

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Martin Strobl
Advisor:	Karel Janda
Title of the thesis:	Group lending with peer monitoring: A theoretical model of microcredit

OVERALL ASSESSMENT (provided in English, Czech, or Slovak):

Please provide your assessment of each of the following four categories. The minimum length of the report is 300 words.

This is a report of advisor, provided by Karel Janda.

Contribution: The Master Thesis of Martin Strobl provides a nice and thoughtfully prepared and executed extension to the paper van Tassel (1999). Students shows ability to identify interesting theoretical problems, to understand the relevant theoretical papers, to replicate the results of good quality theoretical papers and to provide meaningful original extensions to them.

Detailed remarks:

p.14 line 2: replace simulates by models.

p. 15, second paragraph. I do not consider this paragraph true/well formulated. Martin Strobl wants to explain here why lender offers joint liability contracts, but the explanation is not correct. Given the setting of the model, any type of agent provides non-negative expected profit to lender in the complete information setting. Also in incomplete information setting the contract set provides for a contract to be taken by low-ability borrower and for contract to be taken by high-ability borrower. So the screening serves to pool high-ability borrowers into joint liability group lending, while the low-ability borrowers are separated into individual liability lending segment. The Assumption (iii) mentioned there serves to eliminate a possibility of profitable deviation by a lender who would be offering a pooling contract both to low and high ability borrowers. Assumption (iii) does not preclude an existence for individual liability contract designed for low ability borrower such that lender does not have negative expected profit on this contract.

The problem with not sufficiently clear statements like this in the second paragraph on p. 15, is happening on many places in the thesis. A lot of statements in the thesis are kind of „half true“ (something being right in them, something being wrong).

p. 16, last paragraph. We may assume sigma being less or equal to 1.

p. 17 In equation (4.2) wrong notation is used. There should be $\max\{f(L)-(1+r)L- \sigma L_{upper_bar}, 0\}$, i.e. we do not max over L here, we take $\max\{a,b\}$. Here a and b mean two real numbers and max operator just chooses the max out of the set of these two numbers $\{a, b\}$.

p. 17 Last but one paragraph. I do not see why zero reservation income should imply that we should not model utility, risk aversion etc.

p. 19 Section 4.2. Some literature references to costly state verification and peer monitoring are missing. Given that this costly state verification is one of the main extensions of van Tassel (1999), Martin Strobl should discuss the treatment of costly state verification and peer monitoring in the relevant microfinance theoretical literature.

p. 20, first paragraph. Who pays back to bank? How bank decides if receiving contradictory reports?

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Martin Strobl
Advisor:	Karel Janda
Title of the thesis:	Group lending with peer monitoring: A theoretical model of microcredit

Second paragraph: „We assume unsuccessful agents to report always sincerely even in the absence of punishment threat as insincere reporting might hurt their social role.“ If an agent is unsuccessful, he has no money. He is not able to repay. So he cannot report success if he is unsuccessful. I do not see here any need for discussing social role of agents here.

Does the assumption that unsuccessful agent is always reporting truth mean that he reports truth just about himself (which is obvious, given my previous remark), or does it mean that he reports truth on everybody else too? If this is truthfulness about projects of other people, why failed agents should be truthful by assumption and successful agents should not?

Second paragraph. Does the „loss of any profit“ as a punishment apply just to monitored agent or to all agents?

p. 21, last paragraph in section 4.2 „cost of monitoring is entirely borne by the bank“ However the bank has to reflect this cost in an increase in repayment r . Bank has to pass the cost of monitoring to the borrower in order for bank not to suffer a loss (negative profit). Therefore when we add the cost of monitoring, the expected income of the borrower should decrease (because of monitoring induced higher interest rate).

For the whole section 4.2 (Costly state verification and peer monitoring), it seems to me that the only contribution of this section to the rest of the paper is just to redefine opportunity cost of capital for lender γ . Analytically, in the rest of paper, we will just have new $\gamma^* = \gamma + \text{fixed cost of state verification and peer monitoring}$. So we may just as well instead of all the discussion in this section 4.2 say, that we increase the opportunity cost of capital for lender by this fixed scalar caused by C.S.V and peer monitoring. Given this, we may just as well not to talk about this C.S.V and peer monitoring at all and nothing will change in the paper. It looked like that there exists meaningful comparison of opportunity cost of capital and C.S.V and peer monitoring cost in Propositions 2, 4 and 6. But I think it was just because of a small algebraic error. See my remarks on Propositions 2, 4 and 6 further in my report.

