

# THE IMPORTANCE OF OSTROM'S DESIGN PRINCIPLES: Youth Group Performance in Northern Ethiopia

<sup>1</sup>Stein Holden and <sup>1,2</sup>Mesfin Tilahun

<sup>1</sup>School of Economics and Business/  
Centre for Land Tenure Studies

<sup>2</sup>Mekelle University, Department of Economics

Emails: [stein.holden@nmbu.no](mailto:stein.holden@nmbu.no); [mesfin.tilahun.gelaye@nmbu.no](mailto:mesfin.tilahun.gelaye@nmbu.no)

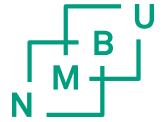
# Introduction

- **Youth unemployment and migration are growing challenges** that need more political attention in many countries, particularly countries with rapid population growth and economic transformation.
- **Proactively mobilizing the youth as a resource in the creation of sustainable livelihoods** can potentially be a win-win-win solution that Ethiopia is currently attempting with its **new youth employment strategy of allocating rehabilitated communal lands to youth groups**

# Hardin versus Ostrom

- One basic question is whether allocation of rehabilitated forests and grazing lands to youth groups has a high risk of ending as a “Tragedy of the Commons” (Hardin 1968)
- Or whether such groups have a high probability of being able to cooperate and establish sustainable livelihoods and behave more in line with the DPs of Elinor Ostrom
- Can lessons be learnt from the degree of compliance and the early performance of youth groups?

# Ostrom's Design Principles



DP No	Short name	Explanation
1	<b>Clearly defined borders</b>	Individuals with rights to the common pool resource (CPR) must be clearly defined and the same applies to the borders of the CPR Ostrom (2010): 1a. User boundaries, 1b. Resource boundaries
2	<b>Matching appropriation and provision rules</b>	There must be a balance between appropriation rules (benefit sharing rules), provision rules (required contributions by group members) and this must match the CPR Ostrom (2010): 2a. Congruence with local conditions, 2b. Appropriation and provision
3	<b>Collective choice arrangements</b>	There must be an inclusive decision-making process related to adjustment of rules for CPR utilization and management
4	<b>Monitoring</b>	There must be an accountable monitoring system in place that monitors the CPR management and ensures its protection Ostrom (2010): 4a. Monitoring users, 4b. Monitoring the resource.
5	<b>Graduated sanctions</b>	Appropriators who violate the rules for CPR management or extraction face graduated sanctions depending on the seriousness of the violation or repetition of violations
6	<b>Conflict resolution mechanism</b>	Appropriators have a good and efficient (low-cost) system for conflict resolution among themselves or between appropriators and outsiders
7	<b>Recognized rights to organize</b>	Government bodies allow groups to self-organize by forming own internal rules of conduct
8	<b>Nested enterprises</b>	Appropriation, provision, monitoring, enforcement, conflict resolution, and government activities are organized in multiple layers of nested enterprises

# Objectives

- A) This study investigates the *extent to which the newly formed youth groups in northern Ethiopia comply with Ostrom's Design Principles the way they are organized*
- B) Assess *how their compliance with the Design Principles is correlated with a number of early performance indicators for the youth groups in terms of their stability, trust and overall performance.*

# Background: Ethiopia

- Population: 103 million
- >80% live in rural areas
- Population growth: 2.6%
- The **median age** in Ethiopia is **18.9 years**
- Rate of **youth unemployment, officially estimated at more than 50%**
- One of the poorest countries
- In 2014/15 the world's fastest growing economy, growth of 10.2%
- 2015-16 the worst drought in 30 years, with close to 20 million people in need of food aid

# Our youth research



[www.elsevier.com/locate/worlddev](http://www.elsevier.com/locate/worlddev)



CrossMark

*World Development* Vol. 64, pp. 259–272, 2014  
0305-750X/© 2014 The Authors. Published by Elsevier Ltd.  
This is an open access article under the CC BY-NC-SA license  
(<http://creativecommons.org/licenses/by-nc-sa/3.0/>).

<http://dx.doi.org/10.1016/j.worlddev.2014.06.013>

## Are Rural Youth in Ethiopia Abandoning Agriculture?

SOSINA BEZU and STEIN HOLDEN\*

*Norwegian University of Life Sciences, Aas, Norway*

- Rapid growth in landless youth in rural areas
- Accelerating youth migration: Rural-urban & international
- Bezu, S. and Holden, S.T. (2014). [Rural-urban Youth Migration and Informal Self-Employment in Ethiopia. CLTS Report No. 1/2014](#). Centre for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway
- Bezu, S. and Holden, S. T. (2015). [Street based self-employment: A poverty trap or a stepping stone for migrant youth in Africa? CLTS Working Paper No. 4/2015](#). Centre for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.

