

Innovation Ecosystems in the EU: Banking sector case study¹

Ecosistemas de Innovación en la UE: el caso del sector de la Banca

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ABSTRACT

Traditionally, it has been considered that the banking sector is quite conservative, from the innovative point of view, despite being part of the infrastructure of economic activity. However, especially due to the recent economy/banking sector crisis, digitalization and social and climate changes, there are several attempts in the search of innovation. Following the previously established framework for structural maturity study of the innovation ecosystems, the banking sector is studied from the perspectives of the EU architecture, economic agents, i.e. banks, scholars' views and society, natural environment impacts. The emerging, overall picture is quite fragmented, there are several issues like the complexity of the banking sector functioning and the structural change subject little attractiveness to the general public. A conscious and orchestrated effort on all the dimensions is required in order to overcome the sub-optimal lock-ins.

Key words: Innovation, innovation ecosystems, innovation helix, banking sector, banking innovation.

JEL Classification: A13, B59, E42, E50, G20.

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RESUMEN

Tradicionalmente, se ha considerado que el sector bancario es bastante conservador, desde el punto de vista innovador, a pesar de formar parte de la infraestructura de la actividad económica. Sin embargo, y debido a la reciente crisis económica/bancaria, la digitalización y los cambios sociales y climáticos, se observan varios intentos de búsquedas de la innovación. Siguiendo el marco previamente establecido para la madurez estructural de los ecosistemas de innovación, el sector bancario se estudia desde las perspectivas de la arquitectura de la UE, los agentes económicos, es decir, los bancos, las opiniones de los académicos y los impactos sobre la sociedad y el entorno natural. El panorama general emergente resulta bastante fragmentado, cuestiones como la complejidad del funcionamiento del sector bancario y su cambio estructural atrae poco interés del público en general. Se requiere un esfuerzo consciente y orquestado en todas las dimensiones para superar los bloqueos subóptimos resultantes.

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Palabras clave: innovación, ecosistemas de innovación, hélice de innovación, sector de la Banca, Banca, innovación bancaria.

Clasificación JEL: A13, B59, E42, E50, G20.



1. INTRODUCTION

Following the establishment of a tentative framework for the structural advancement of the EU Innovation ecosystems (González, Kubus and Mascareñas, 2018), this article provides the views on its banking sector dimension.

In the traditional theories of economics there are three traditional factors of production: land, work and capital (Smith, 1776). In recent times, however capital is inexorably taking the lead and diminishing the participation of other factors in the global income (or the distribution between profit and wages and thus inequality) (Picketty, 2014, p. 33;298; Rushkoff, 2016). Not surprisingly, there is a huge capital ownership concentration.

In this sense, banking sector is different from the other sectors because of its direct relation to money and crucial structure providing for capital and thus for capitalism. Money in principle is understood as a mean of exchange (Smith, 1776; Fetter, 1905, p. 61; Laughlin, 1919), an advancement to direct exchange of goods (value) called barter. It can be almost anything, however some consider money only as a mean through which the taxes can be paid. Money is also a unit of account; or ‘a common denominator of values’ (Fetter, 1905, p. 64) as the value (Laughlin, 1919) of the things is reported in terms of money. There are many issues regarding this function of money as some consider that this is question of social convenience, and value is not really linked with the price expressed in monetary terms. Adam Smith distinguishes between ‘value in use’ and ‘value in exchange’, stating furthermore that ‘the things which have the greatest value in use have frequently little or no value in exchange; and, on the contrary, those which have the greatest value in exchange’ (Smith, 1776, p. 16). Likewise, due to the commodification of our lives, this difference is being subject to heated discussions. There are quite many that consider that currently we assist to a deepening process of unlinking the value with its monetary expression, i.e. money. The third function of money is the store of (easily exchangeable) value (Fetter, 1905, p. 65), however changing with inflation or deflation. There are also different types of money: commodity one (with an intrinsic value) and fiat (currency) money which value is backed by some authority as state. In this document, we also provide for other distinction between the central and (antonymic to it) local currency (Rushkoff, 2011). What is a basic condition for money is its acceptability.

Money supply is defined as “the total quantity of money in the economy at any one time”¹. The easiness at which the money can be converted into currency is called liquidity. There are several measures of money, starting from the narrower one, called M1 to the widest one called M4. The question is that the money related to real economy (M1-M3) are only a small fraction (2-5% depending on author, date or location) of the wider expression of

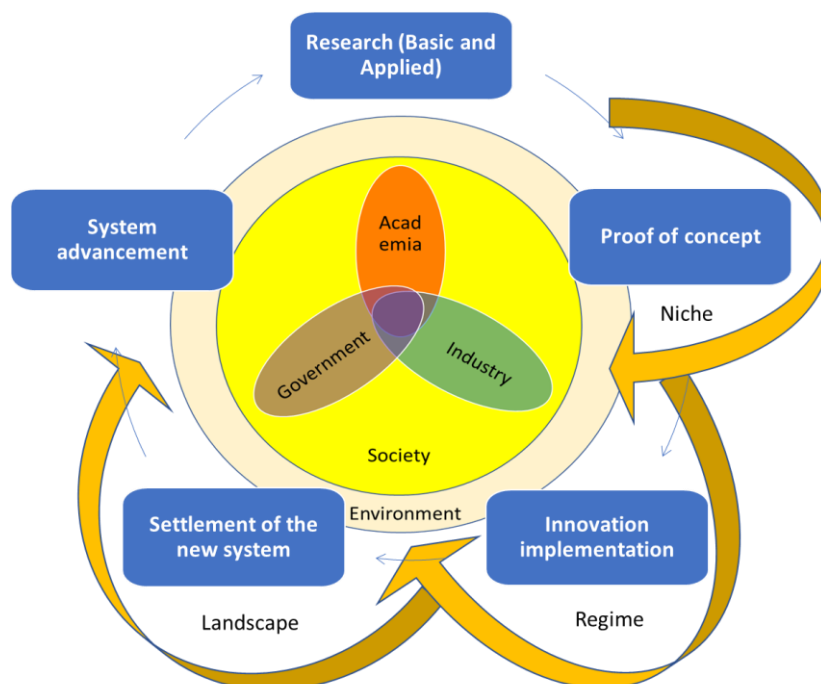
monetary supply, i.e. M4, being the money in place on the financial markets.

According to Schumpeter and Laughling (Laughlin, 1919), credit should mobilise capital and make it more efficient, in this way leading to an increase in product, it shouldn't increase the available capital².

Besides, banking is mainly concentrated on the provision of purchasing power to the entrepreneur, banks are the bookkeeping centre of the economy and act as society accountants. Hereby there will also be provided a theory (Werner, 2014) where banking sector is also the principal source of money creation by credit expansion. Banking is traditionally rather a conservative sector, because this is where money or the value is stored and redistributed. These are serious question and the innovations are not being taken easily into account.

As in the other innovation ecosystem we are seeing the five main actors: Government (the European Union level), Academia (scholars' views), Industry (banks and recently fintechs), together with Society and (Natural) Environment. Responding to global megatrends such as social change; shifts in global economic power; climate change and technological breakthrough, in this research of innovation ecosystems these dimensions and their views and ongoing innovation efforts are going to be studied in order to reach an overall, comprehensive picture, not so much detailed but providing in this way new insides.

Figure 1: Innovation Loop with actors involved



Source: González Fernández, S. et al (González, Kubus and Mascareñas, 2018)

2. INSTITUTIONAL FRAMING FOR BANKING IN THE EU AND ITS CHALLENGES

Hereby the institutional framing for banking is studied on the EU level, mainly from legal and historical perspectives, providing also for the challenges facing the banking sector.

2.1. Legal bases for the monetary and banking policy in the EU

The European Union wants to advance toward an economic and political Union. However, so far advancements were done mainly in the economic arena. This is primarily achieved through fiscal and public spending policy line and the other line is the monetary policy (Muñoz and Santamaría, 2017). The developments of these and other EU policies are characterised by their different speeds in geographic and policy matters implementation, which can be one of the main reasons of disequilibria observed mainly during the unfavourable conditions, i.e. crisis. The main EU objective is to coordinate the efforts of its Member States (MS) in order to avoid frictions, which can be distorting the competence or leading to the tax evasion, or corruption. One of the important aims is also to guarantee the democracy rule, very important in view on new resurgence of populism in Europe and in general all over the world.

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The aims of the economic union are fixed in the point 3.3. – Internal Market of the Treaty of the European Union and 3.4. for economy and monetary union with euro as currency establishment (Council of the European Union, 2012, p. 5). This is furtherly developed in the Treaty on the Functioning of the EU (TFEU) (European Union, 2010), economic policy being regulated between the articles 119 and 126. As stated in the article 119.3 ‘(...) *these activities shall include a single currency, the euro, and the definition and conduct of a single monetary policy and exchange-rate policy the primary objective of both of which shall be to maintain price stability and, without prejudice to this objective, to support the general economic policies in the Union, in accordance with the principle of an open market economy with free competition*’ (European Union, 2010, p. 52). In the further points the will of cooperation in policy terms of the MS is stated, the EU Council is given the power of intervention in case of difficulties, and the European Central Bank is forbidden to authorize the overdrafts in order to create a stable banking system. The monetary policy is defined in the articles 127-133 of the TFEU.

