

**INNOVATION-FUELLED, SUSTAINABLE, INCLUSIVE GROWTH** 

#### Working Paper

# Financialization in EU and the effects on growth, inequality and financial stability

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## Report: EU de-financialisation & re-industrialisation

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# Financialization in EU and the effects on growth, inequality and financial stability

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#### Abstract

In this paper brief we present empirical evidence on the patterns of increasing financialization in the EU in the last two decades, an analysis of its possible adverse effects on several objectives of the EU 2030 agenda, including inclusive growth, innovation, inequality and financial stability.

First, excessive financialization depresses economic growth because it implies that a larger fraction of credit is directed toward unfruitful investment projects, possibly generating economic crises (e.g. via housing price bubbles). Second, financialization has negative impact on innovation because the separation between actors taking risks from innovation and actors extracting rents from innovation implies lower share of reinvested profits (e.g. via short-termism and share buybacks). Third, financialization contributes to inequality by strengthening top earners bargaining power in terms of higher wages and lower taxation, as well as by burdening public budgets with fiscal assistance to financial institutions in time of crisis. Fourth, financialization may lead to financial instability by increasing both the leverage of interconnected financial institutions and the risk of mispricing of large asset classes (e.g. the dynamics of leverage and mispricing of mortgage backed securities in the run of the 2008 financial crisis).

We suggest some countermeasures that could help containing excessive financialization, including: (i) fostering the demand in the real sector; (ii) establishing mission-oriented programs by going beyond the traditional conceptual framework to fix market failures and aim to create markets where they may not exist at all; (iii) encouraging the alignment of top managers compensation schemes with long-term profit and corporate social responsible goals; (iv) studying the possibility of setting a minimal ratio on banks for lending to the real economy (to non-real estate sectors); (v) studying the possibility of setting a maximal level of intra-financial leverage for financial institutions.

Keywords: financialization, re-industrialization, policy implications.

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#### 1 Introduction

Since the middle 1980s many economies have undergone a process of financialization, broadly characterized as the overgrowth of the financial sector compared to all real sectors of the economy. To be more precise, this process has been defined as a pattern of accumulation in which profits accrue primarily through financial channels, rather than through trade and commodity production (Krippner, 2005) or, alternatively, as the increasing role of financial motives, financial markets, financial actors and financial institutions (Epstein, 2005)

The study of the consequences of financialization is a subject of great concern for policy makers and a timely topic of research for economists and practitioners. Financialization indeed has naturally tight connections with the role that credit and financial markets play in shaping economic growth, industrial dynamics, employment, inequality (within and between), and finally, in the generation of large crises like the one of 2007/2008.

Recent studies on the matter are yet inconclusive and results on the effects of financialization are still mixed. While some authors claim that this process might lead to increased long-run economic performances (Neely, 1999), others argue instead that it might increase inequality and have negative effects on employment (Assa, 2012).

In this paper, we discuss recent advances in the research and present results stemming from the ISIGrowth research consortium concerning (i) the macro and industry patterns of financialization in the Euro Area and (ii) the consequences that the financialization process has on the economic system. By collecting the results, we also identify the possible policy trade-offs and provide policy recommendations derived from the ISIGrowth research efforts.

#### 2 Empirical Evidence

Drawing from the analysis discussed in the ISIGrowth paper by Stolbova et al. (2017) here we report some findings on the evolution of financialization in different European countries during the last decade. By combining traditional measures (e.g. the ratio of financial assets to GDP) with some newly proposed metrics (e.g. the ratio between financial assets and fixed assets or the exposures of different institutions to the financial and to the real sectors) we aim at providing a comprehensive picture of the evolution of financialization using publicly available data drawn from the ECB Data Warehouse.<sup>1</sup>

Figure 1, shows the evolution of the ratio of Total Financial Assets (TFA) to the Gross Domestic Product (GDP) of an economy. An increase in this ratio implies that the total financial assets in a given economy have been increasing faster than GDP. Since the GDP amounts to the total value added in the economy generated in a particular year, a possible interpretation of the figure 1 is that increasing portions of sales from goods and services accrue to financial assets rather than being reinvested in real assets.

The lowest growth of the TFA to GDP ratio in the Euro Area is observed for Germany, for which the measure has been relatively stable in the last 16 years. In contrast, for the French economy, the

<sup>&</sup>lt;sup>1</sup>See http://sdw.ecb.europa.eu/. The definitions of the variables employed is available in the Appendix REF A.



Figure 1: Compound growth rates of the macroeconomic measure of financialization for the Euro Area 19 and for largest EU economies. Financialization (y-axis) is measured as TFA/GDP. Each year has then been rescaled to obtain growth rates using the following formula:  $\frac{(TFA/GDP)_t}{(TFA/GDP)_{2000}} - 1$ . Source: authors computations based on the ECB Data Warehouse.

TFA to GDP ratio has been steadily increasing since 2005, reaching a cumulative growth of 40%. However, for these two continental economies, the growth patterns of TFA to GDP are quite different from the one observed in the United Kingdom, where the ratio has experienced the highest growth since the very beginning of the 21 century (around 100% cumulative growth in the first decade). It is also interesting to note that the compound growth rates are much larger in the EA-19 than in France and Germany, implying that the other western European economies have experienced a larger growth of the TFA to GDP ratio with respect to the Franco-German economies. In general, for the analyzed European economies, the total financial assets have been increasing faster than the GDP, implying an increase in financialization at the macroeconomic level.

Another useful metric for assessing the degree of financialization is the ratio of Property Income Receivable (PIR) to Gross Entrepreneurial Income (GEI). This ratio captures the share of total non-financial firms profits that derive from firms ownership of financial assets opposed to profits that non-financial firms generate from productive activities. This ratio helps to account for a less known but equally important aspect of financialization, namely, the financialization of the firms operating in real sectors of economic activity (see also Lazonick and Mazzucato, 2013, and the next section).

