "provided by the data subject". For example, personal data created by a service provider through algorithmic results, or the outcome of an assessment regarding the health of a user or the profile created in the context of risk management and financial regulations (e.g. to assign a credit score or comply with anti-money laundering rules) cannot in themselves be considered as "provided by" the data subject[132].

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[128]According to this Article, "*[t]he data subject shall have the right to receive the personal data concerning him or her, which he or she has provided to a controller, in a structured, commonly used and machine-readable format and have the right to transmit those data to another controller without hindrance from the controller to which the personal data have been provided*".

[129]Commission Staff Working Document *on the free flow of data*, cit., Part 5, point 2, p. 46.

[130]The Article 29 Working Party (Article 29 WP) was the independent European working party that dealt with issues relating to the protection of privacy and personal data until 25 May 2018 (entry into application of the GDPR), when was succeeded by the European Data Protection Board (EDPB): see https://edpb.europa.eu/news/news/2018/europes-new-data-protection-rules-and-edpb-giving-individuals-greater-control_en.

[131]Article 29 Data Protection Working Party, *Guidelines on the right to data portability*, adopted on 13 December 2016, As last Revised and adopted on 5 April 2017, WP 242 rev.01, p. 10.

[132]Article 29 Data Protection Working Party, *Guidelines on the right to data portability*, cit., p. 10.

According to this interpretation of the right to portability, also raw data are deemed as personal data, as long as they are "provided by" the data subject.

However, if we think that big data are generated by different sources, taken together all pieces of information may allow to "build" an *identity*, which cannot but have public relevance. This *identity* does not necessarily concern a specific physical person, but aggregate and anonymised datasets (for instance, data concerning a specific urban area with regards to energy consumptions, road traffic, healthcare, etc.). Notwithstanding, they derive, inter alia, from persons that, if deemed as a whole, may be identified in the State-community. Therefore, and in the light of the theory of the "*Skripturakt*", data generated from there cannot but belong to the same community.

Within this view, it may be possible to consider big data as a common.

The term "commons" is full of ambiguity and rarely defined. However, its definition varies with the type of resource at hand[133].

As has been pointed out[134], the term "commons" has a long historical and intellectual lineage ranging from the enclosure movement in England[135], to Garret Hardin's article "*The Tragedy of the Commons*"[136], to Elinor Ostrom's Nobel work on governing common pool resources[137]. More recently, scholars across an array of specialties have conceptualized and articulated "new commons", beyond those recognized in the traditional fields of property and environmental law[138]. These new commons include, inter alia, scientific knowledge, voluntary associations, climate change, community gardens, wikipedias, cultural treasures, plant seeds,

[133]See HESS, *Mapping the New Commons*, Working Paper, 2008, http:// papers.ssrn.com/sol3/ papers.cfm?abstract_id=1356835, pp. 33 ff.
[134]See FOSTER, IAIONE, *The City as a Commons*, in *Yale Law & Policy Review*, Vol. 34, Issue 2, Article 2, pp. 281 ff., esp. p. 285.
[135]See, e.g., LINEBAUGH, *The Magna Carta Manifesto: Liberties and Commons for all*, University of California Press, 2008; DE MOOR, *The Dilemma of the Commoners: Understanding the use of Common-Pool Resources in Long-Term Perspective*, Cambridge University Press, 2015.
[136]See HARDIN, *The Tragedy of the Commons*, in *Science*, Vol. 162, 1968, pp. 1243 ff, esp. p. 1244.
[137]See OSTROM, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990.
[138]See HESS, *Mapping the New Commons*, cit., who reviews the vast literature and attempts to cohere similarities in the use and articulation of the commons across fields.

and the electromagnetic spectrum.

Since 1990's, the legal community has increasingly invoked the "commons" as an argument against the expansion of intellectual property rights and increasing legal ambiguities in the advent of the online digital environment[139]. Like for other new commons, also big data may be seen as a reaction to increasing commodification, privatization, and corporatization, untamed globalization, and unresponsive governments[140].

There are many different ways that new commons evolve or come into being. Some – like big data – evolve from new technologies (e.g. digital commons) that have enabled the capture of previously uncapturable public goods, such as, inter alia, the Internet[141]. As for big data, they are generated *for free* (mainly) by network users, and they are captured by collectors through new technologies[142]. In the Hess's Map of new commons, big data would be included within the "Knowledge Commons" category, as big data should be deemed, first of all, as a peer production/mass collaboration good[143], and they may also fall within the Internet access and infrastructure subcategories[144]. The Commons-based peer production (CBPP) represents the "*third mode of production in the digitally networked environment*", beyond the property and contract-based modes of firms and markets[145].

In the light of the peer production theory/model, large numbers of people work cooperatively to produce big data, without being necessarily financially

[139]See HESS, *Mapping the New Commons*, cit., pp. 2-3.
[140]See HESS, *Mapping the New Commons*, cit., p. 3.
[141]See HESS, *Mapping the New Commons*, cit., pp. 4 and 38.
[142]See SORO, *Democrazia*, cit., p. 36.
[143]The expression "*Commons-based peer production (CBPP)*" is a term coined by Harward Professor Yochai Benkler and describes a new model of socioeconomic production in which large numbers of people work cooperatively (usually over the Internet). Commons-based projects generally have less rigid hierarchical structures than those under more traditional business models. Often—but not always—commons-based projects are designed without a need for financial compensation for contributors. See BENKLER, *Coase's Penguin or Linux and The nature of the firm*, 112 *Yale L.J.*, 2002, pp. 369 ff.; BENKLER, *The Wealth of Networks*, *Yale University Press*, *2006;* BENKLER, NISSENBAUM, *Commons-based Peer Production and Virtue*, in *The Journal of Political Philosophy*, 2006, Vol. 4, No. 14, pp. 394 ff.
[144]See HESS, *Mapping the New Commons*, cit., p. 13 and 20 ff.
[145]See BENKLER, *Coase's Penguin*, cit., pp. 394 ff.

compensated for their activity[146]. All the principles (or structural attributes) governing such a model theory seem to be met with regards to big data: first, the potential goals of peer production are modular; second, the granularity of the modules; and third, the low-cost integration[147].

These are the main reasons why, although with a view to carry out a deeper specific study on this point, we believe that big data can be conceptualized as a new (digital) commons.

Within this perspective, at the international level, the OECD is undertaking extensive analysis to assess to what extent enhanced access to data can maximise the social and economic value of data[148]. It is interesting to note that in this debate the OECD refers to a "data commons" as a way to describe non-discriminatory access to certain data for at least a wider group of players, specifying that this should neither be confused with an "open data" or "open access" approach (access for the public at large), nor should it mean that access is given at no costs. The defining element of a "commons" is that non-discriminatory access is to be given, i.e. any member of a certain group (e.g. users of an industrial data platform) can use the data for purposes defined by the party making the data accessible[149].

4. Personal data, non-personal data and public data are subject – as we have seen above – to different legal regimes. Notwithstanding, the general principle of free mobility of data seems to be full for all the three categories of data. This may lead to the conclusion that the EU common market – comprising an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured (Article 26 of TFEU) – has been enriched by a fifth

[146]A sort of compensation in the field of big data might be seen within the so-called "zero price market" logic: see *infra*.
[147]See BENKLER, NISSENBAUM, *Commons-based Peer Production and Virtue*, cit., pp. 400-401.
[148]See OECD, *Maximising the Economic and Social Value of Data*, available at http://www.oecd.org/internet/ieconomy/enhanced-data-access.htm.
[149]Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 7.2 (d), p. 37.

freedom, namely the free movement of data[150].

For personal data the relevant legislation is given by Article 16 of TFEU, Regulation 679/2016, as well as Regulation 1725/2018[151].

The principle of free movement of personal data is clearly stated in Regulation 679 (Article 1, par. 3), being the protection of personal data instrumental to the implementation of such principle[152].

National authorities in the Member States are being called upon by Union law to cooperate and exchange personal data so as to be able to perform their duties or carry out tasks on behalf of an authority in another Member State[153]

For non-personal data, Regulation 1807/2018[154] is based on the same principle of Regulation 679, establishing the same principle of free movement within the Union for non-personal data, except when a restriction or a prohibition is justified by public security reasons (Article 4). According to whereas 18 of Regulation 1807, "*[d]ata localisation requirements represent a clear barrier to the free provision of data processing services across the Union and to the internal market. As such, they should be banned unless they are justified on grounds of public security, as defined by Union law, in particular within the meaning of Article 52 TFEU, and satisfy the principle of proportionality enshrined in Article 5 TEU*".

With regards to public data, Communication from the Commission COM(2017) 228[155], in addition to the EU (general) Directive 2003/98/EC on the re-

[150]However, the EU Commission considers the free flow of data as "*instrumental to the protection of the four fundamental freedoms of the EU single market*": see Communication from the Commission, *Building a European Data Economy*, cit., par. 2, p. 5.
[151]Whereas 5: "*[i]t is in the interest of a coherent approach to personal data protection throughout the Union, and of the free movement of personal data within the Union, to align as far as possible the data protection rules for Union institutions, bodies, offices and agencies with the data protection rules adopted for the public sector in the Member States*".
[152]Whereas 5, Regulation 679/2016: "*[t]echnology has transformed both the economy and social life, and should further facilitate the free flow of personal data within the Union and the transfer to third countries and international organisations, while ensuring a high level of the protection of personal data*". See also whereas 13, Regulation 679/2016.
[153]Whereas 5, Regulation 679/2016.
[154]Whereas 10.
[155]Communication from the Commission *on the Mid-Term Review on the implementation of the Digital Single Market Strategy. A Connected Digital Single Market for All*, COM(2017) 228 final, cit.

use of public sector information[156], regulates the mobility of such data. Here the principle is that documents held by the public sector (concerning not only the political process but also the legal and administrative process) are made available to interested persons. The general principle is laid down in Article 3 of such Directive, according to which "*Member States shall ensure that documents to which this Directive applies in accordance with Article 1 shall be re-usable for commercial or non-commercial purposes*"[157].

Although Directive 2003/98 "*does not contain an obligation to allow re-use of documents*", as "*[t]he decision whether or not to authorise re-use will remain with the Member States or the public sector body concerned*", public sector bodies "*should be encouraged to make available for re-use any documents held by them*", and they "*should promote and encourage re-use of documents, including official texts of a legislative and administrative nature in those cases where the public sector body has the right to authorise their re-use*"[158].

Another important provision of the Directive is that allowing public bodies to make charges for re-use. In this case, with the aim of developing a Community-wide information market, the EU encourages public bodies to apply low charges[159], and the limit for charges set by the Directive (Article 6) "*is without*

[156]Directive 2003/98/EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information, as amended by directive 2013/37/EU of the European Parliament and of the Council of 26 June 2013. As we noted above, the 2003 Directive will be repealed by Directive (EU) 2019/1024 *on open data and the re-use of public sector information* from 17 July 2021.

[157]This principle is confirmed by Directive (EU) 2019/1024 *on open data and the re-use of public sector information*, cit. In this respect, see also European Parliament Resolution of 4 April 2019 *on the proposal for a directive of the European Parliament and of the Council on the re-use of public sector information (recast)*.

[158]Directive 2003/98, whereas 9. The degree of data openess is even higher in Directive (EU) 2019/1024 *on open data and the re-use of public sector information*, cit., through which all information and data related to persons (including those sensitive) are at market operators disposal. Article 5, par. 2 of the 2019 Directive lays down that "*Member States shall encourage public sector bodies and public undertakings to produce and make available documents falling within the scope of this Directive in accordance with the principle of 'open by design and by default'.*" (see also whereas 16 of the same Directive). In this respect, see RUGGIU, *"Secondary use", così la Ue ribalta il Gdpr e apre all'accesso indiscriminato ai nostri dati*, 19 August 2019, available at https://www.agendadigitale.eu/sicurezza/secondary-use-cosi-la-ue-ribalta-il-gdpr-e-apre-allaccesso-indiscriminato-ai-nostri-dati/.

[159]See FERRARI, *L'idea di città*, in Ferrari (Ed.), *La prossima città*, Milan, 2017, p. 32. Directive (EU) 2019/1024 *on open data and the re-use of public sector information*, cit., makes this principle

prejudice to the right of Member States or public sector bodies to apply lower charges or no charges at all"[160].

Moreover, other sectorial initiatives have been undertaken by the Commission. For instance, in the field of road transport, given that data generated by vehicles may be of public interest, "*the Commission will consider the need to extend the right of public authorities to have access to more data*". In particular, "*it will consider specifications under the Intelligent Transport Systems Directive regarding the access to data generated by vehicles to be shared with public authority for improved traffic management*"[161].

With regard to the scope of the general principle of free mobility of data, such a freedom suffers restrictions for all the three categories of data: non-personal data (Regulation 1807[162]), personal data (Regulation 679/2016 and within the limits of whereas 10 of Regulation 1807[163], as well as Regulation

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even clearer, as in the first period of the provision (Article 6, par. 1) it is laid down that "*[t]he re-use of documents shall be free of charge*" (first alinea) or limited to the "*marginal costs […]*" (second alinea), where this second option is already in force. It is significant to note that the 2019 Directive establishes the new general principle governing charges, according to which the re-use should be allowed free of charges.

[160]See whereas 14, Directive 2003/98/EC, and whereas 39, Directive (EU) 2019/1024. Moreover, the 2019 Directive makes provision for a new paragraph (the last one) of Article 6, according to which the re-use of high value datasets, the list of which shall be defined in accordance with Article 14(3), (4) and (5), and of research data referred to in point (c) of Article 1(1) shall be free of charge for the user. The expression "*high value datasets*" is defined as "*documents the re-use of which is associated with important benefits for society, the environment and the economy, in particular because of their suitability for the creation of value-added services, applications and new, high-quality and decent jobs, and of the number of potential beneficiaries of the value-added services and applications based on those datasets*": this is a new definition, included in Article 2 (10) of the 2019 Directive. Also the definition of "*research data*" is new, and it is included in Article 2 (9) of the same Directive, according to which they are "*documents in a digital form, other than scientific publications, which are collected or produced in the course of scientific research activities and are used as evidence in the research process, or are commonly accepted in the research community as necessary to validate research findings and results*".

[161]COM(2018) 283, cit., p. 13.

[162]See whereas 10.

[163]Also in the transport sector, the EU Commission reaffirmed this principle: see Communication from the Commission, *A European strategy on Cooperative Intelligent Transport Systems, a milestone towards cooperative, connected and automated mobility*, COM(2016) 766 final, 30 November 2016, par. 3.2, in which it has been pointed out that "*[d]ata broadcast by C-ITS from vehicles will, in principle, qualify as personal data as it will relate to an identified or identifiable natural person*" and that "*[u]sers must have the assurance that personal data are not a commodity*".

1725/2018[164] and Directive 680/2016[165]), and public data or data having public relevance (Article 1, par. 2, Directive 2003/98/EC). Such (public) data are subject to a regulated (or limited) mobility regime[166] (*recte*: not free) and are not tradable/marketable, in the sense that are made available by public bodies with a charge or for free, and possibly through a licence (Article 8).

5. 5.1 Although "*competition rules weren't written with big data in mind*"[167], today big data raise different competition-related issues[168].

Thanks to big data, companies can design new goods, new processes and new business strategies by guessing consumers' preferences and rivals' strategies[169]. Moreover, given the multifunctionality of data[170], by collecting and processing both structured and unstructured non-exclusive data, a firm may

[164]There are many cases of regulation/restriction to data mobility/movement, based on the consent of the data subject.

[165]The Directive makes provision for the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, including the safeguarding against and the prevention of threats to public security and the free movement of such data, is the subject of a specific Union legal act.

[166]On the necessity of a regulation of personal data see whereas 13, Regulation 679/2016.

[167]See Speech by VESTAGER, *Big data and competition*, EDPS-BEUC Conference on Big Data, Brussels, 29 September 2016, available at https://ec.europa.eu/commission/commissioners/2014-2019/vestager/announcements/big-data-and-competition_en.

[168]In this work we are not going to focus on all those issues. For a more comprehensive picture of competition issues in the field of big data see DI PORTO (Ed.), *Big data e concorrenza*, cit., pp. 1 ff.; MAGGIOLINO, *I big data e il diritto antitrust*, Milano, 2018; European Data Protection Supervisor (EDPS), *Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the Digital Economy*, 2014; GRAEF, *Market definition and market power in data: the case of online platforms*, in *World Competition Law and Economics*, 2015, pp. 473 ff.; MASSAROTTO, *From Standard Oil to Google: How the Role of Antitrust Law Has Changed*, in *World Competition*, 41, No. 3, 2018, pp. 395 ff.; DREXL, *Designing competitive markets for industrial data*, cit.

[169]See BRYNJOLFSSON, HITT, KIM, *Strength in Numbers: How Does Data-Driven Decision Making Affect Firm Performance?*, 2011, available at http://ssrn.com/abstract=1819486. See also KUP, MIKEŠ, *Discussion on big data*, cit., p. 394; PITRUZZELLA, *Big data, competition and privacy*, cit., p. 18; HOLKOVÁ LUBYOVÁ, *Big Data in the EU Competition Law*, Prague Law Working Papers Series No. 2018/I/1, p. 2.

[170]Data multifunctionality means that data can be used for many -sometimes not still discovered- purposes: see J. Hoffmann, G. Johannsen, *EU-Merger Control & Big Data*, cit., p. 16. Other scholars refer to data multidimensionality in three different ways. First, it means that the value of data is represented not only by its volume, but also by factors of velocity, variety and veracity. Second, it means that collecting data from diverse sources may result in relevant synergies. Third, data is multidimensional because it can be used for many, sometimes not still discovered, purposes: see RUBINFELD, GAL, *Access Barrier to Big Data*, cit., pp. 370 ff.

become more competitive in its core business, in some other businesses where it is active, in a market where it was not an active player before, or in a completely new market developed thanks to one of the firm's disruptive innovation created by using the knowledge obtained from data exploitation[171].

Data are therefore seen as the world's most valuable resource, with the consequence that companies are not willing to share them[172].

In the public debate, two very different views have been developed on the interplay between big data and competition. On one side, big data are described as a key input controlled by dominant firms, which prevents competitors from entering the market, and puts the former in a privileged situation allowing them to consolidate their dominant position and to exploit consumers. On the other side, big data are seen as a commodity, something that be readily sourced from a variety of providers and that allows companies to offer innovative and better quality services to consumers[173].

In the current (missing) regulatory scenario, the first view – the most worrisome for end users[174] – seems to be reflected in practice.

As a matter of fact, by collecting as many data as possible, companies are able to obtain a competitive advantage over rivals that do not have access to the same big data[175]. The *same* data are the *raw* data (or "first party data" or "non-

[171]See HOFFMANN, JOHANNSEN, *EU-Merger Control & Big Data*, cit., pp. 16-17, who give the very clear example of Google's autonomous car. The information that Google has gathered over the years through the collection and processing of data from its map service have a high value for Wyamo, its self-driving car project, as it makes possible to feed the algorithm/driver with relevant geolocation information which, in addition to the several sensors that form part of the car, allow them to keep on the road. Such information allows Google to "monitor" user's movements and thereby it is useful to target more accurately advertising or search results, if such user is accessing Google's shopping or search engine platforms from any of user's locations.

[172]See STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., p. 3; RICHTER, SLOWINSKI, *The data sharing economy*, cit., pp. 5 ff. See also EU Commission, *Study on data sharing between companies in Europe*, prepared for the European Commission DG Communications Networks, Content & Technology by Everis, Final Report, Luxembourg, 2018, point 6.1.1. A deep analysis of the emerging barriers (or problems) for firms wanting to share or access third party data is conducted by the EU Commission, *Study on emerging issues of data ownership, interoperability, (re-)usability and access to data, and liability*, cit.

[173]See PITRUZZELLA, *Big data, competition and privacy*, cit., p. 18.

[174]See PITRUZZELLA, *Big data, competition and privacy*, cit., pp. 15, 21.

[175]See MAYER-SCHONBERGER, CUKIER, *Big Data*, cit. See also STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., pp. 1 ff.; MCAFEE, BRYNJOLFSSON,

personal data" or "anonymised data" or data that have not been processed or changed since its recording[176]) and not the *processed* ones. Big data competition-related issues therefore primarily concern the first stage (and possibly the second one) of the four-step chain described by the OECD[177] and by some scholars[178], as data collected (and stored) by the collector are not often substitutable[179], and they should be available and accessible to all for the next stages[180] (namely, analysis and distribution, as well as usage), in which data often acquire

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Big Data: The Management Revolution, in *Harvard Bus. Rev*., October 2012, *available at* https://hbr.org/2012/10/big-data-the-management-revolution/ar/1;HOLKOVÁ LUBYOVÁ, *Big Data in the EU Competition Law*, cit., p. 2; J. Hoffmann, G. Johannsen, *EU-Merger Control & Big Data*, cit., *passim*, who distinguish between *relative foreclosure* (where the information extracted from data is not unique, so there is still the possibility to access the information necessary to compete in the market) and *absolute foreclosure* scenarios. Moreover, see Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., pp. 11 ff.; MAHNKE, *Big Data as a Barrier to Entry*, in *CPI Antitrust Chron.,* 29 May 2015, available at https://www.competitionpolicyinternational.com/big-data-as-a-barrier-to-entry/. For a different view see KENNEDY, *The Myth of Data Monopoly: Why Antitrust Concerns About Data Are Overblown*, in *Information Technology & Innovation Foundation*, March 2017; SIVINSKI, OKULIAR, KJOLBYE, *Is big data a big deal?*, cit., p. 201, according to which big data are "*unlikely to generate a need for competition intervention*"; LAMBRECHT, TUCKER, *Can Big Data Protect a Firm from Competition?*, in *Antitrust Chronicle*, 1, January 2017, No. 12, p. 17.

[176]See Communication from the Commission, *Building a European Data Economy*, cit., par. 3, p. 8.

[177]OECD, *Exploring the Economics of Personal Data*, cit., p. 10, which clarifies that the four steps of the chain are: (i) collection and access, (ii) storage and aggregation, (iii) analysis and distribution and (iv) usage of personal datasets.

[178]Among others, according to D. L. Rubinfeld, M. S. Gal, *Access Barrier to Big Data*, cit., p. 349, the data-value chain comprises four stages: Collection, Storage, Synthesis & Analysis and Usage.

[179]As far as the market definition for big data is concerned, the most relevant statements can be found in the EU Commission Decision of 4 September 2012, declaring a concentration to be compatible with the internal market and the functioning of the EEA Agreement, Case No. COMP/M.6314, *Telefónica UK/Vodafone UK/ Everything Everywhere/ JV*, C(2012) 6063 final, in O.J. *7 March 2013* (*C 66*). While the Commission left the precise product market definition open, it argued that there were possibly separate relevant markets for online and mobile data analytics (para. 109-203). On this point see I. Graef, *Market definition and market power in data*, cit., p. 496; PITRUZZELLA, *Big data, competition and privacy*, cit., p. 20.

[180]Where Data analytics will search for patterns (*recte*: correlations) in data. In data science terms, the pattern is referred to as the "mathematical model", which can be implemented using an "algorithm": see SIVINSKI, OKULIAR, KJOLBYE, *Is big data a big deal?* , cit., p. 203. An algorithm is "*an unambiguous, precise, list of simple operations applied mechanically and systematically to a set of tokens or objects (e.g., configurations of chess pieces, numbers, cake ingredients, etc.). The initial state of the tokens is the input; the final state is the output*": OECD, Directorate for Financial and Enterprise Affairs Competition Committee, *Algorithms and Collusion*, Background Note by the Secretariat, 9 June 2017, p. 7. In other words, an algorithm is "*a specific set of instructions for performing a procedure or for solving a problem*": BAGNOLI, *The big data relevant market*, in F. Di Porto (Ed.), *Big data e concorrenza*, cit., pp. 73 ff., esp. pp. 78-79. Algorithms may be used to take decisions: BENÍTEZ, ESCUDERO, KANAAN, MASIP RODÓ, *Inteligencia artificial avanzada*, Barcelona, 2013, p. 14.

commercial value[181], for instance as a commodity product[182] or because they are used for generating profit via online advertising[183], or as results of data integration, analytics, etc.[184].

In such cases, the competition issues concern raw data, as "*[a]ll data in existence are potentially useful for developing, or use in, one model or another*"[185]. And it is clear that firms "*need to acquire infrastructures, technologies, competences and specific analytical techniques to infer information from data*"[186], but this relates to a later stage, which requires/implies the availability of the raw data upstream.

This conclusion seems to find a base in several EU documents, such as on a recent Parliament recommendation, on Commission documents, as well as on the European Court of Justice (ECJ) case law.

More specifically, the EU Parliament states that the development of massive, ever-growing data sets provide unprecedented insight into human behaviour, private life and our societies only "*through advanced processing techniques and analytics*"[187].

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[181]See DI PORTO, *La regolazione degli obblighi informativi. Le sfide delle scienze cognitive e dei* big data, Napoli, 2017, p. 154.

[182]For example, data brokers collect, package and sell databases filled with personal information about consumers – name, address, age, income, job history, online site visit history, buying habits and similar data that possess commercial value for retailers and other businesses: see G. Sivinski, A. Okuliar, L. Kjolbye, *Is big data a big deal?*, cit., p. 208.

[183] J. Kup, S. Mikeš, *Discussion on big data*, cit., p. 394.

[184] In these cases data can be protected, as a result of a protection given to the intellectual effort made into the design of the data integration process or the analytics algorithm (software): Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 3.

[185]See SIVINSKI, OKULIAR, KJOLBYE, *Is big data a big deal?*, cit., p. 203. See also Commission Staff Working Document *on the free flow of data*, cit., Part 3, point 6.2 (a), p. 25. An example is the "in-vehicle data", the access to which could allow independent service providers to provide a wide range of services to the cars owners and drivers. On the current policy discussion on the conflict between the original equipment manufacturers (OEMs), who defend their extended vehicle concept, and the many independent service providers, who demand regulatory solutions regarding access to in-vehicle data and connected cars for ensuring fair and undistorted competition concerning the provision of services in the ecosystem of connected driving see W. Kerber, *Data Governance in Connected Cars*, cit., pp. 310 ff.

[186]In this sense COLANGELO, MAGGIOLINO, *Big data*, cit., p. 251. Technically, the operation to access and extract the potential value of big data is called analytics. This operation, in turn, is made by means of algorithms: see V. Bagnoli, *The big data relevant market*, cit., p. 78.

[187] European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., whereas "C".

The EU Commission points out that "*in a data-driven economy industrial competitiveness depends on the widespread use of data services, enabled by technologies, such as cloud computing*"[188]. Moreover, the Commission affirms that "*[t]he issues of access and transfer in relation to the raw data […] generated by […] machines or processes are […] central to the emergence of a data economy and require careful assessment*"[189].

In the *Schrems* case[190], the ECJ indicates that collecting data using one's own algorithms does not automatically make the collected data the property of the collector. There, the EU High Court determined that the collector of data cannot transfer data collected in Europe and protected under EU laws to entities outside of Europe[191].

The mere possession of large amounts of data gives a company a significant competitive advantage that its rivals will be unable to challenge. Amassing large amounts of data raises entry barriers by favoring market concentration and dominance[192]. In this respect, one should point out that the German Competition Act was amended in 2017, affirming that "*access to relevant data is a potential source of market power*"[193].

Within this perspective, merger control is probably the area in which the role of big data in the competitive process can be more commonly probed[194]. The key question is whether data concentration brought about by the merger can

[188]Commission Staff Working Document *on the free flow of data*, cit., Part 2, point 1.
[189]Communication from the Commission, *Building a European Data Economy*, cit., par. 3, p. 8.
[190]Judgment 6 October 2015, C-362/14, *Schrems*.
[191]See RUBINFELD, GAL, *Access Barrier to Big Data*, cit., p. 362.
[192]See STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., p. 7. See also KUP, MIKEŠ, *Discussion on big data*, cit., p. 395; N. Newman, *Search, Antitrust and the Economics of the Control of User Data*, in *Yale Journal of Regulation*, Vol. 30, No. 3, 2014, pp. 401 ff., available at https://digitalcommons.law.yale.edu/yjreg/vol31/iss2/5; Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 11.
[193]See KERBER, *Digital Markets, Data, and Privacy: Competition Law, Consumer Law, and Data Protection*, in *Gewerblicher Rechtsschutz und Urheberrecht. Internationaler Teil (GRUR Int)*, 2016, pp. 639 ff., available at http://dx. doi.org/10.2139/ssrn.2770479.
[194]See PITRUZZELLA, *Big data, competition and privacy*, cit., p. 19. More in general, on the role of merger and competition within the economic sector see F. Capriglione, *Concentrazioni bancarie e logica di mercato*, in *Banca borsa e titoli di credito*, 2008, I, pp. 293 ff.

strengthen the parties' position in a downstream market[195]. For instance, TomTom's arguments in the European Commission's investigation of the *TomTom/Tele Atlas* merger are particularly illustrative[196]. Another area is the abuse of dominant position, for which a significant case is the Decision of the European Commission in the *Google search advertising* case[197].

Moreover, in a recent study published by the EU Commission, access to and (re-)use of data is deemed as a key barrier[198].

Although there is a growing number of companies specializing in data analytics, e.g. business or market intelligence, only few of these offers full access to raw, non-curated data for re-use[199].

The fact that big data are regarded as a barrier to entry in digital markets implies a "*new approach to antitrust rules*"[200], through which private firms should be forced to share their big data (which are not otherwise publicly available)[201]. This aim can be achieved, inter alia, through legislative provisions[202], through

[195]See PITRUZZELLA, *Big data, competition and privacy*, cit., p. 20.
[196]EU Commission, Decision 14 May 2008, declaring a concentration to be compatible with the common market and the EEA Agreement, Case COMP/M.4854, *TomTom/Tele Atlas*, C(2008) 1859, in O.J. 16 September 2008 (C237). On this case see M. E. Stucke, A. P. Grunes, *Debunking the Myths over Big Data and Antitrust*, cit., p. 7.
[197]EU Commission, Decision 27 June 2017, relating to proceedings under Article 102 of the Treaty on the Functioning of the European Union and Article 54 of the Agreement on the European Economic Area, Case AT.39740, *Google Search (Shopping)*, C(2017) 4444, in O.J. *12 January 2018 (C 9). On this case see* J. Kup, S. Mikeš, *Discussion on big data*, cit., p. 394.
[198]EU Commission, *Study on emerging issues of data ownership, interoperability, (re-)usability and access to data, and liability*, cit., pp. 72 ff. See also Communication from the Commission, *Building a European Data Economy*, cit., par. 3.2, p. 9.
[199]Commission Staff Working Document *on the free flow of data*, cit., Part 3, esp. point 2.2 (a).
[200]*The Economist's*, 6 May 2017. For a synthesis of the relevant points see STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., p. 7; G. Pitruzzella, *Big data, competition and privacy*, cit., p. 15.
[201]For a similar approach see J. Hoffmann, G. Johannsen, *EU-Merger Control & Big Data*, cit., pp. 57 ff., who distinguish between exclusive and non-exclusive data.
[202]For instance, in France, the recent open data legislation (Loi No. 2016-1321 du 7 octobre 2016 pour une République numérique, cit.) puts in place provisions that oblige commercial companies to open up data they hold for re-use, namely data generated in the context of procurement (Article 17), commercial data for the establishment of official statistics (Article 19), certain electricity and gas production and consumption data held by transmission and distribution systems operators for re-use by any other party (Article 23), and certain data relating to changes in real estate ownership for re-use by certain third parties (Article 24). Such data are defined as "*données d'intérêt general*" (public interest data). On this initiative see Commission Staff Working Document *on the free flow of data*, cit., Part 3, esp. point 4, p. 22.

remedial measures[203], and also through the EFD, when the data holder (i.e., the collector) refuses to provide big data[204], seen as an (essential) infrastructural resource[205]. Reasoning otherwise means that the opening up of markets (and the relative degree of competition, beyond the possibility to generate benefits across society) depends on the goodwill of the data holder, "*who ultimately becomes the gatekeeper for downstream markets*"[206].

This is a very thorny point, as the question if and, possibly, to what extent general competition law can be applicable in the context of data-driven business models is a political one[207]. This is the reason why some scholars have recently proposed regulatory measures that are less invasive than a hard obligation for companies to share their data[208].

However, the EU Commission has recently answered affirmatively to the above mentioned question, and therefore general competition law may be invoked to claim wider access to data held by one economic operator[209]. The EU

[203]Some economists of Tilburg University (Jens Prufer and Christoph Schottmüller) have proposed to impose on online platforms a mandatory data sharing, a regulatory duty of sharing data with their competitors. On this proposal see M. Delmastro, A. Nicita, Big data, cit., p. 131.

[204]This is also the conclusion reached by J. Kup, S. Mikeš, *Discussion on big data*, cit., p. 396, as well as by ZENO-ZENCOVICH, G. Giannone Codiglione, *Ten legal perspectives on the "big data revolution"*, cit., p. 37. On the EFD applied to data see Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., pp. 17-18; G. Colangelo, M. Maggiolino, *Big data*, cit., pp. 13 ff. See also H. Richter, P. R. Slowinski, *The data sharing economy*, cit., p. 19.

[205]OECD, *Maximising the Economic and Social Value of Data*, cit. See also J. Hoffmann, G. Johannsen, *EU-Merger Control & Big Data*, cit., pp. 59-60, who observe that non-exclusive information does not fulfil the criteria set out in the European Court of Justice case-law related to Article 102 TFEU (e.g. *Bronner* and other cases, on which see *infra*).

[206]On this point see H. Richter, P. R. Slowinski, *The data sharing economy*, cit., p. 21.

[207]See KUP, MIKEŠ, *Discussion on big data*, cit., p. 395.

[208]See RICHTER, SLOWINSKI, *The data sharing economy*, cit., pp. 5 ff., who focus specifically on how data sharing can be incentivized and on the increasing role of data sharing platforms. It is worth noting that while the term "platform" might sound neutral at first glance, they are set up and owned by particular businesses with different incentives and strategic development perspectives in mind (therein, p. 10). The main limit of such an approach concerns the platform ownership, as larger companies run their own data platforms (*ibidem*). Another limit is the degree of openness of the platform to new participants, given that platforms can be closed in a sense that they are limited to certain cooperating partners (therein, p. 11). Moreover, as a rule, data is shared in return for remuneration (therein, p. 11). The authors also discuss about the possibility to share data through fair, reasonable, and non-discriminatory (FRAND) commitments, assuming big data as essential facilities, namely if companies cannot obtain such data from other sources and if the data are necessarily required to enter a particular market (therein, pp. 18 ff.).

[209]Commission Staff Working Document *on the free flow of data*, cit., Part 3, esp. point 3, p. 21. See also Communication from the Commission, *Building a European Data Economy*, cit., par. 3.3,

Commission provides some examples of cases (*Magill*, *IMS Health*, *Microsoft* and *Huawei*) on potential obligations to contract flowing from competition law. The fact that the Commission does not mention the Oscar Bronner case[210] does not mean that the EFD cannot find application in the data digital economy markets[211]. The EFD is applicable in the fields of data and big data as long as the requirements set by the ECJ case law and by the EU Commission are met.

First of all, the application of the EFD to big data does not require – when examining a potential refusal to supply – that the refused input has been already traded. It is sufficient that there is a potential market[212].

Moreover, the application of the EFD requires to demonstrate that data "owned" by the incumbent is unique and that it is impossible, or even unreasonably difficult, for the competitor (due to any technical, legal or even economic obstacles) to obtain the data that it needs to perform its services[213] in a "realistic potential alternative" way[214]. The "essential" character of data does not depend on their availability[215], but it depends crucially on the accessibility of data and on the substitutability between data of different types[216]. For instance, there are significant differences between mobile and static data; between data retrieved from search queries and data retrieved from social networks; between transactional data and data evidencing purchasing intentions which did not materialise[217].

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p. 10.

[210]ECJ, judgment 26 November 1998, C-7/97, *Bronner*, esp. para. 44-45.

