

FINANCIAL AND BANKING PROBLEMS FACING ROMANIA IN THE CURRENT AND FUTURE PERIOD

Paul MARINESCU⁷⁰, PhD
Otilia Elena MANTA⁷¹, PhD(c)

Abstract

We are currently witnessing the confrontation with many financial-banking problems globally, problems with a direct impact on Romania in the current and future period. A first aspect that we reflect in this research paper is the presentation of the relationship between financial intermediation and disintermediation, namely the value of credit relative to GDP. Another aspect presented in the paper reflects the comparative analysis of the rate, respectively the interest rates on loans and deposits in Romania and other countries. From which we can conclude that at a high borrowing rate and a so low deposit ratio (as a result of comparative analysis in Romania and other countries), it is hard to assume that Romania can start a sustainable growth, as the financing is difficult in the first place the cost of credit as a result of the impact of the crisis on country risk. Another aspect that we detail in the paper is the impact of the euroisation of the national economy and the coexistence of 2 coins (leu and euro) with money function in quasi / no / euro on the development of the Romanian economy / depreciation. By presenting the current financial and banking aspects that we face at national level, we can contribute actively to policy orientation towards the creation of sustainable economic development mechanisms.

Keywords: financial intermediation and disintermediation, interest, sustainable development, financial technology.

JEL classification: G21, Q01

Introduction

For many years, government policy and international non-governmental organizations have been pursued and partly implemented, several initiatives to support and consolidate SMEs, guarantees for government loans (e.g. Small Business Administration -SBA in the US), direct lending by state-owned banks (e.g. the British Business Bank), initiatives to simplify core requirements for SMEs, tax incentives to provide SMEs with capital, the direct subscription of alternative lenders (e.g. insurance companies, asset managers), institutional exchanges (e.g. SME-covered bonds, stock markets for SMEs), consolidation initiatives on securitization of markets, attempts to support private placement markets. Despite all efforts, there is still a significant funding gap. FinTech has become a strong trend, and FinTech is a frequently used term, referring to companies that provide or facilitate financial services using technology. "

Worldwide debt in 2017, according to Business24, reached a record high of \$ 233,000 billion in the third quarter of 2017, according to an analysis published on Thursday by the International Finance Institute (IIF), the world's largest lobbying group in the financial sector. the conditions in which the debt of the non-financial private sector has reached new highs in Canada, France, Hong Kong, South Korea, Switzerland and Turkey. This figure includes the total debt of households, governments, the financial sector and non-financial companies. At the same time, the IIF points out that while the total debt increased by \$ 16,000 billion in the third quarter of 2017 compared to the end of 2016, the debt-to-GDP ratio declined for the fourth consecutive quarter as the world economy has expanded. According to IIF, this ratio is now about 318%, three percentage points below the peak recorded in the third quarter of 2016. "A combination of factors including a global over-synchronized growth potential, rising inflation in China and Turkey and efforts to prevent a destabilizing accumulation of debt in China and Canada all contributed to this decline, "the IIF report said. According to the IIF, China, which was responsible for most of the emerging markets' new debt, slowed the pace of new debt accumulation, so last year its debt rose by just two

⁷⁰ University of Bucharest, Bucharest, Romania, email: paulmarinesc1@gmail.com

⁷¹ "Victor Slăvescu" Center for Financial Research and Monetary, Romanian Academy, Bucharest, Romania, email: otilia.manta@icfm.ro

percentage points to 294% of GDP, with an average annual growth of 17 percentage points in 2012-2016. IIF analysts warn that the debt burden could act as a brake on central bank intentions to raise interest rates, given the concerns that exist about the ability of firms and governments that are heavily indebted to secure debt service.