Three time snapshots (2000, 2010, 2016) of this measure are presented in Figure 2, which also provides country-level information. Using this measure, the French Non-Financial Corporations are by far the most financialized. As a matter of fact, 25% of GEI is generated by means of property income, and the ratio is also significantly higher for France than for the EA-19 as a whole. In contrast, German firms turn out to be the least financialized ones, although the share of entrepreneurial income generated via interests, dividends and other returns on assets has increased by about 5% since 2000. Finally, the non-financial corporations appear to be significantly financialized also in the UK, although property income receivable decreased after the 2008 crisis (from 26% to 15% in the last 6



Figure 2: Ratio between property income receivable and gross entrepreneurial income (PIR/GEI). Nonfinancial corporations.Source: authors computations based on the ECB Data Warehouse.

years). While the above PIR to GEI ratio provides a measure of the financialization of firms by looking at flows of income, with the next indicator we look instead at the financial stocks, by analyzing the evolution of the ratio of Financial Assets (FinA) to Fixed Assets (FixA).

Figure 3 suggests that in the last 16 years, the ratio between FinA and FixA has been increasing in the whole Euro Area, both for Financial and Non-Financial Corporations. In particular, the growth of this ratio in the non-financial sector reveals a shift in the asset side of non-financial firms in favor of financial capital. Also, notice that the Great Recession has marked a decline in the growth of the ratio of financial assets over fixed ones, especially for non-financial firms. Nevertheless, this ratio has started to increase again since 2010. Using the ECB data we can also take a look at the financial exposures of institutional sectors balance sheets. Hence, in Figure 4 we illustrate what portion of the financial assets of each institutional sector in the Euro Area are invested in real sectors (yellow) or in financial sectors (blue).

Figure 4 shows that the sectors holding the largest exposure to other sectors and to the financial sector in particular are households and banks. This result, which may be surprising to some readers, deserves some comments. Households hold the largest total exposures to other sectors of the economy and the largest exposure to the financial sector (around 80% of its balance sheet). This exposure consists mainly of deposits at commercial banks, but also of insurances and pension schemes guarantees towards the sector of pension funds and insurance. Banks exposures are evenly spread between the financial sector and the real sector.<sup>2</sup> However, the largest portion of the exposure to the real sector consists of loans to households, which finance housing mortgages (see for instance Jordà et al., 2016). This statistics contributes to challenge the long-held and still pervasive idea that the main activity of

<sup>&</sup>lt;sup>2</sup>Exposures to the real economy are mainly constituted by loans to households and to Non-Financial Corporations, but also to the external sector. The largest fraction (70%) of banks exposures to the financial sectors is composed by interbank loans (24% of total banks' assets), financial corporate bonds (both from banks and other financial institutions) (8%), and investment fund shares (1%).



Figure 3: Ratio of Total Financial Assets to Fixed Assets, cumulative growth rate computed as  $\frac{(FinA/FixA)}{(FinA/FixA)_{2000}}$  – 1. Measured for Financial Corporations (FC, full blue) and for Non-Financial Corporations (NFC, dashed yellow). Source: authors computations based on the ECB Data Warehouse.



Figure 4: Ratio of Total Financial Assets to Fixed Assets, cumulative growth rate computed as  $\frac{(FinA/FixA)}{(FinA/FixA)_{2000}}$  – 1. Measured for Financial Corporations (FC, full blue) and for Non-Financial Corporations (NFC, dashed yellow). Source: authors computations based on the ECB Data Warehouse.

banks is intermediation between savers and the real sector. In contrast, the largest exposure of banks is within the financial sector itself, while the second largest exposure finances real estate projects. Both exposures have played a major role in the 2008 financial crisis: the real-estate bubble was fuelled by the availability of credit under poor risk monitoring standards, and the complexity of the web of intra-financial contracts amplified the losses once the bubble had burst.

Asset's owner / Investment Target	Fin. sector Euro-Area	Real sector Euro Area	Other
Fin. sector Euro-Area	36.17%	35.10%	28.73%
Real sector Euro Area	44.33%	28.01%	27.66%

Table 1: *Financial exposures between financial (through equity shares, investment funds shares, bonds, loans and insurance and pension scheme guarantees) and real sectors of the of the Euro Area (EA), aggregated, Q4, 2015.* 

Interestingly, table 1 also shows that a sizeable share of financial exposures (about one third), for both financial and non-financial sectors, target activities located outside the Euro Area. This figure reflects the overall level of globalization of financial flows and is also a measure of the potential exposure of the overall Euro Area financial and real sectors to external shocks.



Figure 5: Left: percentage of total loans granted to non-financial corporations (dashed yellow) and to financial corporations (solid blue) in the Euro Area. Right: cumulative growth rates of loans granted to non-financial corporations (dashed yellow) versus financial corporations (solid blue) compared to the first quarter of 2000. Source: authors computations based on the ECB Data Warehouse.

The evidence about the overall exposures of the financial sector outlined above is also coherent with the evolution of loans (one particular set of financial exposures) to financial (FC) and non-financial corporations (NFC). Notwithstanding the fact that the fraction of loans going to the real economy is still higher than the one going to the financial sector, the ratio of loans to the NFC and to the FC has been stable for the first decade of the century (see figure 5, left panel). However, it has steadily been decreasing since 2009. This fact goes hand in hand with figure 5 (right panel) that compares the compound growth rates of the loans granted to NFC and FC. Thus, the right panel shows that after 2009 the growth of loans to financial corporations has exceeded by far the loans to non-financial firms. This last evidence adds to another empirical research by the ISIGrowth consortium carried out by Battiston and Napoletano (2017), who study the relation between credit

exposure and growth of firms. Such a relation has sharply changed from the pre-crisis period and financial constraints have been among the most important factors that have clipped the wings of manufacturing firms during the crisis.

