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 **Solvay Brussels School**
Economics & Management

Trade-offs in Microfinance: A Systematic Review

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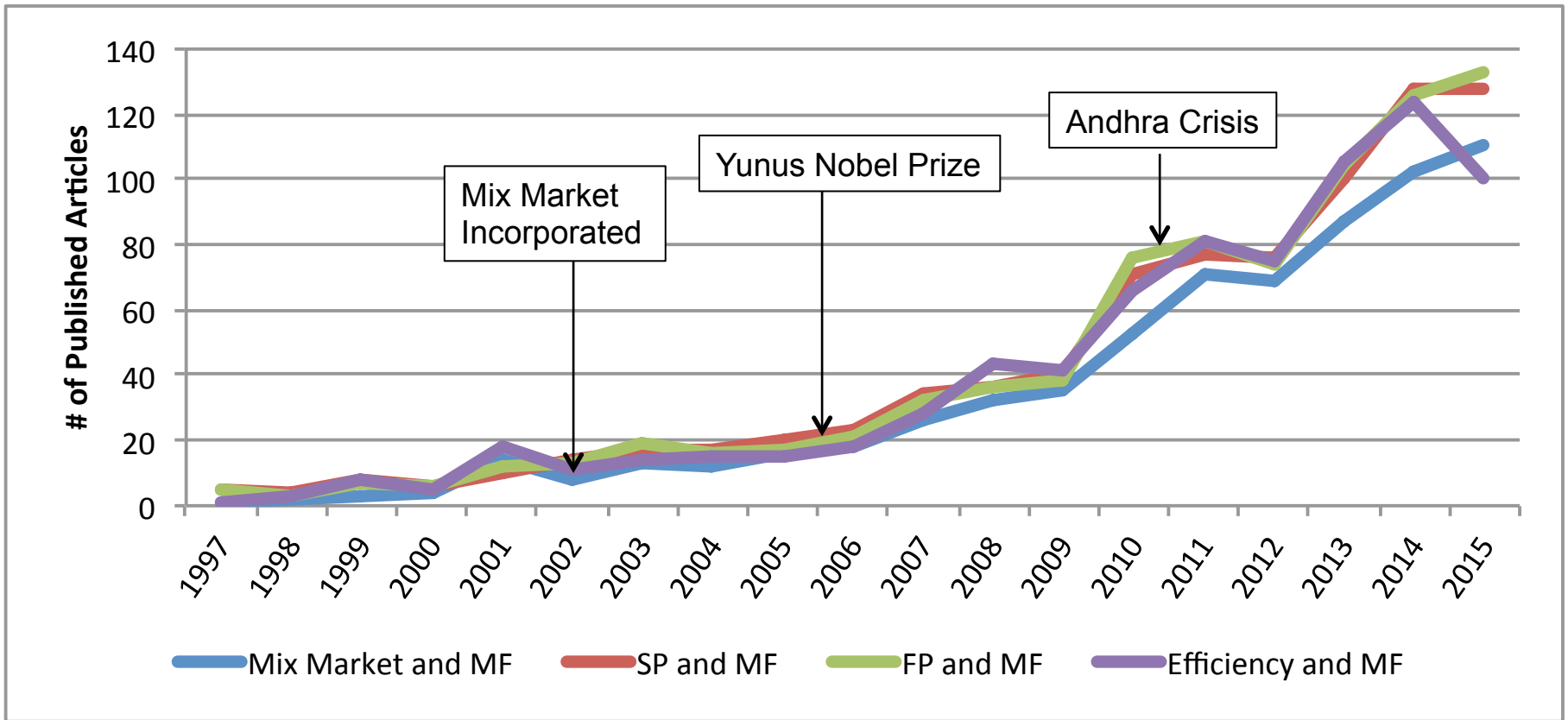
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IAP Day

Introduction

- Microfinance becoming increasingly commercialized
 - Failed, subsidized microcredit programs of the 1960's-1970s
 - (Adams, Graham & Von Pischke, 1984)
 - 1980s: Mission driven NGOs focused on poverty alleviation requiring substantial subsidies to achieve social goals
 - (Armendáriz & Labie, 2011; Hudon & Traca, 2011)
 - PRODEM transformation into BancoSol in 1992
 - (Ledgerwood & White, 2006)
- Does increased focus on sustainability come at the expense of social mission of microfinance? (Conning, 1999; Woller, 2007; Morduch, 2000)
 - Does the pursuit of financial goals come at the expense of breadth (number of clients) and/or depth (socio-economic level) of microfinance outreach? (Armendáriz & Szafarz, 2011; Hermes & Lensink, 2011)