[211]See LUNDQVIST, *Big Data, Open Data, Privacy Regulations, Intellectual Property and Competition Law in an Internet of Things World – The Issue of Accessing Data*, Stockholm Faculty of Law Research Paper Series No. 1, 2016, at 16-18, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2891484; I. Graef, *EU Competition Law, Data Protection and Online Platforms*, Alphen aan de Rijn, 2016, pp. 249 ff. For a different view see G. Colangelo, M. Maggiolino, *Big data*, cit., p. 18.

[212]See PITRUZZELLA, *Big data, competition and privacy*, cit., p. 23.

[213]ECJ, judgment 26 November 1998, C-7/97, *Bronner*, par. 44. On this point see also Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 18.

[214]See ECJ, judgment 26 November 1998, C-7/97, *Bronner*, par. 45.

[215]The "*data is everywhere*" argument.

[216]As explained by Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 54. See also I. Graef, *Market definition and market power in data*, cit., pp. 495 ff.

[217]See again Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 44.

All data are competitively useful, and most of them are unique and without reasonable substitutes[218]. In this respect, it has been pointed out that "*[n]on-personal, i.e. industrial, data often remain single-source data*" and "*[i]n most cases it will not be possible to replace industrial data from a specific sensor with data from another sensor*", with the consequence that "*the entity or person who has actual control over the sensor and its data can de facto exclude others from its use*"[219].

As has been clarified, there are significant factors that may limit the possibility to access data, starting with the different types of costs of data collection that firms may have to engage (in terms of significant investments, the potentially high level of fixed costs that have to be invested in order to collect and exploit massive amounts of data) in order to enter a specific market. It is clear that the level of those costs associated with the accumulation of large datasets may prevent small companies and new entrants to make use of the same volume and/or variety of data as large incumbents[220].

In the light of the above, we may agree with the view that data and big data are non-rival goods[221], meaning that people having and using a dataset do not prevent others, be these competitors or not, from having and using the same data as well, and on condition that "*they can access them*"[222]. If those conditions are

[218]In some cases, the EU Commission has excluded that big data can be qualified as an "essential facility". See, for instance, EU Commission, Decision 11 March 2008, declaring a concentration to be compatible with the common market and the functioning of the EEA Agreement, Case COMP/M.4731, *Google/ DoubleClick*, C(2008) 927 final, in O.J. 2 October 2007 (C230), par. 365.

[219]See RICHTER, SLOWINSKI, *The data sharing economy*, cit., p. 19. By contrast, other authors believe that only in some specific circumstances the refusal to supply might be liable to eliminate effective competition in the downstream market: see G. Pitruzzella, *Big data, competition and privacy*, cit., p. 23.

[220]Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 38, where also other factors that may limit the possibility to access data are analysed.

[221]See COLANGELO, MAGGIOLINO, *Big data*, cit., p. 255; G. Sivinski, A. Okuliar, L. Kjolbye, *Is big data a big deal?*, cit., esp. pp. 214 ff.; V. Zeno-Zencovich, G. Giannone Codiglione, *Ten legal perspectives on the "big data revolution"*, cit., p. 31; J. Kennedy, *The Myth of Data Monopoly*, cit., pp. 1 ff.

[222]As clearly indicated by Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 36. See also RUBINFELD, GAL, *Access Barrier to Big Data*, cit., pp. 350-351, who distinguish publicly available data that are freely available to anyone from data that are not. For the latter kind of data, unique access points to unique data may lead to situations in which the data cannot be easily replicated.

not met, as it occurs in the real world, we should conclude that big data (at least publicly available data that are freely available to anyone) have a rival character. This conclusion is confirmed by the fact that there is a growing effort in attempting to identify some kind of legal protection of collected big data (e.g. by adapting IPRs regulations to the needs of the digital society, or identifying contractual solutions, or sharing data through FRAND commitments or via other regulated regimes[223]), allowing collectors to share "their" data in return for remuneration. If those data were replicable and freely accessible to anyone, why should a fee be charged to obtain them? And why should anybody be interested in paying a fee when the concerned data are freely available everywhere?

5.2. The "zero price market" is another practice that raises competition issues. Indeed, as has been pointed out[224], consumers do not invariably benefit when services are "free", because these services are not actually free, as consumers (often) pay with their personal data and privacy[225].

In such a scenario, also described as an "implicit trade"[226], consumers generally do not know how much they actually pay for these services[227], and often they do not even know who, when and for what reasons their data are being used or processed[228]. By ticking the box, consumers information and data can be

[223]For instance, Regulation 715/2007 allows manufacturers to charge fees for access to vehicle repair and maintenance information (Article 7).
[224]See STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., p. 9.
[225]In this regards, Ugo Mattei (speech given at the conference "*Costituzione, Comunità, Diritti*", held in Turin on 19 November 2017, at Aula Magna della Cavallerizza Reale) has significantly points out that when services are provided for free, goods are the same people who receive the services. Similarly, M. Delmastro, A. Nicita, Big data, cit., p. 24, as well as A. Soro, *Democrazia*, cit., pp. 56 ff.
[226]See DELMASTRO, NICITA, Big data, cit., p. 24, who add that to such an "implicit trade" corresponds an "implicit market".
[227]See STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., p. 9, who also mentions as the economist Carl Shapiro, in a recent workshop, criticized the notion that because something is "free," it must be good for consumers. See also A. Soro, *Democrazia*, cit., p. 45, observes that often internet users transfer their own personal data ignoring their value.
[228]See STUCKE, GRUNES, *Debunking the Myths over Big Data and Antitrust*, cit., p. 10. See also H. Ursic, B. Custers, *Legal Barriers and Enablers to Big Data Reuse*, cit., par. II.1; M. Delmastro, A. Nicita, Big data, cit., pp. 43 ff.; A. Soro, *Democrazia*, cit., p. 48; European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., whereas "J"; Council of Europe, *Guidelines on the protection of individuals*, cit., p. 1, according to which "*it is*

exchanged for compensation or transferred as an asset within a bankruptcy proceeding[229].

On this point, we could state that consumers are basically "hostages" of those services, as they have "*become indispensable to live, communicate and work, despite a lack of understanding about the risks that they might pose to our well-being, security and rights*"[230]. Some scholars describe this as an "*asymmetric collusion*" between individuals and information capitalism[231].

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necessary to secure the protection of personal autonomy based on a person's right to control his or her personal data and the processing of such data, the nature of this right to control should be carefully addressed in the Big Data context". Moreover, it points out that *"[c]ontrol requires awareness of the use of personal data and real freedom of choice*". These conditions "*are essential to the protection of fundamental rights*" (*ibidem*). Also the European Data Protection Supervisor in its opinion No. 7/2015 on *Meeting the challenges of Big Data. A call for transparency, user control, data protection by design and accountability*, 19 November 2015, p. 10, outlines that "*[w]hether the data are volunteered, observed, or inferred, or collected from public sources, individuals are fully entitled to know what they are and from where and from whom the controllers obtained it. It is becoming increasingly necessary to give to the individuals more proactively the data itself, 'in an intelligible form' as well as the source of the data*". In the recent joint report issued by AGCM, AGCOM, Garante Privacy, *Big Data*, cit., the authorities recommend to reduce the information asymmetry between users and digital operators in the phase of data collection. In particular, users should be duly and properly informed not only on the uses of data provided, but also on the necessity to provide those data, also in relation to the service provided by the operator.

[229]See for instance the SharDna case, in which a Sardinian non-profit consortium company (SharDna S.p.a.) in 2000 created (and implemented in the following years) – for research reasons – a biobank, which included 230,000 biological samples from the almost 13,000 fully genealogically linked residents of Sardinia's Ogliastra region. Afterwards, the company went into bankruptcy, and in 2016 the assets of the company (including the biobank) in liquidation were transferred for Euros 258.000 to a UK London-based biotech company (Tiziana Life Science PLC), a private, profit-making company that develops and studies drugs and therapies for treating oncological diseases. With regards to the required data subjects consent, it should properly and deeply be investigated whether the original consent given by donators are such to cover, inter alia, the transfer for value of their data. In this respect, the Italian Data Protection Authority adopted a measure (No. 389 of 6 October 2016) through which blocked the processing of personal data by the new data controller (Tiziana Life Science), until a new and duly informed consent is provided by data subjects. The Court of Cagliari (Sardinia), judgment 18 May 2017, No. 1569 declared the measure taken by the Authority as illegitimate and it was hence annulled. However, the judgment is not sharable, as the local Court found its decision on the fact that the transfer of biobank is not regulated in the Italian legal order, without however analysing whether the information originally given to the data subjects was complete or not.

[230]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., whereas "L".

[231]See DOW SCHULL, *Addiction by Design*, New Jersey, 2012. See also YEUNG, *Hypernudge: Big Data as a Mode of Regulation by Design*, in 20 *J. Inf. Comm. & Soc*., No. 1/2016, pp. 118 ff., who points out that "*through our increasing willingness to submit ourselves to continuous algorithmic surveillance in return for the highly tailored convenience and efficiency which their selection optimisation tools appear to offer, we also engage in a process of asymmetric collusion that threatens ultimately to impoverish us. Like so many addictions, our short term cravings are likely to be detrimental to our long term well-being. By allowing ourselves to be surveilled and*

In this respect, the European Data Protection Supervisor (EDPS) has significantly pointed out that for consumers/internet users "*personal information operates as a currency, and sometimes the sole currency, in the exchange of online services*"[232]. It seems clear that in such cases consent is not freely given as there is a clear imbalance of power between the data subject and the controller, which affects the data subject's decisions with regard to the processing[233].

This situation is clearly described in the recent case *Planet49*[234]. In 2013, Planet49 GmbH organised a promotional lottery through its website. To participate in the lottery, an internet user was required to enter his postcode, which prompted a page containing input fields for the user's name and address. Beneath the input fields for the address were two sets of explanatory text accompanied by two checkboxes. The first explanatory text, the checkbox for which did not contain a pre-selected tick, reads: "*I agree to certain sponsors and cooperation partners providing me with information by post or by telephone or by email/SMS about offers from their respective commercial sector. I can determine these myself here; otherwise, the selection is made by the organiser. I can revoke this consent at any time. Further information about this can be found here*"[235].

The second explanatory text, which was given a pre-selected tick, reads: "*I agree to the web analytics service Remintrex being used for me. This has the consequence that, following registration for the lottery, the lottery organiser, Planet49 GmbH, sets cookies, which enables Planet49 to evaluate my surfing and use behaviour on websites of advertising partners and thus enables advertising by Remintrex that is based on a user's interests. I can delete the cookies again at any*

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subtly regulated on a continuous, highly granular and pervasive basis, we may be slowly but surely eroding our capacity for authentic processes of self-creation and development" (therein, p. 131).

[232]Preliminary Opinion of the European Data Protection Supervisor, *Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the Digital Economy*, March 2014, point 2.2.

[233]See Council of Europe, *Guidelines on the protection of individuals*, cit., point 5.3.

[234]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, para. 25 ff., as well as the opinion of Advocate General Szpunar delivered on 21 March 2019, para. 24 ff.

[235]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, par. 26.

time. You can read more about this here"[236].

Participation in the lottery was only possible if at least the first checkbox had been ticked[237]. In such a situation, a user is not in a position to freely give his separate consent to the storing of information or the gaining of access to information already stored, in his terminal equipment[238]. In this respect, as has been pointed out by the Advocate General, "*the participation in the online lottery and the giving of consent to the installation of cookies cannot form part of the same act*"[239]; and this is precisely what happens in the *Planet49* case and in many other similar cases. Users only effectuate one click on the participation button in order to participate in the lottery. At the same time, he consents to the installation of cookies. Two expressions of intention (participation in the lottery and consent to the installation of cookies) are made at the same time. These two expressions cannot – according to the Advocate General – both be subject to the same participation button. Indeed, "*in the present case, the consenting to the cookies appears ancillary in nature, in the sense that it is in no way clear that it forms part of a separate act*". In other words, "*(un)ticking the checkbox on the cookies appears like a preparatory act to the final and legally binding act which is 'hitting' the participation button*"[240]. The EU Court of Justice substantially agreed with the Advocate General's opinion, stating that "*the fact that a user selects the button to participate in the promotional lottery organised by that company cannot […] be sufficient for it to be concluded that the user validly gave his or her consent to the storage of cookies*"[241]. According to the Court, active consent is expressly laid down in Regulation 2016/679. In this respect, the Court points out that "*according to recital 32 thereof, on one hand, giving consent could include ticking*

[236]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, par. 27.
[237]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, par. 28.
[238]Opinion of Advocate General Szpunar delivered on 21 March 2019, case C-673/17, *Planet49*, par. 90.
[239]Opinion of Advocate General Szpunar delivered on 21 March 2019, case C-673/17, *Planet49*, par. 89.
[240]Opinion of Advocate General Szpunar delivered on 21 March 2019, case C-673/17, *Planet49*, par. 89.
[241]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, par. 59.

a box when visiting an internet website", and, on the other hand, "*that recital expressly precludes 'silence, pre-ticked boxes or inactivity' from constituting consent*"[242]. The Court concludes that the consent "*is not validly constituted if, in the form of cookies, the storage of information or access to information already stored in a website user's terminal equipment is permitted by way of a pre-checked checkbox which the user must deselect to refuse his or her consent*"[243].

It is therefore clear that the logic behind *Planet49* leads to the violation of basic fundamental rights. And this is the reason why the EU Parliament has recently expressed its deep concern on this issue, stressing that "*individuals' poor knowledge and understanding about the nature of big data allows personal information to be used in unintended ways*", and noting that "*education and awareness about fundamental rights is of primary importance in the EU*"[244]. This also implies other major problems, which we can refer to as the digital divide problem[245]. It is therefore entirely sharable the stance taken by the EU Parliament, which recommends to "*the EU institutions and Member States to invest in digital literacy and awareness-raising about digital rights, privacy and data protection among citizens, including children*", underlying that "*such education should address the understanding of the principles/logic of how algorithms and automated decision-making processes work and how to meaningfully interpret them*", and also stressing "*the need to educate with a view to fostering understanding on where and how data streams are collected (i.e. web scraping, combining streaming data with data from social networks and connected devices and aggregating that information into a new data stream)*"[246]. Likewise, the Council of Europe recommends that "*[t]o help individuals understand the*

[242]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, par. 62.
[243]ECJ, judgment 1 October 2019, C-673/17, *Planet49*, para. 63 and 65.
[244]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., point 4.
[245]On the digital divide problem see GASPARI, *La new information economy, il problema del digital divide e il ruolo dei pubblici poteri*", in *Rassegna di Diritto Pubblico Europeo*, No. 2, 2018, pp. 1 ff.
[246]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit., point 4.

implications of the use of information and Personal Data in the Big Data context, the Parties should consider information and digital literacy as an essential educational skill"[247]. In this respect, in Europe, one of the more advanced programmes is currently taking place in Norway, where the national curriculum considers digital literacy as important as more traditional school subjects like mathematics and history[248].

5.3. Data protection and competition concerns may coincide[249], but the relationship between competition law and data protection law is not straightforward[250].

As a matter of fact, in its 2006 *Asnef-Equifax* case, the European Court of Justice stated that "*any possible issues relating to the sensitivity of personal data are not, as such, a matter for competition law, they may be resolved on the basis of the relevant provisions governing data protection*" [251].

More recently, in its Facebook/WhatsApp Decision of 2014[252], the EU Commission found no competition concerns, as privacy-related concerns flowing from the increased concentration of data within the control of one company as a result of a transaction would fall within the scope of EU data protection rules, and not within EU competition law[253].

In its 2016 Decision on the Microsoft/LinkedIn transaction[254], the EU

[247]Council of Europe, *Guidelines on the protection of individuals*, cit., point 9.
[248]For a deeper analysis see ERSTAD, *Conceiving Digital Literacies in Schools. Norwegian experiences*, Proceedings of the 3rd International workshop on Digital Literacy, Digital Literacy 2007, Sissi, Lassithi - Crete Greece, 17 September 2007, available at https://www.researchgate.net/publication/221549739_Conceiving_Digital_Literacies_in_Schools_-_Norwegian_Experiences. Other countries which are proactive on the subject of digital literacy in their national school's programme are Hong Kong, Scotland, New Zealand and Finland.
[249]See SORO, *Democrazia*, cit., pp. 61 ff.
[250]See PITRUZZELLA, *Big data, competition and privacy*, cit., p. 15. See also J. Hoffmann, G. Johannsen, *EU-Merger Control & Big Data*, cit. pp. 33 ff.
[251]ECJ, judgment 23 November 2006, C-238/05, *Asnef-Equifax*, par. 63.
[252]EU Commission, Decision 3 October 2014, Case M.7217, *Facebook/ WhatsApp*, C(2014) 7239 final, in O.J. 21 November 2014 (C417).
[253]See URSIC, CUSTERS, *Legal Barriers and Enablers to Big Data Reuse*, cit., par. III.2. See also Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., pp. 22-23.
[254]EU Commission, Decision 6 December 2016, Case M.8124, *Microsoft/LinkedIn*, C [2016] 8404 final.

Commission confirmed its approach in Facebook/WhatsApp that privacy-related concerns do not generally fall within the scope of EU competition law. However, the Commission clarified that privacy-related concerns as such do not fall within the scope of EU competition law but can be taken into account in the competition assessment to the extent that consumers see it as a significant factor of quality, and the merging parties compete with each other on this factor. Data privacy – according to the Commission – was an important parameter of competition among professional social networks on the market and could have been negatively affected by the potential data concentration as a result of the merger. However, the Commission cleared the transaction subject to certain conditions[255].

Issues that antitrust authorities should consider when assessing the interplay among big data, market power and competition law were also assessed in the May 2016 joint report on big data published by the French Competition Authority and German Federal Cartel Office. As has been outlined in such report, "*[p]rivacy concerns are not, in and of themselves, within the scope of intervention of competition authorities*"[256].

Another important initiative has been promoted in Italy, where on 30 May 2017 the Antitrust Authority (Autorità Garante della Concorrenza e del Mercato – AGCM), the Media Safeguards Authority (Autorità per le Garanzie nelle Comunicazioni – AGCOM) and the Authority for the protection of personal data (Garante per la Protezione dei dati Personali – Garante Privacy) launched a joint sector inquiry[257] regarding the identification of possible issues linked to the use of big data and the definition of a clear legal framework able to promote and protect personal data protection, competition in digital markets, and consumer protection, as well as to foster digital ecosystem pluralism[258]. On 8 June 2018 the

[255]On this case see G. Sivinski, A. Okuliar, L. Kjolbye, *Is big data a big deal?*, cit., *passim*.
[256]Autorité de la concurrence and Bundeskartellamt, *Competition Law and Data*, cit., p. 22.
[257]*Indagine conoscitiva sui Big Data. Analisi della propensione degli utenti online a consentire l'uso dei propri dati a fronte dell'erogazione di servizi*.
[258]See *Big Data: Agcom, Antitrust e Garante privacy avviano indagine conoscitiva*, available at http://www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/644141.

first part of the ongoing inquiry was published[259]. The full findings of this inquiry were published on 2 July 2019[260], and it calls upon a stronger legal framework in terms of transparency in the use of personal information, a stronger role of the three concerned authorities (in terms of control and enforcement)[261], a preliminary (namely, before data are processed) identification of nature and ownership of data, and an evaluation on the possibility that persons are identifiable from anonymised data. With particular reference to the relationship between data protection and competition, the inquiry concludes that the current legal framework is suitable to protect fundamental rights.

The Competition and Markets Authority (CMA) in the UK analyzed the topic in June 2015[262]. While listing a number of business practices that are arguably disputable under consumer protection law, the UK report outlined potential competition law issues, similar to those identified in the German and French authorities' joint report[263].

Also the European Data Protection Supervisor (EDPS) has specifically examined the interplay between data protection, competition law and consumer protection in the Digital Economy. In its 2014 opinion[264], the EDPS observes that the EU approaches to data protection, competition and consumer protection share common goals, including the promotion of growth, innovation and the welfare of individual consumers. However, in practice, collaboration between policy-makers in these respective fields is limited. It suggests a closer dialogue

[259]AGCM, *Primi risultati dell'indagine conoscitiva sui Big Data*, Press Release, 8 June 2018, available at http://www.agcm.it/stampa/comunicati/9334-ic53-primi-risultati-dell-indagine-conoscitiva-sui-big-data-congiunta-con-agcom-e-garante-privacy.html.
[260]*Big Data: Indagine conoscitiva congiunta. Linee guida e raccomandazioni policy*, available at https://www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/9122609.
[261]One of the eleven Guidelines puts forward the establishment of a "permanent coordination" between the three authorities. It is also worth noting that Directive (EU) 2019/1 of the European Parliament and of the Council of 11 December 2018, empowers the competition authorities of the Member States to be more effective enforcers and to ensure the proper functioning of the internal market.
[262]*The commercial use of consumer data*, Report on the CMA's call for information, June 2015.
[263]See URSIC, CUSTERS, *Legal Barriers and Enablers to Big Data Reuse*, cit., par. III.3.
[264]Preliminary Opinion of the European Data Protection Supervisor, *Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the Digital Economy*, March 2014.

between regulators and experts across policy boundaries, which "*can not only aid enforcement of rules on competition and consumer protection, but also stimulate the market for privacy-enhancing services*".

5.4. Competition issues may also arise from "high value datasets", a new category of data included in the Directive (EU) 2019/1024[265].

High value datasets are "*documents the re-use of which is associated with important benefits for society, the environment and the economy, in particular because of their suitability for the creation of value-added services, applications and new, high-quality and decent jobs, and of the number of potential beneficiaries of the value-added services and applications based on those datasets*"[266].

Article 6, par. 6 of the 2019 Directive makes provision for a new principle, namely that the re-use of high value datasets shall be free of charge for the user. a list of thematic categories of such datasets is set out in Annex I of the Directive, with the aim to "*provide for conditions to support the re-use of high-value datasets*" (Article 13, par. 1). The Commission "*is empowered to adopt delegated acts in accordance with Article 15 in order to amend Annex I by adding new thematic categories of high-value datasets in order to reflect technological and market developments*" (Article 13, par. 2). Moreover, Article 14, par. 1 of the 2019 Directive lays down that "*[t]he Commission shall adopt implementing acts laying down a list of specific high-value datasets belonging to the categories set out in Annex I and held by public sector bodies and public undertakings among the documents to which this Directive applies*". Paragraph 2 of Article 14 confirms the principle that, interl alia, these datasets shall be available for free (already stated in Article 6, par. 6), while the following paragraph (3) introduces an exception to this principle of free availability, laying down that "*the implementing acts referred to in paragraph 1 shall provide that the availability of high-value datasets free of*

[265]Directive (EU) 2019/1024 *on open data and the re-use of public sector information*, cit.
[266]Article 2(10) of Directive (EU) 2019/1024, cit.

charge is not to apply to specific high-value datasets held by public undertakings where that would lead to a distortion of competition in the relevant markets". It would be the Commission to conduct the impact assessment as referred to Article 14, par. 2, which clarifies that the impact assessment "*shall give special consideration to the role of public undertakings in a competitive economic environment*" where high value datasets held by public undertakings are concerned (Article 13, par. 7).

6. Within the EU legal system, State aids – deemed as one of the "*core EU policies*"[267] – are regulated in Articles 107-109 of the TFEU. State aid control aims at ensuring fairness of competition law, being the primary concern that of preventing any distortions of competition[268]. The control aims therefore at verifying whether a certain measure can have the effect of favouring a certain undertaking[269].

In the field of data and big data, issues may arise with regards to the mobility of data, taking into account their legal nature.

These issues are not probably to be identified for personal data, given that data in these cases belong to persons, as we have seen above.

6.1. There are at least two cases in which, in our view, a State aid may be identified.

The first case concerns public data. According to the Directive 2003/98, when public sector bodies make documents available, they can decide to make a

[267]See BIONDI, *State Aid, government spending and the virtue of loyalty*, in A. Biondi and P.J Birkinshaw (Eds.), *Britain Alone! The implications and consequences of UK exit from the EU*, Kluwer Law International, 2016, par. 3.
[268]See BIONDI, *Some Reflections on the Notion of "State Resources" in European Community State Aid Law*, in *Fordham International Law Journal*, Vol. 30, Issue 5, 2006, pp. 1426 ff., esp. p. 1435. In this respect see ECJ, judgment 13 May 2014, C-184/11, *Commission v. Spain*, par. 70, according to which State aid control rules are "*the expression of one of the essential tasks with which the European Union is entrusted under Article 2 EC, namely the establishment of a common market, and under Article 3(1)(g) EC, which provides that the activities of the Community are to include a system ensuring that competition in the internal market is not distorted*". See also ECJ, judgment 1 June 1999, C-126/97, *Eco Swiss*, par. 36.
[269]See BIONDI, *Some Reflections*, cit., p. 1435.

charge, with specific limits[270]. However, the same Directive lays down that "*[t]he upper limit for charges set in this Directive is without prejudice to the right of Member States or public sector bodies to apply lower charges or no charges at all*"[271].

Making documents available with no charges may be deemed as in breach of Article 107 of TFEU, according to which any aid granted by a Member State or through State resources in "*any form whatsoever*" which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods, in so far as it affects trade between Member States, is incompatible with the common market.

Directives, for their nature[272], allow Member States to differently decide whether or not apply charges, and therefore this may create, for services offered in the downstream market that implies the same information upstream, State aids, as long as all the conditions set out in Article 107 are met[273].

In this respect, with regards to the requirements of State aid, as laid down in Article 107 of TFEU (widely interpreted by the European Commission[274]) and in the ECJ's case-law[275], for a measure to be classified as a State aid for the purposes of Article 107, par. 1, TFEU, the following cumulative conditions need to be met:

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[270]The principles governing charges are set out in Article 6. See also Article 6 of Directive (EU) 2019/1024, cit.

[271]Whereas 14. See also whereas 39 of Directive (EU) 2019/1024, cit.

[272]According to Article 288, par. 3 of TFEU "*[a] directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods*".

[273]On these conditions see G. Tesauro, *Diritto dell'Unione europea*, Padova, 2012, p. 813, note 88; STROZZI, *Gli aiuti di Stato*, in G. Strozzi (Ed.), *Diritto dell'Unione europea. Parte speciale*, Torino, 2017, pp. 381 ff., esp. p. 384; QUIGLEY, *European State aid law and policy*, Oxford, Portland, 2009, pp. 32 ff.

[274]See BRUTI LIBERATI, *Conclusioni*, in E. Bruti Liberati, M. De Focatiis, A. Travi (Eds.), *Ancora sulla transizione nel settore dell'energia. Gli aiuti di Stato. La tutela del consumatore*, Milano, 2019, p. 59. See also M. Luciani, *Gli aiuti di Stato nella Costituzione Italiana e nell'ordinamento Europeo*, in *Eurojus*, No. 3/2019, pp. 64 ff., esp. p. 70, available at rivista. eurojus.it.

[275]See ECJ, judgment 23 January 2019, C-387/17, *Fallimento Traghetti del Mediterraneo SpA*, par. 36; ECJ, judgment 16 July 2015, C-39/14, *BVVG Bodenverwertungs und verwaltungs GmbH*, par. 24; ECJ, judgment 16 April 2015, C-690/13, *Trapeza Eurobank Ergasias*, par. 17 and the case-law cited therein; ECJ, judgment 24 July 2003, C-280/00, *Altmark*, par. 75; ECJ, judgment 15 July 2004, C-345/02 *Pearle and Others*, par. 32.

a) first, there must be an intervention by the State or through State resources;
b) second, the intervention must be liable to affect trade between Member States;
c) third, it must confer an advantage on the recipient; and
d) fourth, it must distort or threaten to distort competition.

With regards to the first requirement, the concept of "aid" is very broad[276]. As clarified by the ECJ, it is "*wider than that of a subsidy because it embraces not only positive benefits, such as subsidies themselves, but also interventions which, in various forms, mitigate the charges which are normally included in the budget of an undertaking and which, without therefore being subsidies in the strict meaning of the word, are similar in character and have the same effect*"[277]. The concept of aid includes whatsoever advantage having an economic value conferred on a specific undertaking[278] through a public intervention; advantage that otherwise would not materialise[279].

State/public intervention consists of a measure granting direct or indirect aids[280]; the measure may be both a piece of legislation and an administrative act

[276]See BIONDI, *Some Reflections*, cit., pp. 1429 ff.
[277]ECJ, judgment 23 February 1961, C-30/59, *De gezamenlijke Steenkolenmijnen in Limburg*, p. 18; ECJ, judgment 15 March 1994, C-387/92, *Banco Exterior de España*, par. 13. See also ECJ, Judgment 17 June 1999, C-295/97, *Piaggio*, par. 34; ECJ, judgment 1 December 1998, C-200/97, *Ecotrade v. Altiforni e Ferriere di Servola*, par. 34 ECJ, judgment 16 July 2015, C-39/14, *BVVG Bodenverwertungs und verwaltungs GmbH*, par. 26; ECJ, judgment 16 December 2010, C-239/09, *Seydaland Vereinigte Agrarbetriebe* par. 30; ECJ, judgment 17 November 2009, C-169/08, *Presidente del Consiglio dei Ministri*, par. 56; ECJ, judgment 24 January 2013, C-73/11 P, *Frucona Košice v. Commission*, par. 69.
[278]With regards to the concept of an undertaking in the context of competition law, the European Court of Justice has clarified that it "*encompasses every entity engaged in an economic activity, regardless of the legal status of the entity and the way in which it is financed*": ECJ, judgment 23 April 1991, C-41/90, *Höfner and Elser v. Macrotron*, par. 21. Moreover, the Court has pointed out that "*the concept of an economic unit in State aid matters can differ from that applicable in other areas of competition law*": ECJ, judgment 16 December 2010, C-480/09 P, *AceaElectrabel Produzione SpA v. European Commission*, para. 46-71, esp. 66.
[279]See TESAURO, *Diritto dell'Unione europea*, cit., p. 812; G. Strozzi, *Gli aiuti di Stato*, cit., pp. 384 ff.
[280]See ECJ, Judgment 17 June 1999, C-295/97, *Piaggio*, par. 35: the concept of aid "*implies advantages granted directly or indirectly through State resources or constituting an additional charge for the State or for bodies designated or established by the State for that purpose*". See also ECJ, judgment 7 May 1998, Joined Cases C-52/97 to C-54/97, *Viscido and Others v. Ente Poste*

and can be represented, inter alia, by a special rate (or fee)[281]. What is relevant for the provision (Article 107) is that it does not distinguish between the causes or the objectives of State aids, but defines them in relation to their effects[282], and thus independently of the techniques used by the Member States to implement their interventions[283].

In our case, the aid is represented by special rates (or fees or charges) granted by States or public bodies, ending to advantage specific companies or parts of industries.

The aid has to be imputed to the State[284]. More in details, for advantages to be capable of being categorised as aid within the meaning of that article, they must, first, be granted directly or indirectly through State resources, and, second, be imputable to the State[285].

On one hand, according to the ECJ case-law, Article 107 covers all the financial means by which the public authorities may actually support undertakings, irrespective of whether or not those means are permanent assets of the public sector. Consequently, even though the sums involved in the measure at issue are not held permanently by the public authorities, the fact that they remain

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Italiane, par. 13. Moreover, on the distinction between direct and indirect advantages see M. Heidenhain, *The Concept of State Aid*, in M. Heidenhain (edited by), *European state aid law: handbook*, Munchen, 2010, pp. 22 ff.

[281]See TESAURO, *Diritto dell'Unione europea*, cit., pp. 812 ff. See also G. Strozzi, *Gli aiuti di Stato*, cit., p. 387. Providing goods or services applying preferential tariffs has been deemed as State aid: ECJ, judgment 17 October 2013, C-344/12, *Commission v. Italy*.

[282]ECJ, judgment 2 July 1974, 173/73, *Commission v. Italy*, par. 13; ECJ, judgment 29 February 1996, C-56/93 *Belgium v. Commission*, par. 79; ECJ, judgment 26 September 1996, C-241/94 *France v. Commission*, par. 20; ECJ, judgment 17 June 1999, C-75/97 *Belgium v. Commission*, par. 25; ECJ, judgment 13 February 2003, C-409/00, *Spain v. Commission*, par. 46. See also TESAURO, *Diritto dell'Unione europea*, cit., p. 815; BIONDI, *Some Reflections*, cit., p. 1429.

[283]See ECJ, judgment 22 December 2008, C-487/06 P, *British Aggregates v. Commission*, par. 89; ECJ, judgment 8 September 2011, C-279/08 P, *Commission v. Netherlands*, para. 51 and 75 (also known as the *Dutch Nox* case). On these cases see A. Biondi, *State Aid is Falling Down, Falling Down: An Analysis of the Case Law on the Notion of Aid*, in *Common Market Law Review*, 2013, pp. 1719 ff, esp. p. 1732.

[284]See ECJ, judgment 23 March 2006, C-237/04, *Enirisorse*, para. 38 and 39; ECJ, judgment 30 March 2006, C- 451/03, *Servizi Ausiliari Dottori Commercialisti*, par. 56; ECJ, judgment 17 November 2009, C-169/08, *Presidente del Consiglio dei Ministri*, par. 52.

[285]ECJ, judgment 21 March 1991, C-303/88, *Italy v. Commission*, par. 11; ECJ, judgment 16 May 2002, C-482/99, *France v. Commission*, par. 24; ECJ, judgment 20 November 2003, C-126/01, *GEMO*, par. 24.

constantly under public control, and therefore available to the competent national authorities, is sufficient for them to be categorised as State resources[286]. On the other hand, the measure must be imputable to the State or to its articulation(s)[287]. In this respect, however, the imputability to the State of a measure cannot be inferred from the mere fact that that measure was taken by a public undertaking. In other words, the mere fact that a public undertaking is under State control is deemed as not sufficient for measures taken by that undertaking to be imputed to the State. According to the ECJ, it is also necessary to examine whether the public authorities must be regarded as having been involved, in one way or another, in the adoption of those measures[288].

In our case, this requirement is clearly met, given that the intervention consists of a special charge granted by a State or by a public body[289]. It is an indirect advantage granted by a State or public body by way of loss of earnings or diminished revenues[290].

As has been clarified by the ECJ case-law, for the purposes of establishing the existence of State aid, a sufficiently direct link must be established between, on the one hand, the advantage given to the recipient and, on the other hand, a reduction of the State budget or a sufficiently concrete economic risk of burdens on that budget[291].

As the Court has already held, it cannot therefore, as a rule, be precluded that a sale of public land at a price lower than the market value might constitute

[286]ECJ, judgment 16 May 2000, C-83/98 P, *France* v. *Ladbroke Racing and Commission*, par. 50; ECJ, judgment 16 May 2002, C-482/99, *France v. Commission*, par. 37; General Court, judgment 27 September 2012, T-139/09, *France v. Commission*, par. 60.
[287]See QUIGLEY, *European State aid law and policy*, cit., pp. 13 ff.
[288]ECJ, judgment 16 May 2002, C-482/99, *France v. Commission*, para. 50 ff.
[289]See TESAURO, *Diritto dell'Unione europea*, cit., p. 824.
[290]ECJ, judgment 17 March 1993, C-72-73/91, *Sloman Neptun*, par. 19; ECJ, judgment 30 November 1993, C-189/91, *Kirsammer-Hack*, par. 16; ECJ, judgment 7 May 1998, Joined Cases C-52 54/97, *Viscido and Others v. Ente Poste Italiane*, par. 13; ECJ, judgment 1 December 1998, C-200/97, *Ecotrade v. Altiforni and Ferriere di Servola*, para. 35 ff.; ECJ, judgment 19 May 1999, C-6/97, *Italy v. Commission*, par. 16; ECJ, judgment 8 September 2011, C-279/08 P, *Commission v. Netherlands*, par. 18. See also G. Tesauro, *Diritto dell'Unione europea*, cit., p. 826; G. Strozzi, *Gli aiuti di Stato*, cit., p. 389.
[291]ECJ, judgment 19 March 2013, C-399/10 P and C-401/10 P, *Bouygues and Bouygues Télécom v. Commission and Others and Commission* v *France and Others*, par. 109.

State aid[292]. Similarly, making documents available without any charges may confer on the undertaking at stake, as a recipient, an advantage which, in essence, leads to a reduction of the State budget[293].