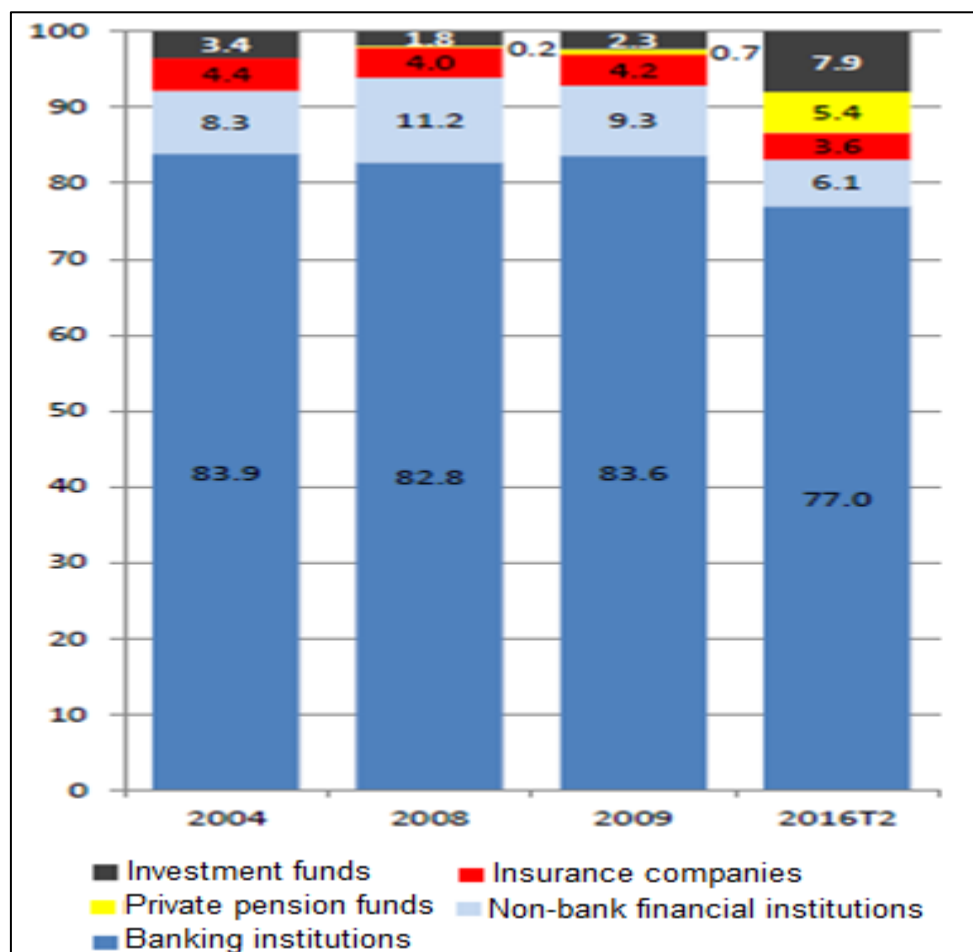
Methodology of Scientific Research

To substantiate the funding model for innovation, we used observation and examination tools, research methods based on the basic principles of scientific research, and we also created procedures based on factual analysis as a result of a significant practical experience and of intensive documentation at the level of national and international literature.

Research Results

In order to be able to formulate opinions on the current financial system, we need to carefully analyze the figures presented at both national and international levels, relying on several indicators such as the assets of the banking system - dominant at the financial sector level.