2.2. History of the monetary and banking policy in the EU

As for the history of the monetary and banking Union, it can be started with Bretton Woods (Williams, 1945) agreement reached in the 1944. In the 1960s, several theories emerged, among them the ‘optimum currency areas’ (Mundell, 1961) by Robert Mundell which was and still is a (not reached) model for the EU. In this decade, severe turbulences were observed, causing the appreciation of the German Mark and depreciation of French

Frank. They were threatening the objectives of prices stability in the EU, so that, in 1968 the Barre Plan (Danescu, 2012) is proposed, stating the economic integration in three phases: monetary integration, fiscal union and common budgetary policy. In the 1970s, collapse of the Bretton Woods System and the renewed need of monetary stability due to the aforementioned crisis lead to the establishment of the ‘currency snake’ (European Parliament, 2015) or ‘the snake in the tunnel’ which was aimed to limit the exchange-rate fluctuations and is considered as an essential first step for the monetary union establishment. The fluctuation was furtherly being limited afterwards and in the 1978 a European Monetary System (EMS) with its European Currency Unit (ECU) was created. In 1995 the decision was reached to replace the accounting currency by euro, which was introduced in 1999. The Single European Act (Council of the European Union, 1987) of 1987 was another relevant however collateral step for progressing in the EMS; Exchange Rate Mechanism – ERM, Financial Support Mechanism – FSM and European Monetary Cooperation Fund – EMCF were the based supporting institutions for the EMS.

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Delors Report (Delors, 1989) produced in the 1989 marked a milestone in the EU construction. It propelled the adoption of Maastricht Treaty (European Communities, 1992) on the European Union with its criteria on harmonization or requirements to enter the EMU and eurozone. In 1994 the EMCF is replaced by European Monetary Institute (EMI, 1997) which is the forerunner of the ECB together with European System of Central Banks (ESCB), being replaced in the 1998. The stability and growth pact proclaimed in Amsterdam in 1997, introduced further budgetary policy coordination and constraints. In the same year Eurogroup was created to coordinate economic policy. In 1999 there were 11 countries to enter the eurozone: Germany, Austria, Belgium, Spain, Finland, France, Holland, Italy, Luxembourg and Portugal, in 2001 joined by Greece, in 2007 by Slovenia, 2008 by Cyprus and Malta, in 2011 by Estonia and 2014 by Latvia. In year 2002 European Central Bank (ECB) was consecrated, legally based on articles 127 and 282 of TFEU, and Euro entered into circulation, it is also a currency in small states like San Marino, Monaco, Vatican City, Kosovo, Montenegro and Andorra. The provisions regarding Euro placed in the failed European Constitution of 2006, entered into force in the Lisbon Treaty (EPC, 2007) of 2009.

The introduction of Euro allowed for increasing competitiveness and investment in the EU thanks to prices stability and transparency, elimination of transaction costs and exchange rates fluctuations and associated risks, i.e. reinforcing the single market, however as a counterpart causing the National Central Banks transfer of powers (necessary especially in cases of asymmetric shocks) to the ECB and the EU. It was also responsible for the inflation and increase in the cost of life, especially in the poorer countries of the eurozone, due to the prices rounding and related to the exchange of old currencies, i.e. money laundering as well as reinforcing the real estate speculative bubble.



In 2008 the financial crisis hit the global economy, starting with Lehman Brothers and following with the ‘subprime mortgages’ crisis. The ECB together with some National Central Banks coordinated to reduce the interest rate and also proceeded with financing injecting liquidity to the economy. The failure of the Lehman Brothers caused the menace of bankruptcy of several banks. In turn, this has caused also lesser confidence in the risk premium evaluation of many countries. This question is to be studied in more detail further on.

In 2009 the De Larosière Report (Nagy *et al.*, 2010) was presented analysing the crisis and proposing several measures, especially on the new structure of financial supervision. In 2009 G20 decided to deepen the European cooperation in this area. In 2010 European Financial Stability Facility (EFSF) was created and the provision for stability in the eurozone was added to the article 136 of the TFEU. ‘Economic Governance’ terms were established in a new framework, due to the amendments of the aforementioned article 136 but also 126 of the TFEU. In 2013 The Treaty on Stability, Coordination and Governance (European Commission, 2012) (called also European Fiscal Pact) in the EMU was approved. Due to this underpinning, the eurozone countries through European Commission and ECB, together with International Monetary Fund (IMF) (González Fernández, 2002), called altogether ‘troika’ offered rescue for several countries, starting with Greece, Portugal, Ireland, Spain and Cyprus. After Greece rescue, European Fund for Financial Stability (EFFS) was created, and after that, also the second temporary entity called European Mechanism for Financial Stability (EMFS). In parallel during the crisis the Euro Plus Pact (Commission, 2015) was introduced in 2011 and it in turns gave way to the entry in 2012 of the European Mechanism for Stability which replaced both temporary institutions in 2013. In 2011 ECB bought for first time the public (and private) debt. At the same time the BCE also started with Long Term Refinancing Operations (LTRO) borrowing banks the funds for only 1% interest rate for 3 years and Quantitative Easing (QE), buying directly and massively public and private bonds at the secondary market.

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As a Pact for Euro measure European Council approved a ‘six pack’ (European Commission, 2011), where three relevant institutions are created: European Banking Authority (EBA), European Securities and Markets Authority (ESMA) and European Insurance and Occupational Pensions Authority (EIOPA). Other measures were: European Systemic Risk Board (ESRB) constitution, together with the adoption of the directive 2011/85/UE (Council Directive No 85/2011, 2011) on requirements for budgetary frameworks of the Member States.

The financial system can be considered stable if it functions normally and has the capacity to limit and resolve imbalances produced in any of its three components: infrastructure (legal, payment, settlement or accounting systems), institutions (banks and securities

companies) and markets (stock exchanges, bonds, money and derivatives) (Muñoz and Santamaría, 2017). This stability is controlled through the price (around 2% inflation) and public debt of MS.

The essential element of the European monetary policy is the Banking Union. In 2013 Single Supervisory Mechanism (SSM) is created with the ECB and National Competent Authorities (NCAs) or National Central Banks (NCBs) with the aim of prudential supervision of all credit institutions (European Central Bank, 2014). Another important institution is the Single Resolution Board (SRB) that together with NCAs forms Single Resolution Mechanism (SRM). The general objective of SSM is that the future rescue needs of the banks could be covered thanks to their own contributions and stay out of the EU budgetary framework. In 2015 Deposits Guarantee System (DGS) is also introduced for its implementation till 2025.

In 2017 White Book on the Future of Europe (European Commission, 2015b) was produced, where the completion of the Banking and Capital Markets Union is envisaged through the SRF and DGS together with the risk reduction in the financial sector, through the Single Supervision of the Capital Markets or the possibility of creating financial instruments backed by Euro.

New Strategy Europe 2020 (European Commission, 2010) introduced the European Semester, which is the instrument where the EU is giving its recommendations to the Member States of the eurozone. The priority is the progress in the banking union. In this sense the European Commission created also a Structural Reform Support Program (SRSP)³ which is coordinated by the Service (SRSS).

In 2014 Juncker Plan⁴ for Investment in the EU was proposed where new measures for mobilising public and private capital to address investment gaps in Europe, mainly the creation of the Fund for Strategic Investment (EFSI) integrated in the European Investment Bank (EIB). In 2018 the EU Commission proposed to replace Juncker Plan with existing instruments into 'InvestEU' Fund⁵ with more focus on benefitting poorer countries and regions⁶.

Apart from the ECB and NCBs, there are also special, dedicated bodies in the main EU Institutions. In the European Parliament, it is the Committee on Economic and Monetary Affairs (ECON) which is in charge of the corresponding legislative part. In the European Council it is the Economic and Financial Affairs Council (ECOFIN), in charge of policies coordination. In this framework of action, European Court of Auditors elaborates the report on the correctness of budget spending.



The point with all this complex banking architecture is whether the institutions mandates have sufficiently agile and well-targeted decision bodies (not too large or with too many different interests involved), and their instruments are strong enough to effectively execute corrective actions when needed. ‘Comply or explain’ mechanism is the one functioning at the EU banking union. The ECB seems to be in this sense better equipped than the ESRB in the matter of macroprudential reaction, but it is ESRB that is set up as a body for the supervision in the banking sector⁷. In the ECB, however there can be a risk of conflict between the monetary and supervision roles. Allocation of central power (with subsidiarity principle) for asymmetric interventions seems a reasonable option mainly due to lesser influence of particular political interests, however the errors which in principle will be amplified are going to be supported mainly by the national states.