Given that the Directive allows Member States to differently decide whether or not apply charges, the undertakings operating in a Member State within a specific market (or industry or sector of activity) may obtain information without charges, whilst for the same market (or industry or sector of activity) undertakings operating in another Member State may be forced to pay charges, and this causes a situation such to affect (at least potentially) trade between Member States.

The distortion of competition in the data and big data sector may be potential only. In fact, the ECJ has rejected the restrictive interpretation of Article 107 to the effect that only aid having an actual effect on trade between Member States and distorting competition is covered by this provision[294].

With regards to the third requirement – the selectivity character of the State/public measure – it is necessary to determine whether the measure in question entails advantages accruing exclusively to certain undertakings or certain sectors of activity[295]. As clarified by the European Commission, also general measures (*recte*: measures potentially open to all undertakings) may be deemed as selective "*if the public authorities can decide on a discretionary basis, which and/or to what extent undertakings may benefit from the measure, or if the effect of the objective requirements is that only certain undertakings may benefit from*

[292]ECJ, judgment 16 December 2010, C-239/09, *Seydaland Vereinigte Agrarbetriebe*, par. 31.
[293]See ECJ, judgment 16 July 2015, C-39/14, *BVVG Bodenverwertungs und verwaltungs GmbH*, par. 28.
[294]ECJ, judgment 21 July 2005, C-71/04, *Xunta de Galicia*, par. 43; ECJ, judgment 21 March 1990, C-142/87, *Belgium v. Commission* (the "Tubemeuse" case), para. 35-40; Court of First Instance, judgment 15 June 2000, T-298/97, *Alzetta and others v. Commission*, para. 76-81; Court of First Instance, judgment 6 July 1995, Joined Cases T-447/93 to T-449/93, *AITEC and Others v. Commission*, para. 139-141. See also G. Tesauro, *Diritto dell'Unione europea*, cit., p. 830; STROZZI, *Gli aiuti di Stato*, cit., p. 393.
[295]Court of First Instance, judgment 11 July 2002, T-152/99, *HAMSA*, par. 156; ECJ, judgment 1 December 1998, C-200/97, *Ecotrade*, para. 40-41; ECJ, judgment 15 December 2005, C-148/04, *Unicredito Italiano*, esp. para. 44-51.

the measure"[296]. Moreover, selectivity arises where public authorities decide on a discretionary basis which and/or to what extent undertakings may benefit from a general measure[297].

The aid has to entail advantages to certain undertakings or certain sectors of activity in comparison with others which are in the same legal or factual situation[298]. A special rate granted to undertakings operating in a specific economic sector, also with the aim to improve the competitiveness of certain undertakings at a certain stage in the development of the sector, may be deemed as a selective aid[299].

Within the EU single market, undertakings operating in a specific sector are in competition with undertakings of other Member States, with the consequence that aids granted to specific undertakings or to the whole economic sector in a specific Member State only may be deemed as selective and are able (at least potentially) to affect trade between Member States[300].

For the assessment of aid effects on trade and on competition conditions operates the presumption that in any case a State aid distorts or threatens to distort competition[301], especially in cases of free advantages, deemed as a *per se*

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[296]European Commission, *XXIVth Report on Competition Policy* 1994, p. 167, point 347.

[297]QUIGLEY, *European State aid law and policy*, cit., p. 45. See ECJ, judgment 29 June 1999, C-256/97, *DM Transport*, par. 27; Court of First Instance, judgment 11 July 2002, T-152/99, *HAMSA v. Commission*, par. 157. See also M. Heidenhain, *The Concept of State Aid*, cit., p. 47.

[298]See TESAURO, *Diritto dell'Unione europea*, cit., p. 828; G. Strozzi, *Gli aiuti di Stato*, cit., p. 394; QUIGLEY, *European State aid law and policy*, cit., pp. 41 ff.

[299]ECJ, judgment 15 December 2005, C-148/04, *Unicredito Italiano*, esp. para. 45 and 51; ECJ, judgment 2 july 1974, case 173/73, *Italy v. Commission*.

[300]ECJ, judgment 2 july 1974, case 173/73, *Italy v. Commission*, par. 19. See also ECJ, judgment 13 July 1988, case 102/87, *France v. Commission*, par. 19, according to which "*aid to an undertaking may be such as to affect trade between the Member States and distort competition where that undertaking competes with products coming from other Member States, even if it does not itself export its products. Such a situation may exist even if there is no over-capacity in the sector at issue. Where a Member State grants aid to an undertaking, domestic production may for that reason be maintained or increased with the result that, in circumstances such as those found to exist by the Commission, undertakings established in other Member States have less chance of exporting their products to the market in that Member State. Such aid is therefore likely to affect trade between Member States and distort competition*".

[301]ECJ, judgment 24 September 2002, C-74 and 75/00 P, *ACB v. Commission*, para. 99 ff. See also TESAURO, *Diritto dell'Unione Europea*, cit., p. 829; C. Quigley, *European State aid law and policy*, cit., pp. 52 ff.

indicator of distortion of competition by the ECJ[302], as it "*strengthens the position of an undertaking compared with other undertakings competing in intra-Community trade*"[303]. Moreover, the relatively small amount of aid or the relatively small size of the undertaking which receives it does not as such exclude the possibility that intra-UE trade might be affected[304].

In addition, with regards to the assessment of the effects of State aids, it should be considered the fact that the aid diverts resources away other objectives, that may be more useful in the medium and long term[305].

It is not covered by the concept only "aids" regarding a good or service for which trade within the EU (*recte*: between Member States) is not even conceivable[306]. The only case where documents are made available without applying any charges may be the exchange of information between public sector bodies free of charge for the exercise of their public tasks[307].

6.2. The second case concerns non-personal data. According to Regulation 1807/2018, major sources of non-personal data stem from the expanding Internet of Things, artificial intelligence and machine learning, for example as a result of their deployment in automated industrial production processes[308].

As examples of non-personal data, Regulation 1807 indicates the large amounts of data that public authorities and bodies governed by public law handle[309], aggregate and anonymised datasets used for big data analytics, data on

[302]See ECJ, judgment 10 December 1969, Joined Cases 6/69 and 11/69, *Commission v. France*, point III, according to which "*[b]y definition, the free advantage granted to certain undertakings or the production of certain goods alters the conditions of competition which, in its absence, would prevail on the market*".
[303]ECJ, judgment 17 September 1980, C-730/79, *Philip Morris v. Commission*, par. 11. On this point see also STROZZI, *Gli aiuti di Stato*, cit., p. 394.
[304]ECJ, judgment 21 March 1990, C-142/87, *Belgium v. Commission* (the "Tubemeuse" case), par. 43.
[305]See TESAURO, *Diritto dell'Unione europea*, cit., p. 830.
[306]See TESAURO, *Diritto dell'Unione europea*, cit., p. 831.
[307]See whereas 19.
[308]Whereas 9.
[309]Whereas 13, according to which "*the principle of the free flow of non-personal data for which this Regulation provides should apply also to general and consistent administrative practices and*

precision farming that can help to monitor and optimise the use of pesticides and water, or data on maintenance needs for industrial machines.

The EU legislation considers such data as owned by no-one. In this respect, even if they both are governed by the same principle of freedom of movement[310], data at stake are nonetheless very different from each other[311] in terms of legal nature, as personal data are "owned" by "persons", while non-personal data are not. This is also demonstrated by Regulation 1807, where it sets out that "If technological developments make it possible to turn anonymised data into personal data, such data are to be treated as personal data, and Regulation (EU) 2016/679 is to apply accordingly"[312].

Within the "public view" of big data, we could therefore conclude that these data belong to all, to the Community (or State-community: for instance smart city related data) or to specific communities (for instance, the Amazon Community, as for the data collected by Amazon, the Google Community, as for the data collected by Google, and so on)[313].

As a matter of fact, Regulation 1807 takes for granted that data have to be produced and released for free. The EU seems to worry only about the free flow of such data, that "*will play an important role in achieving data-driven growth and innovation*"[314]. The EU takes into consideration only "*businesses and consumers, Member States' public authorities and bodies governed by public law*" as those who will "*benefit from increased freedom of choice regarding data-driven service providers, from more competitive prices and from a more efficient provision of services to citizens*"[315]. Given that also such data clearly have a value not only for

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to other data localisation requirements in the field of public procurement, without prejudice to Directive 2014/24/EU of the European Parliament and of the Council".

[310]See whereas 10, according to which "*Regulation (EU) 2016/679 and this Regulation provide a coherent set of rules that cater for free movement of different types of data*".

[311]See again whereas 10 of Regulation 1807/2018.

[312]Whereas 9.

[313]On the web as an "*autonomous collective space*" see A. Soro, *Democrazia*, cit., p. 22.

[314]Whereas 13.

[315]Whereas 13.

all the market operators, as a new asset on a par with capital and labour[316], but also for all the people (*recte*: mankind), seen not only as consumers, but also as persons, such an asset cannot belong to anyone, but to the entire Community.

As seen above, aid can be granted by States in "*any form whatsoever*" (Article 107, TFEU). In this second case, however, the aid does not consist of an "active" intervention (e.g., a legislative provision or an administrative measure), but of a passive behaviour (an omission, namely a legal fact or "inertia"). In other words, the aid is granted *de facto*, through a legislative or administrative omission by a Member State (or public bodies)[317], to the extent that it has not intervened to impede that a public good/commons is object of appropriation and commercialization by specific undertakings that (merely) collect such data directly from who produces them, namely a specific community, seen as a specific organization (or articulation) of States.

Such public measures, although not involving a transfer of State resources, places the undertakings to whom those measures refer to in a more favourable situation than other undertakings (in competition between each other) in the single market[318]. The selectivity character of the State/public measure in our case consists of a non-intervention by the State, with the consequence of putting certain undertakings (for instance, Amazon, Google, etc.) or productions in condition of accruing exclusive advantages in detriment to other undertakings or sectors of activity[319]. It seems clear that undertakings willing to enter a specific

[316]See CUKIER, *Data, data everywhere*, in *The Economist*, London, 25 February 2010, available at http://www.economist.com/node/15557443; E. Brynjolfsson, L. M. Hitt, H. H. Kim, *Strength in Numbers*, cit.

[317]Advantages and benefits granted to undertakings (recipients) stemming from the aid may be of whatsoever form (Article 107, par. 1, TFEU. See G. Strozzi, *Gli aiuti di Stato*, cit., p. 385 and case-law cited therein). Therefore, the aid has an atypical character, with the consequence that it cannot be excluded that it may be generated by a legal fact (like a legislative or an administrative omission) by legislators or public powers.

[318]See, *ex multis*, ECJ, judgment 15 March 1994, C-387/92, *Banco Exterior de España*, par. 14.

[319]See ECJ, judgment 22 November 2001, C-53/00, *Ferring*, para. 19 ff., in which the French State had imposed a duty on undertakings involved in the retail distribution of pharmaceuticals, but not in those involved in the wholesale trade. Both groups of undertakings stood in direct competition with each other. The Court saw the exemption of wholesalers from the duty as preferential treatment that might involve State aid. On this case and on other cases in which the Court ruled similarly see M. Heidenhain, *The Concept of State Aid*, cit., 32.

market downstream in which (raw) data or big data collected upstream by specific undertakings are required to offer services or to produce goods will not be able to properly compete with those companies[320], which in turn will strengthen their position on the relevant market[321]. In this respect, as has been clarified by the ECJ case-law, the free advantage granted to certain undertakings or the production of certain goods by definition alters the condition of competition, as it strengthens the position of an undertaking compared with other undertakings competing in intra-UE trade.

Moreover, an aid may be deemed as incompatible with the single market if it makes more difficult for new undertakings to enter the market[322]. To better understand this conclusion, we can take the example of digital markets depending heavily on big data: targeting and positioning of online advertisements.

If someone can argue that both markets may be entered without possession of big data, it might nonetheless be doubtful how successful such entry might be since the possibility of having more advanced algorithms benefitting from machine learning on vast amounts of data (in case of the online search market) and/or better ways of how to target and position online advertising (in case of the online advertising market) seems to be crucial for the entrants to establish on these markets[323].

As for the "*intervention by the State or through State resources*" requirement, in our case, the aid stems from a community (e.g., State-community). As has been pointed out by the ECJ, from the wording of Article 107, aid needs not necessarily be financed from State resources to be classified as State

[320]This is the reason why the rival nature of big data allows to apply the EFD for data and big data, as mentioned above.
[321]We can mention as an example the "in-vehicle data": if the idea that original equipment manufacturers (OEMs) have, based on the extended vehicle concept, a monopolistic control over such data, it is clear that many independent service providers will not be able to enter or to properly compete in the markets for aftermarket and complementary services.
[322]See STROZZI, *Gli aiuti di Stato*, cit., p. 393; ECJ, judgment 10 December 1969, Joint Cases 6 and 11/69, *Commission v. France*.
[323]See KUP, MIKEŠ, *Discussion on big data*, cit., p. 395.

aid[324]. Moreover, as clarified by the Court, the prohibition contained in Article 107 covers all aids granted by a Member State or through State resources and there is no necessity to draw any distinction according to whether the aid is granted directly by the State or by public or private bodies established or appointed by it to administer the aid[325].

Moreover, as seen for the previous case, the ECJ case-law has clarified that for the purposes of establishing the existence of State aid, a sufficiently direct link must be established between, on the one hand, the advantage given to the recipient and, on the other hand, a reduction of the State budget or a sufficiently concrete economic risk of burdens on that budget[326].

Big data should be made available for all through a regulatory intervention by States. The current (missing) regulatory scenario confers on specific undertakings (collectors of data), as recipients, an advantage which leads to a reduction of the State-community budget[327]. As data at stake have an economic value, they should be made available "*at market value*"[328].

6.3. Another potential case in which the State aid legislation and case-law may be violated might be the case of EU legislative solutions aiming at not excluding, but "regulating" (e.g. through legislative or administrative measures – like authorizations, licences – issued by legislators or by public authorities/bodies or by private entities responsible for public functions, like, for instance, coordinators do in the field of airport slot allocation sector) the movement/mobility of data and big data in exchange for money or other considerations in a downstream market. Such a case may occur, for instance, when public sector bodies allow re-use of public data imposing conditions through

[324]ECJ, judgment 30 January 1985, C-290/83, *Commission v. France*, par. 14.
[325]ECJ, judgment 22 March 1977, Case 78/76, *Steinike & Weinlig*.
[326]ECJ, judgment 19 March 2013, C-399/10 P and C-401/10 P *Bouygues and Bouygues Télécom* v *Commission and Others and Commission* v *France and Others*, par. 109.
[327]On this point more in general see ECJ, judgment 16 July 2015, C-39/14, *BVVG Bodenverwertungs und verwaltungs GmbH*, par. 28.
[328]ECJ, judgment 16 July 2015, C-39/14, *BVVG Bodenverwertungs und verwaltungs GmbH*, par. 29.

a licence[329], but without any charges[330] and a secondary trading in the downstream market operates[331].

Another case concerns the regulated regime envisaged by Regulation 715/2007 concerning specific "in-vehicle data"[332]. Such Regulation allows manufacturers to charge fees for access to vehicle repair and maintenance information (Article 7). The application of charges may be deemed as in breach of Article 107 of TFEU, as it seems that all the requirements to qualify this as a State aid – as above indicated – are met. The intervention of the State or other public institution here is given by Articles 6 and 7 of Regulation 715/2007, that is such to put (at least potentially) certain undertakings (car manufacturers) in condition of accruing exclusive advantages in detriment to other undertakings (independent service providers).

The selectivity character of public intervention is in our case given by the fact that car manufacturers are in a privileged position as they can control the automotive aftermarkets and adjacent services. By recognizing to car manufacturers the right to charge fees for access to data that are generated by vehicles and not by manufacturers, the EU legislation ends up putting collectors of raw data (car manufacturers) in a privileged position leading (at least potentially) to less competition, less consumer choice and less innovation[333].

However, in some cases, in other regulated regimes, the EU case-law has excluded the existence of a State aid – and therefore the application of Article 107, par. 1, TFEU – for using a public infrastructure (in particular, bus lanes on public roads) based on a right of privileged access granted by public authorities (Transport for London or "TfL") to specific authorised vehicles (London taxis or "Black Cabs"), while prohibiting other vehicles (private hire vehicles or "minicabs")

[329]Article 8, Directive 2003/98.
[330]Article 6, Directive 2003/98.
[331]On these cases with regards to airport slot allocation see GASPARI, *Il diritto della concorrenza nel trasporto aereo. La* slot allocation, Turin, 2012, pp. 378 ff.; GASPARI, *Slot mobility in the European Community*, in *Annals of Air & Space Law*, Vol. XXXVI, 2011, pp. 535 ff.
[332]On this sector-specific data access regime see J. Hoffmann, G. Johannsen, *EU-Merger Control & Big Data*, cit., pp. 48-49.
[333]See KERBER, *Data Governance in Connected Cars*, cit., p. 311.

from using those lanes[334].

Penalties[335] – deemed by the applicant as foregone revenues by public authorities which they would have received in the absence of the bus lanes policy – that minicabs had to pay for having used such infrastructures were considered by the Court as not constituting a selective advantage[336].

As regards the condition relating to the commitment of State resources, according to the Court, "*the fact that Black Cabs are not obliged to pay fines because of their use of bus lanes does not involve additional burdens on the public authorities which might entail a commitment of State resources*"[337].

The Court based its decision, inter alia, on the principle of non-contradiction of the UK legal system. In particular, the Court stated that "*it is inherent in any legal system that conduct previously defined as being lawful and permitted does not expose individuals to penalties*"[338]. This is one of the key points of the proceedings, because it is the administrative measure (licence) itself that determines the discrimination between the two market operators[339] and, thereby, a barrier to enter the market and a distortion of competition. Therefore, the Court's argument that the use of local routes and lanes is free of charge appears not to be relevant[340], because that use allows specific market operators to commercially operate the infrastructure at stake.

In this respect, it must be noted that, as the Court has held in its previous case-law, the financing made by the public authorities to the construction of infrastructure which is to be commercially operated may involve the grant of State

[334]See ECJ, judgment 14 January 2015, C-518/13, *Eventech*.
[335]From the end of July 2011 to early December 2012, TfL and various London Boroughs imposed on Eventech fines to an amount exceeding 180 000 Pounds Sterling (GBP), or approximately EUR 215 166, for having used London bus lanes: ECJ, judgment 14 January 2015, C-518/13, *Eventech*, par. 23.
[336] ECJ, judgment 14 January 2015, C-518/13, *Eventech*, para. 44 and 53 ff.
[337]See ECJ, judgment 14 January 2015, C-518/13, *Eventech*, par. 41.
[338]ECJ, judgment 14 January 2015, C-518/13, *Eventech*, par. 36.
[339]ECJ, judgment 14 January 2015, C-518/13, *Eventech*, para. 37 and 40.
[340]ECJ, judgment 14 January 2015, C-518/13, *Eventech*, par. 43.

aid[341]. It seems that the policy implemented by TfL is selective in that it confers an advantage on Black Cabs over their competitors, namely minicabs, as, on one side, Black Cabs are provided with preferential access to a State asset and, on the other side, the bus lanes policy exempts Black Cabs from liability to pay fines or other penalties for the use of those lanes[342].

Nonetheless, the Court upheld the questionable view that in this case there are two different relevant markets and Black Cabs and minicabs are not in a comparable factual and legal situation[343], with the consequence that, also in the light of the above-mentioned principle of non-contradiction, Article 107 is not applicable in this case.

6.4. In all these cases (the first two cases above analysed and the cases falling within regulated regimes), big data may be deemed as public goods, created for free or by using public resources or through the intervention (or omissions) of States/public bodies, or they may be considered as a digital commons, we shall exclude that a *primary trading* exists, like it occurs in other sectors.

For instance, in the air transport sector, airport slots are allocated through EU Regulation 95/93 by a coordinator, and air carriers (namely, the flag carries in the pre-liberalization period) – which obtained them in the light of the so-called "grandfather's rule" – did not have to "buy" them when the liberalization policies were implemented[344].

Under the present legal regime[345], there is no buy-sell slot rule and the selling and buying or exchange of slots for money or other considerations is

[341]ECJ, judgment 19 December 2012, C-288/11 P, *Mitteldeutsche Flughafen and Flughafen Leipzig-Halle v. Commission* para. 43 and 44.
[342]Those are the two pleas in law and main arguments relied on by Eventech: ECJ, judgment 14 January 2015, C-518/13, *Eventech*, para. 29 and 35.
[343]ECJ, judgment 14 January 2015, C-518/13, *Eventech*, par. 61.
[344]See GASPARI, *Il diritto della concorrenza nel trasporto aereo*, cit., p. 449.
[345]Council Regulation (EEC) No. 95/93 of 18 January 1993 *on common rules for the allocation of slots at Community airports*, in *O.J. 22 January 1993 (L 014).*

forbidden by the EU legal system[346]. In other words, there is no legitimate market for slots[347].

As has been properly pointed out[348], if a new regulation allows for secondary trading[349], the incumbent airlines[350] will sell something that it received for free from its government. Within such a new regulation, allowing for secondary trading, incumbent airlines would clearly benefit from State aid.

The same rationale can be found in another case, concerning Article 1, let. b), Council Regulation (EC) No. 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty[351], discussed within the liberalization of the telecommunication sector.

Another (partly) similar case is given by the mobility of biobanks. For instance, in the SharDna case, in which a Sardinian non-profit consortium company (SharDna S.p.a.) collected, for research reasons, a biobank. With the bankruptcy and liquidation of such company, its assets (which include the biobank) were transferred for Euros 258.000 to a UK London-based biotech company (Tiziana Life Science PLC), a private profit company that develops and studies drugs and therapies for treating oncological diseases. The data (biobank) were donated by data subjects to SharDna for research reasons, and the research project was partly funded by public resources. It seems therefore clear that, apart

[346]See GASPARI, *Slot mobility in the European Community*, cit., pp. 535 ff.

[347]However, a "black market" (or "grey market") in airport slots (in the form of a secondary trading) is (unlawfully) in operation at UK airports, as the EU Commission recognised in a 2008 Communication (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *on the application of Regulation (EEC) No 95/93 on common rules for the allocation of slots at Community airports, as amended*, COM(2008) 227 final, Brussels, 30 April 2008), and more recently confirmed (see D. O'Connell, J. Collingridge, *Oman breaks Heathrow record with deal for slots*, 14 February 2016, www.thesundaytimes.co.uk). On these aspects see F. Gaspari, *Recent developments in the air transport regulatory system. Enhancing competition and cooperation: does the air transport need an international competition network?*, Rome, 2016, p. 51.

[348]NERA Economic Consulting, *Study to assess the effects of different slot allocation schemes. Final Report*, London, January 2004, p. 267.

[349]Proposal for a Regulation of the European Parliament and of the Council *on common rules for the allocation of slots at European Union airports*, COM(2011) 827 final, 1 December 2011. The Proposal aims, inter alia, to introduce the possibility for secondary trading in slots.

[350]Airlines that benefit from the "grandfather rights" regime.

[351]Repealed by Council Regulation (EU) 2015/1589 of 13 July 2015 laying down detailed rules for the application of Article 108 of the Treaty on the Functioning of the European Union.

from issues related to the reach of data subjects consent, the recipient of the data (the UK company) has benefited from a selective advantage on the market, in breach of the State aid regulation[352].

In the lack of a specific regulation making provision for big data mobility in exchange for money or other considerations (*secondary trading*), their "buying" or "selling" in a downstream market may be deemed as unlawful (and hence forbidden), taking into account their legal nature (public goods or commons).

However, if a secondary trading of big data, as described above, is deemed as lawful, because, for instance, it is "covered" by a legislative provision, such a trading would be in breach of the EU State aid regulation, because there is no primary trading and the data are generated for free or through the intervention of States/public bodies or funded by public resources, inasmuch as the requirements laid down in Article 107 TFEU as interpreted by the European Court of Justice (recalled above) are met.

7. A possible alternative regulatory option *de iure condendo* may consist of granting, by Member States, special or exclusive rights to undertakings that, on a monopolistic basis (also taking into account the rival nature of big data), collect big data. Such undertakings would be entrusted with a public mandate (for instance, through a universal service) *ex* Article 106 TFEU, inasmuch as they collect data that do not belong to them.

It is worth noting that the European model of economic integration is not based on an entirely deregulatory policy, and the Treaty allows Member States an ample margin for pursuing their legitimate policies. Competition rules are hence subject to the general justification for services of general economic interests found in Article 106[353].

[352]A similar situation is given by the bankruptcy proceedings of airlines, in which airport slots have been considered – both in US and in EU – as an asset having a market value. See, for instance, the McClain case (in the US) and the Alitalia case (in the EU). On those cases see F. Gaspari, *Il diritto della concorrenza nel trasporto aereo*, cit., pp. 179 ff.
[353]See BIONDI, *Some Reflections*, cit., pp. 1436-1437.

More in details, Article 106, par. 1, provides that in the case of public undertakings to which Member States grant special or exclusive rights, they are neither to enact nor to maintain in force any measure contrary to the rules contained in the Treaty with regard to competition. However, according to the ECJ case-law, that provision must be read in conjunction with Article 106, par. 2, which provides that undertakings entrusted with the operation of services of general economic interest are to be subject to the rules on competition in so far as the application of such rules does not obstruct the performance, in law or in fact, of the particular tasks assigned to them[354].

Member States, for securing the universal big data service, which entails the duty to collect and make such data available irrespective of the profitability of the sector being served[355], may confer on the relevant undertakings exclusive rights. These exclusive rights may hinder the application of the rules of the Treaty on competition in so far as restrictions on competition, or even the exclusion of all competition, by other economic operators are necessary to ensure the performance of the particular tasks assigned to the undertakings possessed of the exclusive rights[356].

Given that the activities carried out by the undertakings at stake have a cost and should be performed in conditions of economic equilibrium, they may offset less profitable sectors against the profitable sectors and apply charges to remunerate that activity[357]. In this respect, as noted by the ECJ, it may prove necessary to permit the undertaking entrusted with the task, in the general interest, of operating the universal service to offset profitable sectors against less profitable sectors[358]. In addition, it may be necessary to require suppliers of the service at stake (namely, economic operators in downstream markets) not forming part of the universal service to contribute to the financing of the universal

[354]ECJ, judgment 19 May 1993, C-320/91, *Corbeau*, par. 13; ECJ, judgment 17 May 2001, C-340/99, *TNT Traco*, para. 51 ff.
[355]ECJ, judgment 17 May 2001, C-340/99, *TNT Traco*, par. 53.
[356]ECJ, judgment 19 May 1993, C-320/91, *Corbeau*, par. 14.
[357]ECJ, judgment 19 May 1993, C-320/91, *Corbeau*, par. 17.
[358]ECJ, judgment 19 May 1993, C-320/91, *Corbeau*, par. 17.

service so enabling the undertaking entrusted with that task to perform it in conditions of economic stability[359].

Moreover, the undertaking responsible for the universal big data service must also be required to pay the charges[360], when itself operates in a downstream market not forming part of that service. It must also ensure that neither all nor part of the costs of its service are subsidised by the universal service, lest charges for the universal service and, consequently, the potential losses of that service be improperly increased[361].

Granting undertakings of special or exclusive rights in the sense indicated above is also in line with Protocol 26 to the Treaties[362], according to which the shared values of the Union in respect of services of general economic interest within the meaning of Article 14 of TFEU include, inter alia, "a high level of quality, safety and affordability, equal treatment and the promotion of universal access and of user rights" (Article 1).

Undertakings entrusted with the operation of services of general economic interest carry out a dual function: one linked to the market and therefore to the rules on competition; the other one linked, instead, to meet the primary needs of a Country, and therefore it does not (necessarily) follow the market rules and rationale[363].

8. Among the different regulatory interventions available in the field of big data (mainly two: protection of competition and regulatory measures)[364], the latter is deemed as necessary.

Beyond regulatory options based on the "public view" of big data aiming,

[359]ECJ, judgment 17 May 2001, C-340/99, *TNT Traco*, par. 55.
[360]ECJ, judgment 17 May 2001, C-340/99, *TNT Traco*, par. 58.
[361]ECJ, judgment 17 May 2001, C-340/99, *TNT Traco*, par. 58. On the accounting separation principle see G. Tesauro, *Diritto dell'Unione europea*, cit., p. 823.
[362]On services of general interest.
[363]See TESAURO, *Diritto dell'Unione europea*, cit., p. 796. See also G. Strozzi, *Gli aiuti di Stato*, cit., p. 372.
[364]See BUZZACCHI, *La politica europea per i big data e la logica del single market: prospettive di maggiore concorrenza?*, in F. Di Porto (Ed.), *Big data e concorrenza*, cit., pp. 153, esp. pp. 177-179.

inter alia, at qualifying such data as a universal service, and therefore falling within the scope of Article 106 of TFEU, as well as at developing the notion of "public interest data" at European level (taking the French legislation as a model), we believe that to strengthen regulation in the field of data EU legal system it may be required to create *ad hoc* entities/agencies or to extend the mandate of existing ones, like the European Data Protection Board (EDPB)[365], which is already tasked to promote cooperation between the supervisory authorities and to maintain a publicly accessible electronic register *ex* Article 70, par. 1, let. y), Regulation 679.

In some recent initiatives, the EU Commission[366] proposes to extend the mandate of ENISA[367], which "*would become the information hub of the EU*"[368]. Within this scenario, the role of ENISA could cover also some regulatory needs regarding information and data mobility, acting as a centralized Agency monitoring and managing data mobility[369], if and where required (namely, according to the legal nature of big data and the relative view which one decides to adhere to, as summarized above).

The Agency – in this view – should work closely with the EU Commission[370],

[365]Established by Regulation 679/2016 (Articles 68 ff.), the EDPB is an independent European body, which contributes to the consistent application of data protection rules throughout the European Union, and promotes cooperation between the EU's data protection authorities. See https://edpb.europa.eu/about-edpb/about-edpb_en.

[366]Proposal for a regulation of the European Parliament and of the Council *on ENISA, the "EU Cybersecurity Agency", and repealing Regulation (EU) 526/2013, and on Information and Communication Technology cybersecurity certification ("Cybersecurity Act")*, COM(2017) 477 final, 13 September 2017.

[367]See Directive (EU) 2016/1148 of the European Parliament and of the Council concerning measures for a high common level of security of network and information systems across the Union (NIS Directive). ENISA was set up in 2004 (Regulation (EC) 460/2004 of the European Parliament and of the Council of 10 March 2004 establishing the European Network and Information Security Agency) to contribute to the overall goal of ensuring a high level of network and information security within the EU. In 2013, Regulation (EU) 526/2013 established the new mandate of the Agency for a period of seven years, until 2020. The Agency has its offices in Greece, notably the administrative seat in Heraklion (Crete) and the core operations in Athens.

[368]Proposal for a regulation of the European Parliament and of the Council *on ENISA, the "EU Cybersecurity Agency",* cit. p. 7.

[369]In this respect, it may be established a public register taking as a model the register *ex* Article 49, par. 1, let. g) and whereas 111 of Regulation 679/2016.

[370]Also in relation to the implementing powers conferred upon the Commission by the Network and Information Security Directive (2016/1148) in order to address security requirements: see Proposal for a regulation of the European Parliament and of the Council *on a framework for the free flow of non-personal data in the European Union*, COM(2017) 495 final, p. 5.

as well as with the *Single points of contact*[371], the EDPS, the EDPB and by the relevant domestic authorities (e.g. competition, consumer and data protection bodies), the relevant European networks (European Competition Network (ECN), the Consumer Protection Cooperation (*CPC*) *Network*) as well as another *ad hoc* regulation yet to be proposed. In this latter case, such a new regulation should make provision for not only non-personal data mobility, but also specific coordination provisions/mechanisms with personal data mobility (especially Regulation 679/2016).

However, in April 2019, Regulation 2019/881[372] has reviewed and extended the mandate of ENISA[373], whose role remains, nonetheless, within the scope of cybersecurity. As a matter of fact, whereas 17 of Regulation 881, after having clarified that "*ENISA as established by this Regulation should succeed ENISA as established by Regulation (EU) No 526/2013*"[374], clearly states that "*ENISA should carry out the tasks conferred on it by this Regulation and other legal acts of the Union in the field of cybersecurity*", by providing, inter alia, "*advice and expertise and by acting as a Union centre of information and knowledge*"[375].

Another possible option is to establish a new "network", that may be referred to as the European Data Network (EDN)[376], which all authorities and

[371]That should be designated by each Member State with regard to the application of Regulation 1807/2018 on the free flow of non-personal data: see Article 7 of such Regulation. Article 8 of the Proposal *on a framework for the free flow of non-personal data in the European Union* (COM(2017) 495 final) envisaged also the establishment of the *Free Flow of Data Committee*, but this provision was not included in the final version of Regulation 1807.

[372]Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 *on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act)*. According to Article 68, par. 1 of Regulation 881, "*Regulation (EU) No 526/2013 is repealed with effect from 27 June 2019*", in O.J. 7 June 2019 (L 151/15).

[373]According to Article 68, par. 4 of Regulation 881, "*ENISA shall be established for an indefinite period as of 27 June 2019*". See also whereas 16 and 17 of such Regulation.

[374]According to Article 68, par. 3 of Regulation 881, "*ENISA as established by this Regulation shall succeed ENISA as established by Regulation (EU) No 526/2013 as regards all ownership, agreements, legal obligations, employment contracts, financial commitments and liabilities. All decisions of the Management Board and the Executive Board adopted in accordance with Regulation (EU) No 526/2013 shall remain valid, provided that they comply with this Regulation*".

[375]The mandate, the tasks and the objectives of ENISA as established by Regulation 2019/881 are indicated in Title II, Chapters I and II of such Regulation.

[376]Such network differs from the working group called *ECN Digital Markets*, already established within the ECN, because it is formed only by antitrust authorities and has the task to describe the

agencies involved in the field of data would take part to, primarily for administrative cooperation purposes, based on the principle of sincere cooperation (Article 4 of TEU)[377]. This principle of loyal collaboration requires a "*duty of genuine cooperation and assistance which Member States owe the Community and which finds expression in the obligation laid down in Article [4] of the Treaty to facilitate the achievement of the Community's tasks and to refrain from jeopardizing the attainment of the objectives of the Treaty*"[378].

An initiative of this kind within the logic of an enhanced cooperation in the field of big data has been put forward by the EDPS, with the aim to set up an international voluntary network[379].

More in details, the EDPS proposed the establishment of a Digital Clearinghouse to bring together agencies from the areas of competition, consumer and data protection willing to share information and discuss how best to enforce rules in the interests of the individual[380].

Such an initiative has been upheld by the European Parliament, which in March 2017 adopted a Resolution[381] which, inter alia, encourages a "*closer cooperation and coherence between different regulators and supervisory competition, consumer protection and data protection authorities at national and EU level*" in order to "*ensure a consistent approach to and understanding of the implications of big data for fundamental rights*"[382]. According to the EU Parliament, "*the establishment and further development of the Digital Clearing House as a voluntary network of enforcement bodies can contribute to enhancing*

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ongoing activities carried out by those authorities with regards to the application of competition law to digital operators. See the joint report by AGCM, AGCOM, Garante Privacy, *Big Data*, cit.

[377]On this principle see A. Biondi, *State Aid, government spending and the virtue of loyalty*, cit., par. 2. On the necessity that "*Europe's competition enforcers need to work together on big data*" see VESTAGER, Speech on *Big data and competition*, cit.

[378]ECJ, judgment 15 January 1986, C-44/84, *Hurd v. Jones*, par. 45.

[379]Enhanced international cooperation in regulating big data is also recommended by three Italian authorities (AGCM, AGCOM, Garante Privacy), in their joint report on Big Data, released in July 2019, cit.

[380]See EDPS, *Big Data & Digital Clearinghouse*, available at https://edps.europa.eu/data-protection/our-work/subjects/big-data-data-mining_en.

[381]European Parliament Resolution of 14 March 2017 *on fundamental rights implications of big data*, cit.

