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# **SURVEY OF MICROFINANCE CONTROVERSIES AND CHALLENGES**

**Karel Janda\* Pavel Zetek\*\***

## Abstract

This survey article provides a brief but comprehensive overview of microfinance academic literature with emphasis on recent innovations, trends and efficiency. In particular, we focus on controversial issues of microfinance, such as commercialization, regulation, interest rate policy and the balance between outreach and performance of MFIs. In summary, the findings of the reviewed literature underline the great improvement in the microfinance field that, however, has not reached its full potential yet. At the same time, we outline potential risks and drawbacks which are being discovered along the way of microfinance development and maturing, many of which still waiting for more rigorous scholarly examination. The paper also contains an illustrative econometric model of the relation between social and financial efficiency.

## Keywords

Microfinance, microcredit, efficiency, mission drift

## JEL Classification

G21, O11, O12, O16

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## 1. INTRODUCTION

Governments, as well as the international organizations, struggle to lower the number of people who live at subsistence level or below it. Besides the subsidy or social programs for the low-income inhabitants, there is financial help based on microfinance services for more than 30 years now. Original target of the microfinance institutions (MFIs) - to offer low-capacity credits for starting entrepreneurs with insufficient credit score or missing financial security was extended to other products such as microinsurance, saving or payments. MFIs administrated credits for 89 million clients in the price of 99 billion USD all over the world in 2012 (mixmarket.org). Although according to the evaluating Human Development Report for 2013 the percentage of the poorest - “core poor” - is relatively decreasing, nowadays, there are over 1.56 billion inhabitants who are not able to extricate themselves from the vicious circle of poverty.

The aim of this summarizing article is to continue in previous summarizing studies of Matin et al. (2002), Woller (2002) or Brau and Woller (2004) with the orientation to the basic developmental tendencies and controversial issues of microfinance in the world academic literature.

First, we will clarify why the microfinance has become so popular and what is their contribution in comparison with the direct financing. Then, we will summarize current innovative approaches connected to this sector and show why the general paradigm identifying microfinance as an effective instrument of decreasing poverty can be sometimes misleading. Another part will be focused on the general challenges that the microfinance industry is facing and that are not definitely answered by the existing theoretical or empirical studies. We will concentrate mainly on the matter of financial and social effectiveness where we will extend our existing conclusion to the empirical analysis applied on panel data. Finally, we will introduce the results of our research and generalize some findings for further possible research.

## 2. MICROFINANCE REVOLUTION

Long-time effort of many governments to solve the problems of the inhabitants living in the poverty led to many social programs which financed business activities of low-income people (usually farmers) in the developing countries. This business model of the direct financing, through state-owned banks, was proved to be very expensive and in the most cases ineffective

(Cull et al., 2009). According to Helms (2006) the reason of failure of the direct financing is in insufficient emphasis of the government during the decisive process of the credit program which leads to the choice of the target object with the political connections or the higher income. Government loans are often understood as a donation by their receivers which leads to the effort to postpone their repayment. Another problem of the direct financing is the cost of the credit which is determined under the level of the market interest rate and it does not cover even the invested expenses. Finally, Helms (2006) is pointing out the lacking services (e.g. saving or payments) and unsatisfactory flexibility of the credit programs which are predominantly limited in their orientation to a particular sector, a region or a segment.

More complex solution to this problem was discovered around 1980 when Mohammad Yunus (the founder of Grameen Bank) introduced to the world a revolutionary approach in the financing method of the low-income inhabitants. Basis of this innovative microfinance product is in the low credit amount provided not to an individual but to a homogeneous group of people, usually to women (Morduch, 2000; Bauer et al., 2012). For the debtor there was an advantage that he/she could get higher credit, which he/she would not get as an individual applicant. MFIs have the possibility to reduce the risk of information asymmetry which is passed to the group members as well as the control of the term keeping of the provided credit.

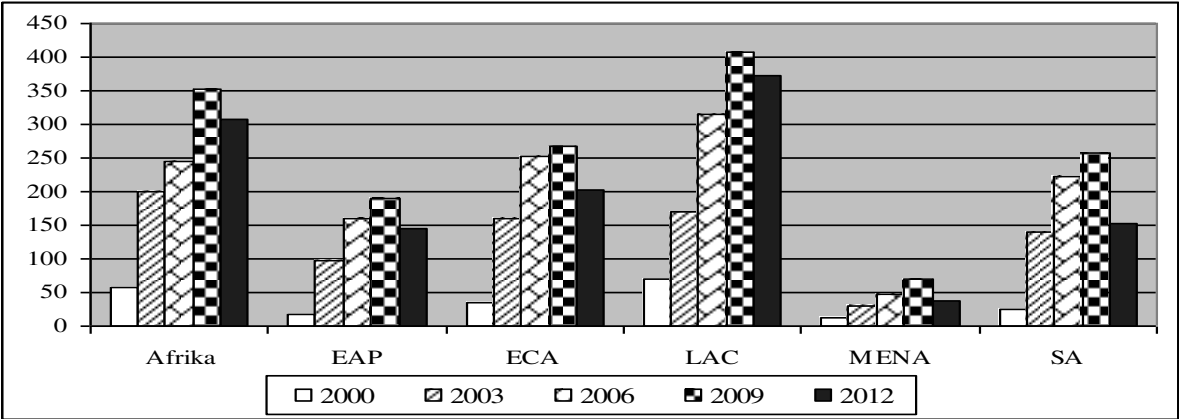
The second important step was the change of the financial purpose. Projects aimed to the agriculture were temporarily replaced by group credits for financing small shops, handcraft shops and cattle farming with the aim to minimize the risks connected with credit repayment. These branches were proved to be more stable and less susceptible to seasonal variation than agriculture (Cull et al., 2009).