Summing up the evidence coming from the different indicators presented so far, we can first conclude that the European Union - as a whole - has become more financialized since the beginning of the century. Interestingly, the increasing financialization has not just concerned financial corporations, which have become increasingly focused on channeling resources towards the financial sector itself. It has also encompassed non-financial firms, who have significantly increased their share of property income and increased the share of financial assets in their balance sheets. The Great Recession has marked an abrupt stop in the above trend, which has however recovered a sustained pace since then. At the same time, financialization has not been homogeneous across countries in the Union. Countries like the United Kingdom and France indeed look much more financialized than Germany. In the latter, the growth of financial assets over GDP, as well as the process of financialization of firms has been much milder, and below the average of the Euro Area.

However, the process of financialization did not only affect the aggregate macroeconomic or industrial level. As a matter of fact, some evidence from the ISIGrowth research shows that it has also been associated to the increasing importance of market-based financial intermediation and that, therefore, financialization is also visible at the institutional level. In this respect in a seminal work, Dosi (1990) distinguishes between two archetypical financial structures: market-based and the creditbased systems (see Table 2). The first typology (present in the Anglo-Saxon countries since the end of the second world-war) is broadly characterized by an impersonal system of exchange of securities, while the second one (that have historically been commonly adopted in many continental Europe economies) involves a more institutionalized ownership/control relationship between credit institutions and firms.

In the last two decades, the European Union displayed an institutional transformation toward a market-based system, that has been built upon the idea that higher stock market liquidity and capitalization can stimulate innovation and economic growth. In fact, such a view suggests that only more financially developed economies, with more complete and more efficient financial markets, can ensure the two necessary conditions of high liquidity and high capitalization.

Properties of the financial Structure	Market Based	Credit Based	
Selective pressure on the grounds of revealed performance	Higher	Lower	
Trial-and-error process through birth of new firms	Higher	Lower	
Voice versus exit process of change	Exit	Voice	
Opportunities of cumulative learning	Lower	Higher	
Discretionality of allocative processes	Lower	Higher	
Specialization of competences by financial allocators	Lower	Higher	
Specialisation versus diversification of incumbent firms	More specialization	More diversification	

Table 2: *Financial exposures between financial (through equity shares, investment funds shares, bonds, loans and insurance and pension scheme guarantees) and real sectors of the of the Euro Area (EA), aggregated, Q4, 2015.* 

Hence, to better understand the transition from a capital-based structure to a market-based one ISIGrowth research paper by Granier et al. (2017) has investigated the similarities between the re-

cently introduced Junior Stock-Markets (JSM) in some European countries and an archetypical marketbased financial structure, represented by the Alternative Investment Market (AIM) created by the London Stock Exchange in 1995. The qualitative evidence suggests that also in this case there is a notable degree of heterogeneity across different EU countries. The German JSM is the one that resembles the most a capital-based institutional structure while the JSMs introduced in Italy, France and Sweden are closer to the Anglo-Saxon AIM, suggesting a more market-based orientation of these countries financial systems.

#### 3 Consequences of the Financialization Process

The previous section presented empirical evidence on the dynamics of financialization in Europe and helped in answering the general question: How did the role of finance evolved in the last 15 years in the European Union?. The evidence presented suggests that financial resources and financial motives have been steadily growing and have become more and more central since the beginning of the century. Furthermore, a detailed analysis also suggested that the growth of financial activities (i) has been even larger than the growth of real activities, (ii) has not been strongly affected by the financial crisis, (iii) has been sectorally widespread affecting all the economic actors (from the largest of the financial institutions to the smallest of the households) but (iv) has been heterogeneous across different EU economies.

After having uncovered the statistical patterns concerning the process of financialization however, the ISIGrowth project also aims at answering a question of even more central importance for the general economic debate and for policy makers: What are the economic effects of the process of financialization?.

In this section we revisit the economic literature on the role and the effects of finance, taking into account the new evidence provided by the ISIGrowth research. We aim at better pointing out the positive effects that the process of financialization brings, but also at better understanding its limit and the possible drawbacks that stem from its abuse.

#### 3.1 Effects on Economic Growth

Since the seminal works of Bagehot (1873) and Schumpeter (1911), it has been claimed that a wellfunctioning financial system plays an essential role in promoting economic development. In particular, financial intermediation can accomplish several fundamental economic objectives as it eases exchanges, it reduces market imperfections, it diversifies risk and it enhances the transfer of liquidity from economic actors in excess of it to economic actors in need of it. Overall, there has been a widely spread view within the economic profession that the development of finance is unambiguously good, as it improves investment efficiency by favoring a better allocation of the available resources to the best economic projects.

This positive view however has been fiercely criticized by many economists and policy makers, in particular after the burst of the housing bubble and the onset of the global financial crisis in 2007. Notwithstanding the critiques, the Nobel laureate Shiller (2014) has argued that there is still a case for a positive role of finance. He concludes that the solution is not to [...] restrain financial innovation

but instead to release it because [...] better financial instruments, not less activity in finance, is what we need to reduce the probability of financial crises in the future.



Figure 6: Cumulative growth rate of total production in the manufacturing sector for selected EU economies. Source: authors calculations using Eurostat short-term business statistics which measure the volume of industrial production.