Several Basel III principles were introduced inside the EU Banking Union toolkits. New capital instruments were introduced to limit the credit growth, leverage thus limit the procyclicality. Higher capital requirements were introduced also for important financial institutions in order to cover systemic risks and also to reduce procyclicality, and better risk assessment for the sectors like real estate. Integrated financial markets can absorb many local shocks, 70% in case of the US and only 25% in case of the EU because of the lower integration level⁸.

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3. EU BANKING SECTOR ON INNOVATION AND ITS CHALLENGES

This chapter is concentrated on the description of the challenges facing the banking sector, as perceived by the economic players, i.e. banks themselves. Their aim and thus point of view in this sense are different, in their case it is the profitability for shareholders and service provision for customers.

Due to the ongoing digitalization of the economy which is the main source of the innovation in the sector, we need to understand that there is an implication of the physicality and adjacent slowness and limitedness of the assumptions of the physical model and the speed, immediateness and virtually almost no limits of the virtual/digital world. Changes can become massive and instantaneous, thus in many cases bank leverage becomes even more dangerously procyclical and not countercyclical. Technically there are no limits to that others than regulatory rules. It is especially relevant during the boom periods of financial cycles, when banks lend too much and in the crises times it becomes the opposite.

In principle the banks follow their own assessment of the new credits for their profitability and solvency. The question there is to assume what is widely considered a reasonable risk and not the process or model of risk assessment as a such. The grey zone (or the zone for

the manual decisioning, at least in the consumer credits) is almost always quite large and also depends on the managerial dispositions, predisposed to the ‘herd effect’. Furthermore, too conservative assessment of the loanability of the applicants is equalled at boom times with ‘wasting market opportunities’. Thus, this was probably the main issue in the subprime market crisis, it is not that banks were not doing a good assessment, the point is that the admission thresholds were installed too low.

3.1. EU Banking sector and its environment pressures

Banking in Europe is currently exposed to many pressures, some of them are particular to Europe, some are global. The short-term challenges for the banks include (Fernández, 2018, p. 1): political and economic outlook, interest rate or taxes evolution, the inherited unproductive assets or changes in regulatory requirements.

At the political level, many recent developments (also due to digitalization of the society) suggest that moderation is replaced with polarization, because of the social media tendency of exacerbating the information to reach the audiences, none instant (physical) personal feedback, especially of the opponents. Moreover, realism/truth is replaced with ideology of pertaining to a tribe. These tendencies are followed by irrational model of decision making on the political arena and related high political risk which needs to be taken into account.

Risk management is evolving from mainly considering ‘value at risk’ and careful evaluation of risk scenario to the incorporation of more variables and preparation for a wider range of situations (scenario analysis and stress tests). Especially the risk of retreat from the globalization causes the need of changing the operational models of companies. In case of banking sector, it is embodied by subsidiarization, which require independently capitalized and governed subsidiaries and thus it is making international operations increasingly difficult and costly. It is mirrored by the branch approach in the international arena, which point toward more dependence but also implication in support from the parent company, especially in the crisis situation. The subsidiarity requirements were supposed to ensure that foreign (international) banks were not going to bring the crisis to the host country, providing their subsidiary with sufficient capital, liquidity, and accompanying governance (Andrade *et al.*, 2018, p. 10).

As for the urgent issues, at the EU level, Brexit is one of the uncertainties that are being faced. London was traditionally a main financial centre due to its history, infrastructure and know-how. Even for the ECB it is probably not going to be easy to handle the influx of new bank applications and revision of internal capital models. UK was playing a key role especially in what regards the United States-EU financial worlds relations. Many banks from the United States being a first order global players have established their branches in London, to passport their operations on the EU markets. Depending on the



outcomes of Brexit negotiations and agreements, this situation can change, the point is if the EU will be willing to maintain its financial centre offshore. New operational centre could be established in principle in willing France or Germany (Andrade *et al.*, 2018, p. 7), which however seems rather hesitant in its confidence towards the banking sector in general (speculation, instability, etc.). Another indirect consequence can be found in the changing approach of the European policy without the UK opinion being considered (as the main opponent mainly) to progress in the integration and other welfare state measures, i.e. financial transaction tax, convergence of labour laws and social justice and welfare.

GDPR – General Data Protection Rules, PSD2 – Second Payment Services Directive which liberalize the access to banking data are being implemented at the EU level, however there are also MIFID II or Basel III or IV requirements at the world level.

Regulations seems to be highly fragmented (some even place them under risk of ‘balkanization’) (Andrade *et al.*, 2018, p. 8), also due to the regulatory arbitrage, i.e. the implementations of regulations and supervisory standards have always differed across the EU. These and other EU and global regulations (for example, European Comprehensive Assessment, bank stress tests; the market discipline triggered particularly by the need for capital raising (PwC, 2014)) require the banks to concentrate on the changes that are not directly related to advance the customer base and services. Banks much more than many economic actors need to run in order to stay afloat. Low interest rates imposed by the ECB had also the consequence of making the net interest margins very low, thus returns have been suppressed and banks concentrated on their base costs. As consequence, many banks struggle to cover their cost of capital.

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Bank as a service is threatening with the disintermediation with the customer, implying also the commoditization of the financial services, banks become ‘utilities’ (Andrade *et al.*, 2018). Banking products in turn become commodified mainly due to their standardization partly imposed by the legislative framework, and the commodity business require scale in order to survive. As probably foreseen by the legislators, standardization make the sector simpler and more prone to aggregated comparisons. Defensive mergers (Mascareñas and González, 2013) to acquire scale are however not an easy response, especially bearing in mind that the legislator wanted to make big banks smaller.

In the meantime, American wholesale banks are becoming bigger, as their EU counterparts concentrate more on wealth management and local retail banking instead of investments. European Banks however maintain their comparative advantages, i.e. ‘proximity to EU clients, strong asset management and wealth businesses, strength in credit cards and the application of fintech in retail banking (Andrade *et al.*, 2018, p. 13).

3.2. Inside view on banking sector innovation

This view is a perspective presented mainly on the Innovation Forums. There can be distinguished several pillars of digital transformation (Capgemini Consulting Group, 2013) in banking. Some of them are persistent during the times of digitalisation, others have rather a short-term life, being a hype only for shorter periods of time.

Omnichannel, also called multichannel banking implies the access of the consumer to banking services through digital media i.e. web, phone or branches, each of them has different customer experience expectations and should be adopted to their particular requirements, however in principle they should be developed once and then distributed through a central hub to orchestrate customer interactions, also between them. The issue around them is also called ‘customer journey’⁹.

The operational efficiency can also be gained through the use of software on the cloud with its more efficient use of processing power (on demand).

Modular architecture is also one of the characteristics proudly stated by many that is however truly difficult to achieve. The truth behind is that most of the banks hold a central big core system which is an amalgam of computing mainframes, built decades ago, stitched together along mergers and acquisitions, additionally with some minor modules, which can be more parametrized and, in some configurations, not used, at least apparently, i.e. performing with some pre-set data. This is one of the main reasons of the so called, technological debt of the banks and the poor cost effectiveness of their IT systems based on the programming languages (Cobol, for instance) on the brink of extinction, at least as the outsourcing is ongoing and the functional knowledge is naturally dying with the natural professional replacement of work forces. Intricated complex systems of different ‘modules’ are not prone for the diving in what refers neither to their relations with the business activities of the banks and regulatory requirements either. In short, they are heavy and difficult to replace, also due to the long-term life of some outdated and complex products (mortgages), still in legacy. Nowadays it is also associated with the agile as opposed to waterfall projects running. However, agile is here rather wilfully applied to subject matters that are in no sense easy to move, light or flexible.

Big data and advanced analytics¹⁰ processes can however offer the chance to orchestrate the exchange of the information between modules and the world. Smart banking as another trend is related to big data and data science, with origins in KYC – Know Your Customer. This allows for the offer personalization based on the customer knowledge with the data from and outside the bank (i.e. from Facebook or other platforms readily selling the customer data, which however – due to the customer protection regulations - requires the depersonalization reverse procedures, only accessible to big entities).



Internet of Things is, especially in banking, on the stage of cloud of ideas, not saying anything about the Artificial Intelligence use, which, apart from being a hype also in the EU, is currently and mainly used for self-learning algorithms spreading associated with Machine and Deep Learning. As every tool used for knowing the future by the supposition that it will be like the past, its tendency is to maintain and reinforce the current and even past status quo without proper counterfeiting of the past tendencies, i.e. gender inequality, wealth inequality, making them however less transparent and more obscure and difficult to detect or to manage. So far, there are no proposals of their auditing by the regulators (for their construction assumptions but also for the outcomes they produce).