Realized changes in the debtor's financing brought high returns of repaid loans (up to 98 %), and also positive impact on the poor inhabitants (Morduch, 1999b; Khandker, 2005). The changes also convinced the government institutions to allocate high percentage of the public expenses into microfinance industry and support the social effectiveness of MFIs.

New stage of microfinance development financed from the public expenses shows that it will be unsustainable in the long term because it creates permanent stress on the state budget and even does not cover enough growing requirements on the financing sources of MFIs. There are determined the legislative rules in the individual countries which enable the transformation of the MFIs from the non-profit organizations to the profitable organizations. The reason for this is the effort to increase the financial effectiveness of these institutions and give the preference to financing with own sources, alternatively to use external sources on the interbank market.

The final effect of the changes mentioned above has a considerable share on the rapidity of the microfinance sector progress. The sufficiency of financing sources and appropriate legal regulation can be seen on the growing number of the MFIs. While in 2000 there were registered 221 MFIs, in 2012 their number rose up to 1055 (mixmarket.org). It is obvious from the Chart 1 that from the point of MFIs number is the biggest microfinance region Latin America and the Caribbean in the long term, followed by sub-Saharan Africa (Africa) and Asia. States of North Africa and the Middle East (MENA) show slower development, mainly due to the lacking capital, insufficient market transparency and religious and cultural traditions.

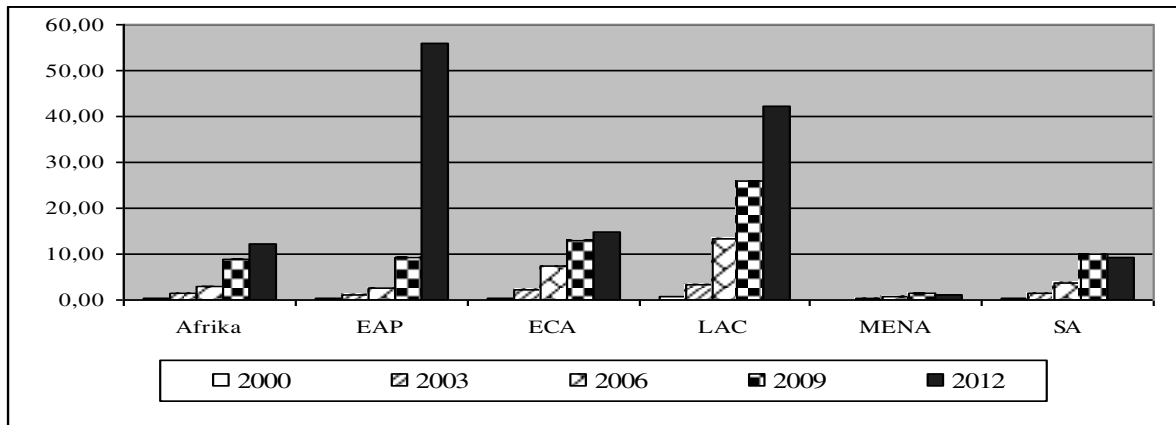
Chart 1: Overview of the number of the MFIs among individual regions



Note: EAP – East Asia and the Pacific, ECA – East and Central Asia, LAC – Latin America and the Caribbean, MENA – North Africa and the Middle East, SA – South Asia  
 Source: mixmarket.org

Besides the growing number of MFIs, the microfinance market is getting larger (Chart 2). Since 2010 is the largest market in East Asia and the Pacific, followed by Latin America and the Caribbean (measured by the amount of the assets). The reason of this is China which strongly supports microfinance programs aimed mainly to the agriculture in the last three years. Local MFIs administrated assets in the total amount of 45 billion USD in 2012, out of this 93 % is held by four profitable MFIs.

Chart 2: The size of the microfinance sector according to the amount of the assets (billion USD)



Note: EAP – East Asia and the Pacific, ECA – East and Central Asia, LAC – Latin America and the Caribbean, MENA – North Africa and the Middle East, SA – South Asia

Source: mixmarket.org

The rapidity of the development of the microfinance industry is influencing also the new products and technologies which are in the most cases comparable to the bank sector. Despite this unquestionable success of microfinance, we will show in the following parts that innovations and trends which are currently the most distinctive on the microfinance market change microfinance culture dynamically and cannot be taken definitely as a positive step ahead.

### 3. TRENDS, INNOVATIONS, OR A PROBLEM?

More detailed analysis of the current trends in microfinance are in Sengupta and Aubuchon (2008), Kono and Takahashi (2010), Armendariz and Morduch (2010), or Barry (2012). We will try to partly generalize it, extend it and emphasize possible risks and deficiency which may appear in the future.

#### 3.1 COMMERCIALIZATION OF MFIs

The most distinctive controversial change is represented by the enormous growth in the numbers of profitable MFIs. These institutions are founded as profitable or many countries allow their transformation from the non-profit institutions. Such a big first transformation occurred in 1992 in Bolivia (BancoSol) and had immediately many followers all over the

world. Nowadays, there are around 463 profitable MFIs on the microfinance market administrating assets in the value of 104 billion USD. For the comparison, there were registered around 592 non-profit MFIs according to the mixmarket.org in 2012 all over the world and their assets were a little less than 27 billion USD.