However, the financialization process documented in the previous section does not seem to have positively contributed to investments, to a recovery of industrial production and to economic growth in Europe (see Tomaskovic-Devey and Lin, 2015; Tori and Onaranm, 2017; Tori and Onaran, 2018). Figure 6 above shows the evolution of total manufacturing production for selected EU economies and for the EA-19 as a whole.<sup>3</sup> From the picture it is clear that countries where the financialization process was less pronounced, i.e. Germany, managed to increase their production output and to expand their capacity since the early 2000s and even more after the crisis hit (growing cumulatively of about 30%). In contrast, France and United Kingdom - i.e. two countries where the financialization process has been stronger - suffered anemic industrial production growth since the beginning of the century and they did not yet manage to reach the level of production they experienced in the early 2000s. This adds to an interesting results from an ISIGrowth research by Lucchese et al. (2016), that shows that such a de-industrialization process has occurred also in Italy, and that it was accelerated by the last financial crisis.

Clearly, it is possible the financialization is not the only driver of these patterns and that to some extent, other country-specific institutional factors could have played a role. Yet, the above evidence casts serious doubts on the claim that financialization, and in general more decentralized and unregulated financial systems, might have allowed the European Union to become more productive and more efficient. These empirical patterns are also in line with theoretical results produced by the ISIGrowth project. In a recent working paper indeed, Fagiolo et al. (2017) show that output growth is higher in an environment with the presence of a commercial banking activity, vis-à-vis a null model abstracting from it. This result emerges as a consequence of the banking sector ability to finance

<sup>&</sup>lt;sup>3</sup>Measured as the sum of all the 19 EU economies.

technological innovation diffusion and hence to foster technical change. However the research goes further, by shedding light also on some possible dangers that an excess of financial dependence might generate. The authors find indeed a significant inverted-U shaped relation between financial depth and GDP growth, meaning that when financialization is too strong, a large fraction of credit is directed toward unfruitful investment projects that might turn into low growth regimes. This last result is also in line with the work of Turner (2012) and with the empirical evidence of Arcand et al. (2015).

Another ISIGrowth research paper by Guerini et al. (2017) points instead not to the quantity of finance but to the quality of finance and investigates the possibility that different forms of financial activities (and in particular different forms of debt) might have different impacts on the economic system. The paper shows that the large increases in mortgage debt, have been the most harmful among the lending activities in the last 50 years, with an overall negative impact on economic growth. In contrast, lending to the non-financial corporate sectors bears positive outcomes to economic performances; in general also the public sector debt had positive effects on economic growth.<sup>4</sup>

Finally an ISIGrowth working paper by Dawid et al. (2018) emphasizes the relation between manager remuneration schemes and long-term performance of an industry. An increase in the sharebased remuneration component, reduces the incentives of the manager to invest in productivityenhancing activities that would pay off over a longer time horizon. It instead induces a re-balancing of firms expenditures towards share buybacks. This increases the share price and managers income in the short term, but it crowds out real investments, reducing firms productivity growth in the long run. Furthermore the authors show that if the increase in share remuneration is adopted by all the firms in the industry, even though the productivity growth in the industry is reduced, the shareholders are able to profit from the measures both in the short and in the long run. Workers purchasing power instead decreases because of the long-term fall in productivity leads to losses in real wages and purchasing power. All in all, the results by Dawid et al. (2018) show that regulatory interventions limiting the possibility for extensive share-based manager remuneration or reducing share buybacks should have a substantial positive effect on productivity growth.

#### 3.2 Effects on Innovation and on Employment in Innovative Sectors

In the previous sections we have also documented how financialization in the European Union has also encompassed a process of financialization at the firm level, characterized by the increased importance of financial income and of financial assets over operating activities of non financial-corporations. Several scholars have warned against the dangers of such a process. In fact, the retained profits have been redirected from investment in R&D or in capacity expansion, toward investments in other financial securities (Davis and Kim, 2015). Consistently with the Maximisation of Shareholder Value (MSV hereafter) capital gains and financial profits are not re-invested in productive facilities but they are instead re-distributed to shareholders, through dividend payouts and share buybacks.

Researchers in the ISIGrowth consortium have extensively investigated the process of firms financialization (see Lazonick, 2016, 2017; Lazonick and Mazzucato, 2013; Sakinc, 2017; Kotnik et al.,

<sup>&</sup>lt;sup>4</sup>This empirical research is carried on by employing USA country-level data.

2017). According to Lazonick and Mazzucato (2013), the negative influence of the MSV principle on innovative practices has to be attributed to the tension between creation and extraction in the innovation processes: it is the increasing separation between actors who take risks from innovation and actors that receive the rents from it that lies behind such tension and behind the fall in the share of reinvested profits. When these conditions apply, investments in some specific areas might be absent.

A paper by Dosi et al. (2016) casts doubts on the ability of financialization in favoring technological exploration, in particular the one by small firms. As a matter of fact their study suggests that there has been a separation between the determinants of innovation and growth, on the one hand, and the performance of firms on the financial markets. This is due to the fact that value extraction behaviors on stock markets negatively influence the exploration of new technological paradigms and even search within known paradigms. In line with that, the results from a paper by Abbate and Sapio (2016) suggest that firms subject to a market-based system (i.e. firms listed to the AIM segment of the London-Stock exchange) grow faster than their unlisted peers; however, their growth is less persistent and the difference in growth with respect to unlisted peers is not different from zero when more sophisticated estimation strategies (that allows to better treat the possible endogeneity issues) have been used.<sup>5</sup> This suggests that also the second hypothesis, claiming that market-based financial system allow for a more efficient market selection of most profitable and productive firms, is not fully supported by the empirical evidence.