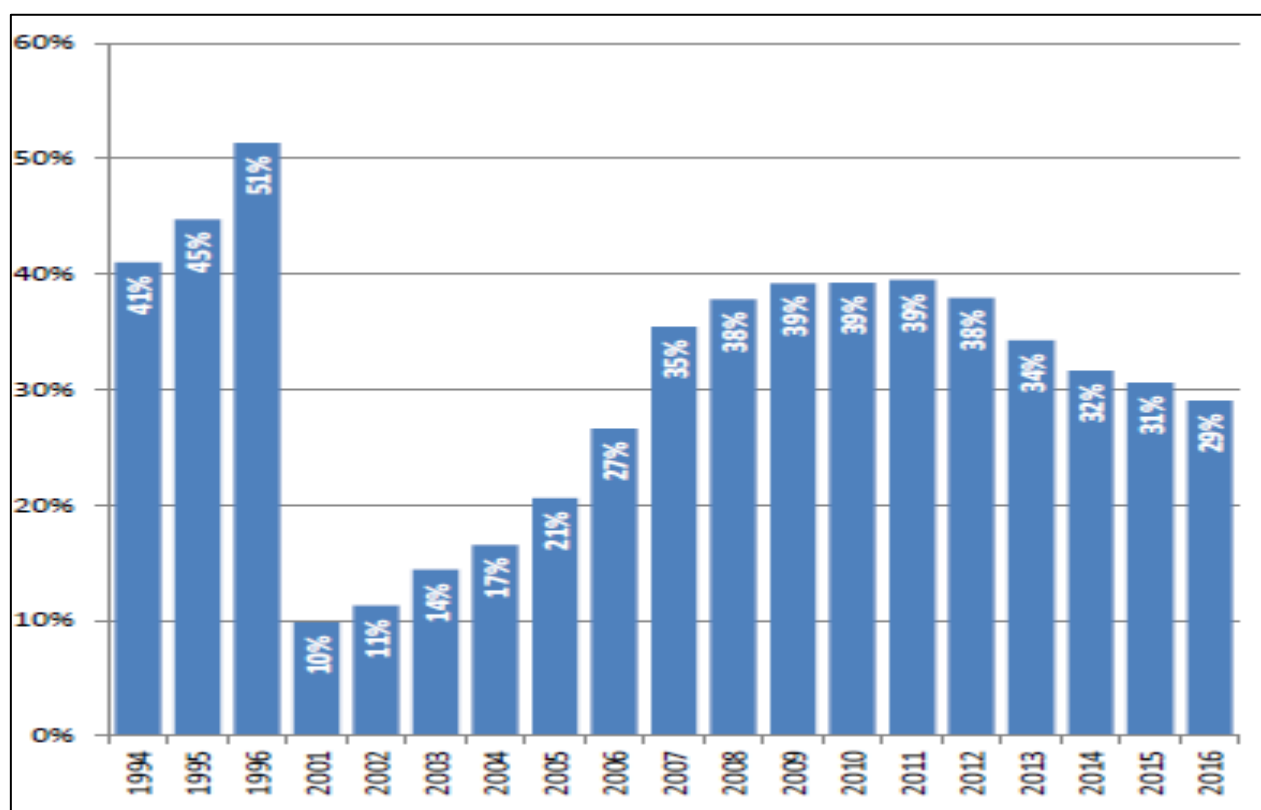
Figure 1 - Structure of financial system assets



Source: National Bank of Romania, 2017

In 2008, the cumulative assets of the banking sector and IFN accounted for 94% of the total (insurances represented 4%, the capital market was 1.8%). After 2009, there are structural changes in the financial sector assets, namely: the 11% reduction in the share of banking sector and IFN assets (to 83%), the increase by approx. 6 pp of the share of assets related to the capital market (investment funds) 7.9% and the increase by approx. 5 pp of the share of private pension funds assets (to 5.4%).

Figure 2 - The level of banking intermediation advanced rapidly after 2004



Source: National Bank of Romania, 2017

After 1990, in the process of economic reforms and with a non-modernized banking system, the intermediation rate ranged between 41 and 51% (1994-1996) matching the NBR's sources.

The next period 1997-2000, after the profound restructuring of the banking system the degree of intermediation fell to 10%. But the period of acceleration of privatization of banks followed, including foreign capital flows, which generated the leap of intermediation to 38% in 2008.

The post-crisis period brought a sharp contraction of brokerage (29% in 2016), amid a massive reduction in resources attracted from parent banks and a generally workable lack of demand, especially in strategic areas such as agriculture and rural development considered as a sector with banking risk.

Compared to large financial institutions that are often slowed down by old processes and an inert culture, start-ups are able to do so by promoting more radical innovations. FinTech has gained a significant attraction in recent years. Global investment has multiplied in 2014, reaching an investment volume of over \$ 12 billion. Looking at global IT spending, which was estimated at \$ 215 billion for 2014 (including hardware, software, domestic and external IT services), the advantage is obvious. Loans represent a major sub-sector of FinTech, thus total investment in FinTech, 27% went into consumer lending and 16% in business lending. Corporate credit companies include Zopa, Credit Club and SoFi, while companies such as OnDeck or MarketInvoice lend especially to small businesses.

In addition to debt financing, online crowdfunding platforms such as Seeders, Crowdcube or OurCrowd link companies and investors who want to help finance small businesses or newly created businesses by providing a form of equity. Also, bank transfer services provided by banks and brokers were the only means available to make money transfers before FinTech suppliers appeared. Companies like WorldRemit, Kantox or CurrencyFair offer international money transfer and currency exchange, services that involve advances in technology, leading to faster and cheaper solutions.

Mobile payments enable people to make mobile or personal mobile transactions (companies such as M-Pesa (Kenya) or EcoCash (Zimbabwe) are responding to the current challenges, notably in terms of innovation in mobile phone payments. this technology aims to revolutionize the very

concept of money itself. We'll encounter trading platforms where FinTech's capital market providers have grown in popularity. For platforms like eToro, retail investors can provide information and invest directly in a range. In recent years, the business-to-business (B2B) segment of the virtual space has received increased attention. In the years to come, the potential can significantly increase in this segment with new types of revenue-generating activities that still have remains unexploited.