The reason of the change of the MFIs proprietary structure consists mainly in the growth of the sources of the financial business activities, in the extension of the product portfolio, possibility of more rapid development or permission to the employees to be co-owners of the particular institution (Lauer, 2008; Chahine and Tannier, 2010). At the same time, authors are pointing out that the change of the proprietary structure can create a strong pressure on the social effectiveness, meaning the preference of the creditworthy debtors, or so called mission drift.

Coleman (2006) and Ghalib (2013) made a more detailed analysis of the portfolio quality of the chosen MFIs debtors in Thailand and Pakistan. The final results proves that even though credit offer leads to the increase of the living standards of the inhabitants, the target group did not consist of the very poor people but there were deliberately chosen the less poor clients. Ghalib (2013) discovers that the analyzed portfolios of the MFIs contain 40 % of the least poor and only 22 % of the poorest, so called core poor. The cause of the mission drift must be argued in the wider economical connections and we will study it in more detail in the section 4.5.

### 3.2 NEW GENERATION OF THE PRODUCTS AND TECHNOLOGIES

Modern microfinancing is not bound today only to the need to finance business activities by means of credit but it also extends to the demand of saving products, or the solution of financial transactions with payments. Morduch (1999b) and Atkinson et al. (2013) discover that thanks to the combination of the credit and saving, it is possible to increase the payment moral of the debtor and also achieve higher probability of the credit repayment.

Innovative changes concern also the credit offer. Standard group credit is offered in different forms, usually varying in the number of members, form of the credit allocation, or possible security. At the same time, there are growing debtor numbers who use credit for non-specific purposes. According to Karlan and Zinman (2010) is this type of the credit very beneficial for the debtors regardless of its higher price and non-business purpose. The last form is the credit offered to the individuals, not to the groups.

Individual credit is popular mainly with the profitable MFIs due to its higher profitability and possibility to require better financial security from the debtor. Armendariz and Morduch (2000) state that while group credits are offered up to 1 000 USD, individual loans can be from 2 000 to 5 000 USD. This type of credit can create on the client's side unique opportunity to reach higher lever effect for the financing of his own intention and at the same time to reduce costs emerging from the necessity of the mutual control among the group debtors.

Growing demand for individual credits is judged critically by Cull et al. (2007), Hermes and Lensink (2007) and Mersland and Størm (2009). The authors agreed on the fact that MFIs providing individual credits have higher ratio of more creditworthy debtors in their portfolio and due to it they reach lower social effectiveness rate. Hermes and Lensink (2007) also warn that the demand for individual credits is more susceptible to the change of the interest rate than group credit.

Another innovation represents evaluation method of the credit applicants. There are started to be used a credit databases in some regions which are shared by the MFIs and they have better awareness of the debtor payment morale. Although among public there are concerns about higher initial expenses for creating databases, the most of the existing studies incline rather to their establishment (De Janvry et al., 2010; Van Gool et al., 2012).

Separate research field is the microinsurance. Even though existing studies does not pay much attention to the insurance products, we should remind the works of Werner (2009) or Biener and Eling (2011). Biener and Eling (2011) made the first more complex analysis with the use of Data Envelopment Analysis (DEA) model studying the effectiveness degree of the microinsurance programs in Africa, Asia and Latin America in 2004-2008. Their final findings recommend to offer this product more to the group than to the individuals due to the lower transaction costs expended on the risk minimization of the information asymmetry. Their study also revealed that the microinsurance is more lucrative for the profitable MFIs due to the more frequent usage of technological apparatus.

### 3.3 COMPETITION

We will begin the overview of the existing conclusions concerning the competition among MFIs with the work of Mallick (2012) where was with the help of microfinance market analysis in Bangladesh discovered that the increasing number of the formal MFIs does not lead to an elimination of non-formal lenders (usurers), but on the contrary, it supports their



expansion meaning the growth of their interest rate for the clients. Knight et al. (2009), Sodokin and Donou-Adonsou (2010), Vanroose and D'Espallier (2013) or Cull et al. (forthcoming) were discovering possible influence of the bank sector to the future development of microfinance industry. Whereas Knight et al. (2009) and Sodokin and Donou-Adonsou (2010) admit possible cooperation between MFIs and commercial banks, Vanroose and D'Espallier (2013) or Cull et al. (forthcoming) can see the space for the future development of MFIs more in the fields with insufficiently developed financial sector. Both studies admit in their recommendations that in the places with higher concentration of financial institutions are MFIs pushed to prefer low-income inhabitants.

The most controversial impact of the competition is seen by the experts in the relation to the clients. Sengupta and Aubuchon (2008) warn that with the growing competition among MFIs, there is not only the decrease of MFIs effectiveness (due to the lower subsidy) but also the decrease of debtor's payment morale. McIntosh and Wydick (2005) and McIntosh et al. (2005) are discovering in their findings that with the growing number of the MFIs, the clients have the tendency to lend money at more MFIs at the same time, alternatively they have less tendency to save. Overindebtedness is the consequence mainly of debtor's financial literacy and lacking credit databases in the most of microfinance regions. Finally, Guha and Chowdhury (2013) are pointing out the relation between overindebtedness and the credit price. While earlier studies of Fernando (2006) or Porteous (2006) admit the possibility of decrease of the credit rate interest, Guha and Chowdhury (2013) are concerned about the fact that higher risk associated with the overindebtedness will push the MFIs to increase these rates.