Finally, a ISIGrowth working paper by Marin and Vona (2017) studies the effects of financialization on employment in sectors with high-content of innovative activity. This paper brings new evidence about the fact that the US financial sector has become a magnet for the brightest graduates in the science, technology, engineering and mathematical fields (STEM); furthermore, it illustrate the consequences for the productivity growth in other sectors over the period 1980-2014. The authors find that the brain drain of STEM graduates by the financial sectors, has been associated with a cumulative loss of labor productivity growth of around 6.6% in the manufacturing sectors. The authors also conclude that increasing the number of STEM graduates may not be enough to reignite sluggish economic growth without making the employment in the financial sector more costly.

#### 3.3 Effects on Inequality

The coincidence during the last two decades of financialization and rising inequality has been noticed by scholars since several years. As discussed in Kus (2012) there are several possible channels of causation at work to be investigated, including: (i) the decrease in profitability of the non-financial sector, leading to the decrease of net wages in the same sector; (ii) the weakening of institutions and policies aimed at containing income disparity, such as unions and minimum wage laws; and (iii) the alignment of the corporate governance structure with shareholders interests and with short-term profits objectives, leading firms to cut on labour costs and to reward top executives. While Kus (2012) is not able to disentangle the specific channels of causation, he finds a positive association between several indicators of financialization and the rise of inequality, using a dataset of 20 OECD countries in the period 1995-2007. Further, Lin and Tomaskovic-Devey (2013), using as a measure of

<sup>&</sup>lt;sup>5</sup>In particular the results do not hold when the authors employ an Instrumental Variable Quantile Treatment Effect (IVQTE) estimation procedure.

financialization the shares of financial income derived by US non-financial firms between 1970 and 2008, find that financialization can explain more than half of the decline in labors share of income. The suggested channel of causation in this case is that the increasing reliance on earnings realized through financial channels decoupled the generation of surplus from production, strengthening owners and elite workers negotiating power relative to other workers.

Within the ISIGrowth project, research on the relation between financialization and inequality is still ongoing. However, we can already draw some preliminary conclusions from our analyses, building in particular on our parallel research work on financial networks. One way of looking at the issue of income and wealth inequality builds on the perspective of incoming and outgoing financial flows across institutional sectors. For households, the main financial flows are wages, revenues from financial assets, costs and taxes. In order to illustrate the arguments, for the sake of simplicity, we divide households into two categories: those in the top 1% percentile of the income distribution and those below. For instance if, everything else equal, wages and revenues for the top 1% increase, and taxation level for the bottom 99% also increase, inequality will increase. For brevity we examine here the impact of financialization on two of each of these flows separately: wages and taxation.

Wages. The macroeconomic dimension of financialization has to do with the gross value added of the financial sector. It is natural to ask whether an increase in gross value added of the financial sector is likely to translate into higher compensations to owners and or executives belonging to the 1% group, hence increasing inequality. In fact, in many countries, even average employees in the financial sector are well above the median compensation in the economy. While this is an empirical question that needs to be better validated, the answer is likely to be positive. A microeconomic dimension of financialization has to do with non-financial firms. As non-financial firms engage more in financial activities they increasingly replicate the governance and incentive structure of financial firms, which are more strongly characterized (than real sector firms) by objectives such as maximization of shareholder value, quarterly growth targets, bonus-based compensation etc. This structure of incentives tends to reward again owners and executive, thus contributing to inequality. It also likely produce the shift in bargaining power suggested in the analysis of Lin and Tomaskovic-Devey (2013). Evidence of the OEDCs report by Forster and Toth (2015) support the above argument: The major change in occupations of top earners between 1979 and 2005 is the rising share of financial professionals, from 8 to 14%. And finds that the financial sector has emerged galvanized from the 2008 financial crisis: while the magnitude of executives compensations has been an object of public debate and even of popular protests in 2009, it took several years to be translated into a EU directives (called bonus cap regulations). According to the EBA reports, these regulations concerns about 10 thousand high earners in the financial sectors, with an average total remuneration of about 2 million Euros, totaling altogether more than 14 billion Euros. However, at the regulatory level, the discussion about financial sector executives pays remained mostly confined to the context of risk and financial stability (see more below).

**Taxation.** There are several ways in which financialization may contribute to inequality through the channel of taxation. A first mechanism is that in a more financialized economy the financial sector has an incentive to lobby for lower taxation of the top earners. Indeed, in the last two decades the tax reforms in almost all OECD countries have reduced top personal income tax rates as well

as rates of other taxes affecting the highest income earners (see OECD Focus on Top Income 2014). Moreover, there is evidence that top earners are more efficient in optimizing their effective taxation (see the World Inequality Report by Facundo et al., 2018). Statistics show how a decrease in top marginal tax rates is strongly correlated with increase in top pre-tax income share in OECD countries between 1970 and the late 2010. Similarly, the OEDCs report by Forster and Toth (2015) shows two concurrent trends for the top 1% earners in the period 1975-2010: (1) the top marginal tax rate (i.e. the tax rate on the last dollar of taxable income) has decreased significantly in all countries (e.g. in many cases from about 70% down to about 50%); (2) at the same time the aggregate income share of these earners has generally increased in all countries (especially in the US: from 8% to 18%). To what extent these trends can be attributed to financialization is an open question, but certainly this is a plausible mechanism in line with the findings of Lin and Tomaskovic-Devey (2013). sA second mechanism is instead related to the fact that financialization is widely recognized as one of the factors leading to the 2008 global financial crisis, which in turn has taken a heavy toll on public finance. According to the ECB report by Grussenmeyer and Maurer (2015): In terms of magnitude, the financial resources needed to finance government bailouts in the euro area are estimated at 5.1% of GDP for the whole period 2008-2013. [...] The situation is very heterogeneous among euro area countries. The impact on debt for half of the countries was over 5% of GDP up to end-2013. Euro Area governments have acquired the resources to assist the financial sector mostly by issuing sovereign debt. A net phasingout of financial assistance measures in the euro area is observed starting from 2014. In this closing stage, governments are predominantly unwinding past interventions by selling the financial assets acquired in the initial phase of the crisis. This unwinding phase of the interventions is bringing new accounting challenges such as measuring the holding gains and losses, [...] (ibidem). The servicing of government debt incurred to remedy the 2008 financial crisis has been financed through taxation. It is likely that this has implied a net transfer from the bottom 99% to the top 1% earners, contributing to inequality. This is in fact an empirical questions that could verified by looking at income and taxation data, which are becoming available only recently thanks also to the international efforts lead by the Paris School of Economics see the World Inequality Report by Facundo et al. (2018).