# Group formation & characteristics

- New Political-social experiment, since 2011:
  - ***strategy of allocating rehabilitated communal lands to youth groups***
- Started in Tigray Region, expanded to other regions
- Groups organized as **local cooperative organizations** based on cooperative law
  - Elect a **board** of five persons
  - **Business plan** required
  - Subject to **Regular auditing** of accounts
- **Groups self-organize and develop their own bylaw**



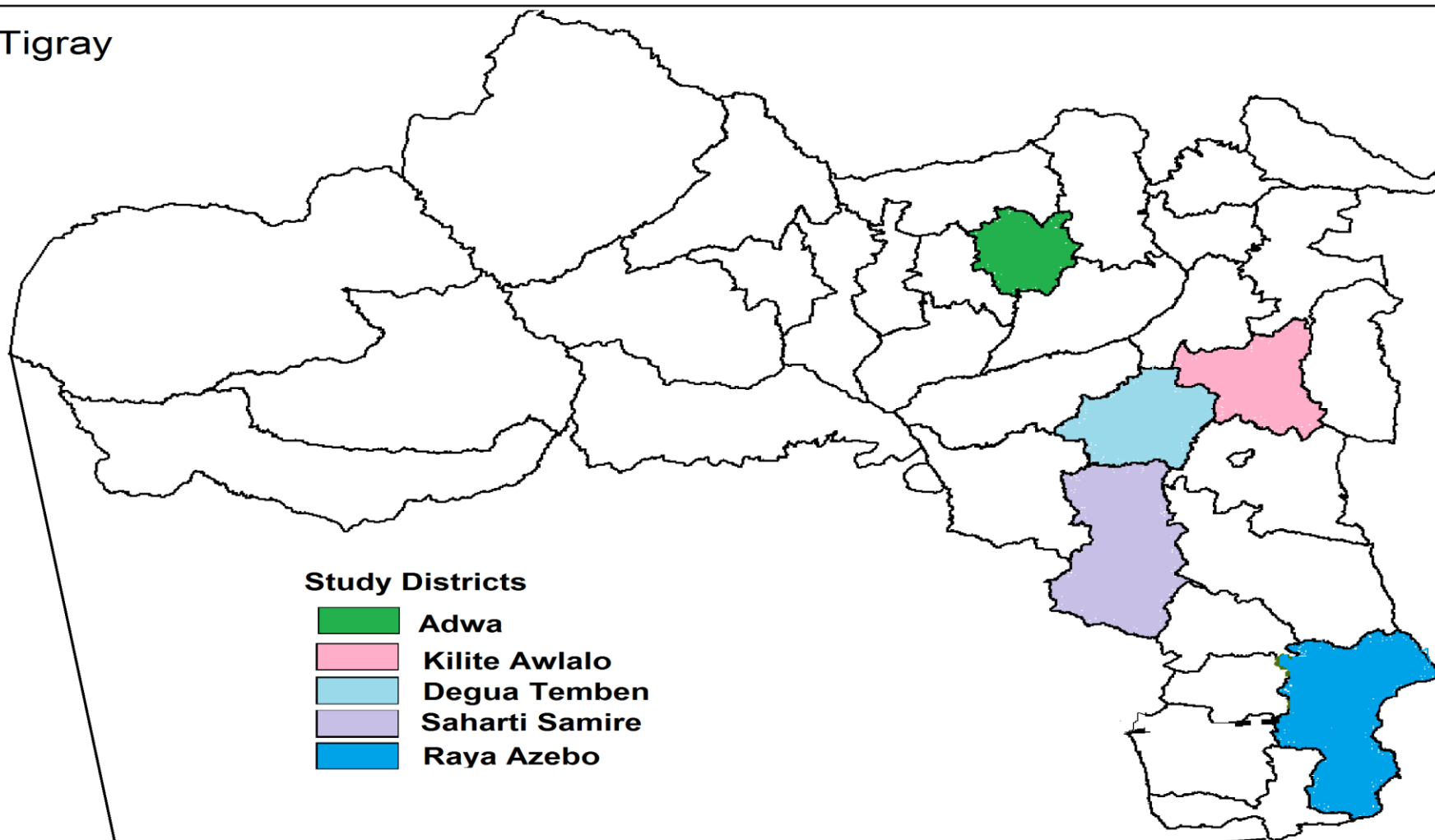
# Group characteristics

- Group size: 10-20 youth from the tabia (municipality)
- Mostly self-selection into groups
- Land demarcation and allocation by local administrations
- Group required to protect the land area
- Alternative **business models (main production activity) defined by administrations** (based on feasibility/resource base)

# Data: Our study

- **Census of 742 youth groups** in 5 districts in Tigray region
- Interviews of all group leaders
- Survey + experiments with 1138 youth group members in 120 youth groups
- Property rights (group versus individual rights to trees in the pipeline for next year)
- For this paper we use data from the Census only