### 3.4 ALTERNATIVE FINANCIAL SOURCES

Initial development of the microfinance sector financed from the public sources is gradually substituted by the debt instruments, such as credits on the interbank market, bond issues or subordinate debt. Creditors are not only the governments of the particular countries but also international organizations, institutional investors, commercial banks or individual objects. In some regions prevails financing from the own sources or there are used client deposit. It is necessary for this purpose that the MFIs are subordinate to regulation of the central bank or other supervising bureau.

The subsidy purposefulness brings more rapid development according to Morduch (1999a) or Hudon and Traca (2011). In accordance with their opinion the subsidy policy should be proportional to the needs of MFIs and should not exceed a border where it shows

ineffectiveness. According to D'Espallier et al. (2013) the worldwide lacking financial support is shown in the decrease of the social effectiveness. Most often it is the increase of client's interest rate, the more creditworthy debtors preference or decrease of women share in credit portfolios.

The second most important way of MFIs financing is external source. Besides the standard credit, bond issue or assets securitization, it is effective to get financial sources in the form of the public subscription share in a particular company. Quite recent IPO, in Mexico in 2007 (2 billion USD) and in India in 2010 (1.5 billion USD), surpassed all expectations and it ensured to the given MFIs the enormous growth of clients and also size of credit portfolio (Rosenberg, 2007; Chen et al., 2010). Critics are warning that these activities lead to the significant growth of microfinance rate interests for the clients and as a consequence damage the good reputation of microfinance and their purpose (Cull et al., 2009).

The reason of higher interest in microfinance sector from the investors is quite simple. Poverty is becoming profitable industry. MFIs lent over 80 billion USD all over the world in 2006-2012, out of it 54 billion USD were aimed to the profitable MFIs. Janda and Svárovská (2010) and Janda et al. (forthcoming) verified that it is possible to reach the profit comparable to other debt instruments and appropriately diversify the investment portfolio by investment into microfinance industry.

The last alternative financing source involves own sources and financial funds saved on saving accounts at MFIs. The use of the internal sources is not released regularly and due to it the academic public does not pay attention to it. The existing conclusions show that internal financing has a positive influence on the business activities of MFIs. Institutions which are financed by these sources have better results in providing credits and are more oriented to the social aims in the long term than if they rely only on the subsidies (Hollis and Sweetman, 1998; Hamada, 2010).

### 3.5 GLOBALIZATION OF MICROFINANCE MARKET

Process of increasing economic integration among particular countries is accompanied by whole range of sources of financing, MFIs participation in international organizations (FINCA, Women's World Banking...), up to performing business activities in more countries of the world or to organizational structure comprising foreign entities. Mersland et al. (2011) analyze these factors in 73 countries of the world during the years 2001 - 2008. Conclusions of their regressive analysis prove the positive impact of international involvement on social

efficiency of MFIs. These MFIs rather tend to offer credits to women, but do not focus on rural areas for their business activities, because of higher costs. On the other hand, no link between international influence and financial efficiency has been proved. The reason is that foreign management can require higher incomes or that clearly defined business model is missing when founding the particular MFI.

Certain degree of skepticism in globalization of microfinance sector is expressed by Dokulilová et al. (2009), Garmaise and Natividad (2013), Wagner (2012) and Wagner with Winkler (2013). Garmaise and Natividad (2013) argue in their conclusions that MFIs in host countries can reach cheaper sources of financing if their mother organization is politically related to their homeland. However, these cheaper sources do not show higher degree of social efficiency but they show increase in profit margins, number of staff or increase in non-purpose loans.

Wagner (2012) and Wagner with Winkler (2013) warn about increasing instability of microfinance sector and its higher susceptibility to market upheavals, especially in connection with the financial crisis in 2008. Many MFIs faced heavy losses from provided credits and in the upshot some of them had to finish their activities. Similar scenario took place also in India in 2010. Due to bad control of risks and due to the credit boom, the Indian microfinance sector fell into trap leading to the largest microfinance crisis in the history so called „Andhra Pradesh Crisis” (Mader a Winkler, 2013).

## 4. FUTURE CHALLENGES

This part will identify the main challenges, which the microfinance sector is facing nowadays. It will deal especially with the issue of new products and services, policy of interest rates, regulation and supervision, human resources management and so called mission drift.

### 4.1 NEW PRODUCTS AND SERVICES

Apart from the possibility of financing housing or ecological projects, there is a great future in insurance products. Considerable part of population in developing countries is exposed to the risk of injury or disease that can cause unexpected expenses on drugs or doctor's appointment. According to Leatherman et al. (2013) these expenses can vary in some countries ranging between 20 to 70% of income. Current product of microinsurance dealing rather with long-term incapacity for work or death could be gradually enriched with health insurance.

Alternative distribution channels (cash dispensers, micro kiosk or movable kiosk) will be of great importance for providing microfinance services. Especially m-finance enabling clients the contact with bank via mobile phone is becoming popular. On the other hand, MFIs give opportunity to reduce operating costs and appeal to more clients with the product offer within shorter space of time. Disadvantages preventing m-finance from faster spreading consist in high up-front costs and range of conditions that are impossible for MFIs to complete in the medium term (Kapoor et al., 2007; Kumar et al., 2010).

Another challenge is represented by an alternative way of financing projects by means of platforms such as Kiva or Prosper. These platforms have indisputable advantage of possibility to appeal to high number of investors all over the world, who want to participate in direct financing of ring-fenced business plans chosen in advance. Although these online platforms can differ depending on business model, regulation or way of cooperation with MFIs, the principle remains the same: to choose interesting projects with suitable investors (Burand, 2009; Galak et al., 2011).