Given this non-essential nature of the section 4.2, there is not really a need for the section 4.1 Generalization of Group Size. This section 4.1 was just needed to support the argument on number of borrowers (group size) in section 4.2. There is nothing in the rest of the diploma thesis which would require more than 2 borrowers or which would depend on number of borrowers.

p. 21 I would suggest to add „under asymmetric information.“ at the end of last line on page 21.

p. 22 errase „be“ on line 5.

p. 23, first line after equation. I think that statement „It cannot be completely ruled out that there exists a joint liability equilibrium.“ is not true. I think that joint liability contract cannot be offered in equilibrium. This is just my conjecture, I am not providing any proof about possibility or impossibility of joint liability equilibrium. This conjecture of mine is supported by the intuitive argument by Martin Strobl on page 23.

p.23, the paragraph before Prop. 2: Why rational profit maximizing lender would do what is suggested in this paragraph? Why would he ignore this information?

p. 23 Proposition 2: I think it is wrong, because I think in equation (4.12) there is a mistake. Instead of minus there should be plus. Firstly it just follows from the algebra, secondly, as I already mentioned in

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Martin Strobl
Advisor:	Karel Janda
Title of the thesis:	Group lending with peer monitoring: A theoretical model of microcredit

my comment on the section 4.2 (Costly state verification and peer monitoring), both γ and m has the same nature as costs of lending to the lender.

The structure of the sections 4.3.1 and 4.3.2 is based on taking section 4.3.1 Complete information Prop. 1 and Prop. 2 with their proofs and repeating them with some small modifications (leading to extensive cut-and-paste in writing the proofs for Props. 3, 4, 5, 6) once for individual lending (Prop. 3 and 4) and once more for peer monitoring (Prop. 5. and 6).

If the Proposition 2 is wrong, then Propositions 4 and 6 are also wrong, since they are just adjustments of Prop. 2 (with the same proof being used with just small changes in notation based on different probabilities and different expression for cost of monitoring).

p. 24 for 2nd and 3rd s.t. conditions: We need to show that there exist positive L such that 3rd s.t. condition holds as strict inequality. I.e. we need to show that both 2nd and 3rd conditions are not binding. Once we show this (if follows from properties of $f(L)$: just draw a picture of $f(L)$ and a straight line $(1+r)L$, both starting from origin, to see how it works) we may obtain first order condition for finding optimal loan size L (the equation 4.12).

In equation (4.12) there should be plus instead of minus. Therefore Prop. 2 is wrong and the whole discussion about $\gamma > m$ is out of place.

p. 25 While reading section on individual lending, I had initially hard time to understand it till I realized that Martin Strobl simply made an assumption that lender is not allowed to use sigma dimension (joint liability) of the contract space. (It was different in the previous section on Complete information. In that section lender did not use sigma dimension because, as I think, in equilibrium no joint contract is offered. However in this section on Incomplete information joint contract would be used in equilibrium. So the restriction to individual lending is just based on assumption of not allowing joint contracts.) Therefore it should be emphasized more that we assume in the whole Individual Lending subsection 4.3.2 that joint lending is not allowed.

Notationally, for both Complete and Incomplete information sections the contract of the form (r, σ) are used. In Complete information section, $\sigma=0$ is endogenously obtained as a solution. In Incomplete information section 4.3.2 $\sigma=0$ is by assumption, not by solution.

p. 25, Proposition 3: should be contract, not contracts, because only one pooling contract is offered. Pooling both low and high ability borrowers.

p. 26 Second line after the end of proof. Typo agents! For the equation 2 lines after this typo, could you please provide a proof for this (relation between r , r_l , r_h)?

p. 26 Proposition 4: It is wrong- see my comments for Prop. 2 (the existence part is still O.K.).

p. 27 Proof. We cannot have both r_l and r in the same problem. (This is just notation comment).

p. 27 Equation 4.14 Should be +, not - in the numerator.

p. 28 Analytically, all the talks about CSV costs m and slightly more complicated CSV costs with peer monitoring mean just simply add a scalar to opportunity cost γ .

p. 29 Proposition 6. It is wrong- see my comments for Prop. 2 (the existence part is still O.K.).

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Martin Strobl
Advisor:	Karel Janda
Title of the thesis:	Group lending with peer monitoring: A theoretical model of microcredit

p. 30 Equation 4.17 Should be +, not – in the numerator. Given the mistake in the sign in (4.17), the discussion in the paragraph after the proof does not make sense.

p. 31. (4.22) does not satisfy (4.19).

p. 32 4th line above IC conditions: typo, should be and . Next line, typo, no the there.

p.32 In (4.32) should be f_2 instead of f_1 .

p. 33 The line before (4.38). Since both members of group are h-types, for s different from 1, one of the group members is with $f_1(\cdot)$, the other with $f_2(\cdot)$. The whole concept of s ratio parameter should be carefully explained since it is presented as one of main original extensions of van Tassel (1999). In particular, where are inequalities (4.38) and (4.39) coming from? Detailed derivation and explanation is needed here. Just allusion to symmetry is not enough. Also it looks like that if we consider two members of a group, for one s works, for the other $1/s$ works.