# Tigray



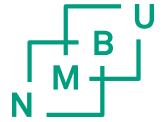
## Study Districts

- Adwa
- Kilite Awlalo
- Degua Temben
- Saharti Samire
- Raya Azebo



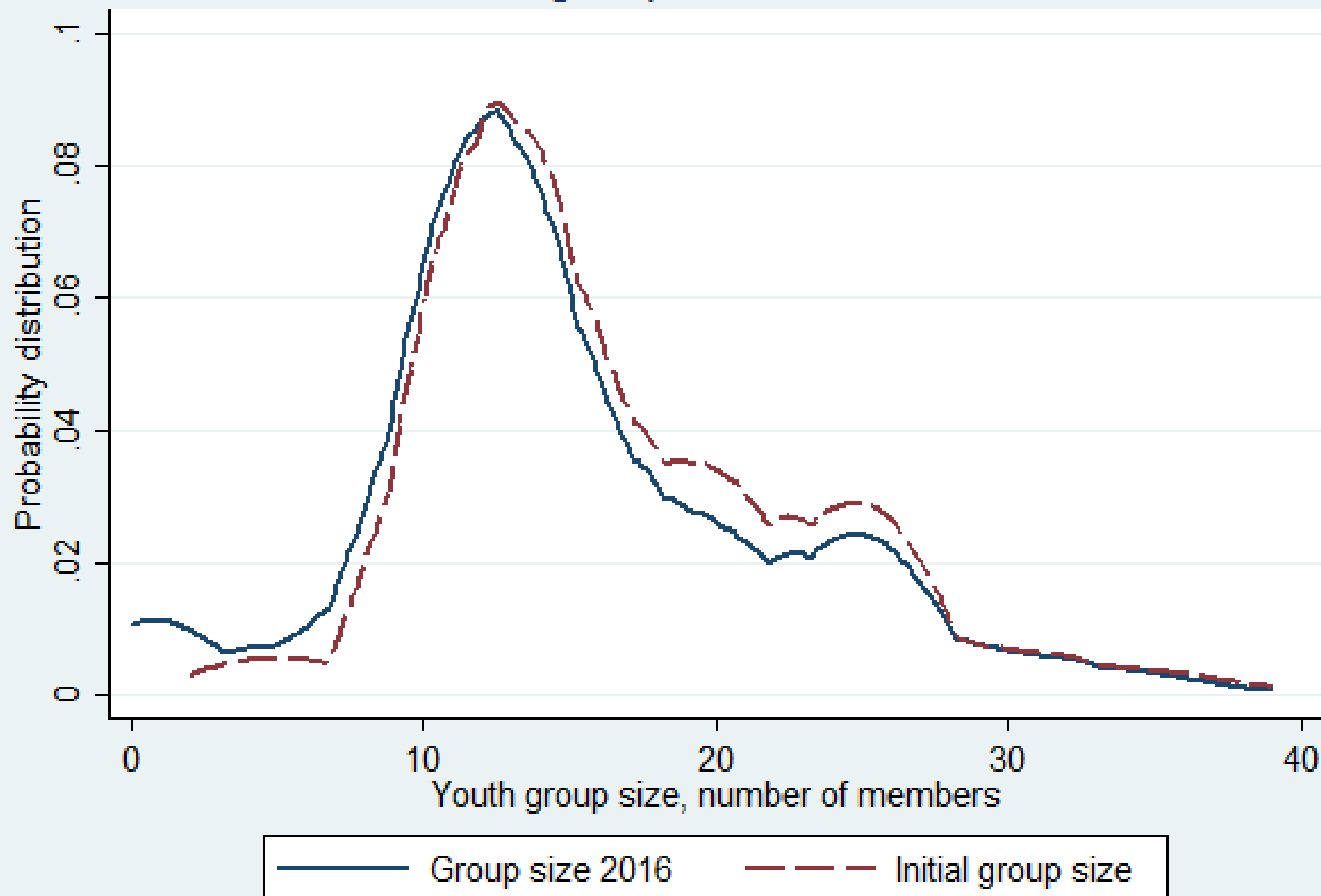
ETHIOPIA

# Groups and land rights

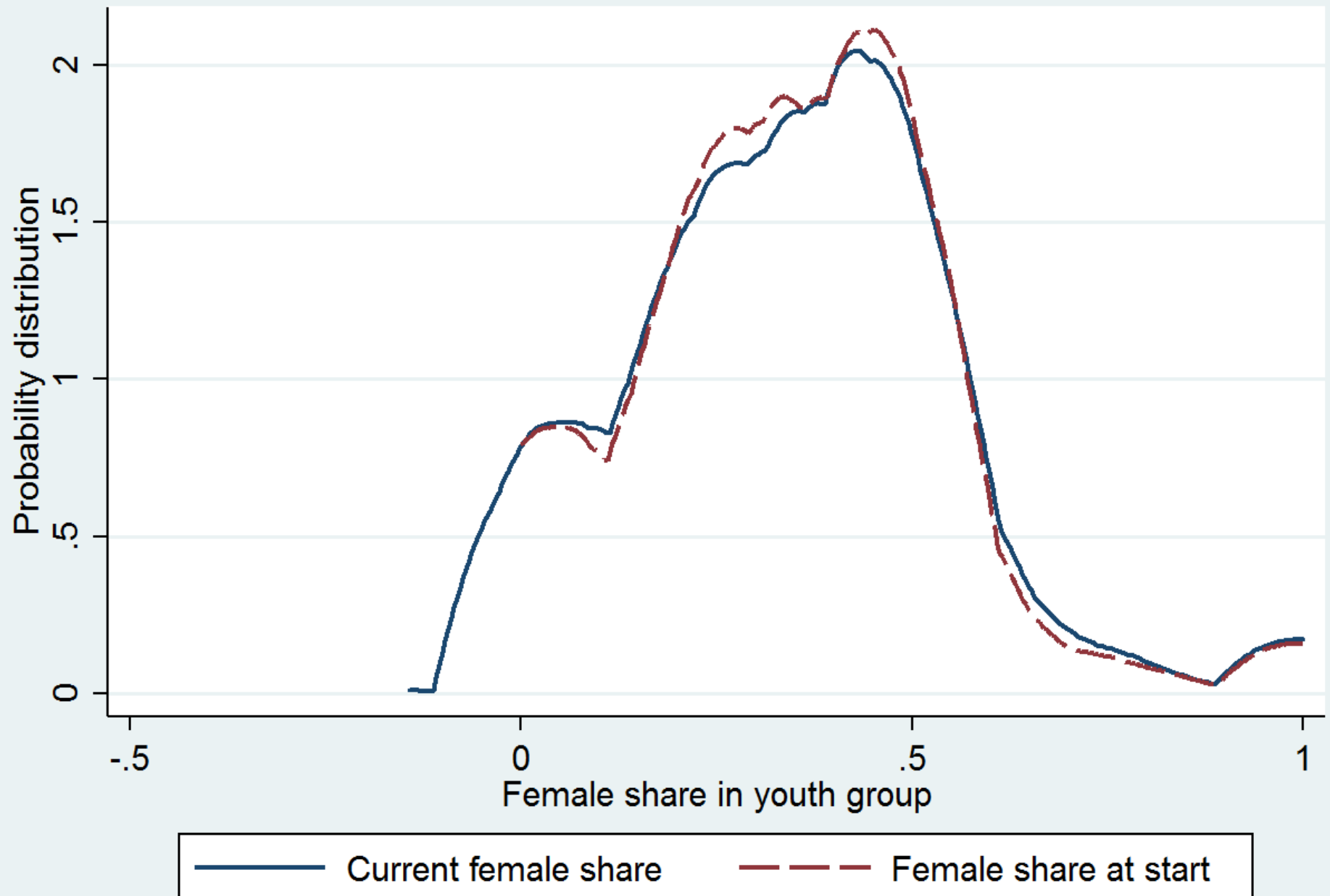


- Group given a **joint initial temporary land right (conditional use right)**
- Based on performance the group is given a letter proof of the group land right after two years
  - The **group is jointly responsible for protecting its area from illegal extraction** (protected trees)
  - The group is **jointly responsible for investments and sharing of the returns to its investments**
    - **Equal sharing is the dominant practice**
  - Business activity must be compatible with resource conservation

