Adoption of exotic chickens in rural areas of Ethiopia: implication for breed introduction

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Outline

- Background
- Objectives
- Methodology
  - Model
- Results
- Conclusion

The background

- introduced since 1950 through extension program
- Census indicates low number and poor productivity: poor adoption
- an indigenous breeding program started in 2006

The background

- timely to start the breeding program, but
- reason not studied and info on similar attempts is lacking
- the information very crucial
- the fate of already distributed once needs to be known

The background

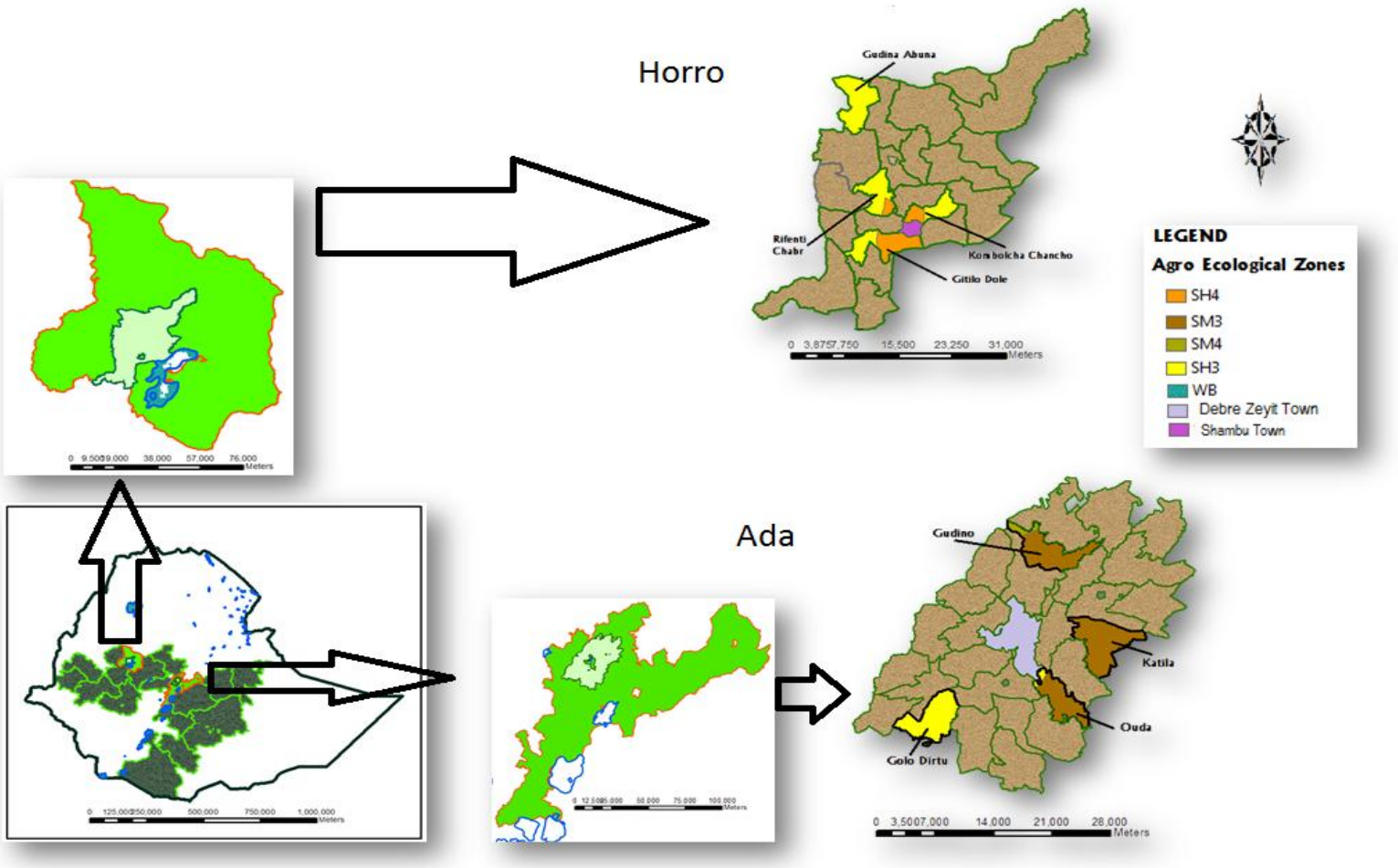
- identifying factors that affect the adoption and intensity of exotic chickens increase the probability of success
- reflect a five decades of intervention by the public extension program
- the first study on adoption and intensity of exotic chickens in rural areas of Ethiopia.

