

Inclusiveness of small and remote farmers in access to livestock services (extension, animal health, and medicines) in Ethiopia: The case of dairy

Bart Minten (IFPRI/ESSP), Yetimwork Habte (PSI/ESSP), Seneshaw Tamru (Licos-Leuven), and Agajie Tesfaye (EIAR)

Introduction and objective

- Access to livestock services influences adoption of improved practices in dairy. Over the last decade, there have been positive changes in access to livestock extension and animal health service delivery and hence in the dairy sector in Ethiopia. It is however important to understand who benefits from these services. The objective of this analysis is to assess the extent of these changes and its inclusiveness.
- We focus on two important factors of inclusiveness. First, we look at the issue of market access as measured by remoteness from Addis Ababa. Previous research has shown the important implications of market access on input use, profitability, and overall agricultural performance. Second, we look at farm size, measured by the number of cows on the farm. Research has shown that transformation regularly excludes small farmers because of higher coordination costs that downstream firms in the value chain incur in their commercial engagements with small farms. The inclusion of smallholders in agricultural transformation, however, is deemed important for broad-scale welfare improvements.

Data and methods

- We obtained administrative data at the level of the woreda, zone, and nation from the Ministry of Agriculture.
- Primary data were collected as well. A survey of 955 dairy producers was fielded in the zones of North and West Shewa; in suburban zones; and in the city of Addis Ababa. Data were collected in January and February 2018.
- In North and West Shewa, we ranked all woredas by remoteness to Addis Ababa. We then divided them in quartiles and selected farms randomly from each stratum proportional to the number of cows and woredas.
- Three kebeles were selected per woreda. In each selected kebele, we did a census of all households with cows in milk. We then stratified by farm size: we randomly selected ten households from those households that had three or more cows in milk and ten from those households that had one or two cows in milk. We also collected data from commercial farms with more than 25 cows.
- This set-up allows for a large number of observations to assess inclusiveness by remoteness and by size of the farm. For the analysis we apply non-parametric models as well as a multi-variable regression framework.