# Youth group size distribution

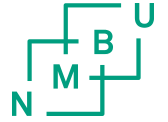


## Gender distribution in youth groups





# Rehabilitated hillside («area enclosure»)





# Mixing exotic trees (eucalyptus) into area enclosures





# Eucalyptus + beehive group



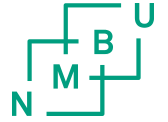


# Rehabilitated land, horticulture group



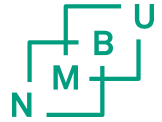


# Rehabilitated land (WB/NTF-funded)



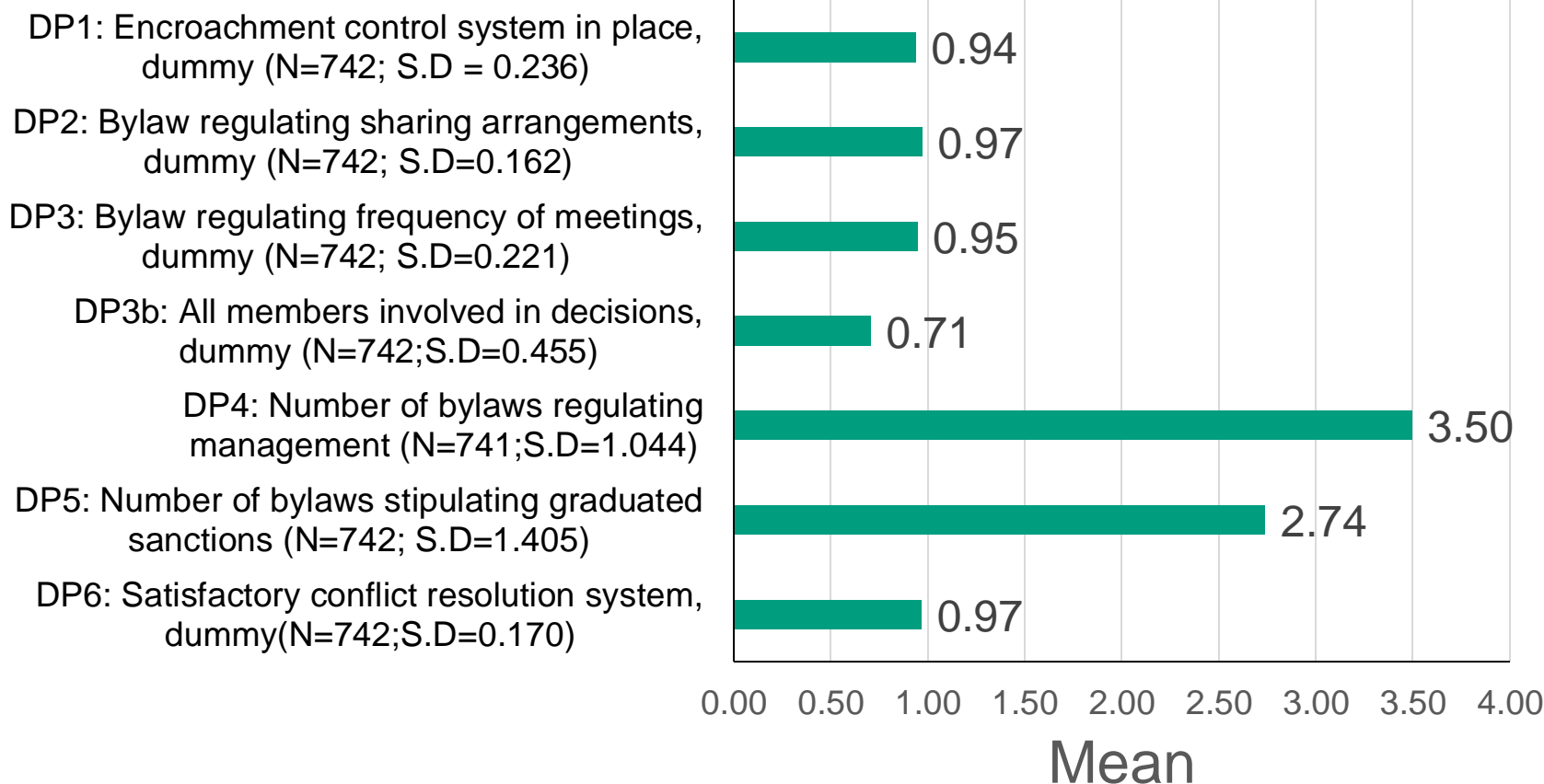


# Ostrom's Design Principles

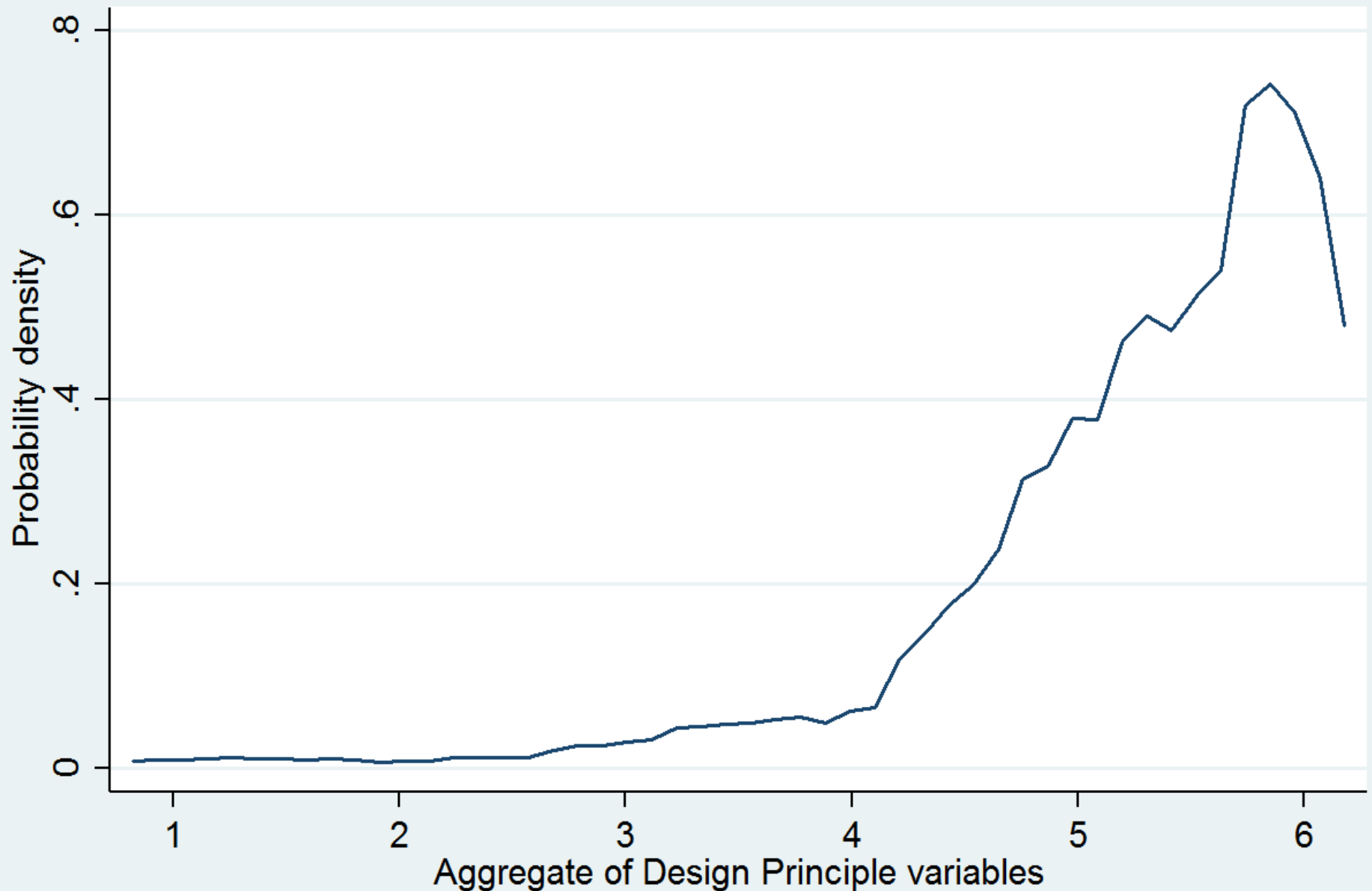


DP No	Short name	Explanation
1	<b>Clearly defined borders</b>	Individuals with rights to the common pool resource (CPR) must be clearly defined and the same applies to the borders of the CPR Ostrom (2010): 1a. User boundaries, 1b. Resource boundaries
2	<b>Matching appropriation and provision rules</b>	There must be a balance between appropriation rules (benefit sharing rules), provision rules (required contributions by group members) and this must match the CPR Ostrom (2010): 2a. Congruence with local conditions, 2b. Appropriation and provision
3	<b>Collective choice arrangements</b>	There must be an inclusive decision-making process related to adjustment of rules for CPR utilization and management
4	<b>Monitoring</b>	There must be an accountable monitoring system in place that monitors the CPR management and ensures its protection Ostrom (2010): 4a. Monitoring users, 4b. Monitoring the resource.
5	<b>Graduated sanctions</b>	Appropriators who violate the rules for CPR management or extraction face graduated sanctions depending on the seriousness of the violation or repetition of violations
6	<b>Conflict resolution mechanism</b>	Appropriators have a good and efficient (low-cost) system for conflict resolution among themselves or between appropriators and outsiders
7	<b>Recognized rights to organize</b>	Government bodies allow groups to self-organize by forming own internal rules of conduct
8	<b>Nested enterprises</b>	Appropriation, provision, monitoring, enforcement, conflict resolution, and government activities are organized in multiple layers of nested enterprises

# Variables used as indicators for Ostrom's Design Principles in regression models



# Degree of compliance with Ostrom's DPs



kernel = epanechnikov, bandwidth = 0.1779

# Group performance indicators I



## How do you (group leader) rate the trust among the group members overall?

Variable code	Response	Freq.	Percent	Cum.
5	Very high	402	54.25	54.25
4	Quite high	306	41.30	95.55
3	Ok	18	2.43	97.98
2	Not so good	12	1.62	99.60
1	Very poor	3	0.40	100.00
	Total	741	100.00	

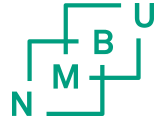
## How do you (group leader) rate the performance of your group?