Open banking is another trend setter in the sector. APIs or Application Programming Interfaces are being introduced by many banks as mainly the answer to the requirements for payments (PSD2) and customer portfolio management across banks, especially when these are external ones. When properly set they should open the gate to the disintermediation and financial innovation, i.e. access to data by third parties, like fintech companies. Sometimes put as remedy to all, this architecture is also not a remedy for everything, especially in a complex and high-risk involving environment, having difficulties to run well inside the banks, a time will be required to make them work effectively.

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Cyber risk mitigation is new on the list, together with the collateral question of banking system integrity.

Previously it included also the gamification or wearable technologies (Efma; Infosys, 2014), which are currently retired from the visible and presented stake. Personal financial management seems to be overtaken by the fintechs already. However, the reluctance of customers to switch, the regulatory barriers and the scale of operations are supporting the maintenance of the existing status quo of the banking sector landscape.

3.3. Fintechs and the EU Banking Sector

There is a new 'Fintech Action Plan' (European Commission, 2018) published on March 2018. Fintechs (Finance & Technology) are understood as 'technology-enabled innovation in financial services'. As stated in the document, this action plan has synergies with other EU initiatives such as Digital Single Market (European Commission, 2015a) and cybersecurity (JOIN, 2017) strategies, eIDAS regulation for the electronic identification (Euro-Lex, 2014), but also to Consumer Financial Services Action Plan (European Commission, 2017) or Capital Markets Union mid-term review (European Commission, 2017). However, there it is still difficult to see a clear legal framework, more than for crowdfunding services¹¹. The thoroughly applied mantra of 'run fast and break things' is not particularly well suited for the banking sector, where a serious breach brings together a high risk of undermining the overall confidence in the banking sector. The safe interconnectivity already mentioned in the point about 'Open Banking' and APIs is a key.

In principle traditional banks should be able to allow outside developers to access the data from banking platforms under controlled conditions, especially in what refers to payments due to the PSD2 directive.

It is a good example of the way that traditional and newly establishing sector of technical and quasi-financial start-ups can work together in a no zero cost game (in principle benefitting both sides but especially the customers). Of course, banks can provide their own APIs for the outsiders' reach. However, as the field develops due mainly to the legal pressure, we can observe the emergence agreements with 'data aggregators' which are specialised middlemen companies. They collect the data from banks and other data sources (like big tech companies), organise them and offer their own suite of open APIs to other developers from outside. In this way, banks and fintech can enter into individual agreements with specific technology providers and data aggregators, developers in order to fulfil their business and legal needs. Banks can of course always limit type of data, how (some specific third-party's suite of products) and with whom it is shared.

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On the other hand, especially in the customer portfolio aggregation and management business, data aggregators and fintech developers can directly ask consumers to give them their online banking logins and passwords, then through the process commonly called "screen scraping", data aggregators log onto banks' online consumer websites, as if they were the actual consumers, and extract information. Banks have difficulties distinguishing them from actual consumer logging or cyberattacks (Brainard, 2017). The European Payment Directive or PS2 in a broader meaning can also bring the 'unbundling' between deposits and payments. It makes visible that the deposit activity does not provide any appreciable added value. The valuable services are the payments services. This is one of the tendencies that put current banking system in question and prone to 'commoditization'. Instead of having customer 'unsafe' deposits, private companies can use insurances. On the other hand, these services could improve thanks to increased competition, shrinking current concentration which makes the system very fragile.

Another dimension, in the boarder with the society is crowdfunding, which implies looking for the financing in the crowd instead of traditional banks. Both forms of financing can coexist (even in the same crediting).

3.4. Cryptocurrencies, Blockchain and Smart Contracts

Concepts of Blockchain and cryptocurrencies are currently correlated in the public imaginary due to their history. As the original and best-known cryptocurrency, i.e. BitCoin is built on the blockchain architecture. Blockchain technology can be seen as a distributed, encrypted and anonymous ledger operation, when thinking about buying and selling. Nonetheless, another plausible use of the blockchain is to make a public, unalterable, undeletable signed statement, that can be 'published' to the block chain—



instead of the distributed ledger applying more a diary notion. In theory, these could be used this for recording vote tallies, verifying the origin of diamonds or brand-name gear, verifying people's identity, resolving the ownership of domain names, keeping items in escrow, disclosing provisional patents under seal, notarizing documents, and so on. In brief, it is seen as suited for the use in different kinds of transactions which previously were in need of an official intermediary body (middle men) and now could be replaced by direct and thus (in principle almost) costless and instantaneous peer to peer transaction. The point here is that every operation is reflected on the computers of all the system users and, in this way, they cannot be manipulated. Encrypting information, storing it forever, and replicating it across the entire network can however be also seen as a big overhead relative to what is actually trying to be accomplished.

Currently this middlemen function is covered by some government-backed entities, for instance, clearing houses in case of payments. It seems that they do however provide many other value-added services, especially in what relates to such a delicate issue as money. In general, the question with building the system is not in the so called 'positive path' when everything goes as foreseen but in case of 'negative paths' when something goes wrong, and it can be interrupted at some point, needs to be reversed and especially needs to fulfil audit standards and allows for investigation when required so. For instance, anti-money laundering in place in current banking systems entities, are designed to prevent and disrupt terrorist financing and (organized) crime. Cryptocurrencies being of a recent use and faithful to the reigning minimum value proposal, are instant and irreversible, furthermore private-key authentication is far from being perfect as it relies on a single-point encryption and not a more sophisticated and secure system involving for instance a two-factors authorization, intrusion detection, volume limits, firewalls, remote IP tracking and the ability to disconnect system in case of an emergency such as cyberattack, for instance. Customer and investor protection thus seem at risk. The cryptocurrencies in principle are a digital currency (as the 95% of currently used currencies), with the same aim of exchanging and also storing the value. In case of BitCoin it is being created with a use of an algorithm which with time is in need of more processing power, time and energy to produce each currency unit (called mining), and one day this possibility is foreseen to be exhausted. However, this is an interesting characteristic, differing from fiat money, with its impact not really studied so far.

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As for the payment system, it seems that current payments systems such as Visa and Mastercard are providing several already pointed out value-added services, related to fraud (tracking) and the identity verification on both sides of the operation (buyer and seller). The problems of speed and energy consumption are important here as with the processing power of today some estimate¹² that if the current Visa transactions were replaced by BitCoin, it would need so much energy as the rest of the world altogether. What's more Visa can handle 60 thousand transactions per second, while the BitCoin

historically taps out at 7, consuming for that 35 times more energy than Visa. Similar is the question with micropayments and bank-to-bank transfer, with BitCoin they are neither free nor instant. Nowadays, they take about 8 minutes to clear and 4 cents to process¹³. New companies have also begun creating other blockchain-based ‘coins’ convertible into company stock and selling them to the public in Initial Coin Offerings, or ICOs, as a cheaper and more flexible way to raise money than a traditional Initial Public Offering, or IPOs, of stocks on an exchange. ‘Smart contracts’ are contracts written as software, rather than written as legal text. Because you can encode them directly on the blockchain, they can involve the “self-executing.” transfer of value based directly on the cryptographic consent of the parties involved. And in theory, contracts written in software are cheaper to interpret—because their operation is literally mathematical and automatic, there are no two ways to interpret them, which means there’s no need for expensive legal battles. Here, the question is also with the previously described ‘negative path’ or ‘grey zone’ of meanings where human intervention is required.

3.5. Regulatory Sanboxes and RegTechs

This part is relevant as an interconnection between the institutional and business sphere (traditional sector innovations and technology start-ups) in banking but also other sectors of the economy. As already stated, the question of the legal burden of the traditional financial companies is being constantly raised by them in the opposition to the new fintech entries in the legal vacuum. This burden is also providing the protection for the traditional companies and banks, however the process of the commoditization of especially traditional banking services is also bringing strong costs pressure for the banks and as previously stated the benefits are mainly envisaged through the scale advantage. New, innovative activities in change, involve more value added and less cost dependent services, providing for more benefits for the fintechs. However, the software stacks of almost all fintech apps point to a bank at one layer or another (Brainard, 2017). In this sense, there is an important role for the facilitators of new innovation business models, such as innovation hubs and regulatory sandboxes.

Innovations hubs are understood as forums and way of communication enabled among entities (regulated or not) and the authorities. As one of their missions they can guide the interpretation of the legislative framework and licensing requirements to serve also the fintech sector.

Sandboxes understood as frameworks for regulatory tests are deregulated models where the innovation and fintech solutions can be tested with the authority support and under its supervision, without the necessity of licence or all the regulatory obligations during a limited period of time. In the countries like UK the idea of sandboxes is already implemented since 2015, the results are encouraging, the time and cost of new innovations reaching the market have been lowered mainly due to an easier access to financing because of the improved regulative certainty for potential investors.