FinTech has the potential to become an important player in financing small businesses. Appropriate funding access remains one of the most important ingredients for the success of SMEs. Over the past few years, a growing number of business products and models have emerged, thus meeting the needs of small businesses, prefiguring a paradigm shift in finance for small businesses. At that time, financial technology provided the nucleus of innovation with potential for significant growth in access to finance for small businesses. While the limits are sometimes fluid, five key products for financing small businesses are highlighted:

- A. peer-to-peer loans;
- B. Funding of traders and e-commerce;
- C. invoicing financing;
- D. financing the supply chain;
- E. Trade finance.

Together, using these solutions can have enormous positive effects on the balance sheet of SMEs, leaving smaller businesses more cash, better working capital management and more stable and secure funding.

Peer-to-peer loans - this type of loan was introduced with the first platform launched in 2005, the PP or peer-to-peer (P2P) market becoming a global marketplace with a multitude of customized, and with a high estimated growth rate. In general, the credit market refers to the practice of lending money to borrowers without going through a traditional financial intermediary such as a bank.

FinTech solution

Lenders on the market aim to provide innovative solutions that banks cannot do. This is due to a number of factors that determine their model of operation.

First, the unsecured loan is the most common form of lending to the market so far. As such, there is no required warranty. Small businesses especially benefit from this, especially in the services sector. Often, such businesses have fairly stable cash flows, but no real collateral, and banks can borrow in these conditions.

Secondly, market creditors are not funded as a classic and much regulated financing process for money depositors. In contrast, in fintech financial services, sources come from funds from retail or institutional investors with an increased risk of appetite; these are Fintech's main financiers.

Third, market creditors apply innovation credits based on innovation and less on scoring items. Such models are heavily based on data, use semi-automatic risk assessment methods and stimulate non-traditional data points. Sources may range from online business rating such as Yelp, LinkedIn's social network, or satellite data to assess the level of wealth in a particular area. This allows credit risk assessment, if banks do not traditionally develop innovations to do so, especially in markets with limited credit (office information). Unlike the consumer market, loans, however, always involve a certain degree of human decision.

The fourth factor is given by the fact that FinTech suppliers operate with a reduced operational configuration, without maintaining a certain branch of activity and less staffing to make underwriting decisions. They can therefore lend competitive rates or incur credit losses at a certain level and with high risk potential for which they have subscribed.

Overview of the market compared to total bank lending to SMEs with a market of over 14 trillion dollars, while SME lending on the market is still limited in size and scope. Globally, market lending for \$ 60 billion to \$ 70 billion in outstanding borrowing volumes in 2014 was recorded. The countries with the largest SME lending volume in terms of volume include China, The United States and the United Kingdom. Since 2014, China has been the largest country with a volume of

loans issued through creditors on the market. Based on estimates, the market lending volume exceeded Yuan RMB 250 million (Chinese renminbi), or \$ 40 billion in 2014, the number of platforms on the market rising to an impressive number of 1,575 platforms compared to only 20 in 2011, the number of these platforms being over 2,000.

The United States has reported over \$ 5 billion in new loans for SMEs through fintech market platforms in 2014, while a volume of over \$ 12 billion has been reached in 2015. Among the most relevant platforms since 2014 we mention OnDeck (\$ 1.2 billion), CAN Capital (\$ 1 billion), Kabbage (\$ 400 million), Merchant Cash & Capital (\$ 277 million), and Strategic Funding (\$ 200 million).

This leaves significant potential untapped. According to estimates, Morgan Stanley and Goldman Sachs market lending to SMEs through fintech technology would be about 180 billion USD. An annual SME loan of 47 billion dollars can be reached in 2020, which will account for 16% of the total SME loan issue.

The UK market is more fragmented, with over 40% in different operating platforms. Among the finest operators we mention on RateSetter (\$ 457 million) and LendInvest (\$ 236 million).

Existing infrastructure is often a prerequisite for market models to work, especially for fintech models. This includes a payment existence and banking infrastructure, which all players need to use. Also, the technical infrastructure, such as the basic one, namely the internet or mobile connectivity, is particularly necessary especially for the fintech business model.