Variable code	Response	Freq.	Percent	Cum.
5	Very good	259	34.95	34.95
4	Good	287	38.73	73.68
3	Average	138	18.62	92.31
2	Below average	40	5.4	97.71
1	Poor performance	17	2.29	100.00
	Total	741	100.00	

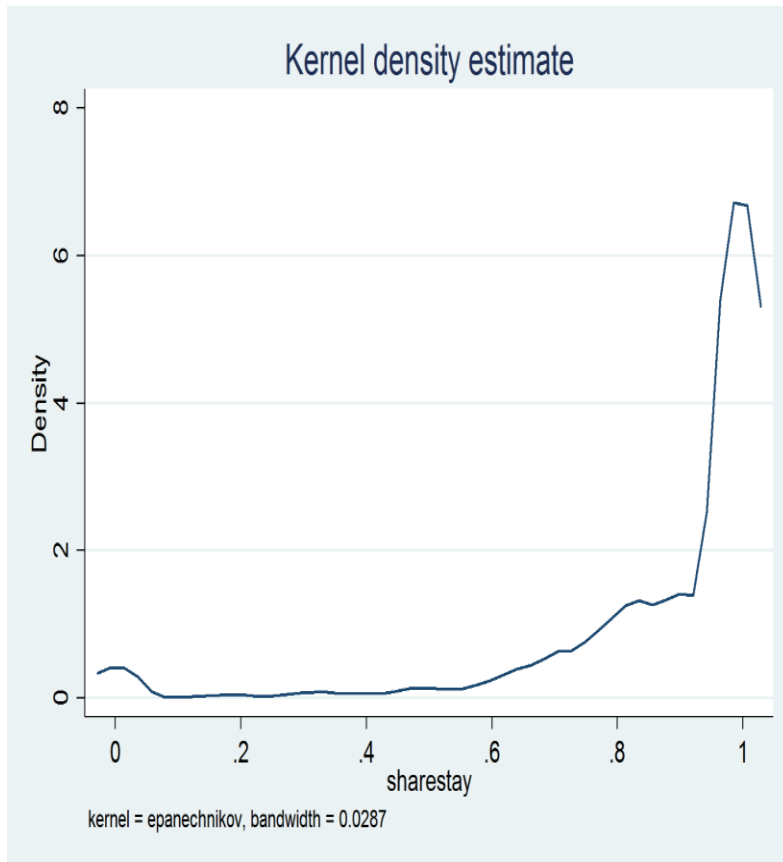
## How is the group rated by the Youth Association?

Variable code	Response	Freq.	Percent	Cum.
5	Very good	83	11.22	11.22
4	Good	307	41.49	52.7
3	Average	295	39.86	92.57
2	Below average	37	5.00	97.57
1	Poor performance	18	2.43	100.00
	Total	740	100.00	

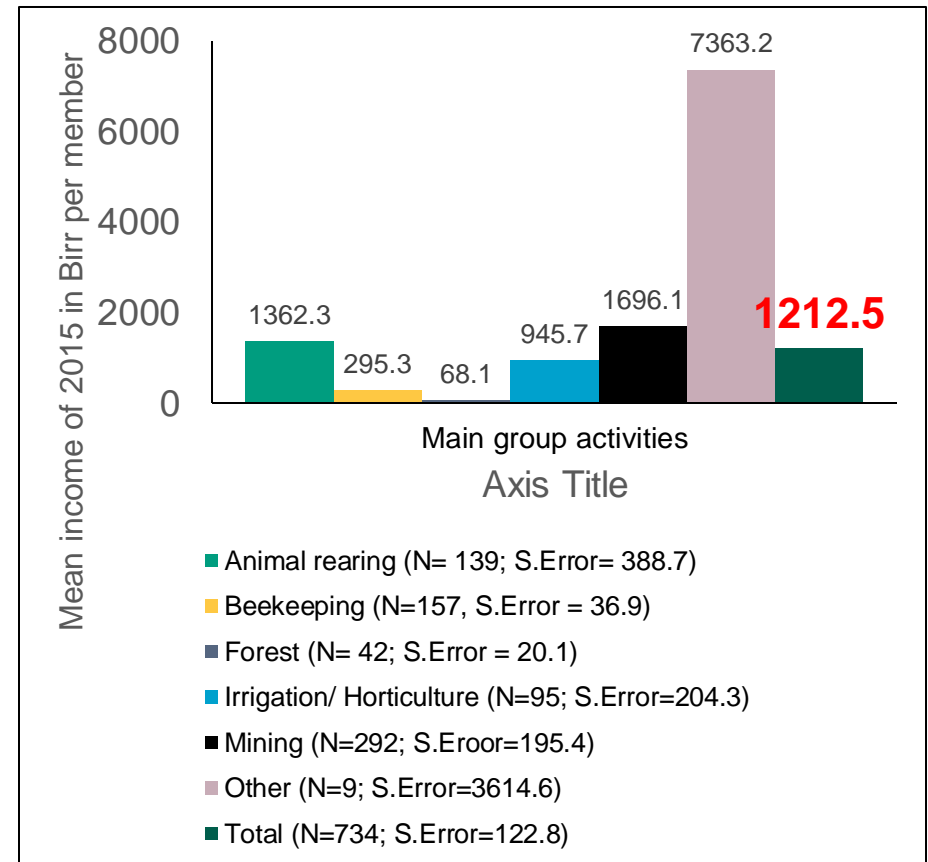
# Group performance indicators II



## *Share of initial group members remaining in 2016*

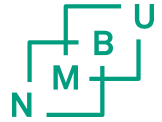


## *Income per member from youth group activity by type of activity in 2015*





# Estimation strategy



- A combination of econometric models:
  - Fractional probit model with robust standard errors is used for the member stay model.
  - Censored tobit with robust standard errors is used in the income per member model.
  - Ordered probit models with robust standard errors are used in the remaining models.
- Endogeneity issues:
  - Assessed the importance for each DP
  - Robustness checks with varying control variables
  - Assessed DPs' correlations with relevant controls
  - Tried IV estimation:
    - Could not find valid strong instruments
    - Could not reject exogeneity of DP index
  - Cautious interpretation of correlations