4. SCIENTIFIC THEORIES ON BANKING INNOVATION

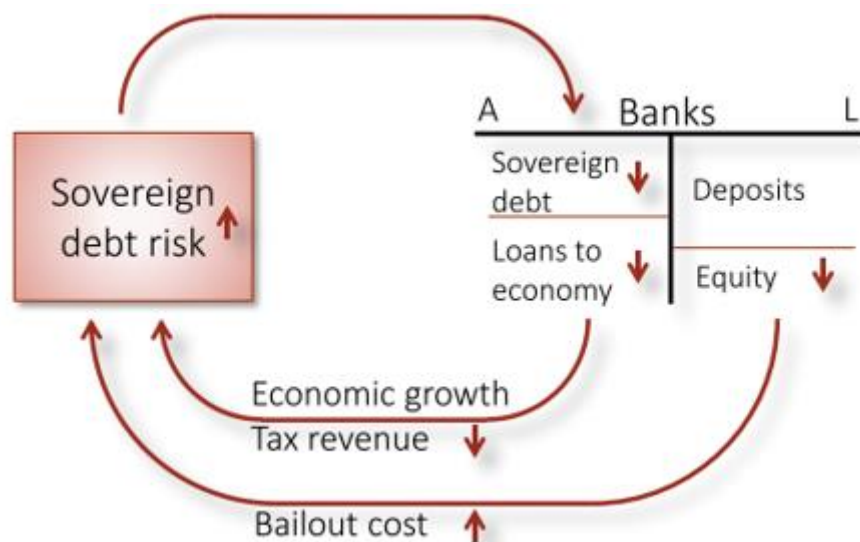
Due to the proposed overarching framework, in this work we need also to concentrate on the innovations proposed by the science. We start with the theories which are more adjacent to the current banking sector model, passing then to others which question the very essence of current understanding of the way banking sector works and could work.

4.1. Sovereign Nexus and diabolic circle

One of aims of the theories of the financial banking crisis is explaining the self-reinforcing nexus between the banking sector crisis and sovereign debt problems. It advocates the existence of some sentiments that can lead to “sudden stops” in the funding of the government debt, setting in motion a ‘devilish interaction between liquidity and solvency crises’ (De Grauwe, 2011, p. 20). Other scholars depict them as two diabolic loops (Brunnermeier, Garicano, *et al.*, 2016). In the countries of the periphery of Euro area, ‘the deterioration of sovereign creditworthiness reduced the market value of banks’ holdings of domestic sovereign debt. This reduced the perceived solvency of domestic banks and curtailed their lending activity. The resulting bank distress increased the chances that banks would have to be bailed out by their (domestic) government, which increased sovereign distress even further, engendering a “bailout loop”. Moreover, the recessionary impact of the credit crunch led to a reduction in tax revenue, which also contributed to weakening government solvency in these countries, triggering a ‘real-economy loop’ (Brunnermeier, Garicano, *et al.*, 2016).

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Figure 2: Two diabolic loops in the banking



Source: Brunnermeier et al (Brunnermeier, Garicano, *et al.*, 2016).

The solutions proposed by the scholars is to introduce the collective issue of government bonds (De Grauwe, 2011; Brunnermeier, Langfield, *et al.*, 2016), which should provide a defence against the ‘vagaries of euphoria and fears’ which seem to be common on financial markets. Studies about the TARGET2 (Trans-European Automated Real-Time Gross settlement Express Transfer System) which is interbank system in place in the EU, for transborder transfers interlinking the EU banking system seem to further corroborate the asymmetric effects of the functioning of the EMU, also on the short-term commercial debt and ‘speculative stress’(Sánchez, 2015). Definitely the main problem is that lack of understanding of functioning of the monetary union has led to the irrational fears and these ones were turn into the political force, which makes even more difficult the work of the governing bodies to arrange the issue(De Grauwe, 2013). A suggested way to overcome the future short-term shocks is going toward the budgetary Union (De Grauwe and Ji, 2016).

4.2. Modern Monetary Theory

As there is a strong concern regarding what happened and how to tackle the financial crisis, together with the concept of ‘digital’ or ‘virtual’ currency’, there are some theories arising insisting that they describe the ‘operational realities’. As always when related with the economic reality they can also be ad ascribed to an ideology or propose a specific economic policy, one of them is Modern Monetary Theory (MMT) proposed by Wray (Fullwiler and Wray, 2014) in 1998. This theory refers to a fiat currency regime with a free-floating exchange rate. In part it is derived from (neo) chartalism (Rochon and Vernengo, 2003; Wray, 2014) which is giving the currency its value due to its ability to be a mean for tax liabilities. In a sense and due to the unpopularity of austerity measures it has gained a lot of traction proposing a counter-intuitive backlash to emphasis on deficits and national debt. The MMT main assumption is that the States budgets are not to be managed in the same way as the ones of households, where balance is required. According to MMT, the state could issue fiat currency at its will, as the government deficit adds to savings. Of course, it would require adapting the constitution and laws, especially in what refers to the separation of powers and others (Armstrong, 2015). Furthermore, it claims that the sum of those deficit equals the money in the private sector possession. So that, without debt and deficit, there would be no more money. It recognises however that it is dangerous for the government to print money without limits, which of course would lead to hyperinflation, defaults, economy collapse and associated poverty. One of the reasons is related to the risk of debt in foreign currency (Mosler, 2010) which cannot be printed by the indebted state, and the debt couldn’t be repaid due to the exchange rate collapse.

The main question is that the government or central bank can print the currency but not real wealth. Its real spending power (especially in a longer term) is related to the its ability to tax and borrow real wealth¹⁴. This multiplicity of theories explaining what is



understood as well known is causing confusion in the public. In the first place, because it seems that even economists do not agree on such basic notions as money, its origins and role in the economy and in the second place because at the end this new invention with more understanding and means of these days scientists is at the end debunked (Palley, 2013), even if still not recognised as a such by many (Tymoigne and Wray, 2014). It is however interesting to observe that almost all of the quoted documents are produced in the Working Papers and a book, outside of the mainstream scientific publications in the field, subdue to the so called ‘scientific excellency’ requirements. It also brought and brings more caution into the (neoliberal) austerity policies application (Palley, 2013). Probably this is the only way to move forward, in the collective intelligence play there must as well be a space to explore the errors.

4.3. Innovative views on money issuance

We currently also have three competing theories of banking (Werner, 2014, p. 71): financial intermediation, fractional reserve and the credit creation, called financing through money creation (FMC) (Jakab and Kumhof, 2015).

In the first one, also called intermediation of loanable funds (IFL) (Jakab and Kumhof, 2015) which is widely assumed and present in the public imaginary, banks lend out the money from the previously gathered deposits of their customers. Here, there is an interesting and not a minor question of ‘market discipline’ because the depositor money is lent without his or her consent and control over the receptor of the credit.

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In the second one, the bank lends the money received from the central bank reserves. However, recent inductive approach studies (reminding the sources of previously described MMT) based on empirical facts would rather support the credit creation theory, where the banks create the money ‘out of nothing’ while extending the credit. As explained by Werner (Werner, 2014), the first step of lending seems the same for the banks and other non-financial institutions, but in the moment when the money is made available to the customer, it is when the money is created, because it becomes stated twice, reclassifying ‘accounts payable’ into a ‘fictitious customer deposits’, as if the bank has passed the money to the borrower. This is being allowed due to the banks exemption from ‘Client Money Rules’, which require all firms that hold client money to segregate such money in accounts that keep them separate from the assets or liabilities of the firm itself. Werner (Werner, 2014) also points out, one of the reasons to neglect this dynamic of money creation is that there is no explicit law, statute or regulation that would grant this privilege to the banks, usually considered a sovereign prerogative to create and allocate the money supply for productive, consumptive or speculative purposes. This ‘creative accounting’, i.e. money creation and channelling it to some use is possible because the banks have also the function of the settlement of all non-cash transactions of the money in the economy (Werner, 2014). This way of banking system functioning based

on the issuance of money by private banks, implies that it is necessary to increase the debt every time there is a need to increase the amount of money. Thus, the recent crisis, led to a colossal credit expansion, especially by the European Central Bank, hardly criticized as it finally resulted limitedly effective and supposed the negative distributive effects (from the population to banks and from the periphery banks to the central ones in the EU).

There is a proposal to break this power into small, non-for-profit community banks (Werner, 2014). In a different approach, trespassing the power of money creation to a central public bank/s in principle could solve many issues. The money created in such a way have several denominations with differences in their full definition, being called 'secure money', positive money, sovereign money, Full Reserve Banking, Limited Purpose Banking, etc. The adoption of the secure money would have disruptive effects for the system, because credit activity could be fully subject to competition, without protection or privileges granted by the State. Today only private commercial banks are allowed to have an account at the central bank. This measure is compared to the XIX century regulation (1844 in England, Peel Law) that stopped private banks from paper money creation (Fernández, 2018, p. 2). It appeared however to be hardly insufficient, especially in the digital era when paper money is only a minor fraction of the total. There were many other approaches for the problem regulation, i.e. Chicago group (Kumhof and Benes, 2012) proposal for transferring this money to Central Bank. The problem was in the accounting requirements that this kind of proceedings would require, i.e. dividing the banking activity into the normal one and on the other part the one of the deposit transfers to central banks, that is why this reform was called Full Reserve Banking (FRB). Even if considered by Roosevelt this measure was not implemented, as the 'liberalisation is successful only when there is a technology in place that makes it possible' (Fernández, 2018, p. 6).