Microfinance Research Trends



Article Motivations

- **Confirm trade-offs between outreach and sustainability**
 - Olivares-Polanco (2005) : Using a sample of 28 Latin American MFIs, the author “confirms the existence of a trade-off between sustainability and outreach.”
 - Cull et al. (2007) : Provide evidence of a trade-off but note the importance of lending methodology
 - Hermes et al. (2011) : Using a sample of 435 MFIs from the MixMarket across 76 countries, the authors find “convincing evidence that outreach is negatively related to efficiency of MFIs.”
- **Rejection of trade-offs between outreach and sustainability**
 - Paxton (2007) : The author notes that “there does appear to be a trade-off between many measures of outreach and sustainability.”
 - Kipesha & Zhang (2013) : The authors are unable to confirm the presence of trade-offs between sustainability and outreach.
- **Synergy between outreach and sustainability**
 - Gutierrez-Nieto et al. (2009) : The authors find a low, positive relationship between outreach and financial efficiency.
 - Mersland & Strøm (2010) : The more cost effective an MFI, the smaller the average loan.
 - Louis et al. (2014) : Using self-organizing maps, the authors “find evidence of a significant, positive relationship between social efficiency and financial performance.”

Research Objectives:

1. Identify articles researching the performance of MFIs across three dimensions:
 - a) Social objectives (outreach)
 - b) Financial objectives (sustainability)
 - c) Efficiency (both social and financial efficiency)

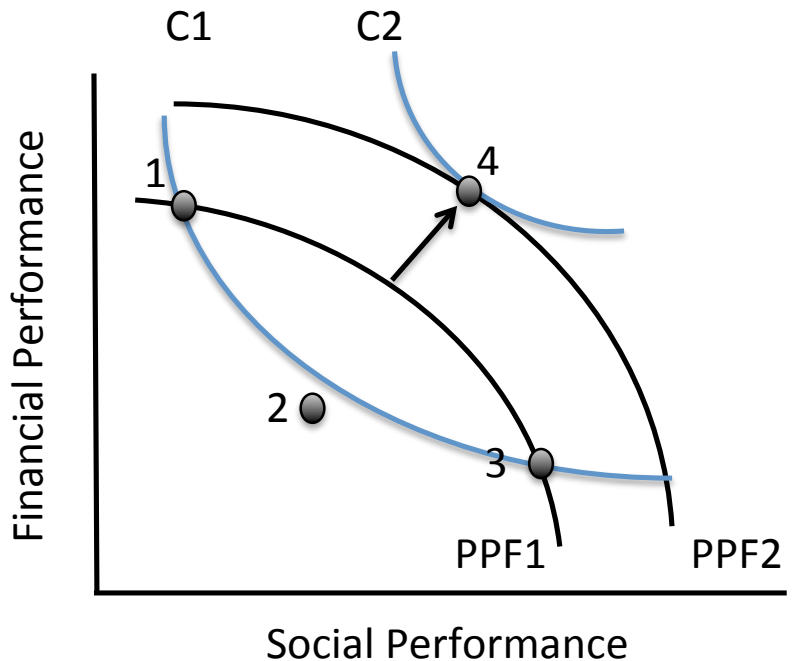
2. Synthesize articles to understand characteristics that could be driving trade-off results (indicators used, time period, data source).

Financial & Social Performance Measures

Financial Performance	<p>Profitability: return on assets, return on equity, profit</p> <p>Portfolio Quality: repayment rates, portfolio at risk, loan-loss ratio</p> <p>Productivity & Efficiency: # of clients per loan officer, cost per borrower, operating expense ratio</p> <p>Financial Viability: operational self-sufficiency, financial self-sufficiency, subsidy dependence index (SDI)</p> <p>Leverage: debt-to-equity ratio</p>
Social Performance	<p>Breadth of Outreach: # of clients reached; number of female clients</p> <p>Depth of Outreach: level of poverty of clients, proxied by average loan size, % female clients</p> <p>Scope of Outreach: # of financial services offered by MFI</p> <p>Length of Outreach: time frame during which MFI provides financial services</p> <p>Cost to Clients: captures interest rate charged to clients and transaction costs to client (transport/documentation, etc.)</p> <p>Worth to Clients: customer willingness to pay for microfinance services</p>