#### 3.4 Effects on Financial Instability

Since the 2008 financial crisis there is growing awareness among both scholars and practitioners of the fact that the financialization of the economy may increase financial instability. For instance, in a 2014 speech, Benoît Coeuré, Member of the Executive Board of the ECB noted that [] there is a link between the size of the financial sector and its complexity. It is likely that the complexity and interconnectedness of financial institutions increases (presumably in a non-linear way) with the size of the overall financial system, making it more difficult for regulators to understand what is going on within its bounds. Relatedly, starting from 2013, the EU Capital Requirements Directives CRD IV and CRR have introduced remuneration rules for key staff capable of influencing the risk profile of their [financial] institutions. Interestingly, the purpose of this regulation is that of limiting excessive risk-taking and aligning staffs incentives with the long-term objectives of firms.

However, there is a lack of clarity on the exact mechanisms through which financialization may increase financial instability. Our research in ISIGrowth has contributed to shed light on these mech-

anisms. From a conceptual point of view, it is important to understand that the main driver of financial instability is not a large exogenous shock hitting the financial system and causing proportionate losses. In contrast, instability has to do with the fact that under certain conditions the financial exposure of financial actors to securities and among actors themselves may act not only as conduits of losses but also as an amplification mechanism of losses. Under these conditions, even small shocks internal to the financial system can turn, endogenously, into disproportionate losses.

In mathematical terms, in an interconnected financial system under a mark-to-market accounting, total losses resulting from a shock have been shown to depend on the structure of the net leverage matrix (see Barucca et al., 2016; Bardoscia et al., 2017; Visentin et al., 2016). Indeed, in a system of banks connected in a network of external assets and interbank obligations, what matters for instability is how much the individual banks are exposed, relatively to their capital, both to securities in the market and to other banks. Each exposure, relative to capital, and corrected for its possible recovery rate, constitutes a component of the net leverage matrix. Indeed, contracts among financial firms usually come with some pledged collateral, so that in case of default of the counter-party the actual value of the contract is decreased by a factor (1-Recovery rate). For the sake of simplicity, we can focus on the average effect which has been shown to boil down to this simple formula:

#### TotalLosses = ExternalLeverage \* (1 + InterbankLeverage \* (1 - RecoveryRate)) \* Shock

where external leverage is defined as the ratio of a banks exposure to external assets over equity and Interbank leverage is defined as the ratio of a banks exposure to other banks over equity. Note that in the above formula, if the Recovery rate on interbank obligation is 1, the losses are solely due to the external leverage. If the recovery rate is smaller than one there is an amplification of losses that can be substantial, because the interbank leverage is empirically larger than one (especially for large banks). The original formulation is in terms of matrices and what matters are the largest eigenvalues of these matrices, but the reasoning is essentially the same. This simplified conceptualization does not model explicitly a number of endogenous aspects of systemic risk; yet, it allows to understand in mathematical terms how financialization can contribute to financial instability. Indeed, in the formula above, financialization can affect both the term Interbank Leverage as well as the term (1 - RecoveryRate) leading to larger systemic losses, as explained more in detail below.

The impact of financialization on leverage and interconnectedness. Financialization is meant here either as an increased asset size of financial firms or as an increased engagement of non-financial firms in financial activities. In the latter case we can look at their financial branches as if they were financial firms. In both cases, financialization implies either an increase of financial exposures among the actors, and therefore an increase in leverage (if equity remains unchanged), or at least an increase in the interconnectedness (i.e. new contracts are established) which tends to increase the eigenvalue of the leverage matrix. This means that financialization tends to increase the magnitude of the term Interbank Leverage (or its matricial counterpart).

An interesting case in this respect is the VolksWagen (VW) Diesel scandal. In the financialization process of the last decades, VW Bank has engaged in originating and distributing Asset-backed Se-

curities (ABS) collateralised around loans granted to VW customers to purchase VW cars. Other car makers have been engaging in similar activities, implying that the exposure of the financial system to the automotive sector has extended beyond the ownership of equity shares or granting loans. As a result of the scandal on the diesel defeat device, the value of these ABS held by a number of investors was at risk of heavy losses and many observers feared that the shock could possibly extend to systemic dimensions. All of a sudden, Volkswagen has become a bigger downside risk for the German economy than the Greek debt crisis ING chief economist Carsten Brzeski commented in an interview for Reuters.<sup>6</sup> Axa has been conducting stress-tests on the VW dieselgate based on various scenarios including a reputational and financial shock for the whole german automotive sector. While there have not been systemic consequences in the aftermath of the dieselgate, a relevant question arises: as the real sector gets increasingly financialized it becomes more exposed to the financial sector. At the same time the financial sector becomes exposed in new ways to the real sector, beyond the traditional channels of equity shares. Contrary to common wisdom, and as demonstrated during the financial crisis, too much interconnectedness is not good for stability.