Alternatively, and outside of the official banking system, mobile money-laundering solutions such as Mobile-Money in Romania and Kenya are slowly gaining market share. However, so far, they have not reached a mature scale in financing small businesses. As a result, market lending now offers bank and "non-bank" solutions, in relation to total non-bank corporations or informal micro-enterprises. The availability of bank borrower analysis data is another requirement for the lending market. Data may come from credit bureaus, SME balance sheets, or electronic accounting systems.

In many cases, market creditors will have to mobilize data from alternative data sources, such as mobile, social media and behavioral models. However, classical analysis data is still preferred. Typically, more data is available, specifically on risk assessment and interest rate cuts, and can be offered differently depending on each type of client.

As far as financial regulation is concerned, fintech platforms in many jurisdictions initially started to operate in a "gray area", given that the legislation on market lending is not yet in place. This usually corresponds to a critical threshold, where innovation goes from "too small to be taken into account" to "too big to ignore."

However, in order for fintech to be accepted by the market, three central actors are needed:

a. Firstly, there must be a number of well-maintained platforms and appropriate operating systems. In general, the existence of a larger number of platforms will help to spread awareness among borrowers and increase competition. Improvements can also be made, including lower operating costs, better customer service (such as video tips) or a wider range of loan products. Increasing competition will force lenders to offer more at competitive prices. Similarly, in the classical lending market, perceived interest rates have declined considerably in recent years (Manta O, 2017).

b. Secondly, private equity providers are needed to provide sufficient funding for sustainable SME development. Globally, institutional investors hold \$ 62 billion of financial assets under management - which may be sufficient to close the SME financing gap more than 20 times. Investors need to be aware and trust in the existing forms of credit in the market. Preferably, investors should invest not only on a loan but also to invest higher amounts to invest for a longer period of time. For example, Blackstone had committed \$ 300 million to be lent to Prosper. Victoria Park Capital announced it will invest up to 230 million euros through Zencap, a European platform. However, many such institutional creditors need a high level of expected return on their investment and the risk they take. The expected results may vary, with yields ranging from 5% to more than 10% per year. Therefore, a critical challenge for many FinTech companies as suppliers is to provide sufficient attractive return for these investors, while on the borrower side they need to be more competitive than banks with low historical refinancing rates.

c. Third, debtors of small businesses must be willing to address the lending markets in their search for funding. This requires both awareness of the availability of market finance and knowledge of how to access them. Since SMEs do not see that managing finance is actually their force, many never start looking for new information and instead rely on their bank's advice - even if the bank declines their credit demand. As a recent UK survey showed, most SMEs that did not get credit from their bank never came to any other source. Therefore, active involvement in education and information on credit markets, such as available funding sources, which are needed to fund their work, must be actively involved. Beyond awareness and knowledge, SMEs must also have the confidence to use this new financial market as a source of funding.

Process facilitators can help players interact perfectly.

By optimizing the investment process, intermediary parties can help bring extra liquidity to the market. Some innovative firms address the financial problem through SME education. The American company NerdWallet aims to provide high-quality online content on alternative sources for consumers and small businesses to rank based on Google searches. The reason for this is that many small businesses start their financial tracking activity based on web searches.

Third-party service providers facilitate the process and increase integration. KYC and security providers help verify user identity. Data aggregators (e.g., Yodlee) synchronize with users' financial data from different sources and integrate with bank account information from different financial institutions, with data easily accessible. Cooperation and partnerships can help increase market access for creditors. This can take many forms; in partnerships between banks and platforms (eg Royal Bank of Scotland and Circle Finance). Moreover, the integrated cooperation between institutional investors and platforms, respectively, the bank assumes a substantial amount of capital to be lent to the platform. Already in 2012, Goldman Sachs provided a significant portion of a \$ 100 million credit facility for OnDeck SMEs. A secondary market for SME lending can help create additional investment demand. The ability to resell credits allows investors to get out of their investments before maturity. Some companies already have a second trading platform for the loans they have created. One of the most advanced secondary markets is in China, where the secondary trading volume in March 2015 reached almost one-third of all new market lending. Financial securitization markets allow structured risk transfer and pooling of credit. In the European Union (EU), the specific objective of stimulating SME securitization is managed through certain programs, such as the SME Initiative Program, with a common funding, being an instrument of the European Investment Bank (EIB) and of the European Investment Fund (EIF), which aims to stimulate SMEs to finance by granting a partial loan for the risk to SMEs. However, most current solutions are adapted at the bank level through interim securitization. However, for large commercial banks, obtaining liquidity on secondary markets is now less challenging. For example, the amount of guarantees for securitized SMEs under the European Investment Fund (EIF) credit enhancement program with less than one billion euros a year. Finally, most of the current European proposals are mainly adapted to "high quality securitization". However, this approach may again exclude the most credit-intensive segment - SMEs that have no access to the bank or bank with the best possible rating based on traditional bank rating criteria. However, this instrument - embedded in ongoing initiatives to redeem the SME securitization market - could continue and stimulate the growth rate of loans on the SME market.