- Financial performance more well-defined than social performance
 - Traditional finance metrics such as ROA and ROE are commonplace.
 - Additional metrics have been specifically tailored for MFIs (CGAP, 2003):
 - OSS refers to an MFI's ability to cover all of its costs through its financial revenue
 - FSS makes adjustments for soft loans, donated equity, technical assistance and inflation
- Outreach typically measured across depth and breadth dimensions
 - Avg. loan size taken as a ratio over GNI per capita for cross-country comparisons
 - However, does not incorporate the loan term, loan type or lending methodology (Paxton, 2007)

Microfinance Trade-offs between Financial and Social Performance



- Points 1 and 3 represent efficient uses of technology such that it is impossible to increase one without decreasing the other.
- Point 2 represents the suboptimal use of resources, technologies and/or the mispricing of financial products (Yaron & Manos, 2007).
- Indifference curves are given by C1 and C2 to highlight combinations of S.P and F.P. equally attractive for a given MFI (Copestake, 2007).
- If technology gains are realized, the PPF can shift outward, creating up a new PPF with increased performance for both social and financial goals (Yaron & Manos, 2007).

Methodology: Systematic Review

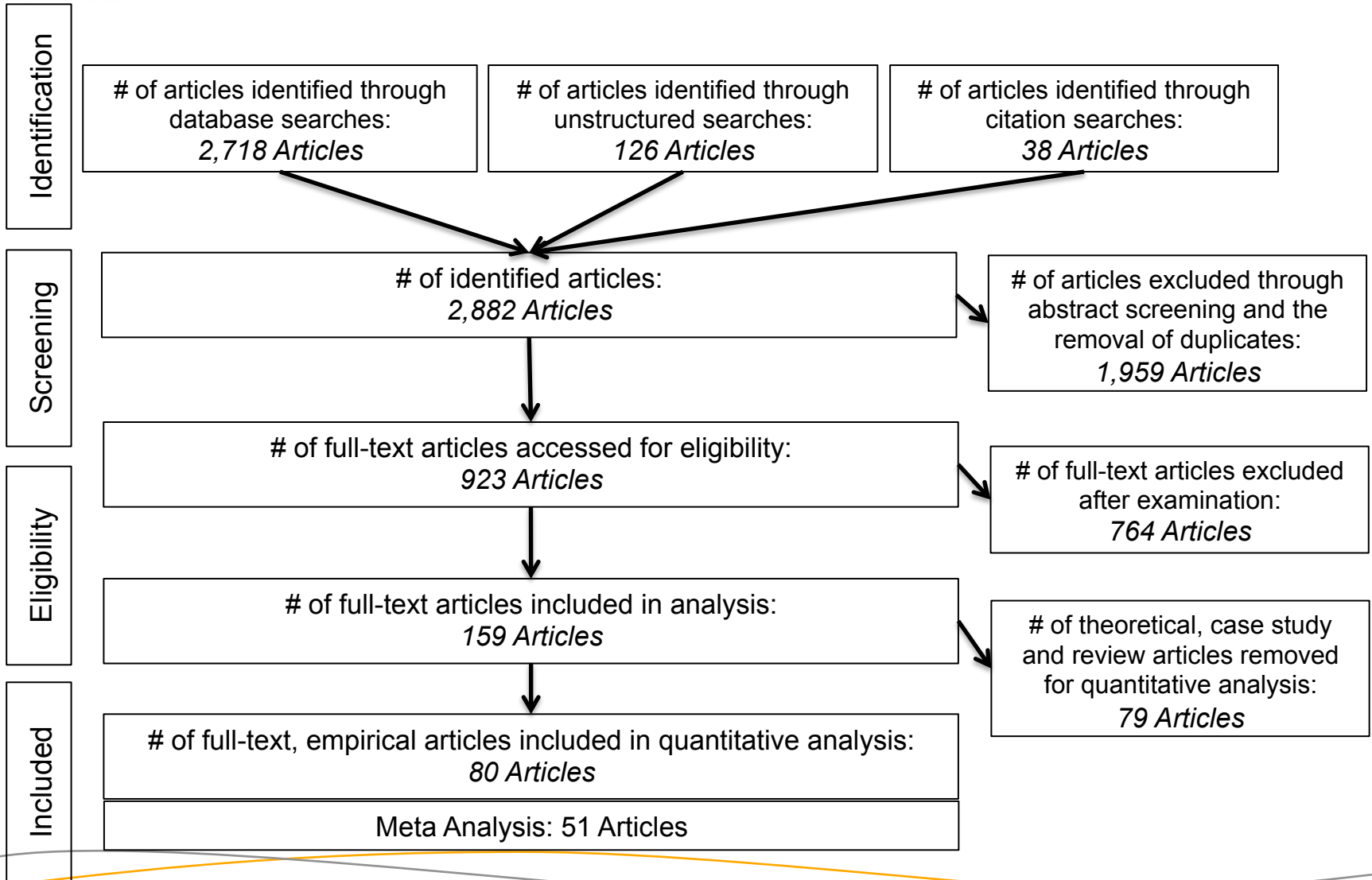
Followed procedure as suggested by Denyer & Tranfield (2009):