#### 4.2 POLICY OF INTEREST RATES

Policy of MFIs interest rates faces two general types of criticism. On one hand, the public believe that interest rates amount is excessively high and does not reflect social goal which the microcredits are intended for. On the other hand, there is prevailing opinion that the amount of interest rates is inefficiently subsidized from public resources and may disadvantage those MFIs that do not receive it.

According to Rosenberg et al. (2013) the degree of microfinance interest rates was decreasing in the long term up to the year of 2007, when it stabilized because of financial crisis and also because of the growth of operating costs and costs for financing credit. Their report also mentions that average amount of microfinance interest rates is estimated at 27% p.a. and it is even higher at profitable MFIs in the long term. On top of that, Sandberg (2013) and Harper (2012) are confident that MFIs proceed correctly when determining these microfinance interest rates and that their height reflects the height of expenses and degree of risk to which these institutions are put at.

Karlan and Zinman (2008) analyze debtors' reactions to change of microfinance interest rates that can be, according to politicians, increased without decrease of demand for credits. Potential increase in the price of credit can compensate subsidy expenses from public budgets. However, Karlan and Zinman (2008) disprove this surmise. Their analysis that was carried

out on consumer credits shows that the growth of rates above particular limit results not only in decrease of demand but also in deterioration of credit returns (especially for women). What's more, MFIs will not make higher profits with the policy of higher interest rates either. Roberts (2013) also came to the same conclusion. He was studying relation between price of credit and amount of profit at profitable MFIs. Finally Karlan and Zinman (2008) add, that the change in due period of credit is more important than its price for relatively poor debtors.

Dehejia et al. (2012) made similar study as Karlan and Zinman (2008) did, and they also confirm that debtors are more sensitive to changes of interest rates. Their demand is mainly focused on smaller amounts and more frequent loans. Growth of credit price can result in higher rate of profitability but at the expense of decreasing social efficiency. The reason is that MFIs tend to prefer more solvent debtors as the interest rates increase.

#### 4.3 OPTIMAL RATE OF (NON-) REGULATION

Another unclear question deals with role of the state and degree of its task to regulate and supervise the microfinance market. Most of studies admit the role of regulation MFIs, particularly because of better management of credit risk, larger transparency and necessity of supervision of administration of the client's deposits. However, Cull et al. (2011) points out that regulation can be significantly expensive especially in initial stage when setting the reporting or training of authorized employees is required. MFIs can respond to such expenses with increasing price of credits or with increasing amount of credits. Target segment is the one who will feel these effects in the upshot. More findings are brought by Hartarska a Nadolnyak (2007) a Mersland a Strøm (2009). Both of these performed studies note that introducing regulation does not affect neither improvement of social efficiency nor acceleration of future development.

#### 4.4 HUMAN RESOURCES

The importance of human resources quality, especially in top management is discussed by Ghani and Mahmood (2011), Galema et al. (2012) and Randøy et al. (forthcoming). Ghani and Mahmood (2011) point out the analysis that was carried out in Pakistan, where the missing market orientation of the company officers and low motivation of subordinate employees caused the insufficient development of microfinance sector. Galema et al. (2012) refer to recent example of financial crisis in India, where the top officials of NGOs have more

freedom in their decisions than it is common in other types of MFIs. These powers then create excessive risk rate that requires accelerated rectification on the part of governmental authority.

Hartarska (2005) and Mersland and Strøm (2009) investigate efficiency of high office division and structure of top management of particular MFIs. Hartarska (2005) came to the conclusion that managing board consisting mainly of employees represents greater contribution for MFIs in achievement of financial development. Mersland and Strøm (2009) argue that it is necessary to prevent general manager to hold an office of chairman of the board and vice versa. They also claim it is essential to prefer women as COE or to provide individual form of credit for the target segment. Observing these rules cause positive effect on resultant profit of MFIs.

#### 4.5 MISSION DRIFT

The most controversial topic of microfinance is the balance between social and financial efficiency. Achievement of social aims lies in offering credits to the poorest inhabitants provided that (non-market) interest rates remain low. On the other hand, financial efficiency reflects price of credit that covers invested costs increased by adequate profit without necessity of subsidies from external counterparties.

However, it is becoming apparent that this theoretical concept is considerably full of problems as financing of core poor poses high operating and transactional costs for MFIs. These costs cannot be simply reflected in amount of interest rates because credit amount of group credit is usually very low (Rosenberg et al. 2013).

Commercialization of microfinance sector and the need of self-financing forces MFIs to prefer more solvent debtors and to secure them faster development. Drift towards richer clients so called “mission drift” creates in professional literature two different approaches to balance between financial and social efficiency. Supporters of fulfilling financial aims claim that it is impossible to achieve social efficiency without preference of more solvent debtors and long-term financial stability. They also add that positive correlation between social and financial efficiency exists. On the other hand, others are of that opinion that mission drift suppress social purpose for which the microfinance originated and it is not advisable to move away from it in the long term.

Gutiérrez-Nieto et al. (2009) come to the conclusion that moderate positive correlation between financial and social efficiency exists. Higher degree of social efficiency is detectable

in NGO rather than in other types of MFIs. Authors analyzed conclusion of the research for one-year period using DEA model.

Mersland and Strøm (2010) carry out more complex analysis using panel regression. Their comparison of social efficiency measured by average amount of credit and of financial efficiency observed on average amount of costs and profitability did not confirm the fact that MFIs could prefer more solvent debtors. It is quite the other way around as it is becoming apparent that higher financial efficiency of these institutions can subsequently lead to better fulfillment of social tasks. Authors also find out that average amount of credit is rather influenced by amount of costs than amount of profit.