Systemic inherent risk may be unpredictable

The recent loan default credit default swap creates a "market with interest for SME failures", similar to the 2007-2008 financial crisis. In countries where withdrawal is at all times guaranteed to investors (for example, in China), this could be possible and would trigger an unpredictable, vicious circle. Platforms need to sell loans to provide liquidity in a declining market, similar to that of banks. To some extent, this was noticed during the collapse of China's summer capital market in 2015.

P2P platforms provided trading facilities, which had to be closed as support market conditions. As a remedy, third party insurance is that it has to provide security, but in case of major disturbances, insurance providers may fall. Finally, hedge funds have recently begun to take leveraged investments and buy loans on the market, thus increasing the risk from a systemic perspective.

In China, the development of the FinTech market has been made precisely because of the more relaxed regime of data confidentiality. This allowed Alibaba to rely on their data on millions of

consumers to extend their loan offer to small businesses. However, it cannot be ruled out that, implicitly, China could adopt stricter privacy and data security measures in the future.

Perspectives and trends

The current market lending landscape is expected to change significantly in the coming years, i.e. the consolidation of market creditors is expected. Moreover, it is expected to internationalize the players. Recently, OnDeck entered the Canadian and Australian markets. However, while a common data and technology platform can usually be easily transferred to new markets, divergences in regulatory requirements and different customer behaviors limit the speed of expansion. Over time, another formalization of the industry is also expected. From our point of view, industrial clusters such as the Peer-to-Peer Financing Association in the UK need to be formed.

Banking response to new challenges

At the same time, banks have become very aware of the opportunities of financial technology - and challenges their traditional business model lending to small businesses. According to an industry survey in August 2016, 68% of bank respondents said their lending to small businesses is in danger. Some banks will try again to increase SME lending in order to capture some of the available market share. Wells Fargo, for example, launched a widespread "Wells Fargo Work" initiative to place 100 billion dollars in new small businesses, i.e. loans until 2018. Internally, banks will have to further streamline processes for make small business lending more cost-effective.

Bank of China has built a "credit facility", especially for small business loans, with the standardization of internal processes. As a result, only four levels of management are involved in approving a loan, compared to up to 10 levels previously. And sometimes it took several months to process loan applications, now it only takes an average of four business days. In this way, more than 200,000 SMEs have already been served. At the same time, implicit levels remained comparable to credits for larger businesses. Others will track internal innovations and evolve under online models and under the umbrella of their licensed banking services. In June 2015, Goldman Sachs announced the launch of an online platform for lending to small businesses. Funding was provided by the bank, the New York State Branch.

Instead of pursuing internal development, banks can also directly acquire market creditors to keep technology or the team, a practice often called "rapid adaptation."

It is still hard to predict where the industry is heading in the next few years. However, estimates are significant, i.e. changes in the market landscape for loans to small businesses are certainly expected - ideally with a positive effect on them (Manta O, 2017).

The New Role of Public Institutions - National and Local at International Level

Few industries are as regulated as in the financial industry. The question whether and how quickly FinTech players can replace traditional business models therefore critically depends on the role that regulators, governments and international organizations choose to play. These actors, however, are in a biased situation. While FinTech has a tremendous potential to improve the situation for small businesses and entrepreneurs, regulatory authorities must also maintain their mandates, covering:

- ☐ Financial stability;
- ☐ Prudential regulation;
- ☐ Conduct and fairness;
- ☐ Competition and development.

A country where government institutions seem to have found a constructive path in the middle is the UK. The Financial Conduct Authority (FCA) is positioned as a leader in a prospective exercise to establish the best framework to support FinTech while developing a competitive and solid banking industry. Looking east, China has recently issued comprehensive guidelines for FinTech's development, a differentiated market that allows both existing operators and FinTech Start-ups to function.