p. 34 First three lines after the Figure are not proved here. My understanding of the logic of the contract menu offered here is that the menu should be complete in the sense, that there is contract offered for each possible type (and subtype) which could show up. So the I-types should obtain their individual lending contract. Remember, the setting of the problems is such that we do not assume that I-types are automatically inefficient (we do not assume that the I-projects have higher costs than benefits).

p. 34 The line before equation (4.41) does the „per one dollar“ mean sum of $L_i=1$?

p. 34 Equation (4.42) does \bar{r} here (and possible elsewhere in the paper) refer to some specific interest rate?

p. 39 Equation (4.49) does not satisfy (4.46).

p. 40 Since the equation (4.55) – (4.62) are just cutted and pasted from p. 32, there is again wrong index in (4.60).

Methods: The student properly uses the tools being used in the relevant literature. The information asymmetry and contract theory concepts used in the formulation of the models, in the statements of lemmas and propositions and in their proof as well as in the discussion are the ones being used in the related literature. The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.

Literature:

The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way. While the thesis is mainly based on a rather dated paper van Tassel (1999), the student takes care to look at a more (and most) recent literature too. Therefore I consider the list of used and reviewed literature to be appropriate for this thesis. Naturally the literature is based mainly on Journal of Development Economics, which is fully appropriate for this topic. The diploma thesis literature looks like van Tassel (1999) extended by Martin Strobl without much references to literature, which is dealing with similar extensions, with exception to sequential financing, which is mentioned in the literature review – i.e. when some extensions of van Tassel (1999) are done,

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Martin Strobl
Advisor:	Karel Janda
Title of the thesis:	Group lending with peer monitoring: A theoretical model of microcredit

the relevant literature dealing with these types of extensions should be mentioned and the new contribution should be compared to the literature.

Manuscript form:

The thesis is well written and well structured. The student uses appropriate language and style. The formal attributes of the List of References, significantly improved over the iterations of the paper. Currently only a few minor omissions remained:

Attanasio, O., B. Augsburg, R. De Haas, E. Fitzsimons, and H. Harmgart (2014).

Group lending or individual lending? Evidence from a randomised field experiment in Mongolia. Technical report. Should be updated to Attanasio, Orazio, Britta Augsburg, Ralph De Haas, Emla Fitzsimons, and Heike Harmgart. 2015. "The impacts of microfinance: Evidence from joint-liability lending in Mongolia." *American Economic Journal: Applied Economics*, 7(1): 90–122.

Beck, T. and P. Behr (2017). Individual versus Village Lending: Evidence from Montenegro. *Review of Development Economics*. Given that this is still early view paper (volume, issue, pages are not assigned yet), this should be indicated by putting „forthcoming“ in the bibliography.

Becker, G. S. and G. S. Becker (2009). *A Treatise on the Family*. Harvard University Press. There are too many Beckers here.

The „recommended citation“ for Brau, J. C. and G. M. Woller (2004). *Microfinance: A comprehensive review of the existing literature*. *The Journal of Entrepreneurial Finance* 9 (1), 1.

is

Brau, James C. and Woller, Gary M. (2004) "Microfinance: A Comprehensive Review of the Existing Literature," *Journal of Entrepreneurial Finance and Business Ventures*: Vol. 9: Iss. 1, pp. 1-28.

Varian, H. R. (1990). Monitoring agents with other agents. *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, 153-174. The journal abbreviation and German journal name are not needed here, but volume/issue information is missing here.

I recommend the thesis for defense.

In the case of successful defense, I recommend the grade „excellent“ (grade 1).

References:

Van Tassel, E. (1999). Group lending under asymmetric information. *Journal of Development Economics* 60 (1), 3-25.

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	22
<i>Methods</i> (max. 30 points)	24
<i>Literature</i> (max. 20 points)	19

Report on Bachelor / Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University in Prague

Student:	Martin Strobl
Advisor:	Karel Janda
Title of the thesis:	Group lending with peer monitoring: A theoretical model of microcredit

<i>Manuscript Form</i> (max. 20 points)	19
TOTAL POINTS (max. 100 points)	84
GRADE (1 – 2 – 3 – 4)	1

NAME OF THE REFEREE: Karel Janda
DATE OF EVALUATION: June 11, 2017

Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

Strong Average Weak
20 10 0

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

Strong Average Weak
30 15 0

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

Strong Average Weak
30 15 0

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Strong Average Weak
20 10 0

Overall grading:

TOTAL POINTS	GRADE		
81 – 100	1	= excellent	= výborně
61 – 80	2	= good	= velmi dobře
41 – 60	3	= satisfactory	= dobře
0 – 40	4	= fail	= nedoporučuji k obhajobě