[382]Whereas "R".

their work and their respective enforcement activities and can help deepen the synergies and the safeguarding of the rights and interests of individuals"[383].

The 2017 International Conference of Privacy and Data Protection Commissioners also endorsed the Clearinghouse in its Resolution to calling for greater cooperation between data protection and consumer authorities[384].

So far, the Digital Clearinghouse met four times. The first meeting was held in Brussels on 29 May 2017[385]. In the Digital Clearinghouse meeting held in December 2018, authorities debated, inter alia, the deceptive framing of a free offer as unfair practice, the opportunity to adopt structural remedies able to provoke a change in the business models, asymmetric regulation of access data and its impact on competitive dynamics, essential facility theory applied to the specificities of data resources and misuse of the data protection framework to hinder investigations by national authorities including competition agencies[386].

One of the main challenges that the Digital Clearinghouse is likely to face is the possible overlapping in terms of tasks. Therefore, it will be important that its exercise in no way interferes with the ongoing work taking place and planned by the existing networks (the CPC and the ECN networks, as well as the EDPB).

The main difference between the Digital Clearinghouse and the proposed EDN is that the former has an international vocation while the latter has a regional (i.e. European Union) dimension. But just because they are different, nothing excludes that they might cooperate between each other, within the Digital Clearinghouse.

[383]See again whereas "R".
[384]EDPS, *Big Data & Digital Clearinghouse*, cit.
[385]The second meeting of the Digital Clearinghouse was held on 27 November 2017 and focused on the four areas of common concern identified in the first meeting, namely fake news and voter manipulation, the emergence of attention markets and opacity of algorithms which determine how personal data are collected and used. The third meeting took place on 21 June 2018, the fourth meeting took place on 10 December 2018, while the fifth meeting took place on 5 June 2019.
[386]See the statement from the fourth Digital Clearinghouse meeting available at https://edps. europa.eu/data- protection/our-work/subjects/big-data-digital-clearinghouse_en.

ENGAGING PRIVATE ACTORS IN THE PRODUCTION OF EU FINANCIAL REGULATION: THE CITIZEN'S PERSPECTIVE

Andrea Minto *

ABSTRACT: *This paper considers the emergence and the need for further development of administrative law mechanisms to promote greater accountability in decision-making and rule-making in the rapidly proliferating variety of regulatory structures and modes in EU financial law. These include formal international organizations, informal intergovernmental networks of domestic regulatory officials, domestic authorities implementing global regulatory law, hybrid public-private and purely private regulatory regimes. The main contribution of this paper is two-fold. First, it aims to explain the growing engagement and role of non-government actors in the exercise of administrative authority; and second, it seeks to explore this trend vis-à-vis the citizen's perspective. In so doing, the paper explains advantages of a dynamic cooperation between public (governments, regulators) and private (regulated) parties in light of the "new governance" theory, which seems to lend itself well to examining how the protection of the public interest can be best ensured by means of private regulation and enforcement.*

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This paper develops the presentation given at the RENFORCE Annual Conference "Regulation and Enforcement in the EU: Challenges, Trends and Prospects", Utrecht University, 22nd, 23rd November 2018. This will also be a chapter of the forthcoming Book "Private Regulation and Enforcement in the EU. Finding the Right Balance from a Citizen's Perspective".

banking industry? – 6. Financial regulation and private actors in a citizen's perspective: an analysis through the lens of the "new governance theory"- 7. Concluding remarks.

1. Financial regulators face chronic and severe asymmetries of information and expertise vis-à-vis regulated actors. These asymmetries are the products of, inter alia, *i)* high-powered economic incentives unique to regulated actors to invest in the acquisition of information and expertise, and *ii)* incomplete and often less than timely access by regulators to market and company-specific information.[1]

Since the effectiveness of financial regulation depends on the ability to promptly intervene with the appropriate measures, this complexity paradigm, which entails a dynamic and proliferating risk profile, presents a fundamental dilemma for regulators. In response to this dilemma, in recent years financial regulators have sought to incorporate private regulation as a means of bridging the informational gap between the actual risk profile of regulated firms and the regulators charged with minimizing the social costs incurred if those risks materialize.

New forms of collaborative and polycentric governance in fact emerged to respond better to sophisticated market failures, opening up to amplified participation and power-sharing between "public" and "private" actors and providing a new composite regulatory paradigm.

Nonetheless, such cooperation between "public" and "private" raises issues pertaining to the legitimacy of regulatory power and accountability. This is particularly so in relation to third parties who might be affected by the regulatory process (financial users, depositors, consumers and citizens). A regulatory process based on the contribution of the regulated entities (financial institutions) may indeed lack legitimacy and consensus on the part of actors whose conduct might be af-

[1]See BALDWIN and CAVE, *Understanding Regulation: Theory, Strategy and Practice* (Oxford University Press, Oxford, 1999) 126; MAHONEY, 'The Exchange as Regulator' (1997), *83 Va. L. Rev*. 1543, and AWREY, *'The Dynamics of OTC Derivatives Regulation: Bridging the Public-Private Divide'* (2010), 11:2 European Bus. Org. L. Rev.) 155.

fected by the regulatory activity.

Against such a backdrop, this paper has two primary objectives: first, it aims to explain the growing engagement and role of non-government actors in the exercise of administrative authority; and second, it seeks to explore this trend vis-à-vis the citizen's perspective. In so doing, the paper explains advantages of a dynamic cooperation between public (governments, regulators) and private (regulated) parties in light of the "new governance" theory. In terms of methodology, such an approach in fact lends itself well to examining how the protection of the public interest can be best ensured by means of private regulation and enforcement. The paper proceeds as follow: section 2 starts with charting the post-crisis institutional architecture of banking regulation and supervision in Europe and the main features of the new composite regulatory paradigm. Section 3 starts off by briefly describing the general features of the market failures with which financial regulators must cope. Then, it explains why and how innovation and modern financial intermediation have changed the style and design of regulation. It highlights the composite legal order and the different actors involved in law-making. Section 4 elaborates further upon the composite legal order of financial markets by fleshing out the different legal sources and the actors involved in the law-making process. It approaches specifically the legal arrangement and foundation, examining the exact nature of the private/public relationship. Section 5 then scrutinizes the main tenets of "new governance" scholarship and why it is particularly informative in describing the current multi-level and composite institutional architecture of banking supervision and regulation in the EU. Section 6 contends with emerging implications from a citizen's perspective. It utilizes the new governance theory as a basis for explaining the increased involvement of private actors. This paper ends with a forward-looking conclusion in section 7. It envisages that greater interaction between regulators, supervisors and regulated entities in banking and finance is deemed to have a number of advantages over conventional "top-

down" regulation.

2. The creation of a single financial market in Europe has, for more than half a century, had high priority on the agenda of what is now the European Union. The first initiative was the Segré Report of 1966. Initially, financial markets in Europe were characterised by a national orientation and approach including the use of national barriers directly or indirectly to protect national markets and market participants in each Member State. Facilitated amongst other things by a technological revolution in the financial services industry, investments and trade nowadays are global, worldwide and no longer take national boundaries into account.

In the same period, regulating financial markets and market participants has been problematic and a challenge for the European regulators. Existing laws and new regulatory initiatives have a tendency to lag behind the development in the market and have difficulties keeping up with the pace and creativity of the market and with its participants.

To overcome or at least to limit the gap between the actual market situation and the regulation, regulators have over time applied different law-making methods and instruments. In Europe, in fact, the institutional architecture of banking regulation and supervision has undergone sweeping changes in recent years.[2] The 2007-2008 great financial crisis (GFC) and the detrimental economic consequences that came with it unleashed an extraordinary torrent of EU institutional and regulatory reforms. Underlying much of this reform surge is a wide array of forces that illustrate how market practices, business and consumption patterns, attitudes and behaviours shook up the former institutional setting over time.

The first stage of the GFC was in fact driven by a number of factors: heterogeneous supervisory practices; global macroeconomic imbalances; waves of financial innovation; and disconnection between macro- and micro-prudential supervi-

[2]See for all, the seminal contribution by C Goodhart et al, *Financial Regulation: Why, How and Where Now?* (New York, Routledge, 1998).

sion. This revealed the fragility of a single market for banking and financial services built upon the pillars of "minimum harmonization and mutual recognition".[3]

Such pillars sought to stimulate cross-border operations by facilitating the establishment of branches in other EU Member States, "passporting" home EU Member State authorisations and harmonising technical standards.[4] In the 1980s and early 1990s, the EU policy agenda was in fact projected to promote trust between EU Member States by underpinning the process of 'passporting' home state authorisations through minimum administrative prudential regulation and supervision for banks and investment businesses seeking to operate across borders. This architecture, however, proved outdated for sustaining the critical dimension and interconnections reached by the single market in the new millennium and somehow turned out to have exacerbated the detrimental effects of the crisis in Europe.[5]

The regulatory heterogeneity and fragmentation arising from such construction constituted a commonly identified contributor to crisis conditions.[6] Not only had it opened up the use of regulatory arbitrage practices in the first place, but, once the crisis hit, it prevented policy-makers and supervisors alike from taking any appropriate action to deal with a highly intertwined and interconnected

[3]See TEXEIRA, *Europeanising prudential banking supervision. Legal Foundations and Implications for European Integration*. in J.E. Fossum and A.J. Menéndez (eds.), *The European Union in crises or the European Union as crises*, *Arena Report Series*, 2014, 527-583, 533 for a more articulate description of the various stages of the integration process and the different institutional drivers.

[4]In accordance with the principle of single authorisation, the decision to issue an authorisation which is valid for the entire EU is the sole responsibility of the competent authorities of the home Member State. A financial institution may then provide the services, or perform the activities, for which it has been authorised, throughout the Single Market, either through the establishment of a branch or the free provision of services.

[5]Indeed, the unheard warning that had been given ahead of the economic crisis by Tommaso Padoa-Schioppa on the inadequacy of the minimum harmonization principle was eventually learned the hard way: a long lasting integration of markets and a single monetary policy cannot be achieved while keeping regulation and supervision at national level (the inconsistent triad): PADOA-SCHIOPPA, *How to deal with emerging pan-European financial institutions?*, 2004, speech at the Conference on Supervisory Convergence organized by Dutch Financial Minister, The Hague, available at *https://www.ecb.europa.eu/press/key/date/2004/html/sp041103.en.html*.

[6]See MOLONEY, 'EU Financial Market Regulation after the Global Financial Crisis: More Europe or More Risks' (2010) *Common Market Law Review* 47, 1317.

market.

As pointed out in the Larosière Report, when the crisis unfolded, it emerged that the European Union's regulatory and supervisory framework was "fragmented along national lines despite the substantial progress achieved in financial market integration and the increased importance of cross border entities".[7] This in fact led up to the second phase of the crisis. The vicious spiral between banking crisis and sovereign debts, culminating in some infamous bail-outs,[8] showed the lack of an appropriate financial regulatory and supervisory architecture to keep up with modern market dynamics. The strong nexus between the credit risks of financial sectors and their sovereign states was possibly the very push needed for creating the European banking union and for equipping supervisors with a harmonized set of tools to manage a bank crisis.[9]

To overcome these deficiencies and to foster regulatory convergence beyond minimum harmonisation, the EU produced an overhaul of the institutional structure of the European financial sector. As is well known, the institutional architecture changed significantly in response to the financial crisis and involved empowering three new EU-level agencies (European Banking Authority; European Securities and Markets Authority, European Insurance and Occupational Pensions Authority) with sectorial regulatory tasks and the creation of *the* European Systemic Risk Board (ESRB). In addition, the EU sovereign debt crisis gave impetus to the creation of the European Banking Union which sits on the three pillars of the Single Supervisory Mechanism, the Single Resolution Mechanism, and the European Deposit Insurance Scheme.[10]

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[7]See, The High-Level Group on Financial Supervision, Chaired by Jaques de Larosière, Brussels, 25 February 2009.

[8]For a study on the mechanisms through which sovereign and bank problems feed into each other, see e.g.: BALTEANU and ERCE 'Bank Crises and Sovereign Defaults: Exploring the Links' (2014) *Banco de Espana Working Paper* No. 1414.

[9]European Parliament, *Vicious circles. The interplay between Europe's financial and sovereign debt crises*, Policy Briefing, June 2016.

[10]See, e.g.: BART, 'Bail in Mechanisms in the Bank Recovery and Resolution Directive' (2014). Available at SSRN: https://ssrn.com/abstract=2511886 or http://dx.doi.org/10.2139/ssrn.2511886;

Despite article 127.6 TFEU being the legal basis for the Single Supervisory Mechanism, article 1 SSM Regulation[11] significantly and overtly emphasises that the ECB has been endowed with the "specific tasks concerning policies relating to the prudential supervision of credit institutions, with a view to contributing to the *safety and soundness of credit institutions and the stability of the financial system*", while ensuring the creation of a level playing field (i.e. having "full regard and duty of care for the unity and integrity of the internal market based on equal treatment of credit institutions with a view to preventing regulatory arbitrage").

Such rapid expansion of the institutional infrastructure brought about new actors, powers and tools. Yet, a much more profound process of change started off along the way, affecting in certain aspects a new governance regulatory technique. Not only had the institutional design developed, but the industry itself – as a nexus of parties – had in turn confronted a structural change,[12] especially in the way regulators, supervisors, financial institutions and end consumers now interact. The multilevel and composite architecture is thus accompanied – and supported – by a new composite regulatory paradigm, or legal order, which is based upon a wide range of regulatory strategies, where "external" regulation and "internal" regulation (i.e. regulation produced and enforced from the outside and from the inside of regulated entities, respectively) co-exist.

Traditional regulatory approaches – spanning the continuum of the rules-based/principles- based approach – have been reshaped by increasing involvement of non-state actors. Systems of government, aimed at delivering greater efficiency and more responsive and flexible public services, brought about innova-

VEERLE 'Deposit Guarantee Schemes in Europe: Is the Banking Union in Need of a Third Pillar?' (2015) *European Company and Financial Law Review* No. 3; G Christos, 'Institutional and Legal Aspects of the European Banking Union: Status Quo and the Way Forward' (2017). Available at SSRN: https://ssrn.com/abstract=3093830 or http://dx.doi.org/10.2139/ssrn.3093830

[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 OJ L 287/63

[12]What Lawrence Lessig referred to as "architecture" – the code, protocols, platforms and structures that determine how firms, consumers and policy- and law-makers interact (see L Lessig, *Code*, 2006, New York, 122).

tions in the organizational structures. In fact, financial regulation is coupled with rule-making delegation ("delegification") to both administrative bodies (supervisors) and private actors (regulated entities, associations and other standard setters). This generally means that legislation is used in principle only to set the outline through general policy principles which will then be implemented and supplemented by administrative regulation and self-regulation respectively.

From a governance perspective, this reflects a paradigm whereby regulatory convergence is achieved by involving parties which are better positioned than politicians and regulators, both because of their superior expertise and also greater and more timely access to company-specific and market information. This Chapter contends that new governance scholarship helps in getting a better understanding of the incorporation of internal private regulations into supervisory public planning.

3. The crisis has caused the market's ability to address severe externalities, especially those stemming from bail-outs and systemic turmoil, to be deeply questioned. EU financial regulation is now routinely discussed in terms of incentives, asymmetries of information, multiple policy options, market-based instruments, quantification of benefits and costs, red-tape alerts and cost-effectiveness. In the aftermath of the crisis, in fact, EU policy-makers have rightly focused on potential solutions to the manifold conflicts of interest and regulatory lacunae that existed in the previous system. On the other hand, market failures that passed unnoticed before are now incorporated within the threats which regulators and supervisors have to cope with.[13]

[13]According to SNIDER, 'The Conundrum of Financial Regulation: Origins, Controversies, and Prospects' (2011) *Annual Review of Law and Social Science* 7, 121, in the age of financial liberalisation and financialisation, market-based concepts have dominated the discourse on public regulatory goals, such that regulatory goals were grounded on notions of efficiency and transaction facilitation. Following the GFC, financial regulation seems to be mainly concerned with the public good of financial stability. In spite of what appeared to be individually sound and well supervised financial institutions, risks that were thought to be well diversified, and institutional infrastructures

"The design of financial regulation is thus ultimately an exercise in economics – applying the analytic tools of economics to determine the legal and regulatory framework best suited to correcting the failures of financial systems".[14] Economic scholarship explained this greater "market-failure thinking" by referring to the "public interest approach" to regulation.[15] At its simplest, it is in the (EU) public economic interest to ensure the proper functioning of the internal market (in turn, instrumental to pursuing the economic goals in the Treaties)[16] by overcoming or removing market failures. Particular features of financial markets make them especially prone to malfunction, failing thus to achieve the economically efficient outcomes which they are theoretically assumed to achieve.[17]

Market imperfections are endemic in the financial sector, due to the very factors of production that are traded and allocated between market participants: "time", "information" and "risk". Complexity of financial intermediation is thus a reflection of the conundrum of how to manage risks stemming from a great deal

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that appear to be robust, systemic risks nonetheless emerged, went undetected for some time and then created great havoc. Since then, through better analytical modelling, information gathering, identification, and monitoring as well as focus on macro-prudential policies, systemic risk has received greater focus. On the prominence of financial stability within the goals of financial regulation (along with the advent of a macro-prudential approach to safeguarding it), see, e.g., SCHWARCZ, 'Systemic Risk' (2008), *Duke Law School Legal Studies Paper No. 163*, *Georgetown Law Journal*, Vol. 97, No. 1; GREEN, PENTECOST, WEYMAN-JONES, *The Financial Crisis and the Regulation of Finance*, (Edward Elgar Publishing. 2011) 101 ff.; HANSON, KASHYAP, STEIN, 'A Macroprudential Approach to Financial Regulation (2011) *Journal of Economic Perspectives* 25(3); GALATI, MOESSNER, 'Macroprudential Policy – A Literature Review' (2011) BIS Working Paper No. 337.

[14]See ARMOUR, AWREY, DAVIES, ENRIQUES, GORDON, MAYER, PAYNE, *Principles of Financial Regulation* (Oxford, Oxford University Press, 2016) 51.

[15]See PELKMANS, 'The Economics of Single Market Regulation, Bruges European Economic Policy Briefings' (2012), n. 25, 13. For a comprehensive overview of economic theories of regulation, see e.g.: HERTOG, 'Review of Economic Theories of Regulation' *Tjalling C. Koopmans Research Institute*, Utrecht School of Economics, Utrecht University, Discussion Paper 2010, n. 18.

[16]On market and legal integration in the European Union, see Commission, *Financial Services Action Plan: Implementing the Framework for Financial Markets* (Communication) COM (1999) 232.

[17]See CIOFFI, *After the Fall: Regulatory Lessons from the Global Financial Crisis*, in D. Levi-Faur (ed), *Handbook on the Politics of Regulation, Cheltenham* (Edward Elgar, 2011) 642; I Glinavos, 'Regulation and the Role of Law in Economic Crisis' (2010) *European Business Law Review* 21, 539; J Benjamin, 'The Narratives of Financial Law' (2010) *Oxford Journal of Legal Studies*, 787.

of uncertainty.[18] The pre-eminent role in risk allocation that the financial sector carries out, accentuates in turn the manifestation of market failures: asymmetric information, moral hazard, bounded rationality and negative externalities are in fact a direct function of the properties of financial markets and of the host of contrasting interests that revolve around them. Steven L. Schwarcz argues that four types of market failures are inherent in the financial system – information failure, principal-agent failure, incentive failure and responsibility failure[19] – and shows how these market failures can eventually contribute and lead, individually or in combination, to systemic failures as the overarching economic vulnerability.[20]

Not only are market failures greater or more likely to come about in the financial sector, but the remedial intervention to cope with them is also extremely difficult to devise. The financial sector is therefore particularly inclined to market failures and non-market failures (or government failures) alike, as the costs of remedying the deficiency are often greater than the benefits.[21] Indeed, some of the regulatory strategies that were conceived as addressing and solving market failures turned out to fall short of achieving the desired outcome, or even to exacerbate the market failures.[22]

By the beginning of the twenty-first century, the advent of globalisation

[18]See MOSS, *When All Else Fails: Government as the Ultimate Risk Manager*, (Cambridge MA, Harvard University Press, 2002).

[19]See SCHWARCZ, 'Regulating Shadows: Financial Regulation and Responsibility Failure' (2013) *Washington and Lee Law Review* Rev. 70, 1781 The author explains that "responsibility failure focuses attention on the fact that the corporate reorganization provisions of bankruptcy law may protect firms, thereby motivating them to operate irresponsibly". Nevertheless, the argument goes, "the protection afforded by those provisions does not mean that a firm will in fact operate irresponsibly or that acting irresponsibly will necessarily result in harm to third parties".

[20]See SCHWARCZ, 'Controlling Financial Chaos: The Power and Limits of Law' (2012) *Wisconsin Law Review* 3, 816-839; S L Schwarcz, 'Regulating Shadow Banking', *Journal of Review of Banking & Financial Law* 31, 619-642.

[21]On the fascinating area of the goals of financial regulation, and on the translation of market failures into regulatory strategies, see e.g.: M. Andenas and I Chiu, *The Foundations and Future of Financial Regulation*, (London, Routledge, 2014) 16 ff.; J Armour et al, *Principles of Financial Regulation*, 2016, 61 ff.; L D Wall and R A Eisenbeis 'Financial regulatory structure and the resolution of conflicting goals' (2000) *Financial Modernization and Regulation*, 133-155; R Aspinwall, 'Conflicting Objectives in Financial Regulation' (1993) *Challenge* 36, 53.

[22]See TRACHTMAN, 'The International Law of Financial Crisis: Spill-overs, Subsidiarity, Fragmentation and Cooperation' (2010) *Journal of International Economic Law* 13, 719.

and financial liberalisation made financial markets much more vast, complex, aggressive and highly competitive.[23] This period was accompanied by deregulation and a firmly held belief in the full empowerment of non-public entities involved in standard setting, supervision and securing compliance.[24]

Nonetheless, the GFC exerted a profound influence on how to regulate financial markets and institutions. The pervasive belief in the social desirability of unfettered markets was in fact abandoned, since private actors – unregulated – proved to be neither rational nor fully informed so as to master risk effectively. They often pursued vested private interests in conflict with the public good and lacked any form of public accountability. Market fundamentalism therefore stopped informing public policy, and a more intrusive form of regulation gathered momentum, to account in particular for both the complexity of modern financial markets and the nature and pace of financial innovation.

Over the last decade, in fact, finance has been shifting increasingly from an industry characterised by bricks-and-mortar bank branches towards an industry composed of heterogeneous providers of services that are extended to customers

[23]See PICCIOTO and HAINES, 'Regulating Global Financial Markets' (1999) *Journal of Law and* Society 26, 351; BRADLEY, 'Private International Law Making for the Financial Markets' (2005) *Fordham International Law Journal* 29, 127; M Andenas, 'Harmonising and Regulating Financial Markets' in M. Andenas and C. Andersen (eds.), Theory and Practice of Harmonisation, (Cheltenham: Edward Elgar 2012), 7–10.

[24]This phenomenon is set against the backdrop of the ideological movement from liberal political economy to neo-liberalism and the predominance of economic theories of regulation. See R. A. Posner, Economic Analysis of Law (7th edn, New York: Aspen 2007); R. A. Posner, 'Theories of Economic Regulation' (1974) 5 *The Bell Journal of Economics and Management Science* 335, where regulation is itself argued to be subject to the rational self-interest of participants on the supply and demand side for regulation (see also G. Stigler, 'The Theory of Economic Regulation' (1971) 3 *The Bell Journal of Economics and Management Science* 21). See also M. Friedman, Capitalism and Freedom (40th anniversary edn, Chicago, IL: University of Chicago Press 2002). The rationality of objective behaviour underpins accepted trust and reliance in market-based solutions and governance, now commonly questioned, see J. Fox, The Myth of the Rational Market (New York: HarperCollins 2009), but warned of earlier in J. Stiglitz, The Roaring Nineties (London: Penguin 2003); A. Sen, On Ethics and Economics (Oxford: Blackwell 1987). See also A. Ogus, Regulation: Legal Form and Economic Theory (Oxford: Clarendon 1994). See also critical discussion in D. M. Driesen, 'Regulatory Reform: The New Lochnerism' (2006) 36 *Environmental Law* 1. A more moderate Harvard school also considers that most forms of regulation are not distorting or ineffective. See an extension of this latter school in the balanced and insightful analysis by S. P. Croley, Regulation and Public Interests: The Possibility of Good Regulatory Government (Princeton, NJ: Princeton University Press 2008).

via a multitude of channels and devices. Financial innovation has deeply influenced law-making, ever since it passed from being a "product/service changer" only, to a "game changer".

Traditionally, financial innovation has been regarded as a change in the type and variety of available financial products.[25] Technological developments relating to telecommunications and data processing have spurred financial innovations that have altered bank products and services and bank production processes alike.[26] A vast amount of literature studied the progress of novel financial products and scrutinized the implications that have come with such progress. One strand of economic scholarship mapped out the ability of technological improvements to increase efficiency whenever something new that reduces costs, reduces risks or provides an improved product/service is being created.[27] On the other hand, the 2007-2008 GFC showed that financial innovation might fall far short of attaining services that better satisfy the demands of financial system participants.

On the contrary, financial innovation could result in products which are designed to obscure the connected risks and which are traded in opaque dealer-intermediated markets by opaque financial institutions, ultimately making end financial consumers worse off.[28] Credit default swaps, residential mortgage-backed securities, and collateralised debt obligations have ignited a great deal of discussion on informational asymmetry between intermediaries and investors, agency

[25]See, in general, AVGOULEAS, 'International credit markets: Players, financing techniques, instruments and regulation', in H. Bigdoli (ed.), The Handbook of Technology Management, 2009, 675-692.
[26]See BOOT and THAKOR, 'Commercial banking and shadow banking. The accelerating integration of banks and markets and its implications for regulation' in Berger, Molyneux, Wilson (eds.), The Oxford handbook of banking, 2015, 47-76.
[27]See MERTON, Financial innovation and economic performance, *Journal of applied corporate finance*, 1992, 4(4), 12-22; P. Tufano, 'Financial innovation' in G.M. Constantinides, M. Harris, R. Stulz (eds.), Handbook of the economics of finance, 2003, Amsterdam, 307-335; F. Allen, Trends in financial innovation and their welfare impact: An overview, *European financial management* 2012, 18(4), 493-514. For a legal perspective on the subject, see, e.g., C. Brummer, Disruptive technology and securities regulation, *Fordham Law Review*, 2015, 84, 977.
[28]See HENDERSON and PEARSON, 'The dark side of financial innovation: A case study of the pricing of a retail financial product' (2011) *Journal of financial economics* 100(2), 227-247, provide recent empirical analysis of a welfare-reducing financial innovation.

problems and transaction costs[29] as well as on the relationship between financial innovation and financial stability.[30]

The negative economic and social consequences provoked by these sophisticated products have exerted a profound influence on how financial innovation is perceived and, perhaps most significantly, revealed the intellectual challenge of adequately accounting for both the "good" and the "bad" of that innovation.[31]

Complexity and innovation are therefore to be considered root causes of greater and more sophisticated markets failures, since they have combined to generate significant asymmetries of information, exacerbated agency costs problems and moral hazard behaviour within financial markets. Besides aggravating already pervasive market failures, they also gave rise to new issues leading up to "too-interconnected-to-fail" situations, the full implications of which we are only just now beginning to understand.

To keep up with such fluid and dynamic market practices, the EU regulatory framework evolved along two trajectories. On one side, a comprehensive and detailed new set of harmonised provisions has been produced, both at level 1 (Directives and Regulations) and level 2 (implementing measures released by the ESAs). On the other side, ad hoc venues for self-regulation have been opened up, as a

[29]"Complexity and innovation have combined to generate significant asymmetries of information and expertise within financial markets, thereby opening the door to suboptimal contracting and exacerbating already pervasive agency cost problems": so maintains AWREY, 'Complexity, innovation and the regulation of modern financial markets' (2012) *Harvard Business Law Review* 2, 238-239. More broadly, touching upon some perverse consequences of securitisation, see JENKINSON, PENALVER and VAUSE, 'Financial innovation: What have we learnt?' (2008) *Bank of England Quarterly Bulletin* Q3.

[30]See, e.g.: GENNAIOLI, SHLEIFER and VISHNY, 'Neglected risks, financial innovation and financial fragility' (2012) *Journal of Financial Economics* 104(3), 452-468. Some scholars argue that financial innovation correlates with increased systemic risk for the financial and economic systems. Since financial innovation involves more credit creation, such increases in leverage as a systemic phenomenon often create greater risk for all participants and could raise systemic fragility in the face of shocks or crises: ADAM, GUETTER, 'Pitfalls and perils of financial innovation: The use of CDS by corporate bond funds' *Journal of Banking and Finance*, 2015, 55, 204; YORULMAZER, 'Has financial innovation made the world riskier?, CDS, regulatory arbitrage and systemic risk', Federal Reserve Bank of New York Paper, 2013, available at SSRN: https://ssrn.com/abstract=2176493 .

[31]See BECK, CHEN, LIN and SONG, 'Financial innovation: The bright and the dark sides' (2014) *Journal of Banking & Finance* 72, 28-51.

way to better adapt to the rash developments occurring in the financial markets and so to respond properly to the intensified potential market failures and negative externalities.[32] The "command-and-control rules-based and principles-based techniques have thus been enriched by self-regulation, consisting of self-imposed or self-enforced rules".[33] In that respect, Marco Lamandini and David Ramos Muñoz have taken the view that external regulation and self-regulation have become intertwined and mutually reinforcing, up to the point that they are "bound to co-exist": "This would make self-regulation an 'add on' in respect to external regulation and it would be capable of bringing about additional gains in social welfare, which would not be made, however, compulsory by external regulation".[34]

4. Although the GFC has led to a resurgence of public regulatory power, no amount of re-regulation could ever elevate the State to a position of substitute for the variety of actors in governance that have arisen, nor is that an ideal position either from a practical or normative point of view.[35]

Thus, the financial sector situates itself in a multilevel or "decentred" regulatory space,[36] which is indeed the result of complexity, fragmentation, interde-

[32]See ALEXANDER, MOLONEY, Law Reform and Financial Markets, Elgar Law Series, 2011, p. vii of the introduction.

[33]See CAFAGGI, 'Rethinking Private Regulation in the European Regulatory Space' (2006), 22, available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=910870, classified self-regulation in the following categories as: (i) *mandated private regulation*, where an industry is required or designated by the government to formulate and enforce norms within a framework set by the government; (ii) *sanctioned private regulation*, in which a private body formulates the norms which are then subjected to governmental approval; (iii) *coerced private regulation*, where the industry formulates the norms in response to threats by the government that if the industry does not, the government will impose statutory regulation; (iv) *voluntary private regulation*, where there is no active state involvement.

[34]See LAMANDINI and MUÑOZ, EU Financial Law, Padova, 2016, 102. On the same lines, AWREY, 'Regulating Financial Innovation: A More Principles-Based Alternative?' (2010) *Brooklyn Journal of Corporate, Financial and Commercial Law* 5:2, 273; refers to "de-centered" understanding of regulation which spans the public-private divide to encompass all forms of social control or influence – whether generated, monitored and enforced via the apparatus of the state or other sources".

[35]See Wilke Governance in a Disenchanted World (Cheltenham, Edward Elgar, 2009).

[36]See BLACK, 'Critical Reflections on Regulation' (2002) *Australian Journal of Legal Philosophy* 27, 1.

pendencies, un-governability and the rejection of a clear private-public distinction.[37] The EU financial regulatory framework extends to a wide array of "regulatory tools" which encompass external regulation, recommendations and guidelines as well as self-regulation/internal regulation. The decentred analysis acknowledges that the financial services industry is a powerful and innovative industry that has been able to exert self-governance over many of its activities, if properly empowered and supervised.[38] In recent years regulators have in fact been actively encouraging the financial sector to take the leadership in developing forms of reflexive regulation to govern the sector's activity, emphasising recourse to market-based solutions instead of the sometimes inappropriate hand of regulation.[39] However, contrary to deregulation practices, in the current regulatory space regulators arguably remain entrusted with the powers to protect and take care of "public interest" or "public good".[40] The "public" character of regulators in the regulatory space is arguably distinct and this is conceptually sustainable even if the regulatory space is decentred.

More broadly, the regulatory landscape in the EU financial sector has become a composite legal order which comprises many sets of rules at different levels, and a diversified range of actors engaged in producing them. Such a new legal

[37]Black indeed argues that decentred regulation is premised on these five preconditions. 'Complexity' refers to the nature of problems that may need to be dealt with. 'Fragmentation' refers to the fragmentation of knowledge, resources and capacity for control in the regulatory space. 'Interdependencies' refers to the dynamics between the participants in the regulatory space, coproducing and co-enforcing norms of governance. 'Ungovernability' refers to the autonomy and unpredictability of actor behaviour in the regulatory space, which will pose challenges to assumptions made by regulatory authorities. In a decentred landscape, there is, some argue, no public-private distinction as all participants contribute to and influence governance.

[38]See BLACK, 'Enrolling Actors in Regulatory Systems: Examples from UK Financial Services Regulation' (2003) *Public Law*, 63; BLACK, 'Mapping the Contours of Contemporary Financial Services Regulation' (2002) *Journal of Corporate Law Studies* 2, 253. See also for a concurring account from the sociological point of view, SNIDER, 'The Conundrum of Financial Regulation: Origins, Controversies, and Prospects' (2011) *Annual Review of Law and Social Science* 7, 121.

[39]See PAGLIARI, 'Who Governs Finance? The Shifting Public-Private Divide in the Regulation of Derivatives, Rating Agencies and Hedge Funds' (2012) *European Law Journal* 18, 44

[40]See UNDERHILL, 'Theorizing Governance in a Global Financial System' in P. Mooschlechner, H. Schuberth and B. Weber (eds.), The Political Economy of Financial Market Regulation (Cheltenham: Edward Elgar 2006), 4; Robin P Malloy, Law in a Market Context (Cambridge: Cambridge University Press 2004), 122 ff.

order has been depicted as a policy and regulatory "circle", or "wheel", as contrasted with the hierarchical pyramid.[41] Unlike the pyramidal structure, the wheel accounts for the current multilevel institutional setting and the multiplicity of public and private actors implicated in the process of financial regulation. It illustrates the co-existence of global to local and public to private actors, with a variety of sources and a variety of modes of regulation. Hard law relies extensively on soft law, and leaves appropriate room for self-regulation. Governance and markets tend to be tangled with each other, and so do the parties involved in drafting and developing the regulatory framework[42]

The decentred landscape is dominated by state-based regulators alongside international bodies and standard-setters (such as the Bank for International Settlements, IOSCO, IMF and FSB) and private financial services industry participants and national competent authorities. This is thus reflected in the co-existence of hard and soft law, which equally contribute to moulding the legal space, in a sort of "participative style of management".[43]

Elaborating upon the "regulatory wheel" developed by Marco Lamandini,[44] we can imagine a diagram that is divided into quadrants that can be read both in top-down and bottom-up perspective. In top and bottom left, respectively, are the soft law of international sources, mainly the expression of non-conventional types of international institutions and without any legally binding effects and the soft

[41]See AYRES and BRAITHWAITE, Responsive Regulation: Transcending the Deregulation Debate (New York, Oxford University Press, 1992); BRAITHWAITE, 'The essence of responsive regulation' (2011) *UBC Law Review* 44(3), 475-520; CASSESE, 'La nuova architettura finanziaria europea, in Dal testo unico bancario all'Unione bancaria: tecniche normative e allocazione dei poteri' (2014) *Quaderni di Ricerca Giuridica della Consulenza Legale della Banca d'Italia,* 19; LAMANDINI and RAMOS MUNOZ, 'A Simplified Model for European Capital Markets' (2014) *Law*, *Libreria Bonomo editrice*, 97 ss; ARUP, 'The Global Financial Crisis: Learning from Regulatory and Governance Studies' (2010) *Law and Policy* 32, 363, refers to this as the matrix of state and corporate power in co-governing the financial sector.