Quayes (2012) partly admits the contradiction between financial and social efficiency depending on the level of MFIs transparency (discourse level). Although primary findings of his regressive model do not yield any statistically important conclusions, by adjusting this model there is a positive influence between financial and social efficiency at MFIs depending on high degree of transparency. On the other hand, low degree of transparency at MFIs lead to compromise between mentioned variables. Louis et al. (2013) apply different methods to the same intention. The method should reveal possible discrepancy between social and financial efficiency. Method SOM (Self-Organizing Maps) applied to selected one-year sample of data points out the important positive reciprocity between social and financial aims.

Mosley a Hulme (1998), Cull et al. (2007), Hermes et al. (2011) a Hartarska et al. (2013) oppose the studies mentioned above. The first extensive study Cull et al. (2007) think that type of microcredit is the cause of deflection towards higher financial efficiency. MFIs providing individual credits reach higher rate of profitability at the expense of decline percentage of women in credit portfolios and social efficiency. On the other hand, institutions concentrating on group credits do not show such deflection. MFIs that can reach both aims can be found as well. Their regressive model confirms that growth of charges, or more precisely price of credits, do not have to appear in higher profitability of MFIs.

Hermes et al. (2011) carry out an analysis of efficiency using the method of SFA (Stochastic Frontier Analysis) on selected sample 435 MFIs in the years 1997-2007. Conclusions show negative correlation between social and financial efficiency. MFIs can aim at poorer population only at the expense of higher costs and lower profitability. Financial efficiency appears only on condition of more solvent debtor's preferences. Hartarska et al. (2013) only add that MFIs that aim to increase social efficiency should focus more on achieving maximum reduction of costs.

## 5. ILLUSTRATIVE EXAMPLE BETWEEN SOCIAL AND FINANCIAL EFFICIENCY

Selected past conclusions regarding social and financial efficiency are illustrated in following part on panel data of selected MFIs from region of southern and south-eastern Asia and Latin America and Caribbean (LAC). Given studied area is further widened by macroeconomic perspective that is considered important especially by Ahlin et al. (2011) and Janda and Zetek (forthcoming).

### 5.1 DATA

Representative sample of data to selected MFIs is downloaded from mixmarket.org. Missing variables or irrelevant figures were completed by weighted average from previous period where the weight coefficient represents the amount of MFI debtors. Macroeconomic data to individual countries are copied from the website of International Monetary Fund or from the website of World Bank, alternatively from Transparency International. Total number of used variables in the period of 2006-2012 is showed in Table 1.

Table 1: General Description of Variables

Variable	General Definition	Number of Observ.	LAC			ASIA			
			Mean	Standard Dev.	Median	Number of Observ.	Mean	Standard Dev.	Median
GDP	Gross Domestic Product (% change)	1936	4.4960	2.9540	4.4800	1239	6.2214	2.5418	6.1800
Inflation	Inflation, average consumer prices (% change)	1936	5.3143	3.1843	4.3000	1239	8.0929	4.1735	7.6400
Export	Export volume of goods and services (% change)	1936	4.1828	6.9622	3.4600	1239	6.7089	10.562	9.6200



Urban_In	Urban population in individual country (abs.)	1936	16.628	1.1973	16.170	1239	17.819	1.6279	17.613
Legal	Index of corruption in a individual country (0-10)	1936	3.1460	0.6267	3.2000	1239	2.7031	0.5112	2.5000
ALB_B	Average Loan Balance per Borrower (USD)	1936	1634.6	3315.5	903.00	1239	305.34	517.54	147.00
Number_In	Number of active borrowers in MFI (abs.)	1936	9.2117	1.6763	9.1573	1239	10.614	1.7888	10.600
Yield_R	Real yield on gross loan portfolio of MFI (%)	1936	30.284	21.581	24.160	1239	18.855	14.012	15.250
PAR_90	Portfolio at risk > 90 days (%)	1936	4.9892	7.3713	3.1050	1239	5.5454	11.373	1.8400
TE/TA	Total Expense / Total Assets of MFIs (%)	1936	29.647	18.385	24.140	1239	21.861	12.491	19.250

Source: mixmarket.org, worldbank.org, imf.org, transparency.org

First indicator *GDP* shows year-on-year change of gross domestic product that is used as proxy indicator of country development. It is supposed that year-on-year growth will have positive impact on microfinance sector. Another indicator *Inflation* shows year-on-year change of price level measured by consumer price index. Macroeconomic perspective is further widened by indicator of economy openness in specific country (*Export*), where MFIs is. Indicator *Urban\_In* shows logarithm of total number of population in specific country living in cities. A lot of MFIs do not focus only on rural regions where higher rate of profitability is not guaranteed (Janda and Turbat, 20013) but establish branches in city districts with relatively higher purchasing power parity of low-income inhabitants. Important indicator also shows the public perception degree of corruption (*Legal*). This index published on year basis of the company Transparency International assume points ranging between 0 (high corruption) to 10 (without corruption) for each country.