1. Define research question
2. Searching for studies
3. Selecting studies and collecting data
4. Analysis and synthesis
5. Analyzing studies (and/or undertake meta-analysis)
6. Reporting and using the results

Research framework:

1. Identify articles researching the performance of MFIs across three dimensions:
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Methodology: Systematic Review



Descriptive Results for Quantitative Sample

Variable (N=51)	Mean	Std.	Min	Max
Year published	2011.43	2.70	2005	2015
<i>Database source</i>				
Database, MIX Market	68.6%	-	0	1
Database, Ratings Data	13.7%	-	0	1
Database, Other	17.6%	-	0	1
# of MFIs (under study)	329.57	354.23	5	1499
# of countries (under study)	46.84	36.11	1	109
# of years (under study)	4.90	3.46	1	13
<i>Variable categories used in studies</i>				
# of institutional variables	3.10	1.71	0	7
# of financing structure variables	0.47	0.72	0	3
Social Performance # of outreach variables	2.53	1.02	1	5
# of macroeconomic variables	0.57	1.01	0	4
Financial Performance # of financial performance variables	1.14	0.93	0	3
# of revenue variables	0.49	0.57	0	2
# of expense variables	0.65	0.95	0	4
# of efficiency variables	0.86	0.91	0	4
# of productivity variables	0.43	0.60	0	2
# of risk and liquidity variables	0.55	0.64	0	2
# of governance variables	0.18	0.81	0	5

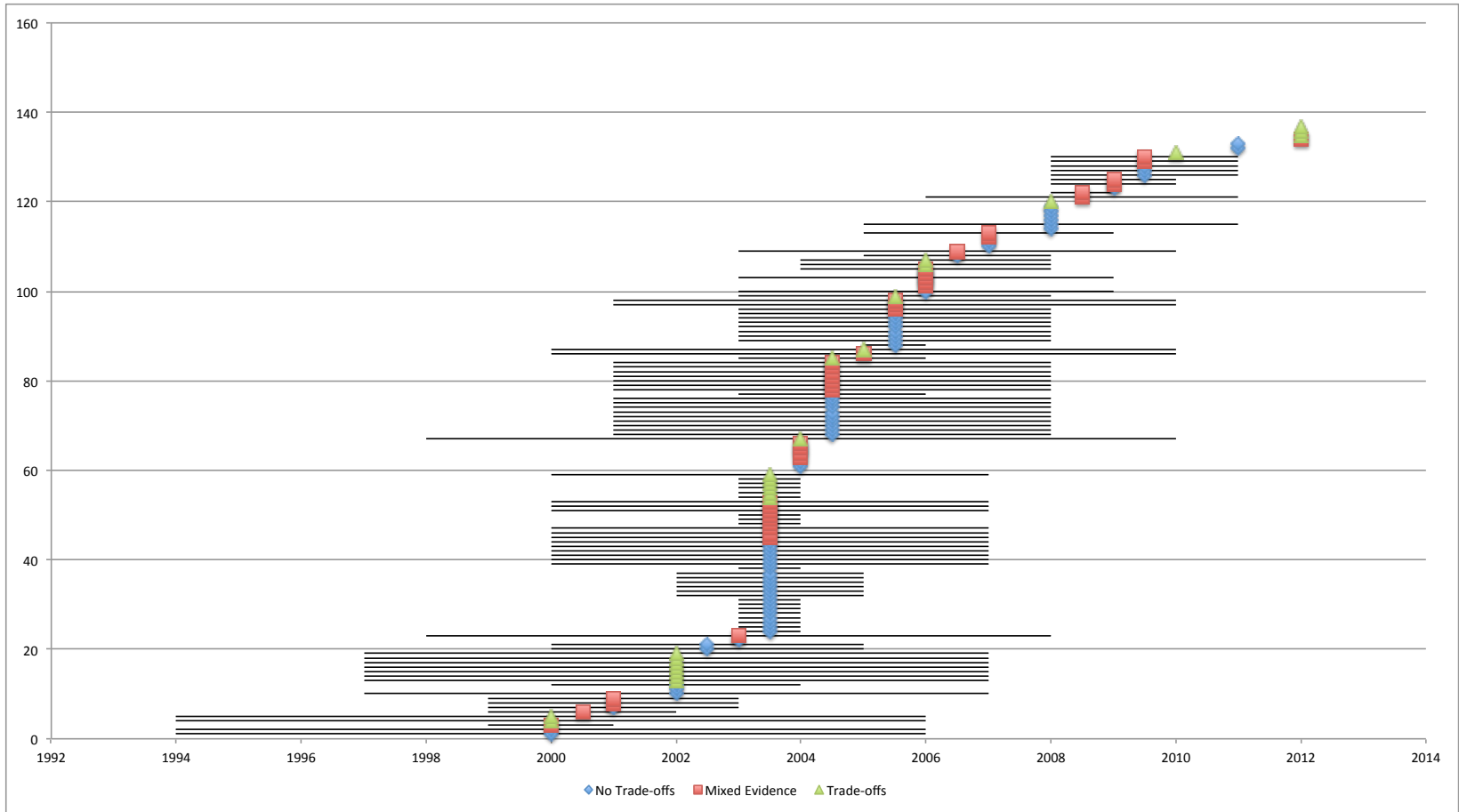
Notes: Variable categories provided by Mix Market Benchmarks.