[42]See BRUMMER, 'How International Financial Law Works (and How it Doesn't)' (2011) *Georgetown Law Journal*, 11-15

[43]See COGLIANESE and LAZER 'Management-Based Regulation: Prescribing Private Management to Achieve Public Goals' (2003) *Law and Society Review* 37, 691-730.

[44]See LAMANDINI, 'Il diritto bancario dell'Unione, in Scritti sull'Unione Bancaria' (2016) *Quaderni di ricerca giuridica della Banca d'Italia* 81.

law produced by market participants. In the other two quadrants, are the prescriptive legislative sources of supranational federal, state and prescriptive rules released and implemented by supervisors. In the financial sector soft law provisions can become de facto compulsory for both public institutions and private market players.[45] Such situation occurs, for instance, when a supervisory authority considers self-regulatory best practices as a decisive factor in assessing a financial institution's compliance with general principles of supervision like safe and soundness, fairness or transparency.[46]

Rule-making is a dynamic process whereby rules move frequently from one quadrant to another, enriching the content and adding to it at each transition. Such a paradigm is premised on the idea that the regulatory space should be composed of 'knowledge-based' actors. Hence, the regulated industry is likely to maintain a position of 'authority' in governance in the post-crisis landscape, by virtue of the set of information it possesses. The regulatory wheel could be said to be dominated by knowledge-based individuals and communities whose collective role provides a form of governance that is perceived as legitimate and credible because of the knowledge base, professionalism and rationality found in operation and action. Hence they are likely to have the authority to participate in governance.[47]

[45]In this respect, the ECJ recently held that guidelines or recommendations issued by the ECB to national competent authorities (NCAs) can be considered as having a legal effect whenever the NCAs feel somehow obliged to abide by these guidelines and recommendations or, to put it another way, if such is "the perception of the Policy Framework on the part of the euro area Member States' regulatory authorities". See Judgment of the General Court, T-496/11, 4 March 2015, *United Kingdom v. ECB*, par. 42.

[46]The former materializes in situations like the one so neatly described by Article 6 of Directive 2013/36/UE where it reads: "Member States shall ensure that the competent authorities make every effort to comply with those guidelines and recommendations issued by EBA in accordance with Article 16 of Regulation (EU) No 1093/2010 and to respond to the warnings and recommendations issued by the ESRB pursuant to Article 16 of Regulation (EU) No 1092/2010".

[47]See DRORI and MEYER, 'Global Scientization: An Expanded Environment for Organization' in G S Drori, J W Meyer and H Hwang (eds.), Globalization and Organization (Oxford: Oxford University Press 2009), 50; DRORI, 'Governed by Governance' in G S Drori, J W Meyer and H Hwang (eds.), Globalization and Organization (Oxford: Oxford University Press 2009), 91.

5. Ensuring effective EU financial regulation in overcoming market failures (including excessive fragmentation of the internal market as such) is not only a function of the risks involved.[48] but also of the information and engagement that each market player can provide. Even when risks are high, and so are the potential market failures to be overcome, EU banking law seems to favour a flexible regime of co-regulation, which foresees the engagement of a variety of parties. This regime consists of relatively 'light' substantive rules – primarily about the regulatory objectives, complemented by some common principles, the layers of conformity assessment when using EU standards and some administrative arrangements plus a safeguard clause – complemented (and influenced) by private initiatives.[49]

The approach hinges on a regulatory framework that is not excessively prescriptive and which sets out certain objectives to be obtained. Such a regulatory strategy has recently been referred to as "meta regulation", in that regulators provide a broad framework which allows regulated entities to implement systems and processes to achieve the regulatory objectives.[50]

Looking at the financial legal order, Talbot maintained that "principles-based regulation, meta regulation, risk-based regulation, reflexive regulation and gatekeeper regulation all apply, in an attempt to deliver a cooperative private-public rule making and supervisory environment".[51] This in turn implies the in-

[48]See PELKMANS, The Economics of Single Market Regulation, Bruges European Economic Policy Briefings 25, 2012, 13.
[49]See OMAROVA and FEIBELMAN, 'Risks, Rules, and Institutions: A Process for Reforming Financial Regulation' (2009) *University of Memphis Law Review* 39, 881, 920; M H Baer, 'Governing Corporate Compliance' (2009) *Boston College Law Review* 50, 952-54.
[50]See COGLIANESE and MENDELSON, Meta-regulation and self-regulation, in R Baldwin, M Cave and M Lodge (eds.), The Oxford Handbook of Regulation, OUP, 2010; WRIGHT, DEMPSTER, KEEN, ALLEN and HUTCHINGS, The new governance arrangements for NHS foundations trust hospitals: Reframing governors as meta regulators (2012) *Public Administration*, 90, 351; PARKER, Meta-Regulation: Legal accountability for corporate social responsibility, in D. McBarnet, A. Voiculescu and T. Campbell (eds.), The New Corporate Accountability: Corporate Social Responsibility and the Law, 2007, OUP; C. Scott, 'Regulating everything: From Mega- to Meta-Regulation' (2012) *Administration*, 60, 61 ff.
[51]See TALBOT, Progressive Corporate Governance for the 21st Century (Routledge, 2013) 148 ff., where there is also the complementing observation that "meta regulation is a form of enforced self-regulation (…) and involves the regulator delegating authority to the regulated to design its

volvement of multiple actors along the different stages of the law-making process (legislation, rule-making, implementation and enforcement). In so doing, policy-making evolved from a centralised "top-down" ordering process, to a "de-centralised", multi-level process, well described as a "process of mutual problem-solving among stakeholders from government and the private sector".[52]

Such a "de-centring governance" tendency is reflected in the main tenets of new governance theory, which provides theoretical support for increased reliance on self-regulation and shared governance roles in the financial industry sector. Such co-governance models are based on the principle of "co-opting the industry to govern itself",[53] insofar as this is necessary to achieve regulatory objectives.

Socio-legal scholars have in fact contributed to a rich new governance literature regarding the evolving methodologies and tools of governance.[54] The central principle of new governance literature posits that traditional "command-and-control", "top-down", regulation has been replaced by or integrated with, to varying degrees, new forms of collaborative governance which emphasize a dynamic cooperation between public (governments, regulators) and private (regulated) parties. Such a view is in stark contrast with that of public choice theorists, who

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own standard setting and mode of compliance, which is overseen by the regulator" (p. 151); reflexive regulation implies in turn that "those regulating the self-regulation of others may subsequently have their role concretised in law and give statutory authority" (p. 152) and gatekeeping regulation "involves a focus and engagement with those who are not regulators themselves but have a strategic position over those who are, which enables them to exercise influence or control over them" (p. 152).

[52]See SCOTT and TRUBEK, 'Mind the Gap: Law and New Approaches to Governance in the European Union' (2002) *European Law Journal* 8(1), 5.

[53]See ANDENAS, CHIU, *The Foundations and Future of Financial Regulation: Governance for responsibility* (Routledge, 2013) 84.

[54]Among the main contributions pertaining to new governance scholarship, see: GERDING, 'Code, Crash, and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis' (2009) *Washington Law* Review 84, 127; SALAMON, The tools of government: A guide to the new governance, L.M. Salamon (ed.), 2001; A. and O. Lobel, 'Stumble, predict, nudge: How behavioural economics informs law and policy' (2009) *Columbia Law Review* 108, 2098-2132; LOBEL, 'Setting the agenda for new governance research' (2004) *Minnesota Law Review* 89, 498-502; with specific regard to the application of new governance theory to financial regulatory reform, see, e.g., WEBER, 'New governance, financial regulation and challenges to legitimacy: the example of the internal models approach to capital adequacy regulation' (2010) *Administrative Law Review* 62, 783-870.

typically frame private involvement as a threat to a proper administrative process, emphasizing the risks of strategic manipulation and describing policy choices as a product of pressure on the part of well-organised and powerful private actors.[55]

New governance theory conceptualises that regulatory effectiveness and enforcement depend on the tools *through which governance is effectuated*, focusing therefore on the *regulator-regulatee mode of interaction*. It is thus a strategy that can coexist with traditional administrative activity as a complementary tool to respond to the increasing complexity of modern forms of social organisations.[56] New governance refers to a wide range of administrative governance regulatory techniques and tools that all share some defining features: increased participation of, and power sharing with, private actors; public adoption of rules negotiated by non-state stakeholders; promotion of competition and diversity as a structural component of regulation; dynamic, responsive and dialogic law-making processes as a response to dynamic regulated markets; composite and multi-level legal ordering; and the use of broad legal frameworks integrated by flexible, revisable rules and standards.[57]

The common thread of all new governance initiatives is thus the deployment of innovative modes of interaction and techniques to overcome intractable market failures which are not solvable by adopting a traditional command and control regulatory model alone. In that respect, legal scholarship has identified three main characteristics as being the most relevant to regulatory reforms in dynamic and complex financial markets: *i)* retention of a public role in law-making and enforcement; *ii)* active pursuit of private actors' knowledge as a supplement;

[55]See ACKERMAN, 'Progressive law and economics – And the new administrative law' (1988) *Yale Law Journal* 98, 344-347; W N Eskridge, 'Implications of public choice theory for statutory interpretation' (1988) *Vanderbilt Law Review* 74, 285; GS Becker, 'A theory of competition among pressure groups for political influence' (1983) *Quarterly Journal of Economics* 98, 371.
[56]See TRUBEK and TRUBEK (2007) 539-542.
[57]For a precise list of attributes see WEBER, 'New governance, financial regulation and challenges to legitimacy: the example of the internal models approach to capital adequacy regulation' (2010) *Administrative Law Review* 62, 783. The author warns that no new governance tool draws on all these characteristics.

and *iii)* a dynamic, flexible and dialogic law-making process.[58]

Most of the debate on style and approaches of regulation focuses on the dialectic between principles- and rules-based approaches (often simplistically referred to as a "trade-off"). At its simplest, a principles-based approach sets out general objectives to be achieved while leaving the choice of form and methods for achieving these objectives to firms. A rules-based regulatory regime, by contrast, prescribes detailed individual rules, laying down the precise conduct which firms are required to adopt and perform.

The principles versus rules tension represents one of the most enduring dialectics in legal thought in terms of determining the optimal legal strategy to achieve regulatory goals.[59] In that respect, legal and economic scholars alike have attempted to differentiate between rules and principles on the basis of, inter alia, their general or specific style,[60] their temporal orientation,[61] the degree of discretion which they confer upon regulated actors,[62] and the position they occupy within the hierarchy of norms.[63] The largely binary nature of this debate (i.e. "trade-off") is likely to misrepresent that, in reality, rules and principles are simply the "endpoints of a spectrum".[64] However, endpoints are still commonly adopted – despite the simplification – to describe the advantages and disadvantages of the two extreme approaches and then to set a hybrid regulatory response accordingly.[65]

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[58]ibid, 783-870.
[59]See, e.g., Awrey (2010), 273-315.
[60]See CUNNINGHAM, Prescription to Retire the Rhetoric of "Principles-Based Systems" in Corporate Law, Securities Regulation, and Accounting (2007) *Vanderbilt Law Review* 60, 1411, 1419.
[61]See KAPLOW, Rules Versus Standards: An Economic Analysis (1992) *Duke Law Journal* 42, 557, 565–67; Frederick Schauer, The Tyranny of Choice and the Rulification of Standards (2005) *Journal Contemporary Legal Issues* 14, 803, 803–04;
[62]See NELSON, "Behavioral Evidence on the Effects of Principles- and Rules-Based Standards" (2003) *Accounting Review* 17, 91.
[63]See SUNSTEIN, "Problems with Rules" (1995) *California Law Review* 83:4, 953 at 966.
[64]See KOROBKIN, "Behavioral Analysis and Legal Form: Rules vs. Standards Revisited" (2000) *Oregon Law Review* 79, 23 at 26.
[65]A rules-based approach aims to increase certainty and predictability, for regulators and regulated entities alike. For the former, it ensures having set a clear objective to be achieved, for the latter it

Recently, the dialectic rules versus principles has been pushed forward and recast in terms of the "transaction and social costs stemming from 1) the generation of legal norms, 2) their subsequent application by decision-makers, and 3) the resulting incentive effects on those subject to their application".[66] If we take this perspective, the generation of detailed rules will typically result in greater ex ante transaction costs attributable to the time and effort expended by drafters in order to articulate the empirical substance of triggers and to match these triggers with the appropriate legal response.[67]

When regulating dynamic and complex market behaviour, though, traditional "rule-principle polarity thinking" ends up producing either over- or under-inclusive rules, failing thus to achieve the regulatory objectives.[68] Worse still, it might result in unexpected consequences which contribute in exacerbating market complexity, and eventually igniting market failures. Either way, an ex-ante rule or principle is very unlikely to be construed so as to keep up with the dynamism of modern financial intermediation.[69] In that respect, Christie Ford notes that a highly complex and dynamic scenario, especially as characterised by regulator-

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is easier to estimate the compliance costs. Alternatively, principles-based regulation moves from a directing relationship of telling and doing between regulators and regulatees to a relationship in which regulators communicate their goals and expectations, and regulatees are entrusted with the responsibility to adopt processes and practices that ensure that these goals are substantively met. For a synthesis, see the landmark contributions of Julia Black, where there are also further references: BLACK, 'The rise, fall and fate of principles-based regulation', in K. Alexander, N. Moloney (eds.) Law Reform and Financial Markets, Cheltenham, Elgar Financial Law Series, 2011, p. 3. For a detailed account of risk-based regulation, see also BLACK, 'The development of risk-based regulation in financial services: just modelling through?', in J. Black, M. Lodge, M. Thatcher (eds.) Regulatory innovation, A comparative Analysis, Cheltenham: Edward Elgar, 2005, p. 156; BLACK, 'Regulatory styles and supervisory strategies', in N. Moloney, E. Ferran, J. Payne (eds.), The Oxford Handbook of Financial Regulation, Oxford: OUP, 2015, p. 218 (offering a comprehensive and insightful review of regulatory styles).

[66]Awrey (2010), 273-315.

[67]See KOROBKIN, 'Behavioral Analysis and Legal Form: Rules vs. Standards Revisited' (2000) *Oregon Law* Review 79, 23, 26.

[68]For some evidence in the wake of the financial crisis, see. e.g. C. Ford, 'Principles-Based Securities Regulation in the Wake of the Global Financial Crisis' (2010) *McGill Law Journal* 55, 257.

[69]See CUNNINGHAM, 'A Prescription to Retire the Rhetoric of "Principles-Based Systems" in Corporate Law, Securities Regulation, and Accounting' (2007) *Vanderbilt Law Review* 60, 1481-1491, stresses the "temporal division between rules, the content of which is set out ex ante, and principles, the content of which is filled in ex post".

regulatee information gaps, is susceptible to neither rules (due to the information asymmetries) nor principles (because of the incapacity of capturing frequently occurring transaction events), but more likely an intermediate juncture between the two.

New governance scholarship gets around such theoretical dilemmas by focusing on the way in which the regulatory tools (whether they consist of rules or principles) are designed to achieve the objectives in a de-centralised and dynamic marketplace. From a new governance perspective, therefore, principles- or rules-based regulatory techniques are to be studied as components of flexible legal systems which are open to diverse forms of articulation. Regulatory effectiveness and enforcement is to be sought by focusing on the regulator-regulatee mode of interaction and the tools through which governance is effectuated.

Standing in contrast to the traditional legal-centric paradigm, financial regulation is premised upon an iterative, dialogic,[70] relationship within which regulated actors are invited to play a potentially important role within the process of generating regulation. An internal ratings-based approach (IRB) and an internal control system are clear examples of forms of private-public regulation.[71]

On the one hand, Robert F. Weber convincingly demonstrates how regulators adopted the internal models approach as a means of more closely calibrating capital requirements to the actual risk profiles of banks, which had become increasingly complex over time. He approaches capital adequacy regulation by applying the new governance theory as an analytical framework. He advocates new modes of interaction between public and private actors in overcoming the flaws stemming from a solely "top-down" prescriptive risk-weighting approach.[72]

On the other hand, Iris H-Y Chiu puts forwards strong arguments in favour

[70]See BLACK, Rules and Regulators, 1997, 37.
[71]Awrey (2010), 18.
[72]See WEBER, 'New governance, financial regulation and challenges to legitimacy: the example of the internal models' approach to capital adequacy regulation' (2010) *Administrative Law Review* 62, 784-840.

of a regulatory approach that empowers and enhances the capacity of financial institutions to self-regulate ("meta regulation") their internal governance measures. This is a form of delegated governance by regulators to banks, and banks can have considerable discretion in designing the implementation systems and processes. As she maintained, regulatory interest in the institution of internal control at banks and financial institutions lies in its organisational position and role. Internal control has proximity to inside knowledge and issues, and acts as an internal gatekeeper for banks and financial institutions. It may be argued that such an organisational position and role could also serve the regulator's objective of securing the financial institution's compliance with regulatory requirements. In other words, internal control is increasingly being fashioned as an internal gatekeeper which serves gatekeeping purposes for the regulator.[73]

Such a hybrid nature resembles the distinction made by Dan Awrey between the "*substantive*" and "*technological*" content of principles-based regulatory measures.

The substantive content of a principle is collectively made up of the animating principle itself (e.g. "a firm must conduct its business with integrity"), the statutory construction of any norms giving effect to this principle (e.g. anti-fraud provisions), the interpretive assumptions underpinning this statutory construction (such as the common law definition of fraud) and, importantly, the desired regulatory outcomes (e.g. the promotion of confidence in financial institutions and markets). The technological content of a principle, on the other hand, consists of the policies and procedures implemented by regulated actors for the purpose of achieving desired regulatory outcomes.

The same paradigm holds true for recovery and resolution.[74] Indeed, recov-

[73]See CHIU, Regulating (From) the Inside. The Legal Framework for Internal Control in Banks and Financial Institutions (Hart Publishing, 2015) 3-34.
[74]See Minto, 'Banking Crisis Management, Recovery and Resolution Planning, and "New Governance" Theory: Approaching "Living Wills" as a Public-Private Collaborative Form of Regulation' (2018) *European Company and Financial Law Review* 4.

ery and resolution planning envisages that the responsibility for articulating the general outline (or "substantive content of principles") resides with regulators, whereas the internal procedures ("technological content") are conceived to be generated by the regulated actors. Furthermore, such a mode of interaction contemplates that regulators will leverage the information and expertise of regulated actors when generating and updating substantive content.[75]

However, non-government actors are involved in all stages of the regulatory and administrative process, sometimes assuming or sharing roles that we think either are, or ought to be, reserved for public actors. Such a cooperation between "public" and "private" raises issues pertaining to the legitimacy of regulatory power. This is particularly so in relation to third parties who might be affected by the regulatory process (financial users, depositors, consumers, citizens). A regulatory process based on the contribution of the regulated entities (financial institutions) may indeed lack legitimacy and consensus on the part of those whose conduct might be affected by the regulatory activity (e.g. depositors).

In fact, many private actors participate in governance in ways that are rarely recognized by the public, acknowledged by politicians or carefully analysed by legal scholars.[76]

6. The involvement of private actors at different levels and, more specifical-

[75]See COGLIANESE, and LAZER, 'Management-Based Regulation: Prescribing Private Management to Achieve Public Goals' (2003) *Law and Society Review* 37, 691-730, in which the authors analysed a regulatory approach that they call "management-based regulation". Management-based regulation directs regulated organizations to engage in a planning process that aims towards the achievement of public goals, offering firms flexibility in how they achieve these goals. Management-based regulation can be an effective strategy when regulated entities are heterogeneous and regulatory outputs are relatively difficult to monitor. Yet, it requires a far more complex intertwining of public and private sectors than is typical of other forms of regulation, owing to regulators' need to intervene at multiple stages of the production process as well as to the degree of ambiguity over what constitutes good management.

[76]The concern of accountability has been among the most recurrent problems concerning the involvement of private parties in rule-making. For an account of the U.S. experience, see, e.g., FREEMAN, 'Private parties, public functions and the new administrative law' in D Dyzenhaus Redrafting the rule of law (Oxford, Hart, 1999) 331 ff.

ly, the delegation of regulatory power to private regulators pose important questions concerning private regulators' accountability and liability. An effective regulatory process thus requires that standard setting obtains legitimacy from industry (financial institutions) and citizens.[77] Legitimacy therefore conveys the notion of acceptability by the public (citizens).

Furthermore, such issues are to be contextualised within the sheer lack of confidence in the banking system. Regaining public trust is in fact one of the most topical subjects related to the regulation and supervision of financial undertakings.[78] As empirical research shows, citizens' acceptance of any economic or social activity is directly correlated with the level of institutional trust and, therefore, the presence of the public character of regulatory governance as an institution underpinning the investment economy is necessary to facilitate acceptance of private investment risks and participation in the investment economy.[79]

In approaching such issues, this Chapter will apply the tenets of the new governance theory. From a normative perspective, in the EU financial sector the private regulator acts on the basis of delegation or within regulatory power-sharing with a public entity. Therefore, purely private regulatory activity is absent, rather than rare.

This symbiotic relationship between "external" regulation and "internal" regulation is premised on a clear articulation between regulators/supervisors and private actors. The former are called upon to set out rules that identify the regulatory outcomes (or desired behaviours) which they are designed to achieve (or in-

[77]See CAFAGGI, 'A coordinated approach to civil liability and regulation in European law: Rethinking institutional complementarities' in F. Cafaggi (ed) The Institutional framework of European private law, OUP 2006, p. 191 ff.; S. Whittaker, Liability for products, English law, French law, and European harmonisation, OUP, 2005, p. 204; and S. Weatherill, EU Consumer Law and policy, Edward Elgar, 2005, p.199 ff.

[78]See, for example, Group of Thirty, Banking conduct and culture: a call for sustained and comprehensive reform, July 2015; FSB, Guidance on supervisory interaction with financial institutions on risk culture, April 2014.

[79]See BRONFMAN, VÁZQUEZ and DORANTES, 'An Empirical Study for the Direct and Indirect Links Between Trust in Regulatory Institutions and Acceptability of Hazards' (2009) *Safety Science* 47, 686.

centivize), without prescribing the detailed procedures with which regulated actors are expected to comply.[80] This is reflected in the presumption that regulated actors are better positioned and informed than regulators to determine the technological content of the policies and procedures necessary to achieve desired regulatory outcomes.[81]

For instance, each financial institution is required to set up and maintain "the governance arrangements that ensure effective and prudent management of an institution, including the segregation of duties in the organisation and the prevention of conflicts of interest" (article 88, Directive 2013/36/EU). This means that primary responsibility for internal governance rests upon market participants, since financial institutions are delegated to develop internal governance arrangements. However, internal governance arrangements are to be designed so as to pursue regulatory objectives that are beyond the mere private interests of the company (i.e., making profits). In fact, corporate governance serves a function in the overall financial regulation agenda, in that it secures the attainment of financial regulatory objectives (consumer protection, financial stability, and so on).

More generally, financial regulation seems to possess the defining characteristics of the new governance theory. It often contemplates: *i)* retention of a public role in law-making and enforcement; *ii)* active pursuit of private actors' knowledge as a supplement; and *iii)* a dynamic, flexible and dialogic law-making process (increased participation of, and power sharing with, private actors).

Most of the financial regulatory regime is the result of a conversational and dynamic interaction, whereby private involvement is analytically framed so as to

[80]"Effective compliance will evolve away from a primary focus on the designing, implementing and monitoring processes that embed detailed regulatory rules in business operations. Instead, it will increasingly require the exercise of judgment.": FSA, "Principles-based Regulation: Focusing on Outcomes that Matter" (April 2007) and BLACK, HOPPER and BAND, 'Making a Success of Principles Based Regulation' (2007) *Law and Financial Markets Review*, 193

[81]As explained by BRIAULT, 'Making a Real Difference to Consumers Through More Principles-Based Regulation', FSA, Treating Customers Fairly Conference (7 December 2006), the FSA's principles-based approach involves "a shift of emphasis… away from looking at the processes carried out by firms, toward the outcomes we seek to achieve for consumers, firms and markets.".

reach regulatory objectives. Such regulatory design is an expression of the fundamental rights of property and of freedom of enterprise (for instance, in the case of corporate governance, IRB, and recovery and resolution planning). Such freedom of enterprise seems to bring up a new host of regulatory challenges, as pointed out in the recent Grand Chamber judgment of the ECJ in *Tadej Kotnick*.[82] Yet, the leeway attributed to the banks in expressing their self-regulatory power must nonetheless comply with the instructions, guidelines, and information provided by the supervisors and regulators. The retention of public authority is therefore relevant and *formally* confined to prompting financial institutions to revise their choices insofar as the regulatory objectives so require. The self-regulatory measures are meant to be, and remain, *private initiatives*, yet under the "benign gun threat" that supervisors can step into the material and substantive internal regulation which a firm has adopted.

However, ex post intensive supervision and vigorous enforcement are essential components of this regulatory strategy, too. Not only is public authority to be retained ex ante, it is needed to identify and punish those un-cooperative credit institutions whose wilful misconduct would otherwise threaten to erode the mutual trust upon which the new governance theory is premised.[83] For instance, in cases where competent authorities detect deficiencies in or impediments to the implementation of a recovery plan, or resolution authorities find that there are substantive impediments to the resolvability of the institution, the authorities are empowered to (re)direct the institution to implement a series of measures to facilitate the implementation of the recovery plan, or the resolvability of the institution, e.g. a reduction of the risk profile, recapitalisation, review of the strategy and

[82]See C-526/14, Judgment of 19 July 2016. Despite the fact that the case is about resolution measures (instead of recovery measures) adopted by a national competent authority before the implementation of the BRRD, the ECJ discussed the tension between property rights and freedom of enterprise and public interests based on grounds of soundness and stability of the financial market.

[83]See FORD (2008), *New Governance, Compliance, and Principles-Based Securities Regulation*, in *American Business Law Journal* 45, 1 at 10.

structure, changes in the funding strategy, or the governance structure (article 6, BRRD).[84]

The supervisory practices therefore have to be characterized both by "a high frequency of interactions and high levels of expertise and independence on the part of supervisors [which] facilitates greater information flow between regulators and regulated actors and provides a built-in feedback mechanism for communicating regulatory expectations in a non-public, non-adversarial fashion".[85] Insofar as financial regulation contemplates the devolution of responsibility for the generation of internal models and plans to deal with the proper viability of a bank, intensive supervision and the credible threat of enforcement are necessary in order to ensure the greatest possible congruence between private incentives and public regulatory objectives.[86]

As stated from the outset, in fact private actors are co-opted to cooperate and this dialogic interaction should not be mistaken for a complete devolution of self-regulatory powers to supervised entities. The retention of a significant public role for supervision and enforcement also serves to distinguish this regulatory approach from forms of unconstrained self-regulation (along with light-touch supervisory practices), which were popular in the pre-crisis era.[87]

Increased participation and power-sharing allow for structuring collaborative solutions to complex market imperfections. Recovery and resolution planning, for instance, aim at correcting mainly three types of market failures: i) the bound-

[84]More controversially in terms of intrusive new supervisory powers, to facilitate resolvability resolution authorities can dictate measures that include the revision of intragroup financing, or service agreements to cover the provision of critical functions, limits to individual and aggregate exposures, information requirements, orders to limit or cease specific activities, business lines or products, changes in operational structures to segregate critical functions, changes in corporate structure (e.g. the setting up for a parent holding company, or a separate holding company for the banking business within a conglomerate), or the issuance of liabilities eligible for bail-in.

[85]See Awrey (2010), 273-315.

[86]See BLACK, 'Forms and Paradoxes of Principles-based Regulation' (2008), *Capital Markets Law Journal* 3:4, 425; I Ayres and J Braithwaite, Responsive Regulation: Transcending the Deregulation Debate (Oxford University Press, Oxford, 1992).

[87]Expert Panel on Securities Regulation, *Creating an Advantage in Global Capital Markets: Final Report and Recommendations*, Canada.

ed rationality problem, since it forces the firm's managers to think through and more clearly confront the reality of the firm's possible failure; ii) agency failure and information failure, because it indirectly motivates the firm's managers to consider how they can better govern the firm to avoid liquidation; and, iii) responsibility failure (or moral hazard) by motivating firms to operate responsibly without reliance on the corporate reorganization protections of bankruptcy law.

Advantages to this regulatory approach include a reduced likelihood that supervisors and supervised entities will not be prepared to deal with economic and financial pathologies. Recovery and resolution planning not only aims at preventing crisis from happening, but also at shoring up the system should a crisis materialise.[88] The consequence is that systemically important firms should be less likely to fail and, if they do fail, should be less likely to externalize systemic costs.

Despite private actors' engagement being beneficial in overcoming the expertise gap, such collaboration might in fact introduce the risk of regulatory capture.[89] More precisely, capture may be caused subtly through the provision of information, or so called "information capture". The information imbalance between regulators and private actors, and the consequent dependency of the former on the latter, empowers industry to influence rules and standards, and tilts the outcome towards industry interests. Thus, as policy becomes more complex, and regulators become more dependent on industry, there is a higher likelihood that rules will be biased towards industry preferences.[90] "Representational capture" occurs when there is an imbalance in the representation of the competing interests, such as between commercial and public interests. In such cases, a regu-

[88]On the concept of "resilience" see, e.g., the recent document released by the Financial Stability Board, FSB Resilience through resolvability – moving from policy design to implementation. 5th Report to the G20 on progress in resolution, 18 August 2016.

[89]See STIGLER, 'The Theory of Economic Regulation' (1971) *The Bell Journal of Economics and Management Science* 3, 21.

[90]See CARPENTER and MOSS, *New Conceptions of Capture - Mechanisms and Outcomes, in Preventing regulatory capture: special interest influence and how to limit it* (Daniel Carpenter & David A. Moss eds., 2013); Mccarty, *Complexity, Capacity, and Capture, in Preventing regulatory capture: special interest influence and how to limit it* (Daniel Carpenter & David A. Moss eds., 2013), 102.

lator is at higher risk of adopting an industry-friendly point of view if the only people that it hears from, or primarily hears from, are industry members.[91]

The risk of regulatory capture seems to be also adequately managed by the threat of a "benign gun". In fact, information capture or representational capture are both confined by the retention of a public role in law making and enforcement. In that respect, industry involvement can scarcely lead to rules that prioritize private gains over the "global" public interest. To the extent that regulators allow private actors to pitch in along the trajectory of well-identified regulatory objectives, the risk of capture seems materially unappreciable.

7. The trajectory of financial regulation is very much based on cooperative modes of interaction between private and public actors. New governance theory and scholarship posits that such cooperation between "regulators" and "regulated entities" is indeed essential to cope with the dynamism of modern financial intermediation. Internal ratings, internal governance measures, and Recovery and resolution planning can be considered, in certain aspects, to be a new governance technique. Private actors' involvement aims at overcoming market failures which would not have been remedied by solely traditional "top-down" regulatory strategies. Nonetheless, from a citizen's perspective such strategies bring to the fore questions relating to legitimacy and accountability. In line with "new governance" theory, the financial regulatory framework possesses the main characteristics for a public-private form of cooperation to work, namely: *i)* retention of a public role in law-making and enforcement; *ii)* active pursuit of private actors' knowledge as a supplement; and *iii)* a dynamic, flexible and dialogic law-making process (increased participation of, and power sharing with, private actors).

This requires regulators to define the main regulatory objectives, to articu-

[91]See SHAPIRO, 'Testimony before the Sub-committee on Administrative Oversight and the Courts of the Senate Committee on the Judiciary; Hearing on Protecting the Public Interest: Understanding the Threat of Agency Capture' (2010) 4.

late the rules on a flexible and dynamic basis, to accept input from the ground level of regulated entities, and to effectively manage incoming information from industry actors.

Greater interaction between regulators/supervisors and regulated entities seems to have a number of advantages over conventional “top-down” regulation, which are worth exploring further. By setting out such a dialogic model of regulation, regulators and supervisors will possibly be able to improve their diagnosis of sources of market dysfunction and deepen their understanding of complexity, market dynamics and business practices. By letting private actors pitch in, public actors are incorporating regulated institutions’ internal models, thus bridging intractable information asymmetries resulting from the complexity and dynamism of contemporary financial institutions.

DIGITAL STRATEGIES AND ORGANIZATIONAL PERFORMANCES OF SMEs IN THE AGE OF CORONAVIRUS: BALANCING DIGITAL TRANSFORMATION WITH AN EFFECTIVE BUSINESS RESILIENCE

Nunzio Casalino [*] - Ireneusz Żuchowski [**] - Nikos Labrinos [***]

Ángel Luis Muñoz Nieto [****] - José Antonio Martín-Jiménez [*****]

ABSTRACT: The process of digital transformation requires a careful management since it involves a set of technological, organisational, cultural and social changes that impact the organization as a whole. For that reason, in order to reach satisfying results, it is not enough to passively adopt digital technologies throughout the organisation. Instead, it is important to be aware of the key organisational implications of embracing such a change in order to be able to manage the whole process in the best possible way. To balance the ongoing digital transformation, it is becoming fundamental to improve also the so-called "digital resilience", that is becoming a critical factor for the success of any SME (Small and Medium Enterprise), now and in the future. Digital resilience needs to be regarded as an integral part of the strategy and mission of any business and should be centred around all involved staff in SMEs. For that reason, the present manuscript

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This article is the result of a joint study of the authors and all paragraphs have to be considered as co-authored.

will go through the main assumptions about decision-making, organisational change, change management, risks prevention and knowledge management which shape the basis for an effective and successful process of digital transformation[1].

SUMMARY: 1. Introduction. - 2. Need of a resilient Business Model. - 3. SMEs' customer relationship, cost structure and revenue streams. - 4. Re-designing an organization by an advanced digital Business Model. - 5. Facilitate a digital transformation process involving all stakeholders. - 6. Implications of digital transformation creating a change culture in a SME. - 7. Strategic and operational implications of the business resilience: from competition to coopetition. - 8. Conclusions

1. European entrepreneurs are calling for measures to ensure the survival of as many small enterprises and SMEs as possible during the escalating Coronavirus situation. It pointed out that while all businesses need cash to survive, SMEs - which typically have higher payroll costs and lower margins than large enterprises - are especially exposed to prolonged business slow-down.

Europe is in the early stages of the Coronavirus outbreak and unfortunately several small and medium-sized businesses, together with professionals, are already feeling its effects.

Italy could provide a showcase for what is to come elsewhere in Europe as businesses are hit by the effects of the rapidly spreading Coronavirus: people staying at home and not spending. Italy's financial sector and public finances are uniquely vulnerable to the COVID-19 crisis. Business loans, above all, are under threat, as Italy's economic structure is particularly reliant on small and medium-sized businesses[2], while its judicial system has routinely proved itself incapable of processing collateral claims sufficiently quickly. Italian household debt is better-

[1]See ROGERS, D.L., (2016), *The Digital Transformation Playbook – Rethink your business for the digital age*, Columbia Business School Publishing, New York.

[2]See PELLEGRINI, M., CASALINO, N., KRAUSE, V. (2016), *Challenges for expatriates returning: measures and approaches for a successful reintegration of employees in financial organizations*, Law and Economics Yearly Review Journal, Queen Mary University, London, UK, vol. 5, part 1, pp. 125-150, Humanistic Management Network, Research Paper Series No. 45/16.

placed, as residential mortgages are less common and loan-to-value ratios lower than elsewhere in Europe. SMEs are highly important for the national economies and for the European productive ecosystem in all. The 99.8% of Europe's companies are SMEs, accounting for more than two thirds of employment in the EU-27. Moreover, the economic and political interests[3] that gain from the current system[4] and advancement of its current trends can explain that industrial policy, environmental law and policy, and trade initiatives must be opened by expanding the practice of multi-purpose policy design[5], and that these policies must be integrated as well[6].

Whilst the individual environmental impacts of each SME are generally small in comparison to those of large companies, the cumulative environmental impact of the sector is considerable.

Since the Coronavirus outbreak began effectively last December 2019, Chinese business activities have been severely slowed, affecting China's position in the global industrial supply chain. The Enterprise Survey for Innovation and Entrepreneurship in China (ESIEC) launched a survey on the "condition of micro, small and medium-sized enterprises (SMEs) during the coronavirus outbreak". Several studies conducted follow-up interviews with representative samples of private entrepreneurs from a database maintained over the past three years, asking about the resumption of production as well the different challenges enterprises face.