In order for all stakeholders to benefit from the positive benefits that FinTech's industry can generate, key objectives and principles are essential for FinTech regulators, governments and players.

Basic principles for FinTech companies

While supporting actions by regulators and governments are critical, FinTech companies also need to contribute their share of creating a collaborative environment.

Compliance: FinTech must always comply with the strictest standard available. This will not only prevent costly adjustments to their business model later, it will also signal the desire to cooperate with regulators. The company that found out this was Prosper creditor. In 2008, the US Securities and Exchange Commission found that Prosper Dependent Borrower issued credit notes that were securities that had been sold without registration or applicable exemption. The action was "stop and quit", the letter of November 2008 that effectively stopped Prosper with all the money borrowed, and asked the company to fully re-launch its business - which is finally succeeding, setting a precedent for many fintech players (Manta O, 2017)

Organization: Regulators often criticize fragmentation from the FinTech landscape. "Whom I call if I want to talk about peer loans," said the executive director of a regulatory body complains. Some verticals of the industry began to be organized at national level. Meanwhile, in the UK, the UK P2P Finance Association (P2PFA) has become a credible partner player and conversation for civil servants. P2PFA represents over 90% of the UK peer-to-peer loan market, including consumer lending, business crediting, and billing. Its membership base includes all major national players such as Funding Center, LendInvest, MarketInvoice, RateSetter, ThinCats and Zopa.

Opportunities for development finance institutions

A group of institutions that have significantly contributed financially to SMEs in the past is international to IFIs such as the IFC, the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) or the Bank (DFI), such as those based on the US, the Overseas Private Investment Corporation, the British CDC Group or the Dutch Bank for Development FMO. They are governmental organizations controlled by institutions that invest in sustainable private sector development projects in order to stimulate development in developing countries (Manta O, 2017).

Ways to support SME finance

Traditionally, a number of instruments have been applied by IFIs and DFIs: In many cases, DFIs provide direct funding to local banks, which is transferred to small businesses according to predefined criteria. A recent example is the \$ 12 million loan from the EBRD to SMEs to a Belarusian private banking company. In other cases, DFI offers risk sharing, such as first loss items for certain tranche loans. In terms of capital, DFIs also take the equity investment or invest as a limited partner in private equity funds that offer venture capital to small businesses. Over the years, only the EBRD has invested in more than 150 private equity funds.

All investments must meet three general criteria: they must be additional, i.e. where investors are informed about the transactions - do not go to avoid "elimination"; they must be focused, i.e. attracting money from other investors to be viable, that is to ensure long-term viability. Given the complex nature of setting up and monitoring the contract and the agreement with local banks, usually the investments tend to have a volume of about \$ 10 million up to \$ 50 million.

Can FinTech change small businesses: FinTech has recently attracted public attention and could become one of the strongest tools to support small businesses and thus stimulate sustainable growth of global economies? Multi-product market lending solutions offer tremendous potential for improving small business financing because institutional capital is immediately available. Market creditors connect to risk-taking institutions for small businesses in need of funding. On the Internet platforms, payment processors and telecom companies can rely on existing business relationships and make use of customer knowledge. Funding through platforms can provide an effective tool to overcome the liquidity shortage and improve the small business capital situation. The online supply chain of finances will further integrate existing supply chains and lead to positive results for all parties involved. FinTech in trade finance is still at an early stage, but promises great potential to

unlock a global customer base for small businesses. Governments can set the right incentives and can provide direct support to help national industries develop through FinTech's solution.

Regulatory bodies can create positive and coherent cooperation in promoting innovative solutions. At the same time, however, it must ensure the protection of individuals and systemic viability by establishing appropriate framework regulations for this new form of funding (Manta O., 2017).