Indicator *ALB\_B* shows average amount of credit for one debtor. If it is increasing in the market it is expected that the amount of clients and social efficiency will decrease. Another indicator *Number\_In* shows logarithm of total amount of debtors who have some kind of credit at MFI. Actual profit from credit portfolio (*Yield\_R*) shows the amount of credits and fees from offered credits. To assess financial condition of microfinance sector, we also need to use the indicator *PAR\_90* that reflects the amount of risk credits after maturity longer than 90 days. We can find a real danger here, as the credits will have to be deducted from MFIs credit portfolios. The last indicator is *TE/TA* shows whether MFIs are able to reduce the amount of total costs in the long term.

## 5.2 MODEL

We will set general regression model 1 for variables mentioned above. There will be following variables on the left side: *GDP*, *Inflation*, *Export*, *Urban\_In*, *Legal* and *ALB\_B* at the time *t* and in the country *c*. When examining the degree of efficiency we find out that it is useful to distinguish between amount and type of MFIs. Therefore we have to widen regressive equation by qualitative variables (dummies) *Status*, *Outreach\_L* and *Outreach\_M*. Variable *Status* will distinguish between profit and non-profit MFI. On the other hand, indicator *Outreach\_L* and *Outreach\_M* defines large and middle MFI.

$$Y_{tc} = \alpha_0 + \beta_1 GDP_{tc} + \beta_2 Inflation_{tc} + \beta_3 Export_{tc} + \beta_4 Urban\_In_{tc} + \beta_5 Legal_{tc} + \beta_6 ALB\_B_{tc} + \beta_7 Status_{tc} + \beta_8 Outreach\_L_{tc} + \beta_9 Outreach\_M_{tc} + \varepsilon_{tc}. \quad (1)$$

Other variables *Number\_In*, *Yield\_R*, *PAR\_90* and *TE/TA* will be analysed on the right side of the equation ( $Y_{tc}$ ). The aim is to confirm whether macroeconomic environment together with selected variables of microfinance sector (properly speaking business strategy, type and amount of MFI) have an influence over quantity of debtors, profits from portfolio, risk operation and optimization of costs.

### 5.3 FINAL FINDINGS

Results of our panel regression are summarized in Table 2 and 3. For each mentioned variable, there is Fixed Effect (FE) mentioned and so is Random Effect (RE). Decision on choice between both types of models is supported by use of Hausman test that rejects method of random effects in its conclusions.

Macroeconomic environment has positive impact on bigger amount of debtors (*Number\_In*) – especially in the area with increasing population in cities and with higher inflation rate. It is interesting on the other hand, that there is no influence of economy development on mentioned variable. Final findings in Table 2 confirm that higher degree of social efficiency is connected with type of MFI and non-growing amounts of provided credits (*ALB\_B*).

Negative impact on real MFIs profitability (*Yield\_R*) manifests itself by growth of population and average amount of credit. It is given primarily by increasing competition on the market that presses interest rates down in the long term and by the problem of increasing

average amount of credit. It is no surprise that increasing price level also has negative impact on profit.

Our simple illustrative panel regression confirms that sufficient growth of population in cities is connected with the growth of credits after maturity. Trying to reach better results, MFIs also resort to financing more dangerous projects that can endanger their future existence. On the other hand, decrease of risk credits is connected with the amount of MFIs and increasing amount of credits. The reason is that bigger MFIs are able to control the risks and by preferring more solvent debtors, it is possible to ensure bigger secure in repayment of credit in case of market upheavals. In the end, it is necessary to add that macroeconomic climate seems to have bigger impact on MFIs in region of Latin America and Caribbean, especially from the economic growth point of view, degree of corruption and inflation rate. The cause is probably prevalence of profitable MFIs that are more connected with the market and therefore even their business activities are more predisposed to macroeconomic development.

Total costs represent the last observed area. Their decrease is connected with the amount of MFIs, with the growth of credits or with the openness of economy. On the other hand, it is becoming confirmed that the growing population result in bigger amount of debtors but also in increasing total costs.

Table 2: Final Findings for the Region of Latin America and the Caribbean

	Number_In		Yield_R		PAR_90		TE/TA	
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	-44.8794*** (0.000007)	7.7948*** (0.000002)	420.092*** (0.00005)	-84.1310*** (0.000002)	-188.017* (0.0613)	15.7040*** (0.0007)	170.165* (0.0520)	-58.6736*** (0.000002)
GDP	0.0013 (0.7664)	-0.0073 (0.1233)	0.1254 (0.1597)	0.1108 (0.1924)	-0.1770*** (0.0016)	-0.2202*** (0.0006)	0.0412 (0.5833)	0.0005 (0.9955)
Inflation	0.0051* (0.0674)	-0.0068* (0.0592)	-0.8772*** (0.000007)	-0.7525*** (0.000003)	-0.2342*** (0.000008)	-0.1967*** (0.0001)	-0.0262 (0.5852)	0.0913 (0.1530)
Export	-0.0012 (0.4574)	0.0033* (0.0795)	-0.0041 (0.9092)	-0.0153 (0.6492)	0.0047 (0.8621)	0.0340 (0.1817)	-0.1096*** (0.0060)	-0.1033*** (0.0019)
Urban_In	3.2099*** (0.000002)	-0.0049 (0.9026)	-23.3829*** (0.0002)	7.2286*** (0.000002)	12.1007** (0.0497)	-0.4112 (0.3184)	-8.7030 (0.1042)	5.3323*** (0.000003)
Legal	0.0734 (0.1450)	0.1972*** (0.000002)	0.4080 (0.6130)	-1.2590** (0.0478)	-1.7882*** (0.0076)	0.00003 (0.6603)	1.2445 (0.1242)	0.1472 (0.8124)
ALB_B	-0.00004*** (0.0004)	-0.00003*** (0.000007)	-0.0002** (0.0211)	-0.0005*** (0.000003)	-0.000002 (0.9797)	-0.4599 (0.5175)	-0.0004* (0.0535)	-0.0007*** (0.000003)
Status	0.0645** (0.0309)	0.5670*** (0.000006)	5.6820*** (0.000009)	10.1713*** (0.000006)	1.3081** (0.0179)	-0.4599 (0.5175)	5.7062*** (0.000002)	5.6510*** (0.0009)
Outreach_L	1.3334*** (0.000009)	1.9850*** (0.000001)	0.6192 (0.7301)	-2.4148** (0.0197)	-2.8637* (0.0994)	-2.0356*** (0.0014)	-1.2514 (0.4889)	-3.6933*** (0.0002)
Outreach_M	0.6978*** (0.000004)	0.9786*** (0.000002)	0.6157 (0.5330)	-0.3191 (0.6610)	-1.1696* (0.0843)	-0.9944** (0.0485)	-0.7819 (0.4658)	-1.7001** (0.0172)
R <sup>2</sup>	0.9684		0.9251		0.5547		0.8979	
Hausman test	0.00008		0.00002		0.000004		0.00002	