As indicated in a study[7] on the impact of Coronavirus on China's SMEs, the main findings include:

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[3]See WILLIAMSON, O.E. (1985), *The Economic Institutions of Capitalism* in *Firms, Markets, Relational Contracting*, The Free Press, New York.

[4]See WU, M. (2013), *Towards a stakeholder perspective on competitive advantage* in *International Journal of Business Management*, vol. 8, n.4.

[5]See PFEFFER, J. (1997), *New directions for organization theory*, Oxford University Press, 1997.

[6]See CASALINO, N. (2014), *Behavioral Additionality and Organizational Impact of European Policies to Promote Internationalization of High-growth Innovative SMEs, Journal of International Business and Economics, American Research Institute for Policy Development*, USA, vol. 2, no. 4, pp. 17-44.

[7]See CDG - Center for Global Development notes: https://www.cgdev.org/publication/impact-coronavirus-chinas-smes-findings-from-esiec

- 80 percent of surveyed firms had not resumed operations at the time of the survey, February 10, 2020, and 40 percent could not determine a timeframe for resumption;
- 20 percent of surveyed firms will be unable to last beyond a month on a cash flow basis, and 64 percent beyond three months, presenting a dire picture for SME bankruptcies under an extended epidemic scenario;
- Barriers to business operations vary along the supply chain, with upstream firms mainly affected by labor shortages, while downstream firms face more serious challenges related to supply chains and consumer demand; and
- Policies aimed at work resumption should consider the characteristics of each industry and avoid a one-size-fits-all approach.

The biggest question, everyone agrees, is how long the downturn in demand will be. If it is brief, will people start spending again after a month or two, making up for lost spending by using what they have saved while in isolation? Other business – such as restaurants and hotels – are seeing dips of up to 80%. This would seem to be unrecoverable lost spending.

People are postponing purchases of non-essentials from clothes to cars, with some retailers giving up and closing shop. No getting out it is not just cinemas, museums, and ski resorts that are closed by law in Italy, gatherings such as weddings and funerals, football matches and church services are also restricted. Bars and restaurants have a table-service only policy, and customers must stay a meter away from one another. With the empty streets and cafes only, the foreign tourists have gone too, and no one is full operative at work.

Unlike during the Eurozone crisis, however, this time export-orientated companies may suffer due to the global nature of the crisis; manufacturers[8] are already struggling due to supply-chain disruption from China, where the virus originated. The accompanying hit to businesses' cashflow means some companies

[8]See DAFT, R.L. (2016), *Organization theory and design*, Cengage Learning, Boston, pp. 69-74.

may soon be forced to stop paying salaries and rent, never mind loans to banks[9]. There's a significant risk of a massive disruption if the government doesn't react.

2. Several entrepreneurs assess how emerging needs linked to COVID-19 business crisis might affect their business and take appropriate action, considering also some competitive aspects as scenario planning, stakeholder analysis, strategy development, external and internal communications. Several indicators can be used in a company to evaluate its reactive capacity and understand the likely impact of digital change to reduce the negative effects of the Coronavirus crisis's issues.

Once the theoretical background is clear, and once the external and internal status analysis has been conducted, SMEs should reflect on their own business model. Digital transformation does not just mean introducing new technologies to perform existing activities: it is a process of re- designing the whole business model.

For several business experts the operational and manufacturing redundancy is becoming crucial. However, redundancy is the enemy of economic efficiency. Over the past few decades, economic engineers have created just-in-time supply chains in order to minimize warehousing costs and have lengthened supply chains in order to access the cheapest labour and materials. Well, everybody got cheaper products, and China has grown its economy at a blistering pace.

Alexander Osterwalder[10], who developed the Business Model Canvas, defined a business model as the logic with which an organization creates, distributes and captures value.

A business is able to create value for its clients when (1) it satisfies one of

[9]See the study *Coronavirus: Italy's banks and SMEs face crisis if shutdown persists* on *https://www.euromoney.com/article/b1kq42s3yscx9g/coronavirus-italys-banks-and-smes-face-crisis-if-shutdown-persists?copyrightInfo=true&copyrightInfo=true*

[10]For further information see *http://alexosterwalder.com/* and *https://strategyzer.com/app* or the book: Osterwalder, A., Pigneur, Y. (2010), *Business Model Generation.*

their needs, (2) it helps them manage an important task, (3) it helps them solve a problem. Regardless of the sector of activity, creating value for customers is the main objective of every company that wants to be successful.

It is exactly for this reason that the first document that a SME[11] must develop in its strategic planning is a map of the business model - not the business plan, which can be correctly formed only after the model is understood and validated.

In order to reflect on one's own business model, instead of just talking about it or summarizing it in long and detailed documents, a useful tool for representation is the Business Model Canvas[12]. This has become a recognized standard for all businesses and allows managers to visually represent the way a company creates, distributes and captures value for its own customers.

With the Business Model Canvas, everyone has the ability to understand complex elements that affect the operation of the company in a simple and extremely intuitive way.

This is because the Canvas is based on a visual language that is quick to learn and accessible beyond the professional background. This allows maximum alignment between the people involved[13] and, at the same time, represents the great communicative advantage of the Business Model Canvas. Osterwalder's framework summarises the key nine elements of a firm, each displayed in boxes that must be filled with information regarding the company. Below is a description of each of the key nine elements and a graphical representation of the Business

[11]See CASALINO, N., DE MARCO, M., ROSSIGNOLI, C. (2015), *Extensiveness of Manufacturing and Organizational Processes: An Empirical Study on Workers Employed in the European SMEs*, *Smart Innovation, Systems and Technologies*, 2nd International KES Conference on Smart Education and Smart e-Learning, SEEL 2015, vol. 41, pp. 469-479, Italy.

[12]The business model canvas was proposed by Alexander Osterwalder in his first work, *Business Model Ontology* (2004), and then developed by Osterwalder, Yves Pigneur and Alan Smith together with a community of 470 experts in 45 countries around the world. This led to the publication of the book Business Model Generation, a world bestseller translated into 30 languages. Today the Model is recognised as an international standard. It is taught in the best business schools in the world, including Stanford and Berkeley University.

[13]See AHMAND, S., SCHROEDER, R.G. (2013), *The impact of human resource management practices on operational performance: recognizing country and industry differences*, Published by Elsevier Ltd.

Model Canvas (figure 1).

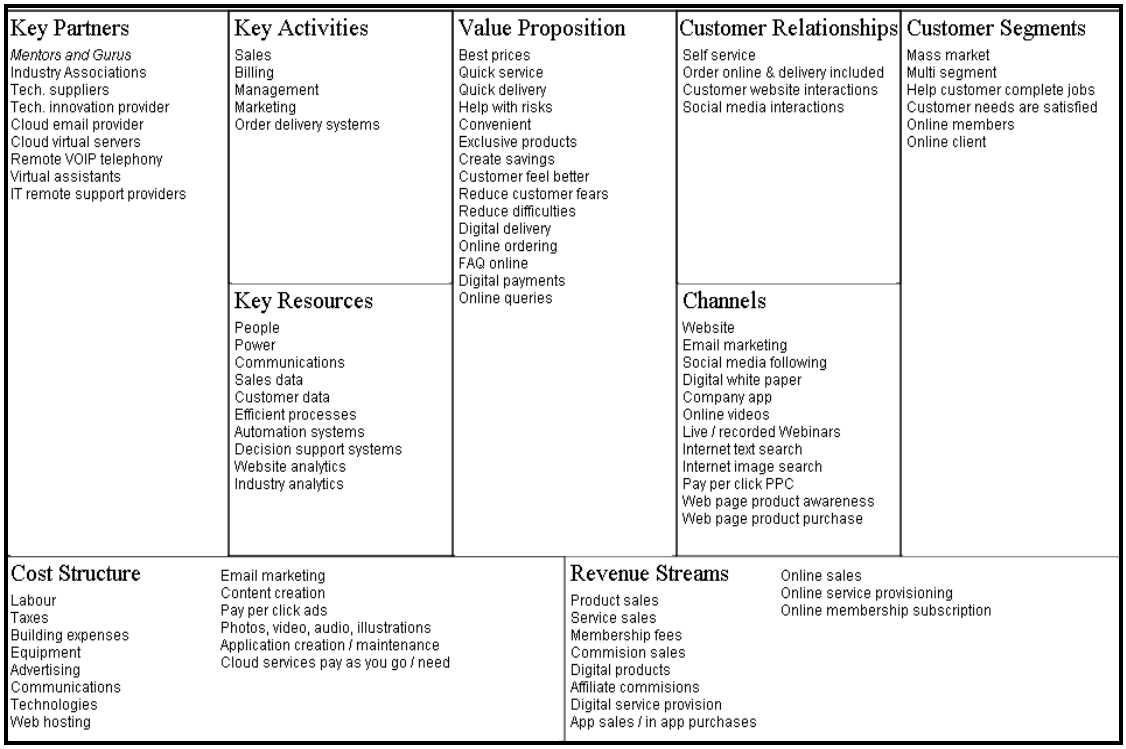

Figure 1 - An advanced Business Model Canvas for the SMEs.

Starting from the idea that a company is a system that acts in a larger ecosystem. It is not possible to think of it as something that is self-sufficient. Key partners are suppliers or other firms which are necessary to the right functioning of the Business Model. In fact, there are strategic external actors that allow the company to fully realize the business model and increase the chances of its market success. These can be considered fundamentally its key partners. A company may need a network of partners to meet different needs[14], such as optimizing resources and activities; developing economies of scale; reducing the risks of competition; competing in a wider market; acquiring particular resources and activities; spreading the brand to a wider audience; discovering new customers.

There are three main types of partnerships:

- strategic alliances between non-competitors: this is the case when suppliers or companies are part of a single production chain;

[14]See PFEFFER, J. (1997), *New directions for organization theory*, Oxford University Press, 1997.

- strategic alliances between competitors: this is the case when companies that are put on the internet provide their customers with similar value within the various points of contact;
- joint venture: a collaborative agreement between two or more companies. This could be an excellent solution to developing new lines of business.

It is essential to create valid partnerships so that the firm will be able to respond to different needs that cannot be satisfied through its own resources and activities[15]. The company's most important activities can be easily identified depending on the business's sector[16]. There are three main types of key activities:

1. productive. They are typical of manufacturing companies where it is essential to continue to create, produce and distribute products;
2. problem solving. They are typical of business models where the value proposition is the service proposal. Consulting companies are located in this area;
3. maintenance or development of networks. This is the case with companies like Google and Facebook, where the development of the platform is fundamental for the functioning of their business.

SMEs in the business services sector generally perform either (1) or (2). The value proposition answers the question: why should customers choose your service? It is what uniquely distinguishes a firm, thus determining the success or failure of its business model.

Elements to be included are not just products and services (obviously divided into lines and types). It is also important to take into consideration other valuable elements that are offered to the customer, such as particular experience,

[15]See FRUSCIANTE, A.D., ELSHENDY, M., CASALINO, N. (2014), *How Motivation Brings to Healthy Organizations: Methods and Incentives to Increase Satisfaction, Efficiency and Productivity*, Open Review of Management, Banking and Finance, Regent's University, London, UK, pp. 134-141.

[16]See CASALINO, N., CAVALLARI, M., DE MARCO, M., GATTI, M., TARANTO, G. (2014), *Defining a Model for Effective e-Government Services and an Inter-organizational Cooperation in Public Sector*, Proceedings of 16th International Conference on Enterprise Information Systems - ICEIS 2014, INSTICC, Lisbon, Portugal, vol. 2, pp. 400-408.

innovation, affordability, accessibility in an organization[17].

There are several ways to create good value propositions that allow the company to transfer not only intrinsic value in terms of the output offered, but also intangible values such as:

- offering an innovation. This creates a new value, giving customers something that was not there before;
- making a product / services accessible. This allows customer segments that previously could not use a product / service to access it;
- improving a product or service by adding relevant features or modifying the current ones to make them more functional for a specific need;
- reducing the price of a product or service;
- using the brand to convey an identity;
- improving the design of a product;
- reducing the risks[18] related to a product or service.

Organizational resilience is "the ability of an organization to anticipate, prepare for, respond and adapt to incremental change and sudden disruptions in order to survive and prosper"[19]. It reaches beyond risk management towards a more holistic view of business health and success. A resilient organization is one that not merely survives over the long term, but also flourishes - passing the test of time. Organizational resilience is a strategic imperative for an organization to prosper in today's dynamic, interconnected world. It is not a one-off exercise but achieved over time and for the long-term. Managing the organizational resilience requires the adoption of excellent habits and best practice to deliver business improvement by building competence and capability across all aspects of an

[17]See SIMON, H.A. (1985), *A formal Theory of the employment relation*, trad. it. Causalità, razionalità, organizzazione, Il Mulino.
[18]See CAVALLARI, M., DE MARCO, M., ROSSIGNOLI, C., CASALINO, N. (2015), *Risk, Human Behavior, and Theories in Organizational Studies, Proceedings of Wuhan International Conference on E-Business*, WHICEB 2015, Wuhan, China, AIS, Association for Information Systems, AIS Electronic Library (AISeL), pp.283-297.
[19]See BSI - *Organizational resilience and business impacts*, New Organizational Resilience Index Report 2019.

organization.

This allows entrepreneurs to take measured risks with confidence, making the most of opportunities that present themselves[20].

3. Digital businesses use technology to create new value in business models, customer experiences and the internal capabilities that support its core operations. The term includes both digital-only brands and traditional players that are transforming their businesses with digital technologies.

Today, people are spending more money online, which has shifted business emphasis to digital sources of revenue and digital channels. The growth of the digital economy has made people more familiar with digital products and services, which has driven companies to seek new competitive advantages in the digital space. But digital business has evolved into more than selling online; according to Accenture "Digital businesses create competitive edges based on unique combinations of digital and physical resources. They do things that others cannot and in ways that build comparative advantage"[21].

There are several views on the exact definition of digital business from industry experts[22]. Gartner says that digital business is the creation of new value chains and business opportunities that traditional businesses cannot offer. McKinsey emphasizes that "digital should be seen less as a thing and more a way of doing things"[23].

Most digital businesses fit one or both of these points; they focus on creating value at new frontiers for their core business, or they use digital

[20]See METALLO, C., AGRIFOGLIO, R., FERRARA, M., CASALINO, N., DE MARCO, M. (2012), *Why should people use wiki in academic environments? An empirical analysis of undergraduate students*, Proceedings of the IASTED International Conference on Computers and Advanced Technology in Education, CATE 2012, pp. 431-437.
[21]See Liferay DXP Business Overview: *Customer Experience and Common Elements of a Digital Business*, 2019.
[22]See SHARDA, N., GEORGIEVSKI, M., AHMED, I., ARMSTRONG, L.J., BROGAN, M., WOODWARD, A., KOHLI, G., CLARK, M. (2006), *Leading-edge developments in tourism ICT and related underlying technologies: key findings and future research directions*, Gold Coast, Australia, The Sustainable Tourism Cooperative Research Centre (STCRC).
[23]See McKinsey report *What 'digital' really means*, 2015.

technology to drive growth, revenue and performance in ways that were impossible with traditional models. It may be helpful for companies to review common elements of digital business and compare them against their own business models. These are some of the trends that differentiate digital from traditional processes.

Use existing technologies to cut costs, gather data and provide a better customer experience. Digital businesses focus on the competitive advantages that technology gains them, whether that's reducing overhead or providing new value to their customers.

Embrace the concept of digital transformation and the cultural shifts that requires. The implementation and management of digital services can necessitate organizational restructuring, especially as new roles are created, and information systems[24] are given greater input into strategic decisions. Explore new business models that put customer experience at the center of digital strategy. People are often willing to spend more for an exceptional customer experience, making it a key differentiator in the digital economy. Business models that align with this hyper focus on customer satisfaction will eventually center on digital services, since digital is increasingly the experience that people prefer.

Digital business is changing the way organizations use and think about technology, moving technology from a supporting player to a leading player in innovation, revenue and market growth. Key resources identify what a business needs to make its own business model work. They can be:

- physical resources: these include tangible assets such as point-of-sale networks, systems, technologies, machinery and all that physically needs to be made to produce or sell a certain product or service;
- intellectual resources: these include a company's know-how, patents, trademarks, copyrights, developed projects, partnerships and customer

[24]See CHANG, D.Y. (2003*), Six fundamentals of strategic implementation of information systems for destination management organizations*, e-Review of Tourism Research (eRTR).

database. If you think of big brands like Coca-Cola, then you realise the importance of these resources. The same goes for the record and the publishing world;

- human resources: HR is important in every business model, especially in the field of services. When you work on this block of the business model canvas, you must first consider strategic resources[25]. Facebook, for example, cannot exist without its programmers, just as Ikea needs designers who develop new solutions;
- financial resources: i.e. credit lines, cash or a set of stock options that allow the company, for example, to hire important employees or guarantee supplies. This gives them a competitive advantage over competitors.

Customer relations describes the type of relationship that the company establishes with its various customer segments. Depending on the established business model, there are different forms of customer relationships[26], such as:

- personal assistance: the relationship is based on the presence of a customer relations manager who becomes their support when help is requested. Think, for example, of the personal employees dedicated to business customers in the various telephone companies;
- dedicated personal assistance: the relationship is constructed and maintained by assigning a specific employee to customers, as in the case with financial advisors. This is a very close relationship that stimulates customer confidence and serenity;
- self-service: the relationship with the customer is guaranteed through an indirect relationship, specifically a structure that allows them to have all the tools to do things themselves;

[25]See AHMAND, S., SCHROEDER, R.G. (2013), *The impact of human resource management practices on operational performance: recognizing country and industry differences*, Elsevier.

[26]Another type of customer relationship is community. The relationship is direct and fosters the relationship between consumers, creating shared identity and recognition in a group. Such communities can also be created without the firm's intervention, but they are a source of valuable information. The term refers to all the communities of users, mostly virtual, who follow a brand and interact with the company through initiatives and competitions launched on the web.

- automatic services: this is an advanced form of self-service that is spread across many sectors. Obviously, it differs a lot from business models that provide personal and dedicated assistance, but it can still be effective. For example, online banks offer a personal online profile with which the client can perform many of the actions at the counter;
- co-creation: the relationship is based on sharing the value creation process. In essence, the customer actively participates by making choices that change the value proposition of the company. Nowadays, the active involvement of consumers in the value creation process is considered crucial. Think, for example, of the emergence of consumer innovation labs worldwide.

The three essential elements of organizational resilience[27]:

- product excellence;
- process reliability;
- people behaviours.

Three functional domains of organizational resilience which help to unlock the potential of within their organizations:

- operational resilience;
- supply chain resilience;
- information resilience.

It is fundamental since it allows the building of the package of products and services around the precise needs of each specific cluster of customers. An easy way to find out which elements to insert in this box is to classify customers in relation to their behaviours and needs.

It is needed to identify and create different customer segments each time. There are:

- different needs that justify different value proposals;

[27]See BSI - *Organizational resilience and business impacts*, New Organizational Resilience Index Report 2019.

- different channels to reach different customers (e.g. physical shops vs. virtual shop);
- different methods of interaction are used (e.g. telephone companies have a customer care dedicated to business customers and one dedicated to individuals);
- different clients available to pay for different aspects of the value proposition (e.g. merchants use the POS to cash in, their customers use it to make payments);
- several aspects that could determine a specific profitability.

The channels block describes how the company reaches a certain customer segment. Channels are therefore simply the point of contact with clients. They can be direct, if owned by the company, or indirect, if owned by a partner. To identify the key elements to insert in this box, think through the following 5 basic steps from the consumer's perspective:

- create awareness about the product or service and about the company itself. Help the consumer evaluate the value propositions made by the company;
- offer the product or service;
- allow the consumer to buy the product or service. Follow the consumer after the sale has taken place.

The variables to be considered in the composition of the revenue streams box are the price and the payment method. Both of these are fundamental for regulating financial flows and making the business model sustainable.

There are two different payment methods that generate different revenue streams and which in turn include other different forms of payment:

- payment in one solution;
- recurring payments, such as rentals or subscriptions.

Given that we are focusing on the services sector, you should consider whether you are offering your services for a user fee (based on the use of a

particular service) or entry free (which is typical for services offered on an ongoing basis). SMEs may also offer their services[28] for a loan, rental or leasing (typical when customers have the opportunity to use an asset for a specified period of time), licensing, adverting, commissions and so on.

In terms of prices, these can be defined in different ways. If the company is dealing with fixed prices, it can set them, for example, based on its business volume and the identified segment of customers. In the case of dynamic prices, these will be defined in terms of real-time market trends, negotiations with partners and other variables.

In the process of mapping the business model canvas, the cost structure is left until last, because it derives almost directly from the structure of the blocks related to key activities, key partners and key resources. By analysing the cost structure, the business model can have:

- fixed costs: in this business model the costs remain unchanged as the volume of goods or services produced (rent, wages, production plants) changes;
- variable costs: costs vary according to the volumes of goods and services produced;
- economies of scale: costs are lowered when a company expands (this is the case with large brands that have much higher price advantages than small producers);
- economies of scope: costs decrease by increasing the range of an operation.

A good question to ask is: is your business cost-driven or value-driven? In a cost-driven business, each diminished cost represents an additional opportunity to respect the value proposition. In a value-driven company, even if you are still

[28]See CASALINO, N., CAVALLARI, M., DE MARCO, M., GATTI, M., TARANTO, G. (2014), *Defining a Model for Effective e-Government Services and an Inter-organizational Cooperation in Public Sector*, Proceedings of 16th International Conference on Enterprise Information Systems - ICEIS 2014, INSTICC, Lisbon, Portugal, vol. 2, pp. 400-408.

going to optimise costs and reduce waste, the most important thing is to offer a value that the customer perceives to be very high. This depends on each company corporate strategy, which can differ across firms within the same sector.

4. Innovating a business model means understanding and rethinking the company at the highest level, observing all the processes (production, distribution, sales and so on) as a whole and in their synergies, without any particularities. A structural vision makes it possible to identify bottlenecks, unexploited opportunities and dead activities, which can then be cut out.

The business model can also be considered the operating system of a company. To put it simply, it is the upstream logical structure that defines the relationships and the behaviour of each single element, and that allows it to work in a fluid, optimised and productive way.

Making business model innovation is like updating a computer operating system. It is something that a company must do when:

1. new threats come from outside (viruses in the case of the PC, new competitors in the case of the company);
2. new needs arise that need a different support (new applications in the case of the PC, new potential customers in the case of the company or new market requirements such as a Digital Transformation process);
3. the system is overloaded, and operations are slow and not very fluid (reduced performance in the case of the PC, reduced marginality in the case of the company).

On the basis of what has been said so far, there are some useful tips below that a business services company should consider when deciding whether to modify its own business plan. It is convenient to suggest reviewing each box of the business model or creating a new one which is tailored to needs of the digital era.

First, the firm needs to change its perspective. Even the largest leading companies worldwide have realised that just using tools as marketing research is

not enough. In order to develop a successful business model, it is crucial to understand clients' needs and desires in the digital era (i.e. which services they are expecting and how is it possible to satisfy their new needs). Then focus on which customer' needs are real and most urgent. In a preliminary brainstorming phase, it is possible that numerous needs might arise. In the process of revision, the managers should then include only those that should really be prioritised.

Value propositions and needs; activities and customer desires must be in synergy with each other. This makes the difference between a successful business model and a broken business model.

Emotional and social aspects must be taken into account, as well as functional aspects (such as the need for the client to perform a certain activity at best). There are also needs linked to the emotional sphere (such as hidden fears, frustrations and desires), which are just as important. At an operational level, it is important and strategic to understand how the built business model is integrated. Is it adequately supported by the key activities? Is it synergistic with the value you offer? What kind of relationship can be more functional for each customer segment? These considerations will allow the company both to make appropriate choices and to harmonise them within the design process.

The different types of relationships that the company establishes with different customer segments support and structure the customer experience. Do not underestimate the importance of communicating with clients: they can help you to be aware of the needs of the target group and from time to time to spread various initiatives, to gain news on offered services and new value proposals. And all without necessarily exposing the company immediately in a co-creation relationship[29].

Enter only key strategic activities: don't consider all the activities that will

[29]See CASALINO, N., CIARLO, M., DE MARCO, M., GATTI, M., (2012), *ICT Adoption and organizational change. An innovative training system on industrial automation systems for enhancing competitiveness of SMEs*, Proceedings of 14th International Conference on Enterprise Information Systems–ICEIS, Wroclaw, Poland, Maciaszek L., Cuzzocrea A., Cordeiro J. (Eds.), INSTICC, Setubal, Portugal.

be part of the business cycle but just the ones that are particularly relevant for the functioning of the business model. Together with key resources and key partners, this block will determine what cost structures the company will have to support. Keep a clear vision: always keep a clear and concise overview of the business model. This will be particularly useful in translating the business model canvas into subsequent strategic planning documents.

If a SME follows a multichannel strategy, all channels should be considered simultaneously so that it will be easier to create points of contact with people who will benefit from products and services. The digital era is the era of omnichannel environments, where in order to reach the consumer it is important to select the right message and to deliver it at the right time and through the right touchpoints[30].

Search for partners with whom to create synergies: especially if the firm needs to acquire knowledge[31] and skills about new digital technologies it should consider the possibility of developing a partnership with specialised firms.

In terms of prices, the first questions you should ask are: What do customers have to pay for? How should they do it? How much do they have to pay?

Revenue Flows can then be structured along with the cost structure analysis, and this will allow you to maintain the success achieved by making the business model sustainable.

There is no single factor that makes revenues sustainable and functional. When you think about your new business model, do not make the mistake of considering revenue based on price. You should also pay attention to payment methods, resources, partners and key activities. In fact, it is important to ask

[30]See McKinsey Customer Decision Journey in the Digital Era, 2019.
[31]See AGRIFOGLIO, R., METALLO, C., VARRIALE, L., FERRARA, M., CASALINO, N., DE MARCO, M., (2013), *Assessing Individual Learning and Group Knowledge in a Wiki Environment: An Empirical Analysis*, in Klement E.P., Borutzky W., Fahringer T., Hamza M.H., Uskov V., Proceedings of Web-based Education - WBE 2013 conference, IASTED-ACTA Press Zurich, 11-13 February, Innsbruck, Austria, DOI 10.2316/P.2013.792-042.

which of these items will have a greater impact on costs. If an entrepreneur has done the analysis correctly, in the presence of high costs you will have to make a comparison with the revenue streams. Obviously, the business model will become sustainable only if these are higher than the costs.

5. If digital transformation is simply approached as a new tool or just an addition to the current firm's structure it will definitely fail. Digital transformation must be implemented as a total rethinking of what must be done in a market where new technologies are continuously introduced and shaping new customer needs. The real challenge in a process of digital transformation is not to keep up with all technological changes – these are countless and getting faster everyday – but to become quicker, more flexible and cost-efficient, and therefore to minimise risk and structural complexities.

It is important that entrepreneurs remain watchful, taking steps to proactively and intelligently address also cyber-security risks within their organisation. Beyond the technological solutions developed to defend and combat breaches, it is possible that can accomplish even more through better training, awareness and insight on human resources behaviour[32].

Confidence, after all, is not a measure of technological systems, but of the people who are entrusted to manage them.

Digital resilience is about balance and collaboration. The balance between seizing the opportunities and managing the digital risks your organisation faces. The balance between your people, processes and technology as each needs to play their role in any integrated and enterprise-wide response to better protect the most precious and valuable information assets. And collaboration is the key to

[32]See AHMAND, S., SCHROEDER, R.G. (2013), *The impact of human resource management practices on operational performance: recognizing country and industry differences*, Elsevier.

success[33] – collaboration between the leadership team and their risk, security and technology teams as well as collaboration with other key business stakeholders (communication, public relations, marketing, legal, procurement, etc.) to ensure entrepreneurs are well placed and prepared for a breach as and, almost inevitably, when it happens.

In order to ensure that your new business model will work adequately, pay attention to the following useful tips:

- development and role of an effective and inclusive leadership: top management clearly and formally sets out the objectives of change, but middle management must be involved with accountability actions to facilitate communication and decisions, thereby involving staff at all organisational levels;
- make people aware of the benefits of change: develop an awareness of the effects and benefits of change, for example how it will change the way people work and their roles, so as to facilitate acceptance. It is also good to provide incentives and reward mechanisms;
- learning: create a way to develop specific change skills that can be distributed within the organisation, integrating them also with a programme or project management skills[34]. SMEs could distribute some general instructions to their employees or organise ad hoc training sessions;
- organisational governance: define the role of a change coordinator with a clear and visible mission;
- tool, methodologies, check list: provide methods that facilitate and speed up the start of the programmes without having to "reinvent the wheel"

[33]See ARMENIA, S., CANINI, D., CASALINO, N. (2008), *A system dynamics approach to the paper dematerialization process in the Italian public administration*, Interdisciplinary Aspects of Information Systems Studies, pp.399-408.
[34]See CAPRIGLIONE, F., CASALINO, N. (2014), *Improving Corporate Governance and Managerial Skills in Banking Organizations*, International Journal of Advanced Corporate Learning (iJAC), Austria, vol. 7, issue 4, pp. 17-27.

every time. Develop instead a permanent operational culture that is dedicated to change;

- monitor hard and soft key performance indicators (KPIs)[35]: activating control mechanisms linked to business objectives (KPI hard), but also KPIs that are soft for communication, alignment with strategies, and company climate. The technology also provides innovative support with change predictive analytics for increasingly effective decisions related to change.

The following step by step instructions, provided by Gartner[36], facilitate the process of digital transformation within an organisation:

1. create the right mind-set and shared understanding;
2. put the right leadership in place;
3. launch a digital business centre of excellence;
4. formulate the digital strategy;
5. find, develop and acquire knowledge;
6. create new digital capabilities.

The impacts of not effectively balancing your digital transformation with effective digital resilience have already been keenly felt by too many organisations. So, it is more and more fundamental to focus on the more effective way to start to make digital resilience the critical business enabler it should be.

6. The present manuscript tries to emphasize that digital transformation is not achieved simply introducing new technologies to perform organisational tasks. It is, instead, a process of change which involves the organisation as a whole and therefore has organisational, financial, strategic and operational implications.

The tricky part of transforming a business is to change the organisational culture, the mind-set and instincts of the working people in a company. The

[35]Key Performance Indicators (KPIs) are metrics which indicate the level of achievement of a given objective by an individual, a department or a company.
[36]See Gartner Inc. research and advisory services. With expert-led, practitioner-sourced and data-driven research it steers clients toward the right decisions on the issues that matter most. *https://www.gartner.com/technology/about.jsp*

common definition of culture is the set of values, norms, beliefs and knowledge that shapes people's will and needs and is embedded in the place in which they were born and have grown up. Just as it varies between each different country, so also every organisation has its own values, which characterise people's behaviours and interactions: this has an impact on activities and the way in which they are managed.

When dealing with changes – i.e. introducing new strategies, structures or processes – it is important to clarify whether they are in contrast with basic norms and values shared by the corporate culture. If so, getting the benefits from the change process will be practically impossible.

So, what if the SMEs organizational culture is not in line with a process of digital transformation? It is clear that changing an organisational culture means changing values, norms, attitudes, opinions and ways of thinking which permeate the whole organisation and thus influence the entire workforce's behaviour.

It is important to understand and improve a recognition of non-formal and informal learning acquired through work experience in an organisation to overcome, or, at least, to reduce the effects of this crisis[37].

Traditional models of on the job training are often not enough for continuous skills' updates and upgrades as they are too cumbersome and limit learners to prescribed and closed educational/training systems.

There are many methods and a variety of techniques for collecting evidence to provide a basis for judgments about whether learning/training outcomes (skills and competences) have been acquired or not.

Learning and knowledge support systems have to convey professional knowledge to non-specialists[38].

[37]See USKOV, V., CASALINO, N. (2012), *New Means of Organizational Governance to Reduce the Effects of European Economic Crisis and Improve the Competitiveness of SMEs*, in *Law and Economics Yearly Review Journal*, Queen Mary University, London, UK, vol. 1, part 1, pp. 149-179.

[38]See BIANCHI, M., CASALINO, N., DRAOLI, M., GAMBOSI, G. (2012), *An Innovative Approach to the Governance of E-Government Knowledge Management Systems*, in *Information*

Current approaches and information systems[39], enhanced by Web 2.0, provide a viable solution for fast paced and multitask oriented patterns of learning and working today. They enable learning in small steps and with small units of content through social interaction.

Innovative and well-designed processes aligned with formal learning and embedded in online going professional development. As companies seek various new ways and options for the more efficient and effective cross training of employees, informal learning has become an increasingly valuable alternative[40].

Organisational culture has been described in literature by Edward Twitchell Hall as an iceberg (figure 2)[41].

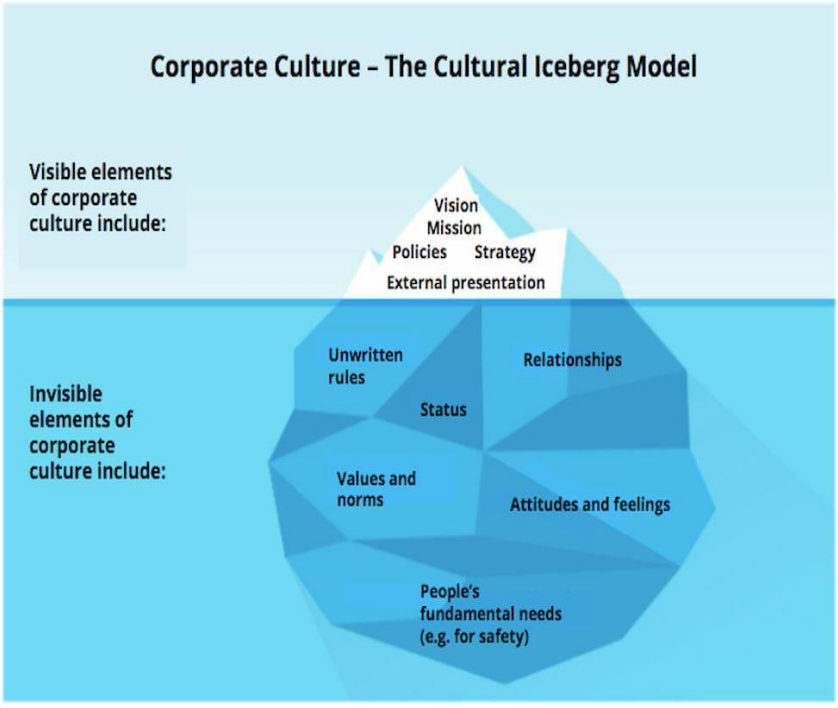

Figure 2 - Iceberg model of corporate culture by Edward Twitchell Hall (1989).

Systems: a Crossroads for Organization, Management, Accounting and Engineering, De Marco M., Te'eni D., et al. (Eds.), Physica-Verlag, Springer, Heidelberg, pp. 113-121, ISBN 978-3-7908-2788-0, doi 10.1007/978-3-7908-2789-7_14.

[39]See D'ATRI, A., DE MARCO, M., CASALINO, N. (2008), *Interdisciplinary Aspects of Information Systems Studies*, pp. 1-416, Physica-Verlag, Springer, Germany.

[40]See USKOV, V., CASALINO, N. (2012), *New Means of Organizational Governance to Reduce the Effects of European Economic Crisis and Improve the Competitiveness of SMEs*, in *Law and Economics Yearly Review Journal*, LEYR, Queen Mary University, London, vol. 1, part 1.

[41] See EDWARD, T.H. (1989), *Cultural Iceberg Model*, in *Beyond Culture*, Anchor Books, USA.

On the surface there are visible elements, i.e. organisational structures, office layouts, brand, vision, mission, symbols, and all the other elements that can be seen by everyone inside and outside the organisation. On the other hand, the lower part of the iceberg is made up of all the deep-seated values embedded in people's minds within the organisation, i.e. assumptions, opinions, unconscious mental processes that define their culture.