Trade-offs by Indicators

	# borrowers	Borrower growth	# of depositors	# total clients	# of women borrowers	% of women borrowers	Women focus	Women clients above average	# of MFI services	Gross loan portfolio	Voluntary deposits	ALS	ALS/GNI	Interest rate	Poverty index	Fin. Perf. Total
ROA	6 / 0%	-	1 / 0%	-	1 / 100%	10 / 0%	1 / 0%	1 / 0%	1 / 0%	2 / 50%	-	2 / 0%	16 / 31.3%	-	-	41 / 18.1%
ROE	3 / 0%	-	-	-	-	6 / 0%	-	-	-	1 / 0%	-	-	6 / 33.3%	-	-	16 / 8.3%
OSS	9 / 33.3%	-	1 / 0%	-	-	7 / 0%	-	-	2 / 0%	5 / 0%	1 / 0%	-	14 / 57.1%	-	5 / 0%	44 / 11.3%
FSS	2 / 50%	-	-	-	-	6 / 16.7%	-	-	-	2 / 0%	-	-	8 / 50%	2 / 0%	5 / 80%	25 / 32.8%
Total expense	5 / 20%	-	-	1 / 100%	1 / 100%	9 / 77.8%	-	-	-	2 / 50%	1 / 100%	-	14 / 92.9%	-	-	33 / 77.2%
Operating expense	1 / 0%	-	-	-	1 / 0%	-	-	-	-	3 / 0%	-	-	3 / 33.3%	-	-	8 / 8.3%
Profit margin	1 / 0%	-	-	-	-	1 / 0%	1 / 0%	-	1 / 0%	2 / 50%	-	-	3 / 33.3%	-	-	9 / 13.9%
Yield	1 / 0%	-	-	-	-	1 / 0%	-	-	-	-	-	-	1 / 0%	-	-	3 / 0%
Total exp ratio	-	-	-	-	-	-	-	-	-	-	-	-	4 / 25%	-	-	4 / 25%
Operating exp ratio	6 / 50%	-	1 / 0%	-	-	4 / 25%	2 / 50%	1 / 100%	-	2 / 0%	-	-	12 / 50%	-	4 / 0%	32 / 34.4%
Personnel exp ratio	-	-	-	-	-	1 / 100%	1 / 100%	1 / 100%	-	-	-	-	-	-	-	3 / 100%
Cost per borrower	6 / 0%	-	1 / 0%	-	-	4 / 25%	1 / 0%	-	-	2 / 0%	-	-	10 / 30%	-	-	24 / 9.2%
Cost per loan	1 / 0%	-	-	-	-	2 / 0%	-	-	-	-	-	-	1 / 0%	-	-	4 / 0%
Borrowers per staff	4 / 25%	-	1 / 0%	1 / 100%	-	3 / 0%	-	-	-	3 / 33.3%	1 / 0%	1 / 100%	10 / 20%	-	-	24 / 34.8%
Loans per LO	1 / 0%	-	-	-	-	-	-	-	-	-	-	-	1 / 100%	-	-	2 / 50%
Personnel allocation	-	-	-	-	-	-	-	-	-	-	-	-	2 / 0%	-	-	2 / 0%
Staff/branch	1 / 0%	-	-	-	-	1 / 0%	-	-	-	1 / 0%	1 / 0%	-	1 / 0%	-	-	5 / 0%
PaR	7 / 14.3%	1 / 100%	-	1 / 0%	-	10 / 0%	3 / 33.3%	-	-	6 / 33.3%	-	-	15 / 6.7%	-	1 / 100%	44 / 36%
Write-off ratio	-	1 / 0%	-	-	-	-	-	-	-	-	-	-	-	-	-	1 / 0%
Social Perf. Totals	54 / 12.8%	2 / 50%	5 / 0%	3 / 66.7%	3 / 66.7%	65 / 17.5%	9 / 30.6%	3 / 66.7%	4 / 0%	31 / 18.1%	4 / 25%	3 / 50%	121 / 33.1%	2 / 0%	15 / 45%	