The money in the central banks is considered real, not pseudo-currency, or the promise to return the money (Fernández, 2018). In order to assure this 'promise' central banks need to put in place extraordinary measures (mainly budgetary and regulatory effort) such as the assurance of deposits, the provision of liquidity by the State when they fail to obtain it in the market, injections of public capital, exemptions from the competition legislation and many others. Anyway, this sovereign money will not prevent all the financial crisis, like the ones of stock exchange, pension or hedge funds, but the meaningful difference is that the costs of such crisis will be directed and restricted to the agents that take part in money borrowing or investment for such financial activities (and not the citizens as it is now). This will also imply what is called 'putting the skin in the game'. Currently, the banks where the assets to capital ratio is generally at the level of 5-10% (Fernández, 2018, p. 12), are playing mainly with the money that are not owned by their shareholders (the rest).



Quite interestingly, at the EU level there is no information about total money supply (M4) as in the UK (in 2010 notes and coins in circulation supposed only 2,1% of actual money supply).

There are still many questions that need to be answered in the respect of the 'secure money' proposal. One, which is crucial is the way to make the transition from old to new way the system would work. What is generally working in case of liberalizations is the application of a slow calendar of reduction of protective shields, allowing a gradual opening to the competition. This is however not a very viable way, as once the possibility for deposits and credits would have been opened, a social demand could become "viral" and urgently require the removal of privileges to the private banks.

The point with this reform is that even if it has some recognized scholars, like a Nobel Prize in Economics, Prescott, working on the subject. There are also efforts to introduce the ideas into the political debate, like Monetative¹⁵ in Germany. There was even a referendum in Switzerland in 2018 in order to introduce the reform, with quite a fuzzy explanation and delivery, it gained 26% of votes, even if Association of Banking and the Central Bank are defending the current system of creation of money by private banks. The Bank of England has a research program, and in Sweden there is one also, correlated. There are also some association or non-lucrative citizens organizations like Positive Money¹⁶ in the UK but also 'Dinero Positivo'¹⁷ in Spain. A documentary¹⁸ on the subject, is however presenting a catastrophic vision in a highly emotional tone¹⁹. In some sense, it reminds the climate change question, where according to some studies, the knowledge of the subject is penalizing the action of the subject in the real world, due to its highly depressive content. Anyway, this question is not easy to explain and to be understood by the citizens, considered too complex and bored as opposed to other more simple and 'sexy' subjects.

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It seems that this innovation proposal is trying to spread from the niche level, not reaching the traction and probably critical weight. Probably we are also observing a sub-optimal lock in as it is taking out a lot of power and profitability from current economic agents in the sector. Even if in the long term their life could in this way be easier, not being so for profits. The shock of the financial crisis has passed and there is no such a strong willingness to change things when they seem to work even if they could work better in another configuration.

4.2. Local/Regional Currency

In almost all the theories of money, only one kind is described, i.e. central currency, generally issued by the Central Bank. However, during the history together with this centralized money, used for long-distance transactions with long term value holding due to the precious metals it was made of, there was also a local currency (Rushkoff, 2011,

pp. 106–112) in place used for daily transactions.

Local currency, first (described) in use in ancient Egypt where a shard of pottery – an ostrakon was paid for the agricultural products storage. This money was losing quickly its value, as well as the stored products, in this sense having a negative interest rate due to recoinage (with other date in exchange of less units of the older edition) and in this way biased toward spending or collective investment and not saving or private hoarding. By investing into productive assets instead of bank accounts, strong businesses can be built, workers rewarded well, integrity of the equipment and quality of land maintained, investment can be done in the research and development, in general improvement.

Central currency built on scarcity, however promotes the centre in comparison to periphery as everybody needs to repay the debt to the lender, also promoting the interests of already wealthy (aristocracy first) and reducing the ability of smaller groups or regions to create the wealth for itself. Furthermore, in central currency there is a bias towards competition, the repayment requires economy expansion and increases the overall indebtedness to the central bank of this positive interest-bearing money. The business activity is subdued to its debt structure.

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There are some organizations dealing with the return to this kind of money, like RAMICS²⁰ - Research Association on Monetary Innovation and Community and Complementary Currency Systems, it deals also with time banks. These theories and research are however only on the niche level, not broadly known. There are only some small experiments with the local money.

There is an effort also in establishing the ‘lost’ connection between money and values, when value changes money instead of money changing values. In some cases²¹ even, regional money are not really understood based on the beforementioned assumption, trying to enter the market value play from the central currency assumptions just replacing their place of creation. Such is probably also the case of cryptocurrencies or digital money, with its hype and exacerbated speculation.

5. BANKING AND SOCIETY AND (NATURAL) ENVIRONMENT

The general public perception is that the benefits of the banking system activity are privatised, but the lost is made to be paid by the public, i.e. citizens. This is so not only because of the citizens money employed in the banks rescuing but also due to the macroeconomic costs as GDP losses, unemployment growth, companies’ destruction, etc. The direct costs can be estimated in the 40 billion euros, but the indirect are estimated in 600 billion euros (Fernández, 2018, p. 3).



There are several voices, especially Thomas Picketty raising the question of the capital and labour split that is causing the exacerbation of the inequality or peripherization of the society related to wealth and income distribution. '*Once constituted, capital reproduces itself faster than output increases. The past devours the future*'. (Picketty, 2014, p. 398) He proposes the progressive annual tax on capital, advocating for supranational and also European Union level as appropriate for its implementation.

Political economy, dealing with the policy proposals is having also its normative and moral sense. There is the question of participation of society and other agents, like social scientists, if they are active in the public debate and political confrontation and are not only the commentators or demolishers of the views and data of others. 'Everyone is political in his or her own ways' (Picketty, 2014, p. 400). The conflict of our time is the division between those with and without the knowledge (Fischer, 2000).

The currently observed use of mathematical methods in the study of subjects makes it difficult to be accessed by the citizens, topics studied in the models are minutiae mainly based on stating the correlation between variables that are already intuitively known, in this way the vacuity of the content is rather obvious. The same is known for the pyramid schemes of the financial crisis covered in sophisticated mathematical and supposedly logical explanations. Statistics by itself are also social construct. In the innovation field there is so much concentration on the STEM (science, technology, engineering and mathematics). It gives the impression that the economic thought is lost and especially its ways of shaping the management of the society and economy. They appear to exist in separated realms. Economy seems to be an infrastructure to the political structure, but this view is probably too simplistic and abstract. Quoting Picketty (Picketty, 2014, p. 402): 'all social scientists, all journalists and commentators, all activists in the unions and in politics of whatever stripe, and especially all citizens should take a serious interest in money, its measurement, the facts surrounding it, and its history'.

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Even if apparently not really treating the same questions, Society and (Natural) Environment are very closely related in its indirect dimensions of impact of especially services sectors as they are the dimensions which are more likely to be included in the long-term strategies only, apart from gimmicky marketing strategies.

Probably the question of the (natural) environment directly understood are less relevant here as the banking products are services. Money is the mean of storing and exchanging value, even if taking into account cash this is not considered a high burden on the environment. Banking systems are also not high energy consumers (in principle).

Though, bearing in mind the indirect effects the banks are having some argue that their impact is understated. There are two major causes of banking negative impacts. One of

them is their endemic weakness and crisis dynamics they impulse. When the crisis struck and there is a recession, short-term thinking prevails, meaning that the government regulations are caring less about the natural environment and lesser long-run oriented investments are done, companies are rather concentrated on the cost cuts in order to return to their profitability as sale expansion is rather difficult in that times. Another cause of the banking sector negative impact on the natural environment is due to the fact that current monetary and economy system requires growth in order to be sustainable. It is already stated by Keynes and Schumpeter, talking respectively about the ‘real or pure exchange economies’ and ‘monetary or capitalist economies’ which employ the money supply expansion through credit creation mechanisms.

There can be many reasons distinguished²², however the main is that as the credits need to be repaid with the interest rate there needs to be a growth in order to support these charges. Another part of the question is related to the procyclical behaviour of banking sector in relation to the overall economy (caused by the design of the current system), during the hypes more money is created, and it is being reverted in creating speculative bubbles, as for the real estate market, which require in turn earning (and borrowing) more money by the citizens in order to sustain their lives. From the perspective of natural environment, economic growth has a high correlation with consumption of resources and pollution. We need a monetary system that will help fighting against the challenges of growing population, climate change and scarcity of natural resources in all its forms as the natural is being changed to industrial and urban if not wastelands.