The impact of financialization on recovery rate. Financialization can also have a negative impact on the recovery rate of contracts among financial firms. Contracts are collateralized by securities that may consist of debt obligations of third parties, such as government bonds, securities of other banks in the same financial system but also mortgage-backed securities and other asset-backed securities. As observed during the 2008 credit crisis and the 2011 EU sovereign debt crisis, the value of these securities is subject to sudden variations. Financialization, by fueling excessive funds into certain asset classes (e.g. real-estate and mortgage related securities) can lead to systematic mis-pricing of large portions of assets used to collateralize the contracts. When market participants update their beliefs and become aware of the mispricing, the value of the recovery rate suddenly drop.

#### 4 Conclusions

Financialization can be assessed both at the micro-level and the macro-level. In this paper, the notion of financialization is broadly defined along two levels: at a macroeconomic level the notion refers to the relative size of the financial sector with respect to the overall economy; at the microeconomic level, the notion refers to the engagement of non-financial firms into financial activities not directly related to the production of good and services, relatively to the whole activity of the firms. The policy insights and recommendations are as follows.

Financialization is increasing in the Euro Area. Several empirical indicators, capturing various complementary aspects of the financialization process, show altogether an increase of financialization in the last 15 years in the Euro Area.

Excessive financialization has unintended adverse consequences for several objectives of the EU 2030 agenda, including innovation, inclusive growth and financial stability. While in the last decades financialization has been mostly considered to be a driver for growth and innovation, today there is

<sup>&</sup>lt;sup>6</sup>https://www.reuters.com/article/us-usa-volkswagen-germany-economy/

volkswagen-could-pose-bigger-threat-to-german-economy-than-greek-crisis-idUSKCN0RN27S20150923.

ample evidence from empirical studies and theoretical arguments that seriously challenge the benefits of financialization and point to detrimental effects on innovation, growth and stability.

Excessive financialization should be contained. Currently there are no policies aimed at mitigating the negative effects of financialization on the economy. However, the evidence reported in this paper suggests that, in order to enable finance to remain a driver for innovative and inclusive economic growth, financialization should be contained and to this end several measures could be taken including the following ones:

- Fostering the demand in the real sector. On the one hand, there is a need to foster the demand in the real sector so that liquidity is channeled from the financial sector to productive activities. On the other hand, not all real sector activities are equivalent in terms of the possible long-run outcomes: households debt financing has more dangerous effects on growth than corporate debt (see also Guerini et al., 2017). As an example, policies supporting the creation of green infrastructures and the research in green-oriented technologies, instead of those fueling housing price bubbles might be welcomed.
- 2. Establishing mission-oriented programs. One conclusion from the ISIGrowth research project (see Mazzucato and Penna, 2015, 2016) is that the state should play a role in establishing mission-oriented programs in targeted areas (e.g. green infrastructures). The rationale for state intervention goes beyond the usual market-failure argument that in a given area there is a market not working correctly, which should be fixed. In contrast, the rationale is that markets may not exist at all in some areas and that mission-oriented projects enable to create new technolog-ical landscapes to deliver on the policy objective of innovation-fueled growth and to crowd-in new investments from the private sector.
- 3. Encouraging the alignment of compensation schemes with long-term profit and firms goals. At the firm-level in the non-financial sector, discouraging short-termism would help to contain the engagement of non-financial firms into financial activities instead of productive activities. For example, the managers that receive stock options or other assets as part of their compensation schemes, should be constrained in the sales of these assets before a certain number of years, in order to align their the long-run incentives with those of the firm itself (see Dawid et al., 2018).
- 4. Studying the possibility of setting a minimal ratio of lending to the real economy (non-real estate). While the previous policy suggestions directly affect the demand side for credit, the present policy suggestion focuses on the supply side, at the level of individual financial institutions (e.g. banks): it could be beneficial to consider the possibility to set a minimum ratio for banks balance-sheet regarding the portion of lending to the real economy, as this would help to channel funds toward productive activities.
- 5. Studying the possibility of setting a maximal level of intra-financial leverage. Financialization can amplify the propagation of financial distress along chains of exposures among financial institutions on multiple instruments (e.g. loans, bonds, equity holdings and derivatives). It is therefore crucial that supervisors proactively monitor intra-financial leverage, both at the individual level and at a system-level in the EU, as a critical factor to inform early-warning systems

for financial instability (see Barucca et al., 2016; Visentin et al., 2016; Bardoscia et al., 2017). Moreover, policy makers should study the possibility of introducing a cap on intra-financial leverage, in addition to the cap on total leverage already existing in the Basel III framework.<sup>7</sup>

<sup>&</sup>lt;sup>7</sup>As in the much of economic literature, leverage is defined here as the ratio of total asset over equity and interbank leverage is defined as interbank exposure over equity. Notice that in the Basel III framework the "leverage ratio" is defined instead as equity over total assets.

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#### A Appendix A - Base Definitions

**Total financial assets.** TFA are economic assets, comprising all financial claims, equity and the gold bullion component of monetary gold. Liabilities are established when debtors are obliged to provide a payment or a series of payments to creditors (see ESA2010 for details).

**Gross domestic product**. GDP is the final result of the production activity of resident producer units measured at market prices (see ESA2010).

**Property income receivable**. PIR is the sum of income receivable by non-financial corporations as owners of a financial asset or a tangible non-produced asset. It consists of interest, the distributed income of corporations (i.e. dividends and withdrawals from income of quasi-corporations), reinvested earnings on direct foreign investment, property income attributed to insurance policy holders, and rent (see OECD's glossary on economic statistics).

Gross entrepreneurial income. GEI is instead the sum of PIR and the operating surplus of the Non-Financial Corporations.

**Exposures**. The exposures presented in Figure 4 are only those exposures allocation for which data are available: they include equity holdings, bonds, loans, insurance and pension scheme guarantees to the Euro institutional sectors and as a residual, exposure to the rest of the world.