Objectives:

- to investigate the differences between adopters and non-adopter, and

- to identify factors behind the poor adoption and intensity of poultry breeds.

Study sites


Horro
Gudina Abuna
Rifenti Chabr
Korobokcha Chancho
Gitilo Dole
LEGEND
Agro Ecological Zones
SH4
SM3
SM4
SH3
WB
Debre Zeyit Town
Shambu Town
Ada
Gudino
Katila
Ouda
Golo Dirtu

Methodology:

- Participatory Rural appraisal to formulate structured questionnaire
- A two stage sampling procedure
- In the first stage:
  - purposively to select villages
- The second stage:
  - systematic random sampling to select participants.

Methodology

- Data on the descriptive statistics analysed using SPSS- version 17.0.
- probability and intensity of adoption STATA-Version 11.1.)
- The Heckman selection Model (Tobit Type II)
- Econometric model :
  - Selection equation: deciding probability
  - Outcome equation: deciding intensity

The Model: Tobit II

- The model has two stages.
  - In the first stage, a dichotomous variable z (being adopter or not) determines whether or not y is observed, y being observed only if z = 1(model that is estimated with some matrix of independent variable w, some coefficient a, independent and with an error term e);
- $z_i^* = w'_i\, a + e_i$ Selection equation (1)
- $z_i = 0$ if $z_i^* \leq 0$;
- $z_i = 1$ if $z_i^* > 0$

The Model: Tobit II

- in the second stage,
  - the expected value of y was modelled, conditional on it being observed. So, z is a dummy variable, which is a realization of an unobserved (or latent) continuous variable z*, having a normally distributed independent error, "e", with a mean zero and a constant variance, σ^2_e.
- $y_i^* = x'_i \beta + u_i$ Outcome equation (2)
- $y_i = y_i^*$ if $z_i = 1$
- y_i not observed if $z_i = 0$
- $(\varepsilon, u) \sim N(0,0,\sigma^2_\varepsilon, \sigma^2_u, \rho_{\varepsilon u})$ (3)
- (ε, u) is independent of x and z (4)
- $Var(u) = \sigma^2_u = 1$ (5)

Results:

Descriptive: determine characteristics of adopters and non-adopters

Variables	type	Difference between adopters and non
Social contact	continuous	P < 0.001
income from livestock	continuous	P < 0.001
off-farm participation	dummy	P < 0.001
credit access	dummy	P < 0.001
compatibility	dummy	P < 0.001

Econometric results: model fitted data

Variable	Coef.(Std.Err.)	Prob. level	Change in prob. of adoption (dy/dx)	Coef.(Std.Err.)	Prob. level	Change in number of exotic chickens (dy/dx)
constant	2.510(2.90)	0.388	-	2.486(0.681)	0.000	-
price@	1.220(2.14)	0.568	0.350	0.370(0.47)	0.431	0.125
compatibility@	-0.165(2.13)	0.938	-0.059	0.010(0.42)	0.980	0.041
Input avail.@	-0.496(0.710)	0.484	-0.165	0.160(0.26)	0.531	0.257
education@	-0.067(0.470)	0.887	-0.025	-0.034(0.123)	0.780	-0.023
gender@	**-0.196(0.426)**	**0.645**	**-0.071**	**-0.367(0.110)**	**0.001*****	**-0.330**
age	-0.007(0.014)	0.599	-0.003	-0.004(0.004)	0.316	-0.003
Credit access@	0.287(0.530)	0.588	0.107	0.406(0.283)	0.151	0.353
Farm size	**-0.009(0.054)**	**0.862**	**0.496**	**-0.025(0.011)**	**0.027****	**-0.023**
Off-farm part.@	**1.350(0.627)**	**0.031****	**0.022**	**0.364(0.390)**	**0.350**	**0.131**
Social contact	0.060(0.198)	0.761	-0.008	-0.085(0.06)	0.156	-0.096
Extension visit	-0.022(0.094)	0.812	-0.383	-0.034(0.040)	0.347	-0.033
Income from Livestock	**-1.030(0.445)**	**0.021****	**-0.045**	**-0.512(0.120)**	**0.010****	**-0.320**
Training	-0.121(0.355)	0.733	0.010	0.073(0.093)	0.436	0.095

conclusion

- variables affecting the probability of and intensity of adoption known
- The study indicated important variables to consider
- The result calls for reconsidering the earlier extension scheme
    - Breed selection
- The result will be used to shape up the dissemination scheme of the breeding program
    - Gender, individuals who earn a lot from large livestock

I thank you!!

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