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CONCLUSIONS

As it was presented in the document, several dimensions of the innovation ecosystems in the banking sector were studied. Here we highlight the most important global questions, such as the last economic/financial crisis, digitalization and social and climate change.

As for the last crisis, there is a lot of criticism expressed on the policies run by the European Central Bank with its introduction of unconventional monetary policies in the high income countries, in order to avoid secular stagnation (Summers, 2014), such as the purchases of large-scale assets to stimulate economic growth by keeping credit market functioning and interest rates low. Central Bank cheap liquidity has in turn incentivized the investment in equities fueling the hyper-activities in the stock market. Thus, further reinforcing the rate of return on capital over income learned in the real economy and economic and social inequality.

As expressed by Goodhart: ‘financial regulation is normally imposed in reaction to some prior crisis, rather than founded on theoretical principle’(Goodhart, 2010). Indeed, there



was a strong push for the regulation of the banking sector, in order to avoid the future financial crises. Even if justified in the current configuration of the banking sector, it was having however mostly pervasive effects, obliging more investment of the Banks but in this way increasing the concentration and reducing competition, by protecting them as new entries are strongly handicapped due to the fact of high spending and efforts required for these regulations. The presentation of these far-reaching supervisions can however be counterproductive as proposing the panacea for all, which can be only an indirect consequence when properly articulated with other relevant and broad changes.

In the short term, the ‘diabolic circle’ (Fernández, 2018, p. 6,8) of Supervisors and Central Banks trapped in their relationship with private banking could make the system work out, however in the long-term it increases the leverage and reduces the need for innovations in the traditional banks, which in turn makes banking system more fragile and increase the risk of crisis.

As for the banking sector views on the innovation, the changes concentrate there on the response to changing political climate in general. As explained due to the digitalization the moderation is replaced with polarization and realism with ideology. This leads to the populism, protectionism and also a spread of anti-European politicians, with Brexit as an evidence. Fortunately, social networks provide also for the promotion of progressive movements, such as the emergence of a pan-European party Volt²³. In what refers to digitalization, these changes even if widely spread seem so far not really affecting the essence of the banking business.

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Current core banking systems are very expensive and more and more complex, as compared with agile fintech companies, even if the main fear of the banks is perceived from the big technology companies like Amazon, Apple or Facebook (Peters, 2013). The legacy is not so easy to overcome as compared to starting from scratch.

APIs allow the start-ups to enjoy the access and aggregation of the customer information from banking systems without the high regulatory burden of being a bank. Information asymmetry is supposedly being overcome. Especially the PSD2 is opening the opportunity for the fintechs, Financial Technology innovation companies. It is potentially affecting more the retail than the wholesale banking. This last one involves so far too much entry barriers and too much money (Andrade et al., 2018).

There are also other changes discussed even if only promising in their nature, such as blockchain, cryptocurrency, so far having too much in common with lottery bubbles and in need of check for the implementation of probably many future legal requirements that allow for supervision. Cybersecurity is also become a high concern in the newly

introduced and old systems. The regulatory sandboxes should be eagerly implemented in order to protect the consumers and also allow for a balanced growth in innovations.

In a sense, in the current banking architecture, there is a question that governmental institutions, need to worry about assuring banks liquidity, they need to tell the economic agents (banks) what are the decisions that they must adopt when taking risks, with what capital, or liquidity requirements and furthermore they are offering as money an asset whose security they cannot guarantee. In principle, these governmental institutions should deal with banks through market regulations, protection of the consumer, defense of competition and supervision of markets and infrastructure, in order to assure that market works correctly and do not defraud the citizens.

The issuance of money should probably be separated from the objectives, from private entities but also from politicians and governments. Nowadays Central Banks have the power to decide to whom they deliver the money they create: to private banks, to holders of public or private debt and can even buy shares of private companies.

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In addition, the public initiatives in form of public subsidies or investment, reduction of taxes, reduction of public debt should be going to the state and/or citizens and not to private companies with the stress on correcting the inequalities generated by globalization and climate change long-term initiatives. The destination of the (public) money should be decided by citizens through the democratic institutions (Fernández, 2018, p. 6).

There are several proposals of solutions to this problem exposed, in what refers to scholars' views on the banking, however it seems that only the narrowest ones have currently the possibility to permeate rather slowly into the reality. In theories like Positive Money or Local Currencies apart from not having a wider public reach, there is a need of further inquiry into the possibilities they can offer. They are only on a niche level and the banking system represents rather suboptimal lock-ins the current status quo. The question is that it is a complex and confusing landscape which cannot be easily explained to the public, furtherly associated with the subject matter being boring or presented in tremendous terms. There should be much more willingness on part of the society to actively enter this area as it is having profound implications on the lives of citizens and on the natural environment, the subsequent crisis strengthens the short-term measures with pervasive consequences on both of them.



BIBLIOGRAPHY

- ANDRADE, D. ET AL. (2018) 'The changing shape of international banking and the future of Europe'. Bank Governance Leadership Network, pp. 19.
- ARMSTRONG, P. (2015) *Heterodox Views of Money and Modern Monetary Theory (MMT)*.
- BRAINARD, L. (2017) 'Where do banks fit in the fintech stack?', in *New Developments in Consumer Finance: Research & Practice*". Northwestern Kellogg, pp. 18.
- BRUNNERMEIER, M. K., LANGFIELD, S., PAGANO, M., REIS, R., VAN NIEUWERBURGH, S., VAYANOS, D. (2016) 'ESBIES: SAFETY IN THE TRANCHES', *SSRN*, (21).
- BRUNNERMEIER, M. K., GARICANO, L., LANE, P. R., PAGANO, M., REIS, R., SANTOS, T., THESMAR, D., VAN NIEUWERBURGH, S., VAYANOS, D. (2016) 'The sovereign-bank diabolic loop and esbies', *American Economic Review*, 106(5), pp. 508–512.
- CAPGEMINI CONSULTING GROUP (2013) *Trends in the Global Banking Industry 2013. Key business trends and their implications for the global banking sector*.
- COMMISSION, E. (2015) 'The Euro Plus Pact', *EPSC Strategic Notes*, (3), 1–9.
- COUNCIL DIRECTIVE NO 85/2011 (2011) 'On requirements for budgetary frameworks of the Member States', *Official Journal of the European Communities*, 2011(September), 41–47.
- COUNCIL OF THE EUROPEAN UNION (1987) 'Single European Act', *Official Journal of the European Union*, L 169.
- COUNCIL OF THE EUROPEAN UNION (2012) 'Consolidated version of the treaty on the functioning of the European union', *Official Journal of the European Union*, (October), 47–390.
- DANESCU, E. R. (2012) 'The first and second Barre Plans', *Cvce*, (October 1970), pp. 1–5. Available at: http://www.cvce.eu/obj/the_first_and_second_barre_plans-en-a27c0587-77ad-479e-a644-cb56dbaf9c90.html.
- DELORS, J. (1989) *Report on economic and monetary union in the European Community*. Available at: <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Report+on+economic+and+monetary+union+in+the+European+Community#0>.

EFMA; INFOSYS (2014) *Innovation in Retail Banking. Delivering Superior Customer Value*. Available at: <http://ideas.repec.org/p/wop/pennin/97-48.html>.

EMI (1997) *The European Monetary Institute*. Frankfurt am Main.

EPC (2007) 'Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007', *European Parliament and Council OJ C 306*, 50(December), pp. 1–272.

EURO-LEX (2014) 'Regulation (EU) No 910/2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC', *Official Journal of the European Union*, 58(910), p. 42. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG.

EUROPEAN CENTRAL BANK (2014) *Guide to banking supervision*.

EUROPEAN COMMISSION (2017) 'Mid-term review of the capital markets union action plan'. Brussels, pp. 22. Available at: https://ec.europa.eu/info/publications/mid-term-review-capital-markets-union-action-plan_en.

50

EUROPEAN COMMISSION (2010) 'EUROPE 2020. A strategy for smart, sustainable and inclusive growth', *Com(2010) 2020*, Brussels(3 March), p. Commission of the European Communities.

EUROPEAN COMMISSION (2011) 'EU Economic Governance "Six-Pack " Enters into Force', *Press Release Database*, 126(December), pp. 1–5. Available at: http://europa.eu/rapid/press-release_MEMO-11-898_en.pdf.

EUROPEAN COMMISSION (2012) 'Treaty on Stability, Coordination and Governance in the Economic and Monetary Union', *T/SCG*. Brussels, pp. 25.

EUROPEAN COMMISSION (2015a) 'A Digital Single Market Strategy for Europe'. Brussels, pp. 20.

EUROPEAN COMMISSION (2015b) *White Paper on the Future of Europe*. Brussels.

EUROPEAN COMMISSION (2017) 'Consumer Financial Services Action Plan: Better Products, More Choice'. Brussels, p. 15. Available at: https://ec.europa.eu/info/publications/consumer-financial-services-action-plan_en.