#### **B** Appendix **B** - Data and Methods

#### B.1 Data

In our study, we use classification of the institutional sectors of the Euro Area provided by the ECB Data Warehouse: non-financial corporations (e.g. NFC, firms), investment funds (IF), monetary financial institutions or banks (MFI), other financial institutions (OFI), insurance and pension funds (I&PF), governments (Gov) and households (HH).

#### B.1.1 Data used in computation of financialization indices

For calculation of the financialization indices, for the countries we used neither seasonally nor working day adjusted data (the only data available). Euro Area 19 comprises 19 countries. All data used in this study are taken at market prices.

#### **B.1.2** Data used for the exposure reconstruction

Data on financial exposures among the institutional sectors listed above (often referred to as who-to-whom data) was used for calculation of table 2 and figure 3 and have been obtained from the ECB Data Warehouse. These data sets contain information on financial exposures among the institutional sectors of the Euro Area (19 countries) and so-called Rest-of-the-world, without specification of the institutional sector. Exposures are presented for the four major financial instruments: equity, bonds, loans and insurance&pension schemes guarantees. The longest in time (1999Q1 - 2016Q3) and more detailed information is collected for loans and include short-term loans (with maturity of one year), long-term loans (with maturity of more than a year) and deposits. In case of bonds exposures, the data set contains information for short-term bonds (maturity up to one year) and long-term bonds (maturity more than one year). These data sets cover a shorter time period: 2013Q4 - 2016Q3. For equity holdings, the information is available for listed equity shares and for investment fund shares, covering the time period 2013Q4 - 2016Q3. Since the data on exposures between the institutional sectors of the Euro Area is not available for unlisted companies, and as unlisted companies represent a significant portion of assets of some of the institutional sectors, we reconstructed these data by assuming that exposures of institutional sectors through unlisted companies are proportional to their exposure via listed companies. Allocation of assets through other than four listed above instruments can not be determined due to data unavailability (exposure to the rest-of-the-world) is presented separately in Table A1 (see below) and these assets are not taken into account in Figure 3 of this Policy Brief.

#### B.2 Method

#### B.2.1 Calculation of the measures of financialization of the Euro Area economy

#### **Global measure of Euro Area financialization**

The term financialization is usually used to describe the increased importance of financial activities, incomes, and profits of the economy (see Krippner, 2005; Assa, 2012). In order to capture the financialization of the Euro Area economy we looked at one of the standard indicators of financialization (Assa, 2012): the ratio between the total financial assets over the GDP. The results are presented on Figure 1 in the main text of the Policy Brief. This analysis was performed for the Euro Area 19 as a whole, and for selected European countries: Austria, Belgium, Germany, United Kingdom, Italy, the Netherlands and France.

Another interesting and representative measure of financialization of the EA economy is the ratio of the total financial assets over the total assets for the EA economy and chosen countries. However, unfortunately, there are no existing data for the total assets (including non-financial) at both EA level and national level. Accordingly, this measure cannot be used at the moment due to the lack of data. Important to note, that data availability on the total assets at the national accounts level is crucial for the understanding of the trends and mechanisms of financialization of the Euro Area economy.

#### Measures of non-financial corporations financialization in the Euro Area

To understand the patterns of financialization of the Euro Area economy it is important to distinguish between the financialization of institutional sectors such as non-financial corporations (NFC) and financial corporations (FC). In Stolbova et al. (2017) we propose several measures to capture the financialization of the non-financial corporations:

- 1. The ratio of the property income receivable (from the ownership of financial or tangible non-produced assets) to total income (the sum of property income receivable and entrepreneurial income) see Figure 2.
- 2. The ratio of the total financial assets of NFC to fixed assets of NFC.
- 3. The ratio of the total financial assets of NFC to gross value added of NFC.
- 4. The ratio of the gross value added (GVA) of NFC to total gross value added.

For the sake of clarity, in this paper we consider the first of the listed above ratios, as it is also the most representative one. We also consider the ratio, in order to compare the financialization of the non-financial corporations with financialization of financial corporations.

#### Measures of Financial Corporations (FC) financialization in the Euro Area

Financialization of the Financial Corporations can be measured with the following measures:

- 1. The ratio of the gross value added (GVA) of FC to total gross value added.
- 2. The ratio of the total financial assets of FC to gross value added of FC.
- 3. The ratio of the total financial assets of FC to fixed assets of FC.

In this paper, we focus on the last ratio for the comparison of financialization of the financial corporations with nonfinancial corporations.

# **B.3** Financial assets allocation of the Euro Area institutional sectors and comments on calculation of the table 2

Table 2 was calculated using aggregation of the Table 3 (see below). Financial sector includes banks, investment funds, insurance&pension funds, while real economy sector includes non-financial corporations, governments and households of the Euro Area. In addition, for the allocation of the rest-of-the-world exposure through equity, bonds, loans and insurance&pension scheme guarantees, we used an assumption that institutional sector allocate their assets outside the Euro Area in a similar way as inside the Euro Area.

Sector	Total	Known Allocation	Unknown Allocation	Within EA	Outside EA	Unknonw
NFC	21.18	13.96	7.23	12.32	1.64	7.22
MFI	32.37	30.65	1.72	26.20	4.45	1.72
IF	9.53	9.04	0.48	4.88	4.16	0.49
OFI	19.52	15.63	3.89	11.97	3.66	3.83
I&PF	9.20	8.83	0.36	7.28	1.55	0.37
Gov	5.00	3.67	1.33	3.32	0.35	1.33
HH	22.01	19.97	2.10	19.24	0.73	2.04
RoW	-	30.75	-	25.97	-	-

 Table 3: Detailed exposures of the Euro Area institutional sectors to each other and to the rest of the world (RoW).