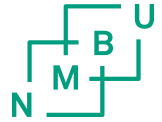
# Parsimonious models



	Member Stay share	Group cooperation	Trust	Own rating	Youth Asso- ciation Rating	Group income per member
DP1: Encroachment control system in place	<b>0.064<sup>c</sup></b>	<b>0.303</b>	<b>0.703<sup>a</sup></b>	<b>0.752<sup>a</sup></b>	<b>0.766<sup>b</sup></b>	<b>5.013<sup>a</sup></b>
DP2: Bylaw regulating sharing arrangements	<b>0.081</b>	<b>-0.330</b>	<b>0.186</b>	<b>0.080</b>	<b>0.122</b>	<b>-0.480</b>
DP3: Bylaw regulating frequency of meetings	<b>0.026</b>	<b>-0.031</b>	<b>-0.236</b>	<b>0.449<sup>d</sup></b>	<b>0.545<sup>c</sup></b>	<b>1.946</b>
DP3b: All members involved in decisions	<b>-0.014</b>	<b>1.020<sup>a</sup></b>	<b>0.443<sup>a</sup></b>	<b>-0.004</b>	<b>-0.326<sup>a</sup></b>	<b>0.398</b>
DP4: Number of bylaws regulating management	<b>-0.016</b>	<b>0.011</b>	<b>0.095</b>	<b>-0.046</b>	<b>-0.029</b>	<b>0.334</b>
DP5: Number of graduated sanctions	<b>0.021<sup>b</sup></b>	<b>0.096<sup>c</sup></b>	<b>0.024</b>	<b>0.001</b>	<b>0.075<sup>c</sup></b>	<b>-0.425<sup>c</sup></b>
DP6: Satisfactory conflict resolution system	<b>0.032</b>	<b>-0.993<sup>a</sup></b>	<b>0.651<sup>c</sup></b>	<b>0.427</b>	<b>0.699<sup>c</sup></b>	<b>1.477</b>
Constant	<b>0.232</b>					<b>-5.884<sup>c</sup></b>
Cut1 constant		<b>0.500</b>	<b>-0.861<sup>d</sup></b>	<b>-0.624</b>	<b>-0.230</b>	
Cut2 constant		<b>0.930<sup>c</sup></b>	<b>-0.190</b>	<b>0.011</b>	<b>0.389</b>	
Cut3 constant			<b>0.176</b>	<b>0.829</b>	<b>1.853<sup>a</sup></b>	
Cut4 constant			<b>1.848<sup>a</sup></b>	<b>1.861<sup>a</sup></b>	<b>3.172<sup>a</sup></b>	
Sigma constant						<b>5.629<sup>a</sup></b>
Wald chi2	<b>19.639</b>	<b>89.559</b>	<b>54.093</b>	<b>23.213</b>	<b>49.572</b>	
Log likelihood						<b>-1554.391</b>
Prob > chi2	<b>0.006</b>	<b>0.000</b>	<b>0.000</b>	<b>0.002</b>	<b>0.000</b>	<b>0.001</b>
Number of observations	<b>741</b>	<b>736</b>	<b>740</b>	<b>740</b>	<b>739</b>	<b>733</b>

Significance levels: d < 0.10, c < 0.05, b < 0.01, a < 0.001.

# Results summary



- For the seven DP measures and six performance indicators: **14 significant effects** or correlations in line with DPs enhancing performance in the parsimonious models
  - Two of those became insignificant when we added the set of controls.
- **Three significant relationships** between the DPs and the performance indicators that had the “**wrong**” sign.
- **Five of the seven DP measures** were significantly correlated with the Youth Association’s ranking of the performance of the groups and **one of these had the “wrong” sign (DP3b - All members involved in decisions)**,
- **Only DP1** was significantly positively correlated with **income of group members** from their joint production activity

# Conclusions

- Our study revealed **a high degree of compliance with Ostrom's Design Principles across the youth groups:**
  - **Ostrom's «Invisible hand» is with us😊**
- When relating the Design Principles to a number of performance indicators, we **found that DP1 (having an encroachment control system –guarding the borders- in place)** was the most significant among the DPs
- Overall, **we think the youth group model we have studied shows promise as an approach to engaging landless and unemployed youth in productive activities and as environmental custodians**
  - **We think it is worth testing in other countries**