Note: P-values are given in brackets below the coefficient estimates; \*, \*\*, \*\*\* represents level of significance 10 %, 5 % a 1 %.

Table 3: Final Findings for the Region of Asia

	Number_In		Yield_R		PAR_90		TE/TA	
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	-58.0041*** (0.000003)	5.7342*** (0.000002)	290.526*** (0.0010)	43.5187*** (0.000002)	-433.114** (0.0493)	-6.7685 (0.3438)	-258.941** (0.0485)	12.7498 (0.1350)
GDP	-0.0078 (0.2687)	-0.0254*** (0.0011)	-0.0253 (0.7700)	-0.0297 (0.7850)	-0.1439 (0.2929)	-0.2769* (0.0700)	0.1227 (0.3142)	-0.0551 (0.6686)
Inflation	0.0053* (0.0555)	0.0099*** (0.0089)	-0.6343*** (0.000009)	-0.7243*** (0.000001)	0.0046 (0.9413)	0.0060 (0.9353)	0.0311 (0.6614)	0.0340 (0.5870)
Export	-0.0010 (0.4764)	0.0022 (0.1897)	-0.0122 (0.6049)	-0.0186 (0.4215)	0.0281 (0.2478)	0.0455 (0.1652)	-0.0245 (0.3649)	-0.0026 (0.9231)
Urban_In	3.7988*** (0.000003)	0.1586*** (0.0002)	-15.1185*** (0.0027)	-0.7232 (0.1636)	25.1869** (0.0465)	1.0212** (0.0417)	16.3941** (0.0275)	1.1765** (0.0325)
Legal	-0.0269 (0.7063)	0.1365** (0.0489)	1.5693* (0.0756)	-1.3183 (0.1715)	-1.4988 (0.3750)	-0.9450 (0.4522)	-1.7356* (0.0942)	-2.3685** (0.0350)
ALB_B	-0.00009 (0.3455)	-0.000002 (0.9786)	-0.0047** (0.0213)	-0.0042*** (0.000002)	-0.0038** (0.0315)	-0.0019* (0.0566)	-0.0034*** (0.0085)	-0.0037*** (0.0002)
Status	-0.1533 (0.2676)	0.1217 (0.2680)	-0.5126 (0.6335)	-0.8495 (0.5290)	-0.1089 (0.7051)	1.5242 (0.1986)	-1.4813 (0.4593)	-1.0306 (0.4634)
Outreach_L	1.6528*** (0.000007)	2.3658*** (0.000003)	1.2151 (0.3560)	-0.3915 (0.6912)	-6.2559** (0.0214)	-2.9394** (0.0103)	-7.9483* (0.0651)	-5.3519*** (0.000002)
Outreach_M	0.8560*** (0.000007)	1.1613*** (0.000002)	-0.6365 (0.4620)	-0.6601 (0.4469)	-3.1897* (0.0837)	-1.6609 (0.1319)	-5.6323* (0.0569)	-3.9409*** (0.00009)
R <sup>2</sup>	0.9645		0.8661		0.5526		0.7486	
Hausman test	0.000002		0.000002		0.0353		0.0002	

Note: P-values are given in brackets below the coefficient estimates; \*, \*\*, \*\*\* represents level of significance 10 %, 5 % a 1 %.

## 6. CONCLUSION

Theoretical and empirical studies described in this summarizing article confirm considerable microfinance sector development in developing countries. These studies show that rigid, state-controlled, model of direct financing of the poor may be replaced by MFIs that are able to finance business activities effectively by combining their own and other sources. Increasing competition and pressure on financial efficiency of MFIs is then positively reflected in wider portfolio of products and services to low-income inhabitants.

However, our summary of present academic literature shows that the development of microfinance industry does not have clear conclusions from the social efficiency point of view. Many studies primarily point out insufficient choice of low-income debtors and departure from original intention which the microfinance were intended for. Academic literature also points out increasing instability of microfinance market, excessive pressure on financial efficiency, problem of risky operations and persisting financial illiteracy leading to overburdening of debtors.

This article is far from providing thorough overview of all controversial topics about microfinance. That's why we recommend the reader to focus also on further studies, especially on the topics that were not covered in this article, such as expediency of own financial sources, causes of decreasing the share of women in credit portfolios, reasons of different development of microfinance between regions, and macroeconomic influence on the development of microfinance sector.

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