Notes: Observations correspond to regression equations from selected articles (137 regressions reporting details on 324 possible trade-offs). Each cell reports the number of trade-offs investigated and the percentage of the trade-offs confirmed. Totals for both outreach indicators and financial performance indicators are also reported.

Trade-offs by Time Period Under Study



Notes: Chart is ordered by time period under observation, as measured by the average year of sample period. Error bars indicate the length of time under observation. Three data series represent articles that find mixed evidence, no evidence or strong evidence of trade-offs.

Trade-offs by Data Source

	MIX	Ratings data	Self-collected	Total
Mixed	23	8	4	35
No trade-off	20	5	0	25
Trade-off	8	5	4	17
Total	51	18	8	77

Notes: N=77. Table provides evidence of trade-offs by data source. Three data sources (MIX, Ratings data and self-collected datasets) are identified. For all data sources, roughly 50% of articles find mixed evidence. However, ratings data articles find strong evidence of trade-offs, on average, 28% of the time while MIX studies only find strong trade-off evidence 16% of the time.

Database	Average % of trade-offs found
Mix	32%
Ratings Data	47%
Self-collected	64%

Notes: N=54. Table provides evidence of trade-offs by data source. For studies where trade-offs between individual indicators are observed we quantify the trade-offs as previously detailed and then average the percentage of trade-offs by each data source. Again, we see that MIX data is less likely to confirm the existence of trade-offs as compared to Ratings data or self-collected data sources.

Trade-off Probit

VARIABLES	(1) Tradeoff dummy	
Pre_fin_crisis_dummy	-0.609*	
	(0.339)	
Database_dummy	-0.431*	
	(0.242)	
BreadthDummy	-0.484	
	(0.300)	
DepthDummy	-0.151	
	(0.358)	
FPdummy	0.678**	
	(0.294)	
EFCYdummy	0.603**	
	(0.275)	
PRODDummy	-0.00997	
	(0.606)	
Riskdummy	0.196	
	(0.338)	
Constant	0.485	LR chi2(8) = 18.26
	(0.664)	Prob > chi2 = 0.0194
Observations	136	Pseudo R2 = 0.0969

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. Pre_fin_crisis_dummy takes a value of 1 if the complete timeframe under study is before 2008 and 0 otherwise. Database_dummy takes a value of 1 if the observation uses Mix Market database and 0 otherwise. Breadth dummy takes a value of 1 if breadth of outreach indicators are present in the observation (NAB, OLP, Deposits) and 0 otherwise. Depth dummy takes a value of 1 if depth of outreach indicators are present in the observation (ALS, ALS/GNIpc %Fem).

Limitations & Next Steps

- Limitations:
 - Article is biased towards articles published in academic journals
 - The selection of articles and classifications applied to the final sample is disposed to subjective evaluation
 - No controls for robustness checks by authored articles al
- Next steps:
 - Move towards meta-analysis
 - Estimate probit models explaining the probability of a trade-off in terms of variables (mainly dummies for the variables used in the trade-off, for the mid-point of the time period, the datasource and a discrete variable for the length of the period).