EUROPEAN COMMISSION (2018) 'FinTech Action plan: For a more competitive and innovative European financial sector EN'. Brussels, pp. 51.

EUROPEAN COMMUNITIES (1992) *Treaty on the European Union (Maastricht Treaty)*, *Official Journal of the European Communities*.



- EUROPEAN PARLIAMENT (2015) 'A history of European monetary integration Introduction. From the Gold Exchange Standard to Bretton Woods', (March), p. 8. Available at: [http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/551325/EPRS_BRI\(2015\)551325_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/551325/EPRS_BRI(2015)551325_EN.pdf).
- EUROPEAN UNION (2010) 'Consolidated Version of the Treaty on the Functioning of the European Union', *Official Journal of the European Union*, 20007/C 30(C), pp. 155.
- FERNÁNDEZ, M. (2018) 'El Futuro de la Banca: Dinero Seguro y Desregulación del Sistema Financiero', in *Seminario sobre el Futuro de la Banca (6 de febrero)*. Madrid: Fundación Ramón Areces, 1–14.
- FETTER, F. A. (1905) *The Principles of Economics, with Applications to Practical Problems*. Online edi, *Political Science Quarterly*. Online edi. New York: The Century CO.
- FISCHER, F. (2000) *Citizens, Experts, and the Environment: The Politics of Local Knowledge, Contemporary Sociology*. Duke University Press.
- FULLWILER, S. AND WRAY, L. R. (2014) *Modern Monetary Theory: A Debate*.
- GONZÁLEZ FERNÁNDEZ, S. (2002) *Organización Económica Internacional. Relaciones y Organismos Fundamentales*. Pirámide.
- GONZÁLEZ, S., KUBUS, R. AND MASCAREÑAS, J. (2018) 'Innovation Ecosystems in the European Union – toward a theoretical framework for their structural advancement assessment', *CYELP - Croatian Yearbook of European Law and Policy*, 14 (in publication).
- GOODHART, C. (2010) 'How should we regulate bank capital and financial products? What role for 'living wills?', *The Future of Finance: The LSE Report*, 165–186.
- DE GRAUWE, P. (2011) *The governance of a fragile Eurozone, CEPS Working Document*.
- DE GRAUWE, P. (2013) 'Design Failures in the Eurozone: Can they be fixed?', *LSE 'Europe in Question' Discussion Paper Series*, (57). Available at: [https://www.lse.ac.uk/europeanInstitute/LEQS Discussion Paper Series/LEQSPaper57.pdf](https://www.lse.ac.uk/europeanInstitute/LEQS/DiscussionPaperSeries/LEQSPaper57.pdf).
- DE GRAUWE, P. AND JI, Y. (2016) *Flexibility versus Stability. A difficult trade-off in the eurozone, CEPR Discussion Paper Series*.
- JAKAB, Z. AND KUMHOF, M. (2015) 'Banks are Not Intermediaries of Loanable Funds – And Why This Matters', *SSRN*, (529).

JOIN (2017) 'Resilience, Deterrence and Defense: Building strong cybersecurity for the EU'. Brussels, pp. 21.

KUMHOF, M. AND BENES, J. (2012) 'The Chicago Plan Revisited', *IMF Working Papers*, 12 (2012).

LAUGHLIN, J. L. (1919) *The principles of money*. Original 1. London: Cambridge University Press.

MASCAREÑAS, J. AND GONZÁLEZ, S. (2013) 'Las oleadas de las fusiones y adquisiciones de empresas: análisis retrospectivo comparado', *RUE: Revista Universitaria Europea*, (19), 87–112. Available at: <https://dialnet.unirioja.es/servlet/articulo?codigo=4682814>.

MOSLER, W. (2010) *The Seven Deadly Innocent Frauds of Economic Policy*. Available at: <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Seven+Deadly+Innocent+Frauds+of+Economic+Policy#0%5Cnhttp://moslereconomics.com/wp-content/powerpoints/7DIF.pdf>.

52 MUNDELL, R. A (1961) 'A Theory of Optimum Currency Areas', *The American Economic Review*, 51(1971), 657–665.

MUÑOZ, M. AND SANTAMARÍA, A. (2017) *Política económica , financiera y fiscal 2017*. Centro de Documentación Europea.

NAGY L., Á. PETE, S., BENYOVSZKI A., PETRU T. P., GYÖRFY L. (2010) 'The de Larosièr Report Regarding the new Structure of European System of Financial Supervision', *Theoretical and Applied Economics*, 11(11), pp. 5.

PALLEY, T. (2013) *Money, fiscal policy, and interest rates: A critique of Modern Monetary Theory*. 109. Düsseldorf.

PETERS, K. (2013) 'The Future of Retail Banking in Europe', *Roland Berger Report*, (September), pp. 33.

PICKETTY, T. (2014) *Capital in the Twenty-First Century*. London: Harvard University Press.

PWC (2014) *The Future Shape of Banking Regulation. Time for reformation of banking and banks?*

ROCHON, L.-P. AND VERNENGO, M. (2003) 'State money and the real world: or chartalism and its discontents', *Journal of Post Keynesian Economics*, 26(1), 57–67.

RUSHKOFF, D. (2011) *Life inc: how corporatism conquered the world, and how we can*



take it back.

RUSHKOFF, D. (2016) *Throwing Rocks at the Google Bus. How growth became the enemy of prosperity*. Profile.

SÁNCHEZ, P. (2015) 'Política monetaria del BCE y consecuencias en la Unión Monetaria Europea', *Papeles de Europa*, 27(2014), 42–69.

SMITH, A. (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations.*, *The Economic Journal*.

SUMMERS, L. H. (2014) 'U.S. economic prospects: Secular stagnation, hysteresis, and the zero lower bound', *Business Economics*. Nature Publishing Group, 49(2), 65–73.

TYMOIGNE, E. AND WRAY, L. R. (2014) 'Modern Money Theory: A Reply to Palley', *Review of Political Economy*, 27(1), 24–44.

WERNER, R. A. (2014) 'How do banks create money, and why can other firms not do the same? An explanation for the coexistence of lending and deposit-taking', *International Review of Financial Analysis*. Elsevier B.V., 36(C), 71–77.

53

WILLIAMS, J. H. (1945) 'The Bretton Woods Agreements', *Proceeding of the Academy of Political Science*, 21(3), 40–50.

WRAY, L. R. (2014) *From the State Theory of Money to Modern Money Theory: An Alternative to Economic Orthodoxy*.

REFERENCES AND LINKS (15.11.2018)

¹ <https://open.lib.umn.edu/principleseconomics/chapter/24-1-what-is-money/>

² Joseph Schumpeter wrote that if the entrepreneur is the (Spartan) king, the bankers are the Ephors of the Market, who were leaders together with the kings (p. 182) due to their ability of awarding the purchasing power. As a curiosity, he even stated that it can be said that Banker creates money through the creation of claims against themselves (p.181).

³ https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/structural-reform-support-programme-srsp_en

⁴ https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan-europe-juncker-plan_en

⁵ <https://www.euractiv.com/section/economy-jobs/news/goodbye-juncker-plan-hello-investeu-europes-new-investment-fund/>

⁶ <https://www.euractiv.com/section/euro-finance/news/juncker-plan-becomes-friendlier-to-poorer-eu-members/>

⁷ <https://www.weforum.org/agenda/2015/06/how-to-improve-europes-financial-supervision/>

⁸ <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180919.en.html>

⁹ <https://internationalbanker.com/banking/key-banking-trends-watch-2018/>

¹⁰ <https://thefinancialbrand.com/69180/2018-top-banking-trends-predictions-outlook-digital-fintech-data-ai-cx-payments-tech/all/>

¹¹ <https://es.fundspeople.com/news/innovation-hubs-y-sandboxes-como-facilitadores-de-la-innovacion-en-el-sector-financiero?sf184730537=1>

¹² <https://hackernoon.com/ten-years-in-nobody-has-come-up-with-a-use-case-for-blockchain-ee98c180100>

¹³ <https://hackernoon.com/ten-years-in-nobody-has-come-up-with-a-use-case-for-blockchain-ee98c180100>

¹⁴ <http://www.the-lighthouse.net/debunking-modern-monetary-theory-mmt-understanding-it-first/>

¹⁵ <https://www.monetative.de>

¹⁶ <https://positivemoney.org/videos/introduction/>

¹⁷ <https://dineropositivo.es>

¹⁸ <https://positivemoney.org/videos/97-owned-monetary-reform-documentary/>

¹⁹ Talking about the monetary reform and meanwhile presenting bleeding people from manifestations.

²⁰ <https://ramics.org>

²¹ <https://michaelsevans.com/zelizers-theory-of-money-and-the-case-of-local-currencies/>

²² <http://positivemoney.org/issues/environment/>

²³ <https://www.volteuropa.org>