Of course, in order to change the company's culture, it is important to change underlying elements, that will in turn impact all visible elements[42]. It is essential that the management encourages values that are in line with concepts such as innovation, sharing, teamwork, flexibility, responsibility, etc.

There are four main strategies that are considered effective for a successful cultural change:

1. business Development. Managers should introduce the change as a business development strategy aimed at improving the firm's capability to adapt to changes and solve new problems;
2. groups. This is when managers organise a meeting with all the relevant stakeholders of the organisation and they meet outside the firm to reflect on new opportunities and to develop a new plan;
3. team Building. Working together can always be translated into teamwork. Teams can be created to solve problems, to develop new products, to achieve other specific objectives. Building teams can strengthen cohesion and collaboration among employees;
4. activities among employees. Employees that typically perform different tasks are brought together in a neutral place to reflect on ways to make communication and coordination more effective.

New technologies imply changes in employees' knowledge, competences and skills. More specifically, each organisation needs to design jobs, and assign goals and tasks that employees must achieve. Managers can intervene with job

[42]See DAFT, R.L. (2016), *Organization theory and design*, Cengage Learning – Boston, pp. 69-74.

descriptions when they believe there is a possibility for improving the productivity or motivation of employees. Nowadays, new technologies are often popular interventions, but since they modify employees' work, they are often seen as a threat and are not always easily accepted.

However, although it is true that technologies have often reduced the number of workers needed to perform a task, they should not be seen as a danger. The possible effects of technology on jobs are:

- job simplification: activities become simple and not very varied, so employees could be unsatisfied with their mechanic role[43];
- job enrichment: there is an increase in responsibilities and competences required to employees, so that they would need training and instructions to perform their tasks effectively;
- job enlargement: the number of tasks performed by a single employee is increased.

In the digitalised world, employees must be ready to learn continuously since new technologies could be introduced nearly every day, changing the way in which the job is executed. Even if they are often negatively perceived, literature suggests that if the role of technologies is well interpreted, employees' positions will be strengthened and will provide them with new opportunities that also ensure higher satisfaction.

Training on the workplace is a process through which individuals are helped to learn a skill or technique. In particular, skills may be manual, such as using a keyboard, or intellectual, such as negotiating a contract. Progress in today's digital era places emphasis on the growth of the individual, relating to acquiring a broad range of planned activities and experience that is most commonly acquired through the extensive use of a computer or other means of modern technology. Internet has far-reaching implications for the availability of information and for

[43]A possible solution could be to introduce job rotation so that everyone can practice different roles and learn new tasks.

education. It is changing the way we work and creating new businesses that support technology. At the same time, technology and the internet also provide new techniques for trainers to use in the process of training itself. However, this can affect interpersonal communication. The basis for most training remains the traditional training process system.

This comprises of four main steps, namely identifying training and learning needs, devising a learning plan, delivering training, and evaluating the outcomes.

While establishing an entrepreneur training plan, be sure to stress the relevance of creativity, effectiveness, adaptiveness and flexibility. These are the characteristics which were considered most important in the current state analysis[44]. In fact, technologies could and will change in the future. People must be ready to adapt and quickly update their knowledge and skills.

5. Many organisations have already changed their structure due to the introduction of new technologies. This has led to important implications for both strategy and operations. More specifically:

- it would help organisations when responding to customers that are becoming more demanding every day in terms of the speed, comfort, quality and value they expect from companies;
- it would provide advantages in terms of upgraded decisional process, higher control, efficacy and coordination.

Technologies support agile work[45], and this has some important implications for strategy and operations:

[44]See CASALINO, N. (2014), *Simulations and Collective Environments: New Boundaries of Inclusiveness for Organizations?*, in *International Journal of Advances in Psychology* (IJAP), Science and Engineering Publishing, USA, vol. 3, issue 4, pp. 103-110.

[45]Sometimes also referred to as smart work or flexible work, agile work is defined as "an approach to organizing work through a combination of flexibility, autonomy and collaboration, which does not necessarily require the worker to be present in the workplace or in any pre-defined place and enables them to manage their own working hours, while nevertheless ensuring consistency with the maximum daily and weekly working hours laid down by law and collective agreements". It is, of course, facilitated by new technologies (European Parliament resolution of 13 September 2016 on creating labor market conditions favorable for work-life balance.

- organisations can be smaller. Some internet-based firms, for example, exist almost completely in the "cyberspace". There is no formal organisation with offices and big structures, everything could be managed directly from home, reducing the need for large investments in assets and fixed costs[46]. When dealing with the transformation of SMEs this means that the small dimension of those enterprises is not a weakness[47], at least for operational and strategic purposes. Thanks to ICT consulting organisations[48], companies in general could also outsource many functions and reduce their internal dimensions;
- decentralisation of structures. Many firms are using ICT to decentralise the decisional power. Nowadays, in fact, there is no need for managers to heavily rely on what the top management says. Thanks to ICT they could have all the information they need at any time, thus being able to take decisions in the most efficient and effective way. Depending on the organisational culture, technology[49] could also be used to strengthen the power of the centralised authority. In this case, they could have an even greater control over all the activities carried out throughout the company;
- better internal and external coordination. Communication is simplified, and it is the most important thing to ensure coordination among members of the organisation. Information systems ensure that workers can be connected and that they can work together even if they are located in different parts of the world. On the other hand, a greater flow of information and communications could increase the number of direct interactions among members within the organisation, thus creating new

[46]This is the case with hi-tech start-ups, which are born to be competitive in the international scene and are characterized by flexibility and a high level of innovation.
[47]Instead, as was previously thought, this small dimension could also be a weakness due to the lack of financial resources required to invest in digital transformation.
[48]See CHANG, D.Y. (2003), *Six fundamentals of strategic implementation of information systems for destination management organizations*, e-Review of Tourism Research (eRTR).
[49]See POLLOCK, F. (1956), *Automation: a study of its economic and social consequences*.

challenges when it comes to supervising the whole process;

- better inter-organisational relationships. Point 3 also applies to horizontal coordination and collaboration with third parties such as suppliers, clients and partners. While traditional interactions with third parties were often considered to be distinct, a growing trend is to level organisational boundaries and promote collaboration as if suppliers were part of the company;
- reinforced networks. If the transforming SME is working in a network of enterprises, then their work will be optimised by all the advantages carried by business information systems. The continuous flow of information obtained at a lower cost helps companies reinforce their competitive position.

Technologies are almost everywhere in services and they are the most important source of innovation. Incorporating them in the whole firm is essential to optimise strategies. As defined by Huang and Rust (2017)[50], the three major impacts on services are related to: (1) the ability to communicate with clients, (2) the improved storage of data on clients (big data), (3) the ability to analyse this data and better understand clients' needs. These three impacts are all focused on customers. It is therefore clear that technology can help to strengthen relationships with clients[51], which can be standardised (when technology is used for gaining efficiencies) or personalised (when technology is used to better discover customers' needs)[52].

As has been stated before, the main implications of digital transformation relate to communication and coordination between various stakeholders, which could be inside the boundaries of the organisation or outside. This explains the

[50]See HUANG, M., RUST, R. (2017), *Technology-driven service strategy*, in *Journal of the Academy of Marketing Science*, Springer, 45:906-924.
[51]See WILLIAMSON, O.E. (1985), *The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting*, The Free Press, New York.
[52]See HUANG, M., RUST, R. (2017), *Technology-driven service strategy*, in *Journal of the Academy of Marketing Science*, Springer, 45:906-924.

implications of digital transformation for two important stakeholders: suppliers and competitors. An increasingly widespread trend is the “integrated enterprise”.

Technologies allows companies to communicate and coordinate their work internally, but also to do so with suppliers, clients and partners. Integrating suppliers in the production process makes it easier to satisfy customer needs.

Companies are entrenched in multiple multifaceted relationships that make them interdependent on each other for success so that we cannot talk anymore about competition, in its strictest sense. Technologies even reinforce this trend, given that they often require scales: the more they are used and improved, the more they will be useful for all companies.

One particularly interesting theory is that of James F. Moore in his work on business ecosystems[53] (figure 3). He defines these ecosystems as a system formed by the interaction of a community of organisations and their environment.

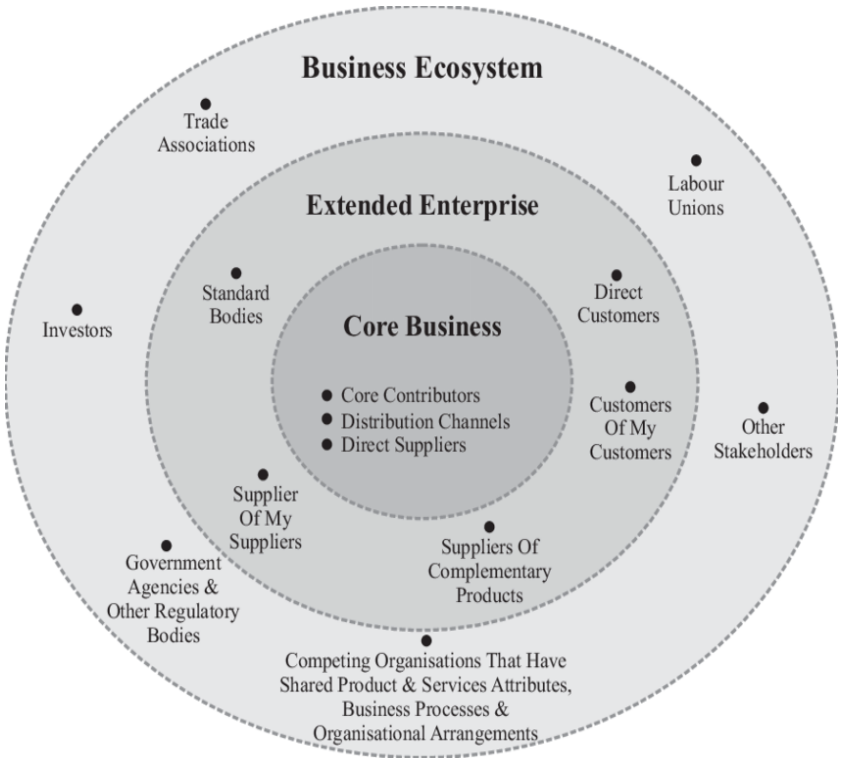

Figure 3 – The Business Ecosystem described by James F. Moore (1996).

[53]See MOORE, J.F. (1996), *The Death of Competition: Leadership and Strategy in the Age of Business Ecosystems*, John Wiley & Sons Ltd, USA.

SMEs could also think about sharing the costs required by technology investments and creating networks. In organisational ecosystems and enterprise networks cooperation and competition coexist, creating an environment of co-opetition. The term co-opetition was coined by Adam Brandenburger and Barry Nalebuff in a book of the same name. The authors applied game theory to business relationship to show why the right strategy for rival businesses is often a mix of competition and cooperation on different fronts. […] rival companies must cooperate to "grow the pie" and at the same time they compete to "divide the pie"[54]. What is clear from the analysed framework is that firms need to be ready to lose their boundaries in the pursuit of organisational efficiency and market growth. SMEs in the business services sector should learn from the experience of Italian industrial districts, made of small and medium enterprises, that perform traditional activities but still enjoy the benefits of sharing major costs, in some ways thanks to geographical proximity[55]. The same can be done, nowadays, even without being located close to other competitors. Data and information sharing could be the new source of competitive advantage if they allow firms to anticipate their clients' needs.

6. An effective and innovative business strategy will aim to maximize the use of communication tools to raise the demand, favoring a dynamic selection of markets in which to intervene, of products and strategies to promote and commercialize, etc.

From the business point of view, a resilient organization must demonstrate key traits in the way that it operates: adaptable with agile leadership that governs robustly. A resilient organization will benefit from:

[54]See BARANDENBURGER, A.M., NALEBUFF, B.J. (1997), *Co-opetition*, New York, Currency Double day, 11-27 cited in ROGERS, D.L. (2016), *The Digital Transformation Playbook – Rethink your business for the digital age*, Columbia Business School Publishing, New York, pp. 74-75.

[55]See CARABELLI, A., HIRSCH, G., RABELLOTTI, R. (2006), *Italian SMEs and Industrial Districts on the move: Where are they going?*, PRIN research project, MIUR.

- strategic adaptability – giving them the ability to handle changing circumstances successfully, even if this means moving away from their core business;
- agile leadership – allowing them to take measured risks with confidence and respond quickly and appropriately to both opportunity and threat;
- robust governance – demonstrating accountability across organizational structures, based upon a culture of trust, transparency and innovation, ensuring they remain true to their vision and values.

Besides the company, through a promotion aligned to the organizational value proposition[56], has to distinguish one country from another, is a great resource to exploit: organizational culture[57] and, in the same time, the local lifestyle by the analysis of the data obtained by GIS – Geographical Information Systems. So, the governmental support to the market access for SMEs could be guided by the following objectives:

- promote a digital European internal market;
- facilitate access to international markets for innovative entrepreneurs;
- enable concretely the uptake of resource efficiency technology through concrete investments, training actions and cooperation exchanges between European SMEs.

Given limited public resources, it is really recommended that the European countries, as is making the Chinese government, will assist enterprises in resuming work and production as soon as possible. Supportive policies should be tailored to the unique characteristics of each sector. For example:

- the light industry sector is most in need of support, in particular those enterprises involved in exports. By introducing support for the full industrial chain, and rebates in social security contributions, the government can help

[56]See CASALINO, N., D'ATRI, A. MANEV L. (2007), *A quality management training system on ISO standards for enhancing competitiveness of SMEs*, Proc. 9th International Conference on Enterprise Information Systems – ICEIS conference.
[57]See WILLIAMSON, O.E. (1985), *The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting*, The Free Press, New York

enterprises to quickly resume operations;

- to assist the heavy industry sector, the government should roll out region-specific epidemic control measures. Many medium- and large-sized heavy enterprises have their own dormitories. They should take responsibility for organizing production while keeping workers safe within their perimeters;
- in the business services sector, as the long-term impact of the outbreak will likely be relatively small, the government should continue to provide medium- to long-term loans to avoid disrupting cash flows;
- although the residential services sector has been hit by the direct impact of weak demand, the need for government support should be relatively limited. Rent relief is identified by the residential services sector as the most important supportive policy.

Despite more than a dozen supportive policies unveiled by various ministries and commissions to help enterprises overcome the epidemic, most private entrepreneurs lack a clear understanding of these policies and have no idea how to make proper use of them.

Supportive policies should take into account differences across sectors to be more relevant to their specific needs; they should also be more transparent if they are to deliver subsidies directly to the private entrepreneurs, they aim to help overcome the crisis.

In the meantime, digital transformation follows the rise of new digital skills and the adoption of digital tools. This is a process of transformation which requires the re-structuring of previous business models to make room for new, more effective and efficient, practices[58].

These draw on existing theories of organisational change, change management, knowledge management, project management and risk management.

[58]See CASALINO, N., D'ATRI, A., BRACCINI, A.M. (2012), *A quality management training system concerning ISO standards for sustainable organisational change in SMEs*, in *International Journal of Productivity and Quality Management* (IJPQM).

An appropriate digitalization strategy to develop own business aims to expand the products/services offer of SMEs to make them more and more competitive. In particular, the suggested strategy is oriented to the full use of the competitive advantage linked to the plurality and variety of cultural, and social motivational tools, also expressed towards practical skills, knowledge, experience, better talents and local feedbacks (also using for example the latest GIS – Geographical Information Systems).

A successful process of digital transformation is a complex task to perform. First, it is fundamental plan for the worst and implement a clear action plan. Every decision maker within the company needs to ensure they are fully aligned with the business on the expectations. Then is essential to look carefully for the right technology. Sometimes purchasing more products to fix issues only tends to make things worse. It exposes vulnerabilities in the business, leaving SMEs also opened to malicious attacks and troubles.

Finally, businesses need to properly test their digital infrastructures. By running a full failover test, enterprises can be sure they can fully recover valuable data when necessary, ensuring all plans for digital transformation are not quashed by increasingly sophisticated data losses. With the right technology for information systems resilience in place, businesses can drive their digital transformation efforts forward, safe in the knowledge that the risk of downtime is mitigated, with an always-on business that will maintain superior customer experience in any eventuality.

The experience with SARS, H1N1 and Ebola already showed that, while some progress is made after each outbreak, this is often not sustained. This COVID-19 epidemic shows that managing diseases is absolutely critical to the long-term health of global economy, and doubly so in circumstances where traditional central bank and finance ministry tools for dealing with major global economic

shocks are limited[59].

For this reason, in order to simplify the analysed complexity, an advanced business process model[60] could be very useful for representing a step-by-step re-organisational process. SMEs should first assess their current status[61], then be aware of new technologies and innovations. They should then revise their business model, while considering profound implications on culture, training and financial, strategic and operational performance.

[59]See BUTLER, C. (2017), *How to Fight the Economic Fallout from the Coronavirus*, Chatham House.
[60]See BECKER, J., ROSEMANN, M., VON UTHMANN, C. (2000), *Guidelines of business process modeling*, in *Business Process Management*, pp. 30-49, Springer Berlin Heidelberg.
[61]See PFEFFER, J. (1998), *Seven practices of successful organizations*, in *California Management Review*, 40(2), pp. 96-124.

MANAGING THE PROFESSIONAL SKILLS OF THE FUTURE: A MODEL TO SUPPORT COMPETENCE MANAGEMENT

Pamela Palmi [*] - Fabrizio Errico [**] - Laura Fortunato [***] - Simon Fietze [****]

ABSTRACT: *Big data and digitalization are transforming the world of work, introducing an epochal change. This wild digital phenomenon, also thanks to the introduction of 4.0 industry, is changing the relationship between workers and machines and, if properly governed, can represent a great chance for companies to attain advantages and create value. This stimulating scenario embodies a huge opportunity for HRM. It provides impulses to improve positive social change, as well as develop and adopt new digital systems and innovative organizational solutions. HR professionals can help employees use digital 4.0 modes to manage, organize and drive change. To address this opportunity, HRM 4.0 has to collaborate with IT, spread an agile mind to execute projects, adopt design thinking and use integrated analytics. This paper presents an organizational model based on a technology platform designed for business workers and able to fill the gap between own skills and the request from the labour market. A theoretical framework is proposed, based on an innovative integrated system able to implement the entire workflow of evaluation, selection and training of candidates with the final aims of allowing companies to*

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Although the article is the result of joint observation of all authors, the paragraphs 1, 2.1, 2.2, 2.3 and the abstract have to be attributed to Pamela Palmi, the paragraph 3.1 to Fabrizio Errico, the paragraph 3.2 to Laura Fortunato, the paragraph 4 to Simon Fietze.

identify, manage and build business workers' competencies. We conclude presenting opportunities and challenges for future studies.

1. Sudden and disruptive changes can represent a serious problem or an opportunity for growth, depending on the perspective and the viewer. The economist Joseph Schumpeter said: *"Innovations imply, by virtue of their nature, a "big" step and a "big" change ... and hardly any "ways of doing things" which have been optimal before remain so afterward"*[1]. If we consider the current disruptive effects of Big Data and digitalization on trade, services and business models, in light of Schumpeter's pioneering words, we can more easily imagine that everything will soon be different from how we see it today.

The world is inundated with data generated every minute of every day, with a growth rate that increases about 10 times every five years[2]. According to the Industrial Development Corporation (IDC) and EMC Corporation (IDC, 2014), the amount of data generated by 2020 will be 44 times bigger than in 2009. By the end of 2020, there will be 5,200 gigabytes of data for each person on Earth, resulting in more than 40 ZB. An enormity that is scary.

This wild digital phenomenon, if properly governed, can represent a great

[1]See LANZILLOTTI R.F., (2003) *Schumpeter, product innovation and public policy: the case of cigarettes*, in CANTNER U., DINOPOULOS E., LANZILLOTTI R.F., *Entrepreneurship: The New Economy and Public Policy*, Berlin Heidelberg New York, Springer, p.13.
[2]See HENDRICKSON S. (2010), *Getting Started with Hadoop with Amazon's Elastic Map Reduce. EMR.* Hadoop Meetup, Boulder/Denver, CO; HILBERT, M., LÓPEZ, P. (2011), *The world's technological capacity to store, communicate, and compute information*, *Science*, 332, 60–65.

chance for companies to obtain advantages and create value. For instance, value can consist in providing new products and services, making faster and better decisions in real time and reducing costs or improving efficiency[3]. But value can also derive from the response to the challenge of designing a new way of working, with the request to organizations to redesign their structures and processes[4]. Workers should develop new skills and abilities, from technological skills and data analysis skills, to essential social and emotional ones, as well as increasingly strong creative abilities[5]. Furthermore, industry 4.0 is changing the relationship between workers and machines, so the worker's duties will be ever more characterized by autonomy and responsibility at decreasing costs, thanks to the new tools made available by technology[6]. On the other hand, revolution 4.0 is changing time and workspace: work becomes ever more intelligent, agile, with real-time feedback supporting development and motivation[7].

As Morgan notes[8], there are many fascinating things happening in the world of technology that are impacting on work. The use and control of IT provides an opportunity to be innovative in when we work, where we work and the way we work (time, place and space) in a global economy[9]. Furthermore, as Howcroft and Taylor point out[10], these innovations in labour utilization and scheduling work impact on

[3]See CHEN, H., CHIANG, R. H. L., LINDNER, C. H., STOREY, V. C., & ROBINSON, J. M. (2012), *Business intelligence and analytics: From Big Data to Big Impact*, *MIS Quarterly*,36, 1165–1188.

[4]See KANE, G.C., PALMER, D., PHILLIPS, A.N., KIRON, D., BUCKLEY N. (2016), *Aligning the organization for its digital future*, *MIT Sloan Management Review*. Research Report on Digital Business.

[5]See COLBERT, A., YEE, N., & GEORGE, G. (2016). *The digital workforce and the workplace of the future*, *in. Academy of Management Journal*, 59(3), 731-739.

[6]See HOLLAND, P., BARDOEL, E. A. (2016), *The impact of technology on work in the twenty-first century: exploring the smart and dark side*, *in International Journal of Human Resource Management*, 27(21), 2579-2581.

[7]See SONNENTAG, S., BINNEWIES, C., MOJZA, E.J. (2008), *Did you have a nice evening? A day-level study on recovery experiences, sleep, and affect, Journal of Applied Psychology*, 93(3), 674.

[8]See MORGAN, J., (2014). *The future of work: Attract new talent, build better leaders, and create a competitive organization*. Hoboken, NJ: Wiley

[9]See HARVEY D., (2010), *The Enigma of Capital and the Crises of Capitalism*, Oxford, Oxford University Press.

[10]See HOWCROFT D., TAYLOR P. (2014), *Plus ca change, plus la meme chose?' researching and theorising the 'new' new technologies*, *New Technology Work and Employment*, 29(1)

employees' work and how work is done, as the boundaries of the organization 'melt' away. Indeed, they argue that society is experiencing a new wave of revolutionary technology that provides the platform for significant change in the way we work. These changes are creating renewed interest in how work is conceptualized – what we describe as the 'smart-side' of technology.

This stimulating scenario represents a huge opportunity for HRM. It provides impulses to develop positive social change, as well as develop and adopt new digital systems and innovative organizational solutions. HR professionals can help employees use 4.0 digital modes to manage, organize and drive change. To address this opportunity, HRM 4.0 has to collaborate with IT, spread an agile mind to execute projects, adopt design thinking and use integrated analytics[11].

Thanks to IT solutions, companies can define development plans in line with future objectives and strategic positioning, adopting competency management processes able to define the right expertise for the right job in respect to requirements within the organization, consequently improving the effectiveness of employees' allocation and performance[12]. New tools emerge with the aims to support these activities: Business Process Management (BPM), used for designing processes, deploying run-time processes[13], monitoring and managing those processes, reporting and analyzing the performance of those processes; Social Network Analysis (SNA) to extract information from a particular network of human resources using specific analysis indicators[14]; gamification, to rise the engagement of users by means of game-like techniques such as scoreboards and personalized fast

[11]See STROHMEIRER, S., PARRY, E., (2014), *HRM in the digital age- digital changes and challenges of the HR profession, Employee Relations, 36; BONDAROUK, T., & BREWSTER, C. (2016). Conceptualising the future* of HRM and technology research. *The International Journal of Human Resource Management*, 27(21), 2652-2671.

[12]See LINDGREN, R., HENFRIDSOON, O., SCHULTZE, U., (2004), *Design principles for competence management systems a synthesis of an action results study, MIS Quarterly*, 28, 435.

[13]See FETTKE, P. (2009). *How conceptual modeling is used, Communications of the Association for Information Systems*, 25(1), 43.

[14]See ROLLAG, K., PARISE, S., CROSS, R., (2005), *Getting new hires up to speed quickly: the key to making new employees productive quickly, known as rapid on-boarding, is to help them immediately build an informational network with co-workers. MIT Sloan Management Review*, 46(2), 35-42.

feedback[15], thus making employees experience more ownership and purpose when engaging with tasks.

The fluctuation towards the convergence of physical and digital dimensions, the different nature of work and the unprecedented technological injection that Industry 4.0 is generating, is transforming organizations and their managerial systems. Both the ongoing and the potential transformation of HR empowered by emerging technologies likely seem to have a noteworthy effect on HR, so much so that the expression Smart Human Resources 4.0 was introduced. This indicates a concept that "*is evolving as a part of the overall 4th Industrial Revolution and[is]characterized by innovations in digital technologies such as Internet of Things, Big Data Analytics, and artificial intelligence (AI) and fast data networks such as 4G and 5G for the effective management of next-generation employees"*[16].

In this study we present an operative methodology based on a technology platform designed for business workers and able to fill the gap between own skills and the request from the labor market.

Our paper proceeds as follows. In the theoretical section we present the passage of traditional business towards the concept of enterprise 4.0. In particular, we carry on an investigation on the transition from HRM to HRM 4.0, and the role of Competence Management and the emerging technologies for a new competence management approach to improve the effectiveness of the employees' allocation and performance. In doing this, the research aims to address the following research question: is there a way to help managers identify, manage and build the professional skills of the future?

Then a theoretical framework is proposed, based on an innovative integrated system able to implement the entire workflow of evaluation, selection and training of candidates with the final aim of allowing companies to identify, manage and build

[15]See SWEETSER, P., WYETH, P., (2005), *GameFlow: a model for evaluating player enjoyment in games. Computers in Entertainment (CIE)*, 3(3), 3-3.
[16]See SIVATHANU, B. AND PILLAI, R., (2018), *Smart HR 4.0–how industry 4.0 is disrupting HR*, in *Human Resource Management International Digest*, 26(4), 7-11, p.7.

business worker's competencies. The proposed organizational model can help managers and stakeholders in such a complex scenario, in order to better direct corporate policies and managerial strategies, with the result of supporting the growth of human resources in a company, but also of creating growth, development and value for the entire company and for all stakeholders.

We conclude our research proposing opportunities and challenges for future studies.

2. 2.1. The Digital Era has redesigned the industry as Industry 4.0, ever smarter and with an increasingly strong interaction between man and machine[17]. As clarified by Ghoabakhloo[18], industry 4.0 is a dynamic and integrated system for exerting control over the entire value chain of products' lifecycle. Vertical and horizontal integration and fusion of the physical and the virtual worlds is at the heart of Industry 4.0.

In this new organization, there emerge four macro-directions of development of the Smart Factory[19]:

-Data, computing power, connectivity: the unification of data into a company and their conservation through Big Data, i.e. a collection of data developed in terms of scope, variety and speed that workers could never channel, and which would require very complex tools able to manage, extrapolate and process information in the shortest possible time (Cloud Computing).

- Analytics: being able to recognize the value of collected data in terms of

[17]See STOCK T., SELIGER G., (2016), *Opportunities of Sustainable Manifacturing Industry 4.0*, 13th Global Conference on Sustainable Manufacturing - *Decoupling Growth from Resource Use*, Science Direct, Elsevier, 536-541; ROJKO, A., (2017), Industry 4.0 concept: background and overview *International Journal of Interactive Mobile Technologies* (IJIM), 11(5), 77-90; REISCHAUER G., (2018), *Industry 4.0 as policy-driven discourse to institutionalize innovation systems in manufacturing*, *Technological Forecasting & Social Change*, 1-8.

[18]See GHOBAKHLOO, M., (2018), *The future of manufacturing industry: a strategiv roadmap toward Industry 4.0*, *Journal of Manufacturing Technology Management*, 29 (6), 910-936, p.924.

[19]See MCKINSEY, D., (2016), *Industry 4.0 after the initial hype. Where manufacturers are finding value and how they can best capture it.*

productivity and efficiency. Focus on data deserving analysis and development, abandonment of others.

- Interaction between man and machine: this is made possible thanks to the increasingly innovative and widespread touch-devices and interfaces, such as computer hardware and software, which guarantee a reduction in errors, time and costs and an improvement in process safety.

- The bridge between digital and real: once the data are collected, analyzed, processed and coded in appropriate machines, it is necessary to find the tools to produce goods and services. These tools refer, for example, to 3D printing, robotics, communications, and machine-to-machine interactions.

To make sure that the IoT, Cyber-Physical Systems (CPS) and Big Data, indicated as strategic aspects of Industry 4.0, are opportunely exploited, it is necessary to work on the growth of new "digital" professional figures[20]. Human resources policies and the search for managerial talent will need to be fully integrated with the way in which work is organized within the organization[21]. This does not mean that these skills should be developed only for some departments but that, alongside the development of hard skills, every worker shall possess soft skills to understand the former. The problem of robotization will therefore be that of shifting employment from traditional logics to innovative and digital logics. If technology is the means and not the goal, in order to ensure that this leads to productivity results, it is necessary to invest in human resources, on the quest for young talents able to exploit, without being dominated, the strength of robots. That's why we need to focus on human resources[22].

[20]See PARRY E., BATTISTA V. (2019), *The impact of emerging technologies on work: a review of the evidence and implications for the human resource function*, *Emerald Open Research*, 2019, Last updated: 27 jan.2020.
[21]See IMPERATORI B., BISSOLA R., BUTERA F., BODEGA D., (2019), *Work and HRM in the 4.0 Era: insights and research directions*, *Studi Organizzativi*, n. 2, pp. 9-26
[22]See Marler J.H., Boudreau J.W., (2017), *An evidence-based review of HR Analytics*, *The International Journal of Human Resource Management*, 28:1, 3-26,

The spread of internet-based HRM innovations, generally labeled e-HRM[23], may be attributed to the promise of significant economic efficiencies in processing administrative transactions and communicating information. The disruptive technology of internet-based IT will inevitably transform the way in which organizations are structured[24]. Based on this perspective, it was argued that e-HRM will transform or disrupt how HRM is practiced in organizations, shifting it from being primarily administrative to being more strategically relevant[25], because the use of IT affects the way organizations are structured[26]. With major automation of administrative tasks and increasingly distributed access to data, decision-making is decentralized so that those performing HRM tasks now can more effectively focus on complex, judgment-oriented and professionally demanding tasks and responsibilities[27]. In this sense, jobs in HRM are upskilled as an adaptation to the effects of new technological advances[28].

At any rate, a managerial strategic choice plays the main role, deciding on how technology can support the organization for the achievement of strategic objectives[29]. From this perspective, when e-HRM is adopted and how it is deployed is

[23]See RUËL, H.J.M., BONDAROUK T. (2004), *E-HRM: Innovation or Irritation*, *Proceedings of the 12th European Confrence on Information Systems*, Turku, Finland; STROHMEIER S., (2007), *Research in e-HRM: Review and implications* in *Human Resource Management Review*, 17, 19-37.

[24]See BOWER J.L., CHRISTENSEN C.M., (1995), *Disruptive Technologies: Catching the Wave*, *Harvard Business Review*, 73 (1), Jan-Feb: pp.43-53; BRYNJOLFSSON, E., HITT L.M. (2000), Beyond Computation: InformationTechnology, Organizational Transformation and Business Performance, *Journal of Economic Perspectives*, Volume 14, Number 4 Fall 2000, 23–48.

[25]See LEPAK D.P., SNELL S. A. (1998), *Virtual HR: Strategic human resource management in the 21st century Human Resource Management Review* 8(3); SHRIVASTAVA S., SHAW J.B. (2003). Liberating HR through Technology, *Human Resource Management*, 42, 201-222.

[26]See HITT L.M., BRYNJOLFSSON E., (1997) *Information Technology and Internal Firm Organization: An Exploratory Analysis*, *Journal of Management Information Systems*, 14:2, 81-101; PFEFFER J., LEBLEBICI H. (1977), *Information Technology and Organizational Structure*, *Pacific Sociological Review*, 20(2): 241-261.

[27]See HOLLAND P., BARDOEL A., (2016), *The impact of technology on work in the twenty-first century: exploring the smart and dark side*, *The International Journal of Human Resource Management*, 27:21, 2579-2581.

[28]See BRYNJOLFSSON, E., HITT.L.M., (2000), *Beyond Computation: Information Technology, Organizational Transformation and Business Performance*. *Journal of Economic Perspectives*, 14 (4): 23-48*;* MARLER, J., LIANG, X., (2012), *Information technology change, work complexity and service jobs: A contingent perspective*, *New Technology Work and Employment*, 27, 133–146.

[29]See BARLEY, S.R., (1986), *Technology as an Occasion for Structuring: Evidence from*

the result of strategic decision-making and managerial intent[30]. The emergence of e-HRM in organizations is a planned outcome of strategic decisions concerning how to provide HRM services. In many cases, the planned outcome might simply be to make the delivery of HRM services more efficient rather than transform HRM jobs into strategically important roles[31].

2.2. Due to the rapid development of digitalization, companies are facing a new industrial revolution, known as "Industry 4.0", in which the use of smart technologies is enabling new and more efficient products, services and processes[32].

This change represents risks, challenges and opportunities for the entire industry system and will generate output in different sectors at different speeds, depending of the complexity of adopted business models[33]. The advent of Industry 4.0 has also radically changed the way Human Resource Management (HRM) has been conceived: the measurement of individual productivity gave way to the strategic management of human resources, with a specific attention on human learning management, knowledge management, learning organizations and more in

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Observations of CT Scannersand the Social Order of Radiology Departments, *Administrative Science Quarterly*, Vol. 31, n. 1, 78-108.

[30]See BRODERICK, R., BOUDREAU J.W., (1992), *Human resource management, information technology and the competitive edge*, *Academy of Management Executive*, Vol. 6 No. 2, 7-17; MARLER, J. (2009), *Making human resources strategic by going to the net: Reality or myth?*, *International Journal of Human Resources*, 20, 515–527; MARTIN G., REDDINGTON M. (2010), *Theorizing the links between e-HR and strategic HRM: A model, case illustration and reflections*, *The International Journal of Human Resource Management*, 21(10):1553-1574; RUËL, H., BONDAROUK, T., & LOOISE, J., (2004), *E-HRM: Innovation or Irritation. An Explorative Empirical Study in Five Large Companies on Web-based HRM* in *Management Revue*, *15*(3), 364-380.

[31]See MARLER J.H., (2009), *Making human resources strategic by going to the Net: reality or myth?*, *The International Journal of Human Resource Management*, 20:3, 515-527.

[32]See STRANDHAGEN, J., ALFNES, E., STRANDHAGEN, J.O. AND VALLANDINGHAM, L., (2017), *The fit of Industry 4.0 applications in manufacturing logistics: a multiple case study*, *Advances in Manufacturing*, Vol. 5; ZHONG, R.Y., XU, X., KLOTZ, E., NEWMAN, S.T., (2017), Intelligent manufacturing in the context of industry 4.0: a review, in *Engineering*, 3(5), 616-630.

[33]See ROBLEK, V., MEŠKO, M., & KRAPEŽ, A. (2016). *A complex view of industry 4.0. Sage Open*, 6(2); STRANDHAGEN ET AL., *ibidem*; HIRSCH-KREINSEN, H., (2016), *Digitization of industrial work: development paths and prospects, in Journal for Labour Market Research*, 49(1), 1-14; RAJNAI, Z., & KOCSIS, I., (2017), *Labor market risks of industry 4.0, digitization, robots and AI.* In *2017 IEEE 15th International Symposium on Intelligent Systems and Informatics (SISY)*.

depth on competence development[34]. Each company, in an attempt to solve problems and challenges coming from the external environment, has developed specific business strategies based on a coordinated use of all internal organizational and technological resources[35]. The increasing use of technological resources, in terms of combination of Information & Communication Technologies (ICTs), as for example the sophisticated Enterprise Resource Planning (ERP) software, with internet-based technologies, led companies, and in particular HRM, through a standardized and automated vision of the administrative processes[36].