Some data provided to the NBR that should allow each of us to reflect and identify specialist's solutions:

- 1.From the total capital of Romania, at the end of 2014, the financial capital represents only 30% (70% non-financial capital - tangible and intangible assets);
- 2.Within the financial capital, foreign capital has become preponderant since 2008 and represents 62% in 2015 compared to only 38% of the domestic capital;
- 3.Foreign capital inflows over the period 2004-2008 (with an annual average of 14% of GDP) allowed for a sharp rise in the investment rate well above the saving → unsustainable current account deficits (14% in 2007 and 12 % in 2008) → substantial currency imbalance, which required major internal economic correction in 2009-2010 and funding of approx. EUR 17.9 billion from international financial institutions in 2009-2012 (from EUR 18.9 billion initially contracted);
- 4.fiscal pro-cyclical policies and boom-based revenue → accentuating the post-crisis budget deficit → tripling public debt, from 13% of GDP in 2008 to 37.6% of GDP in 2016;
- 5.The GDP per capita evolution of Romania in 2003-2016 and the comparison of its dynamics with other former socialist countries → NATO entry and EU accession were decisive moments for the development and modernization of the Romanian economy → was the only solution viable and efficient for the irreversible orientation of Romania towards the values of Western democracies with a reasonable cost-benefit ratio.
- 6.Monetary and prudential measures of the NBR have helped to strengthen the resilience of the banking system to shocks → Additional liquidity and capital buffers → Bank overrun of the recent crisis without the use of public funds → Maintaining financial stability;
- 7.Deep economic reforms applied after 1990, including the privatization of state-owned banks, foreign capital inflows, the crisis, massive outflows of post-crisis banks, the consolidation of the banking system → large fluctuations in banking intermediation -51% in 1996; 10% in 2001; 39% in 2009; 29% in 2016.

Bibliography

Alvarez, Fernando; Francesco Lippi (2009). "Financial Innovation and the Transactions Demand for Cash". *Econometrica*. 77 (2): 363–402. doi:10.3982/ECTA7451.

Allen, Franklin; Douglas Gale (1988). "Optimal Security Design". *The Review of Financial Studies*. 1 (3): 229–263. doi:10.1093/rfs/1.3.229.

Friedman, Benjamin M. (2000). "Decoupling at the Margin: The Threat to Monetary Policy from the Electronic Revolution in Banking". *International Finance*. 3 (2): 261–272. doi:10.1111/1468-2362.00051.

Goodhart, Charles A. E. (2000). "Can Central Banking Survive the IT Revolution?". *International Finance*. 3 (2): 189–209. doi:10.1111/1468-2362.00048.

Li, David X. "On default correlation: A copula function approach." *Journal of Fixed Income* 9, no. 4 (March 2000).

Duffie, Darrell; Rohit Rahi (1995). "Financial Market Innovation and Security Design: An Introduction". *Journal of Economic Theory*. 65 (1): 1–42. doi:10.1006/jeth.1995.1001.

Melamed, Leo (1996). *Leo Melamed: Escape to the Futures* (First ed.). Wiley. ISBN 0-471-11215-1.

MacKenzie, Donald (2006). *An Engine, Not a Camera: How Financial Models Shape Markets*. The MIT Press. ISBN 0-262-13460-8.

- Manta, O. (2017): New challenges in economic science, ISBN 978-620-2-07721-7, editura LAP LAMBERT Academic Publishing, Germany.
- Miller, Merton H. (1986). "Financial Innovation: The Last Twenty Years and the Next". *The Journal of Financial and Quantitative Analysis*. 21 (4): 459–471. doi:10.2307/2330693. JSTOR 2330693.
- Myers, Stewart C.; Nicholas S. Majluf (1984). "Corporate financing and investment decisions when firms have information that investors do not have". *Journal of Financial Economics*. 13 (2): 187–221. doi:10.1016/0304-405X(84)90023-0.
- Persons, John C.; Vincent A. Warther (1997). "Boom and Bust Patterns in the Adoption of Financial Innovations". *The Review of Financial Studies*. 10 (4): 939–967. doi:10.1093/rfs/10.4.939.
- Ross, Stephen A. (1989). "Institutional Markets, Financial Marketing, and Financial Innovation". *The Journal of Finance*. 44 (3): 541–556. doi:10.2307/2328769. JSTOR 2328769.
- Shiller, Robert J. (2008). "Derivatives Markets for Home Prices" (PDF). Cowles Foundation Discussion Paper no. 1648.
- Tufano, Peter (2003). "Chapter 6 Financial innovation". *The Handbook of the Economics of Finance*. Volume 1, Part 1. Elsevier. pp. 307–335. ISBN 978-0-0804-9507-1.
- Woodford, Michael (2000). "Monetary Policy in a World Without Money". *International Finance*. 3 (2): 229–260. doi:10.1111/1468-2362.00050.