

The effect of adopting an improved dairy cattle breed on the livelihood of smallholder farmers in the West Shewa zone, Ethiopia



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Introduction

- Livestock plays pivotal role in the economic and social life of Ethiopian people.
- Livestock production is constrained by:
 - Traditional production system and management problems;
 - Poor health service;
 - Lack of institutions and technological problems;
 - Poor breeds and services, inadequate resources;
 - Low capital investment in human and fixed assets.
- Indigenous breeds have poor productive and reproductive potential.
- Adoption of crossbreds improves the livelihoods of smallholder farmers.

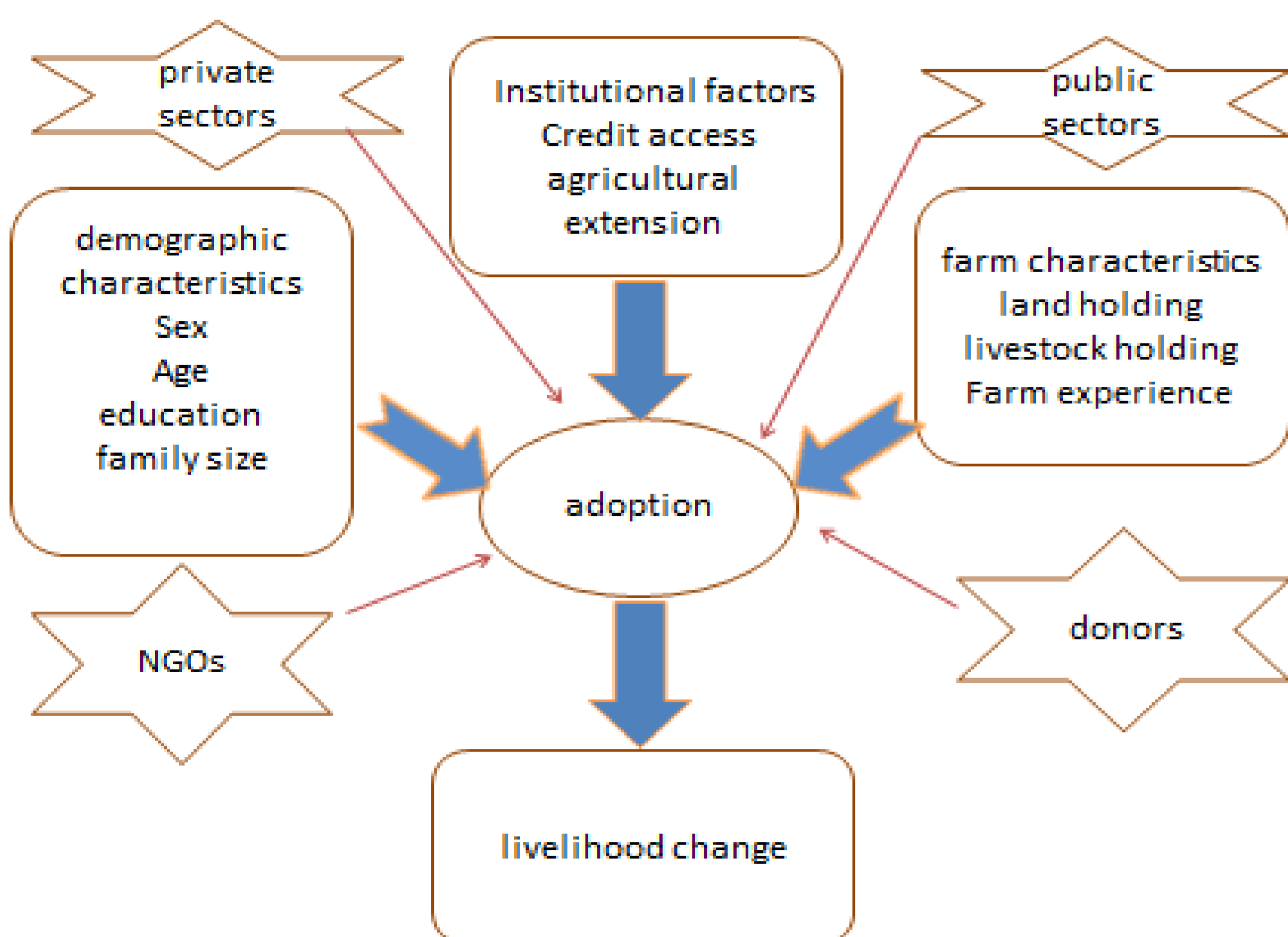
Objective

To assess the effect of adopting a crossbred dairy cattle on the livelihoods of smallholder farmers.

Materials and Methods

- Multi-stage sampling techniques were employed to collect the survey data (N = 138) with an equal number adopters (N = 69) and non-adopters (N = 69) in the West Shewa zone, Ethiopia.
- Both, descriptive and econometrics models were employed to analyse the data.
- A probit model was used to investigate the determinant factors for adoption decision of smallholder producers.
- Propensity score matching was conducted to estimate the average effect of crossbred adoption on the livelihoods of smallholder farmers.

Conceptual Framework



Conceptual framework for the livelihood change of smallholder farmers in West Shewa zone, Ethiopia.

Mainly emphasized variables
Less emphasized variables

Table 1. Propensity score matching result: The average effect of crossbred cattle adoption on smallholder livelihoods.

Intervention Variables	Coefficient (SE)	P-value
Milk production (liter/day)	19.2 (0.72)	0.00
Total income (1.000 ETB/year)	81.5 (3.1)	0.00
Adoption		
Credit access (%)	0.44 (0.19)	0.82
Ikub (traditional saving) (%)	-0.49 (0.1)	0.00
Cooperative (+) (%)	-0.03 (0.06)	0.64
Land size (%)	0.01 (0.34)	0.97
TLU (unit)	0.72 (1.03)	0.49
Water pump (%)	-0.36 (0.07)	0.00
Donkey cart (%)	-0.25 (0.08)	0.00

ETB: Ethiopian birr (1 USD = 21.15 birr; Nov. 2015), SE: standard error, TLU: tropical livestock unit; Ikub: traditional saving association.

Results

- Educational status, livestock ownership, and cooperative membership significantly affects the farmers probability of adopting crossbred dairy cattle.
- Cows of adopter households produce 19.2 liter more milk per day than non-adopter households.
- The total income derived from livestock and livestock products in adopter households was by 81.5 thousand Ethiopian birr per year higher than that of non-adopter households.
- Adoption decreased the households' probability to participate in a traditional saving association (i.e. Ikub) by 49% than non-adopters households.
- Adoption decreased households' probability of buying a water pump and a donkey cart by 36% and 25%, respectively.

Conclusions and the way forward

- Adoption of crossbred dairy cattle increases milk production and economic capital, but decreases the social and physical capitals of households. Adopter households are more food secured than non-adopter households
- Nevertheless, subsequent training on improved crossbred dairy cattle husbandry has to be given to smallholder farmers.
- Credit access has to be strengthened to foster smallholder farmers' capacity to expand crossbred dairy cattle adoption.
- Networking of public and private sectors, non-governmental organizations, and agricultural extension services is required to ease access to crossbred dairy cattle and livestock feed supply.