Across their daily life, companies have witnessed the transition from HRM to e-HRM, understood as the configurations of hardware, software and electronic resources that enable HRM activities (e.g. policies, practices and services), through coordinating and controlling individual and group-level data capturing, as well as information creation and communication within and across organizational boundaries[37]. With the "E-wave" also reaching the area of HRM, the terms e-HR or e-HRM are increasingly being used when referring to the next development stage in IT-based HRM[38]. This involves the use of Web technologies for redistributing HR

[34]See BERARDINE, T., (1997), *Human Resource Information Systems Improve Management Decision-Making*, *Canadian Manager*, 22(4):17–18; HENDRICKSON, A.R., (2003), *Human Resource Information Systems: Backbone Technology of Contemporary Human Resources*, in *Journal of Labor Research*, 24(3):381–394; PETER HOLLAND P., BARDOEL A., (2016), The impact of technology on work in the twenty-first century: exploring the smart and dark side, *The International Journal Of Human Resource Management*, 27:21, 2579-2581.

[35]See GAVETTI, G., RIVKIN, J., (2007), *On the origin of strategy: Action and cognition over time*. *Organization Science*, 18, 420–439; COLBERT A., YEE N., GEORGE G., (2016), The Digital Workforce and the Workplace of the Future, *Academy of Management Journal*, VOL. 59, NO. 3; CORALLO, A., ERRICO, F., LATINO, M. E., MENEGOLI, M., (2018), "A framework proposed in order to assuring the entrepreneurial ecosystem sustainability through a dynamic model of governance", *2018 7th International Conference on Industrial Technology and Management (ICITM)*.

[36]See MARLER J.H., (2009), *Ibidem;* KANE, G.C., PALMER, D., PHILLIPS, A.N., KIRON, D., BUCKLEY N., (2016), *Aligning the organization for its digital future*, in *MIT Sloan Management Review*. Research Report on Digital Business.

[37]See MARLER, J., FISHER, S., (2013), *An evidence-based review of e-HRM and strategic human resource management,* in *Human Resource Management Review*, 23, 18–36.

[38]See KARAKANIAN, M., (2000), *Are Human Resources Departments Ready for E-HR?*, *Information Systems Management*, Fall 35–39; LENGNICK-HALL, M.L.,S. MORITZ, (2003), *The Impact of E-HR on the Human Resource Management Function*, in *Journal of Labor Research*,

activities from the HR department to the entire organization, and integrating these with other corporate processes such as finance, supply-chain management, and customer service[39]. The era of Industry 4.0 transposes the traditional HRM onto a new model, one which is able to deal with the "not so new" but still challenging Learning 4.0 and Education 4.0[40]. HRM 4.0, as it is called, materializes the industry strategy for filling in the blanks around their dynamic capabilities[41] to adapt and survive in the 4.0 market, combining real and virtual global information and IT management knowledge[42]. This new systems enable common definitions and standardization of data across the company, thus contributing to the simplification of HR processes[43], even if a resistance to adopting these standards in some units/process is not uncommon[44]. The transition from client/server-based systems to Web-based access is a concrete example: a new option for "self-service" routines, where managers and employees can be responsible for registering and maintaining their CVs, as well as filing and tracking time/attendance, give permits, and payroll

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24(3):365–379; BONDAROUK, T., BREWSTER, C., (2016), *Conceptualising the future of HRM and technology research*, *The International Journal Of Human Resource Management*, 27:21, 2652-2671.

[39]See KARAKANIAN, *Ibidem*; LENGNICK-HALL M., MORITZ S., (2003), *The Impact of e-HR on the Human Resource Management Function, Journal Of Labor Research*, Vol. XXIV, Number 3, Summer 2003, 365-379; Ruël and Bondarouk, *Ibidem;* 2004; MARLER, J. H., PARRY, E. (2016). "Human resource management, strategic involvement and e-HRM technology". *The International Journal of Human Resource Management*, 27(19), 2233-2253; HOLLAND P, BARDOEL A., *Ibidem.*

[40]See HARKINS, A.M., (2008), "Leapfrog principles and practices: core components of education 3.0 and 4.0", Futures Research Quarterly, Vol. 24 No. 1, pp. 19-31.

[41]See TEECE, D.J., PISANO, G. AND SHUEN, A., (1997), "*Dynamic capabilities and strategic management", Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533; EISENHARDT, K. M., & MARTIN, J. A., (2000), "Dynamic capabilities: what are they?". *Strategic management journal*, 21(10-11), 1105-1121.

[42]See HECKLAU, F., GALEITZKE, M., FLACHS, S., KOHL, H., (2016), *Holistic approach for human resource management in Industry 4.0*, *6th CLF - 6th CIRP Conference on Learning Factories*, 54, 1-6.

[43]See GREENGARD, S., (1995), *When HRMS Goes Global: Managing the Data Highway*, *Personnel Journal*, 74(6):90–98.

[44]See HELLSTRÖM, T., KEMLIN, P., MALMQUIST U., (2000), *Knowledge and Competence Management at Ericsson: Decentralization and Organizational Fit*, *Journal of Knowledge Management*, 4(2):99–110; Hellström, T., Malmquist U., Mikaelsson J., (2001), *Decentralizing Knowledge: Managing Knowledge Work in a Software Engineering Firm*, in *The Journal of High Technology Management Research*, 12(1):25–38; ROLLAND, K.H., MONTEIRO E., (2002), *Balancing the Local and Global in Infrastructural Information Systems*, *The Information Society*, 18(2):87–100.

information online[45].

This increasingly strong interaction between organization and technology is based on the key role of "knowledge" that draws attention to a broader domain, known as "Knowledge Management Systems" (KMS)[46] referring to a wide range of technological tools supporting creation, sharing and application of individual and organizational knowledge[47].

In the knowledge management domain, competence management represents a key factor as it provides an integrated picture of the organization's total competence resource that can be mapped against competence requirements and used for planning and implementing competence development actions[48]. IT-supported competence systems may also contribute to the knowledge management processes in an organization, through supporting identification and distribution of knowledge and competence[49].

In this regard, competence systems provide crucial information about where the knowledge resides, rather than providing access to the knowledge itself, thus supporting the network model of KMS[50].

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[45]See SIVATHANU, B., PILLAI, R., (2018), *Smart HR 4.0 – how industry 4.0 is disrupting HR*, in *Human Resource Management International Digest*, Vol. 26 No. 4, pp. 7-11; TOTTY, P., (2001), *Human Resource Information Systems*, *Credit Union Magazine*, 67(8):53–55; HENDRICKSON, *Ibidem.*

[46]See ALVARI, M., LEIDNER D.E., (2001), *Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues*, *MIS Quarterly*, 25(1): 107–136; BOWMAN, B.J., (2002), *Building Knowledge Management Systems*, *Information Systems Management*, Summer 32–40; MARLER J.H., PARRY, E. (2016), "Human resorce management, strategic involvement and e-HRM technology", *The International Journal of Human Resource Management*, 21(10):1553-1574.

[47]See DAVENPORT, T. PRUSAK L., (1998), *Working Knowledge. How Organizations Manage What They Know*. Boston: Harvard Business School Press.

[48]See BORGHOFF, U.M., PARESCHI R., (1998), *Information Technology for Knowledge Management*. London: Springer Verlag; CORALLO, A., ERRICO, F., ESPOSITO, M., LAZOI, M. (2014). "The role of knowledge in the new product development process through the perspective of business model", *International Journal of Collaborative Enterprise*, *4(4)*, *249;* MARLER AND PARRY, *Ibidem*)

[49]See DAVENPORT T.H., PRUSAK, L., (1998), *How Organizations Manage What They Know*, Boston, Harvard Bisiness School Press, 1-199; Holland P., Bardoel A., *Ibidem*).

[50]See BOLAND, R.J., TENKASI R.V. (1995). *Perspective Making and Perspective Taking in Communities of Knowing*, *Organization Science*, 6(4): 350–372; MARCHAND, D.A. (1998). *Competing with Intellectual Capital*. Krogh, G., Roos, J., and Kleine, D. (Eds.), *Knowing in Firms*.

At the same time, competence management is a key element of HRM practice, as it generates competencies that provide the organization with the right mix of talent to meet existing and future needs[51]. This may affect the socialization process among employees, by providing wareness within communities of individuals having similar interests[52]. Furthermore, the core competencies of an organization should provide guidelines for the competence management process to increase sustainable competitiveness[53].

The HRM 4.0 approach considers more crucial the description, stimulation, and development of the single employee's competencies, rather than job descriptions and duties focusing on career development and long-term goals for employees, as it requires an overview of each worker's competences, and an in-depth knowledge of all activities and processes in which he is involved[54].

2.3. Each company will need to align its HRM strategies and practices with Industry 4.0, including topics such as employment and skills development. For this reason, digital skills might be needed in this Industry 4.0 future, such as the creation of digital outputs, non-routine tasks and problem- solving[55]. This is because some

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London: Sage Publications Ltd., pp. 253–268. MARCHAND D.A., 1998; ALAVI, M. (2000). *Managing Organizational Knowledge*. Zmud, R.W. (ed.), *Framing the Domains of IT Management. Projecting the Future…Through the Past,* Cincinnati, OH, Pinnaflex Educational Resources.

[51]See ULRICH, D.O., LAKE D. (1990). *Organizational Capability: Competing from Inside Out*. Canada: John Wiley & Sons; NORDHAUG, O. (1993). *Human Capital in Organizations*. Oslo: Scandinavian University Press; HOUTZAGERS, G. (1999). *Empowerment, Using Skills and Competence Management*, *Participation & Empowerment: An International Journal*, 7(2):27–32; BONDAROUK T., BREWSTER C., (2016), Conceptualising the future of HRM and technology research, The International Journal of Human Resource Management, 27:21, 2652-2671.

[52]See LINDGREN, R., AND D. STENMARK (2002). Designing Competence Systems: Towards Interest- Activated Technology, *Scandinavian Journal of Information Systems*, 14(1):19–35.

[53]See BERGENHENEGOUWEN, G.J., TEN HORN H.F.K., MOOIJMAN E.A.M. (1996). *Competence Development. A Challenge for HRM Professionals: Core Competencies of Organizations as Guidelines for the Development of Employees, Journal of* European *Industrial Training*, 20(9):29–35; HAGAN, C.M. (1996). *The Core Competence Organization: Implications for Human Resource Practices*, *Human Resource Management Review*, 6(2):147–164.

[54]See KANE ET AL., *Ibidem.*

[55]See DJUMALIEVA, J., SLEEMAN, C., (2018), *Which digital skills do you really need?, London: Nesta Available from: https://www. nesta. org. uk/report/which-digital-skills-do-you-really-need*; SIVATHANU B., PILLAI R., *Ibidem.*

technologies, such as Big Data, Internet-of-Things or artificial intelligence, can automate most of the HR processes, with a positive impact on all the processes.

IT solutions, as *Competency Management Systems (CMSs)*, can help organizations apply the competency management processes defining the right competencies for the right job with respect to requirements within the organization and consequently, so as to improve the effectiveness of employees' allocation and performance. A CMS can be a driver of relevant benefits such as experts and talents location, allowing the increase of objectivity in the evaluation of human resources[56] . In fact, CMSs are aimed at optimizing the identification, development, and scouting of competencies required in business activities, in order to identify those processes or tasks that are critical for achieving enterprise objectives, evaluate the competency gap between people and role, and determine the most important actions useful to mitigate the gaps.

Companies are recognizing the importance of their human resources as the principal holders of knowledge. In an enterprise environment, the "human resources" use their knowledge to carry out the business process in order to obtain the best performance. They work using their knowledge, information and skills[57]; they make analyses, define problems (problem- setting) and identify solutions (problem solving). The intra-organizational knowledge management facilitates the transfer of expertise and knowledge-sharing among human resources, in order to make business activities more efficient. The comprehensive elicitation of knowledge relevant to work processes is a primary objective of the *Business Process Management (BPM)*[58]. BPM has emerged as one of the major systematic approaches to support and optimize their activities and processes, employing methods, policies,

[56]See LINDGREN R., HENFRIDSSON O., SCHULTZE U., (2004), *Design Principles for Competence Management Systems: A Synthesis of an Action Research Study*, *MIS Quarterly*, Vol. 28, No. 3, Special Issue on Action Research in Information Systems (Sep., 2004), pp. 435-472.
[57]See DRUCKER P.F. (1999) *Management: Tasks, Responsibilities*, Harlow, England: Addison-Wesley; COLBERT, A., YEE, N., GEORGE, G., (2016*), The digital workforce and the workplace of the future*, *Academy of Management Journal*, 59(3), 731-739; KANE ET AL., *Ibidem.*
[58]See FETTKE P, (2009), *How conceptual modelling is used. Communications of the Association for Information Systems (CAIS)*, 25 (43), 571-592.

metrics, and software tools[59].

Today, many enterprises have well defined their business processes, but these hardly correspond to those occurring in the real world. In addition, human resources are often at the core of numerous processes that have a high degree of complexity and difficulty of management; it is thus very hard to capture and organize information retrieved from these business processes. Often, the information is retrieved by human resources through informal communication exchange with other human resources, not belonging to the traditional organizational hierarchy[60].

Moreover, a significant component of a person's information environment consists of the relationships he can tap for various informational needs. Relationships are critical for obtaining information, solving problems and learning how to do your work[61] (Cross and Parker, 2001). For this reason, most organizations recognize the importance of *Social Network Analysis (SNA)*, a powerful diagnostic method used to analyze the nature and pattern of relationships among members in a particular domain. In order to understand knowledge flows or bottlenecks that slow down business processes, it is useful to 'map' the relationships between employees, with whom they communicate, and how often[62]. SNA can influence HR interventions at the individual, group, and organizational levels[63].

At the individual level, SNA facilitates the identification of those who are central or brokers in the work network, supporting interventions for knowledge

[59]See HAMMER, M., CHAMPY, J. (1993). *Business process reengineering*, London, *Nicholas Brealey*, 444(10), 730-755; HAMMER, M., CHAMPY, J., (1993), *Reengineering the Corporation: A Manifesto for Business Revolution*. Harper Business, New York, NY.

[60]See CHAN, K., LIEBOWITZ, J., (2006), *The synergy of social network analysis and knowledge mapping: a case study*. *International Journal of Management and Decision Making*, 7(1), 19-35; COLBERT ET AL., *Ibidem.*

[61]See CROSS, R., PARKER, A., PRUSAK, L., BORGATTI, S. P., (2001), *Knowing what we know: supporting knowledge creation and sharing in social networks*, *Organizational dynamics*, 30(2), 100-120.

[62]See BUSCH, P., FETTKE, P., (2011), *Business process management under the microscope: The potential of social network analysis*, in 2011 44th Hawaii International Conference on System Sciences, IEEE, 1-10.

[63]See HATALA J.P., (2006), *Social Network Analysis in Human Resource Development: A New Methodology*, *Human Rosource Development Review*, Vol. 5, No. 1 March 2006 45-71.

acquisition, transfer, and retention among individuals. (Rollag, Parise, & Cross, 2005). At the team level, SNA can help business managers analyze and diagnose causes of intergroup fragmentation and discuss action items to overcome these challenges. Connections within groups, connections with other groups, and group leaders' connections with peers and higher-level managers can have an impact on group performance[64] .

In addition, SNA can support HRM in enabling an organization's innovation efforts, in this way networks play a critical role in integrating relevant expertise and facilitating coordination of work[65]. Network analysis can provide a lens through which to view how work and information flows are occurring across groups. Also, HR managers can take concrete action to ensure the appropriate pattern of collaboration, mapping connectivity among experts and decision makers.

Competence management can be also supported by methods coming from other contexts or domains: this the case of "Gamification", which is the use of game-play mechanics for non-game applications[66]. Any application, task, process or context can theoretically be gamified. Gamification's main goal is to rise the engagement of users by using game-like techniques, such as scoreboards and personalized fast feedback[67], making employees experience more ownership and purpose when engaging with tasks. Gamification is used in several different contexts, mostly business and marketing, but we further wish to demonstrate its utility and importance in the educational environment as well. Gamification can enhance

[64]See MEHRA, A., DIXON, A. L., BRASS, D. J., ROBERTSON, B., (2006), *The social network ties of group leaders: Implications for group performance and leader reputation*, *Organization science*, 17(1), 64-79; OH, H., CHUNG, M.H., LABIANCA, G. (2004), *Group social capital and group effectiveness: The role of informal socializing ties*, *Academy of management journal*, 47(6), 860-875; REAGANS, R., ZUCKERMAN, E. W., MCEVILY, B., (2004), *How to make the team: Social networks vs. demography as criteria for designing effective teams*, *Administrative Science Quarterly*, 49(1), 101-133.

[65]See HARGADON, A. (2003). *How breakthroughs happen: The surprising truth about how companies innovate*. Harvard Business Press.

[66]See REEVES, B., READ, J.L. (2009). *Total engagement: How games and virtual worlds are changing the way people work and businesses compete*. Harvard Business Press.

[67]See SWEETSER, P., WYETH, P., (2005), *GameFlow: a model for evaluating player enjoyment in games*, *Computers in Entertainment*, Vol. 3, No. 3, July 2005.

learners' autonomous motivation and enable them to feel enthusiastic during their tenure in the organization; gamification can be considered an innovative approach for creativity, innovation and organizational agility.

Gamification is not only about virtually recreating a mesmeric experience by using game elements and mechanics, it is also about designing HR processes by utilizing ideas or best practices from a range of fields – fun and motivation in particular. Furthermore, with increasing pressure for HR to add value, the use of gamification in HR might also provide one way for organizations to measure that contribution[68]. A gamified approach is being applied in HR to attract, induct, train, engage and retain employees[69]. Gamification has been used for recruitment and selection, as it provides huge stimulus for action, and it has been extensively used to test candidates' skills and motivate them to complete certain tasks. Also, Induction and Orientation training are critical processes for HR, and gamification can help provide the right information to the newly hired employees, thus ensuring maximum productivity as swiftly as possible. It enables employees to have first positive experiences in their company, as well as the workplace, colleagues and team members. Games are often more effective for learning than traditional training approaches[70] and for this reason several big companies have incorporated a gamified approach in their training and development processes to make their employees more efficient, thus increasing revenue and reducing costs.

In the next section we present a theoretical framework based on the permanent interaction of technological and organizational assets. This paper aims at introducing an organizational model based on a technology platform designed for

[68]See SIMPSON, P., JENKINS, P. (2015). *Gamification and Human Resources: an overview*. *Brighton: Brighton Business School*.
[69]See LASOLA-CARAMOL, E., (2017), *4 Ways Gamification Transforms e-Learning Experiences*. Available at: *https://elearningindustry.com/4-ways-gami_cation-transforms-elearning-experiences*, (accessed 4 December 2017).
[70]See SIMPSON, P., JENKINS, P., (2015), *Gamification and Human Resources: an overview*, Brighton: Brighton Business School; SINGH, S. P., (2012), *Gamification: A strategic tool for organizational effectiveness*, *International Journal of Management*, 1(1), 108-113.

business workers, able to fill the gap between own skills and requests from the labor market.

Moreover, this work aims at creating an innovative, integrated system able to implement the entire workflow of evaluation, selection and training of candidates, with the final aim of allowing companies to identify, manage and build the business workers' competencies.

3. 3.1. The operative methodology proposed in this work requires to define the source of extraction of skills able to respond to the real needs of the European labour market. Systems like these, modelling business activities or social networks, like LinkedIn, can be interesting sources.

A system for extraction, uploading and assessment of skills starting from the sources identified is also proposed. A semantic analyzer can extract competences from social networks, like LinkedIn. A Social Network Analysis tool can evaluate the soft competencies and an online evaluation system can assess technical and soft competencies.

The creation of a competency dictionary using the European competency frameworks is a necessary step to match required competencies with possessed, identify competencies gaps, suggesting the appropriate training to fill these gaps.

The results obtained by *European Area of Skills and Qualifications*[71] consultation and the guidelines of *Recommendation of validation of informal and non-formal learning*[72] must be considered in order to identify and categorize skills, competencies, qualifications and occupations in a standard way, so as to create a competency dictionary. Figure 1 shows a representation of the proposed methodology's integration system.

[71]http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_417_en.pdf
[72]http://www.cedefop.europa.eu/files/Council_Recommendation_on_the_validation_20_December_2012.pdf

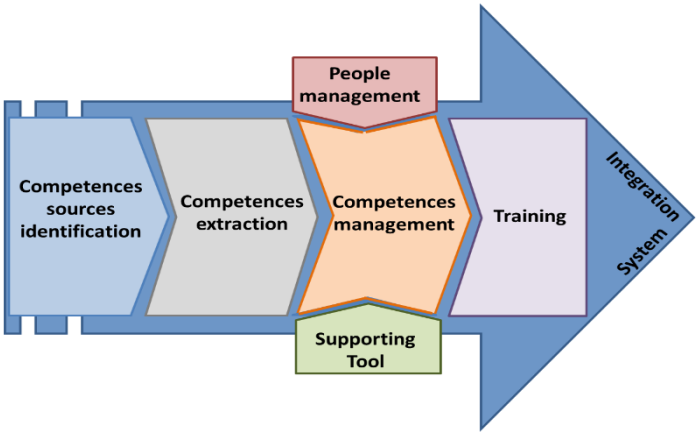

Figure 1 - Integration system of the proposed methodology. Source: our elaboration

The competence management methodology finds roots on some important techniques, which add depth to the project: the Business Process Modeling System (BPMS), semantic engine tools, the Social Network Analysis (SNA), and the online evaluation system.

What follows is a detailed description of techniques. According to Papazoglou[73], a business process is a set of logically related tasks performed to achieve a well-defined business outcome. BPM has presented many definitions overtime, which identified the need to enhance processes and allow organizations to operate more efficiently. To capture and model business activities, enterprises use Business Process Modelling tools. The Business Process Modelling System (BPMS) is based on formal graphical notation, known as the Business Process Modeling Notation (BPMN), which is a *de-facto standard* for business processes modeling. This standard allows describing any business process using a notation which is easy to understand by all actors involved in the process[74]. With this notation, business activities are inserted within the process workflow, while roles and human resources are allocated to the activities. The workflow modelling permits to model employee work processes, in an attempt to accurately interpret how employees conduct their

[73]See PAPAZOGLOU, M.P., (2003), *Web services and business transactions. World Wide Web*, 6(1), 49-91.
[74]See SCHEER, A.W., (2001), *ARIS - Modellierungs methoden, Metamodelle, Anwendun-gen, (ARIS - Modeling Methods, Meta-models, Applications)*, Springer Verlag Berlin.

everyday activities and then find ways to improve them, thus gaining cost efficiency.

These information systems provide some kind of event where an event refers to a case (i.e., process instance), an activity and in most systems, also a timestamp, a performer, and some additional data[75]. In these modern workflow systems, activities are marked with a beginning and an end time point, and event logs retain information on the length of tasks, the timing, and usually some form of identification related to the personnel who undertook them[76].

BPMN uses key elements in order to provide an overall view of business processes. The main key elements, useful for the project's implementation, are:

- *Pool* and *Lane* represent responsibilities for activities in a process. A pool or a lane can be an organization, a role or a system.
- *Task* is a unit of work, the job to be performed.
- *Input Data Object* is a useful input for the execution of the task.
- *Output Data Object* is a task's result data.
- *IT System*, represents IT systems involved as a support to perform the task.

Different types of attributes can be associated with each key element.

In order to properly implement the workflow modelling and also to extract only right competences information from each task, the correct modelling process requires the use of some attributes, such us: roles allocation, responsibilities, execution time, execution costs, execution frequency, human resource number, etc.

A well-structured business process diagram simplifies the complex data mining process.

The term "semantic analysis**"** refers to the connection between a logical expression and the extra linguistic reality in which this phrase is formulated. A semantic engine is able to generate an environment where a web page, file or

[75]See SONG, M., CHOI, I., KIM, K., VAN DER AALST, W.M., (2008), *Deriving social relations among organizational units from process models. Eindhoven: Technische Universiteit Eindhoven*.
[76]See VAN DER AALST, W. M., REIJERS, H. A., WEIJTERS, A. J., VAN DONGEN, B. F., DE MEDEIROS, A. A., SONG, M., VERBEEK, H. M. W., (2007), *Business process mining: An industrial application. Information Systems*, 32(5), 713-732.

document of various formats are labelled in their meaning by using metadata and comparison with other types of information.

Starting from the state of the art regarding the tools for a semantic analysis of texts, our methodology requires to custom a dictionaries domain on which to compare the textual data extracted from the BPM tool.

In addition, through a semantic analysis it is possible to obtain professional information available from social networks, and tools for tracking and recruitment management. In this way, a required profile can be identified.

According to Burt[77], a social network is a group of collaborating entities (i.e., actors) that are related to one another. Mathematically, Social Network Analysis (SNA) results can be represented as a graph, wherein each participant is called "actor" and described as a node in the network.

Actors can be persons, organizations, or groups, or any other set of related entities. Relations between actors are represented as links between the corresponding nodes. Software as Ucinet, Jung, Pajek, Condor and Krackplot provide a graphic picture of the relationships of people, teams, and organizations. Moreover, they allow the user to create visual maps, movies and adjacency matrices. These permit to calculate indicators of collaboration between actors or groups within a communication network[78].

In mathematics, a social network can be represented by using the graph theory. Here, the nodes are the network's actors and the arcs represent some relationship between the nodes. If the candidate, interested in an open position, provides his social network profile (Facebook, Twitter etc.), one can derive information about his degree in the social event involving his friends. For example,

[77]See BURT, R.S. (1992), *Structural Holes*, Harvard University Press.
[78]See HANNEMAN, R.A., RIDDLE, M., (2005), *Introduction to Social Network Methods*. *University of California*, *Riverside*. Published in digital form at http://faculty.ucr.edu/~hanneman/; CORALLO, A., BISCONTI, C., FORTUNATO, L., GENTILE, A. A., PELLÈ, P., (2015), *An approach from statistical mechanics for collaborative business social network reconstruction*. *In Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2015*, 565-568.

how many people turn to the candidate? Which weight has the candidate in his social net? Which friends are closest to the candidate? The SNA can provide all this kind of data by using the properties of the graph associated with the considered net.

The innovation of our methodology is that it aims at using some SNA metrics, the most appropriate among existing ones, so as to provide an assessment of the candidate's soft competences starting from the information about how the candidate is considered in his social network. If the company is looking for a team leader, for example, the candidate's charisma should be filled in his social network too, as a necessary condition for his recruitment.

To validate soft and technical competencies, the "gaming evaluation system" can be used. These tools are different and can be used in a combined manner. Here there is a list of some of these gaming tools:

1. Personality Test

The personality test allows obtaining a profile able to arise the personality's characteristics of an individual.

2. Motivational test

The questionnaire allows obtaining a profile that contains the needs and values that characterize individual motivations and attitudes.

3. In-basket

The in-basket is an instrument presenting a complex situation that requires an immediate solution, using the information contained in the text. This type of tool allows to examine the candidate's organizational capacity, its sensitivity on the issues and its decision-making capability. It explores the area of a candidate's problem-solving skills and the way solutions are found.

4. Role-playing

Role-play is a simulation of real-life situations with predefined roles. The premise of this assessment tool is the idea that acts on an issue allows the emergence of behaviors and attitudes not yet explored by other methods.

5. The critical incident technique

A set of procedures for collecting direct observations of human behavior in such a way as to facilitate their potential usefulness in solving practical problems and developing broad psychological principles.

The critical incident technique outlines procedures for collecting observed incidents having special significance and meeting systematically defined criteria.

3.2. This research work is a starting point to create a competence management system, designed in Figure 2, consisting in six main modules:

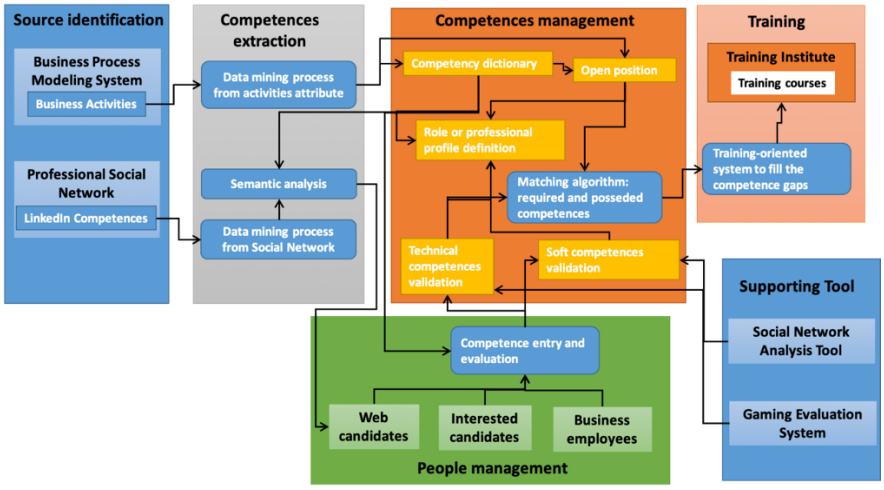

Figure 2 - Functional Architecture of the Competence Management System. Source: our elaboration

- A dedicated module apt to both extract competences from Business Process Modeling System and, also, to create a competency dictionary starting from European Competency Frameworks;
- A tool to analyze all forms of unstructured data (such as semantic analyzer) in order to extract competencies from Social Networks, like LinkedIn;
- A module to upload and evaluate people's competencies;
- A prototypal module, focused on the Social Network Analysis, to evaluate soft competences and, also, an online evaluation system to enable an assessment of technical and soft competences;
- A dashboard to display, in a dynamic and integrated way, the matching

between required and possessed competences (competences gap);

- A module to suggest training paths useful to fill it.

A detail of the modules is reported below.

Competencies mining system from Business Processes.

Starting from a detailed analysis of business processes and their related tasks, obtained through the Business Process Modelling software, different competencies are connected to each task. The detailed analysis is carried out in order to identify which competencies are required by each task. The data mining process has to get information from each task, such as: description, related product, input/output data, IT system, execution time, etc.

Competencies of human resources, belonging to each business area/process, are identified by a detailed analysis carried out on outputs of data mining process, taking account of key elements like: business processes, business areas, operating procedures, business culture and values; as well as, from the definition of competencies declined in the business context. This phase leads to the creation of a competency dictionary, which should be regularly updated and, also, customized in order to respond to any business strategy's changes. The competency dictionary, so implemented, is going to be an effective tool.

By using all contributions of European competence initiatives, programs and best practices, the competence will be divided in two main areas: the first one includes technical competencies, the second soft competencies.

This phase's innovation derives from the integration of the Business Process Modelling System within the platform/architecture and, also, from the data mining process, which allows for competences definition that can be included in a well-structured competency dictionary. By implementing and analyzing processes, tasks and associated competencies, companies can obtain both their required competencies and available positions, in order to recruit human resources from the market.

Competencies mining system from social networks.

Professional social networks (e.g. LinkedIn) represent a direct access to people's personal profiles and, thus, to their information. This information will be handled with Semantic Search Engines, which allow extracting competencies that are closer to those within the competency dictionary itself.

Taking full advantage of this competency extraction mechanism, the recruitment business process would be facilitated. In addition, if candidates, identified as suitable by companies, turn out to be interested in the recruitment, they will use the competency management system in order to be put in contact with the right business company.

Module to competencies entry and evaluation.

The main stakeholders of this system are: potential workers or business employees. According to the open and required business positions, they can select their competencies from an existing list, based on the competency dictionary. Once chosen the possessed competencies, they are able to assign a "score", in order to perform a self-assessment. Self-assessments can be substantiated by uploading various types of relevant documents, such as certificates, Europass CVs, etc. As for business employees, a further competency assessment (confirmation or denial) is required by their business manager.

This step's innovation derives from the creation of a collaborative platform able to reduce human resources' recruitment time. As a matter of fact, this platform addresses both companies and potential candidates to find an opportunity that meets their respective needs, in an efficient and optimized manner.

Module to assess soft and technical competencies.

This module has two main goals. On the one hand, it aims at converting SNA's outputs (such as metrics and key indicators) into useful criteria for the assessment and validation of soft competencies; on the other hand, it aims at investigating the validity of online evaluation competencies systems (such as online survey).

System to compare required and possessed competencies.

In this phase, a methodology and a system are deployed. This system designed and implemented in order to define “competency gaps”, is based on a matching algorithm, and starts from two types of available input data: competencies required by companies and competencies possessed by candidates.

Training-oriented system.

By acting on the “competency gaps”, the proposed platform is able to suggest the right training course that training entities should propose to interested candidates. By providing the correct training path, the system is able to fill the existing competency gaps in order to integrate business and people needs.

Training courses offered to corporate employees, or training courses that a single person interested to a company position attends privately, do not always meet the real business needs. The system proposed by this project, aims at addressing all these problems by providing a precise solution.

In order to help learners’ and workers’ mobility among countries, or find jobs and, at the same time, facilitate their lifelong learning, a reference standard model is the European Qualification Framework for lifelong learning (EQF). EQF acts as a translation device, making qualifications more readable. This reference model is a system that allows the comparison of qualifications possessed by European citizens. Taking as an input both the results of the EQF comparison that the business needs, the proposed system can address citizens to the right training course.

4. As labor markets and the demand for skills are rapidly changing, it is essential that HRM, and in particular the Competence management, change accordingly in order to ensure that they are able to cater to the expected increase in terms of demand. It is thus vital to make sure that resources are distributed efficiently and effectively, in line with changes introduced by Industry 4.0.

We are at the beginning of an exciting transformation in the field of work practices and workplaces. The digital competencies of the workforce and the ways in which technology is used in the workplace will continue to develop and change. This

provides organizations and managers with opportunity for increasing organizational effectiveness[79].

However, it is important to also recognize the downsides of burgeoning technology usage for concentrated work, close relationships, and effective collaboration. Research in this field is needed not only to examine the effects of the growing use of technology by a digital workforce, but also to provide guidance about how to best utilize technology in the service of organizational goals.

HRM 4.0 will generate long-term implications for the organization: In some cases, implications will be minimal, but in others they will be part of the package that contributes to the survival and even success in a highly competitive marketplace[80]. The role of HRM 4.0 in organizations is much more complex than just supporting existing HRM processes. Both internal and external forces in organizations appear to operate reciprocally and result in a transformation of the HRM function towards the role of a strategic player[81].

As for the workforce, the long-term effects may be different as they may range from the development of new ways of interacting with their bosses and the HRM department, by way of increasingly distancing from them, thus leading to a dramatic work intensification and redundancy[82]. For this reason, competences' management became crucial for each organization due to an increase of their strategic implications[83].

The significance of these implications, however, seems to differ depending on the external institutional environment in which the organization operates. Consequently, the relationships within organizations, with particular regard to

[79]See COLBERT ET AL., *Ibidem*
[80]See BONDAROUK T., BREWSTER C., (2016), *Conceptualising the future of HRM and technology research*, in *International Journal of Human Resource Management*, 27:21, 2652-2671.
[81]See PARRY, E., (2011), *An examination of e-HRM as a means to increase the value of the HR function*, in *International Journal of Human Resource Management*, 22(5), 1146-1162.
[82]See BRYNJOLFSSON E., MCAFEE, A., (2014), *Progress, and Prosperity in a Time of Brilliant Technologies***,** WW Norton & Company, New York, NY**.**
[83]Marler J.H., Fisher S.L., (2013), *An evidence–based revoiew of e-HRM and strategic human resource management*, in *Human Resource Management Review*, vol.23, Issue 1, 18-38.

innovative information technology, may be contingent on a broader context in which organizations exist. The outcomes of combining information technology and human resource strategy may not solely emerge within the organization, but co-evolve *in tandem* with external stakeholders, such as vendors, political institutions and market competitors.