Results

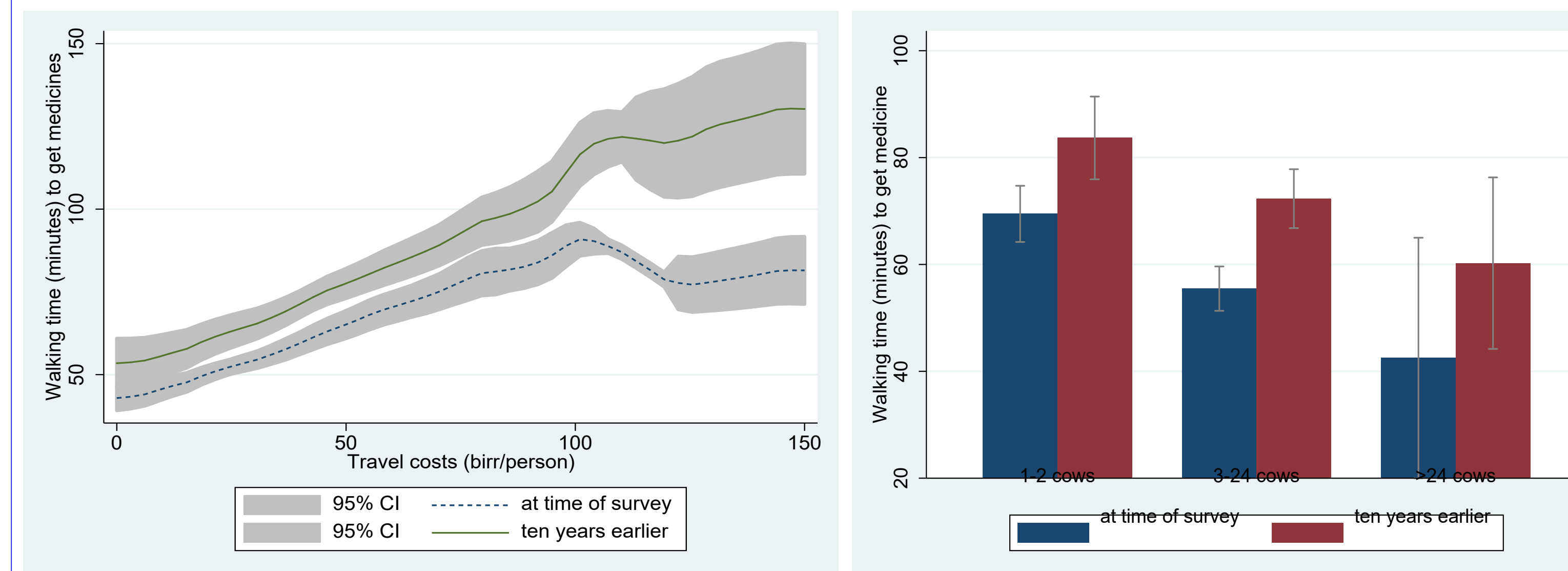
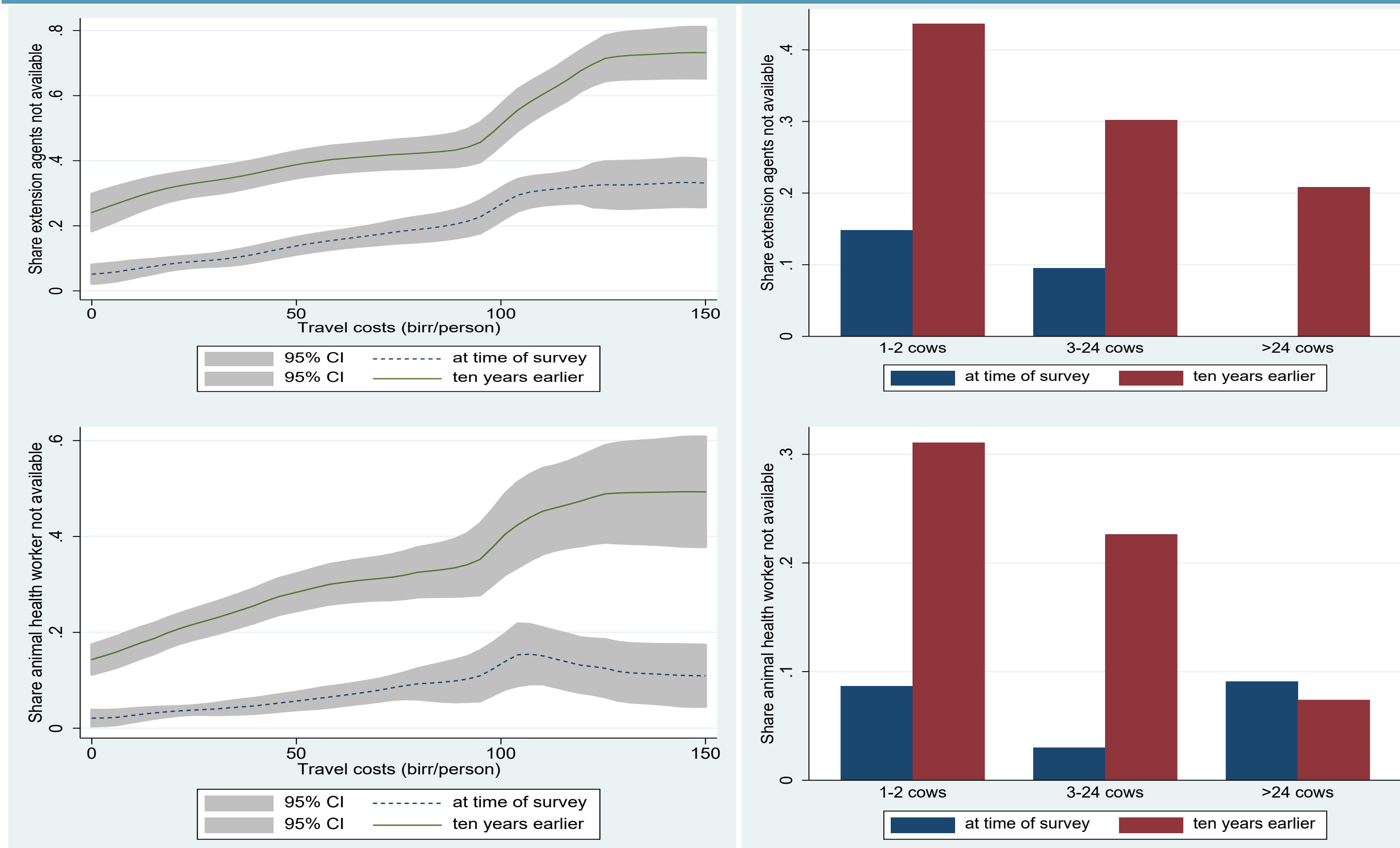


Table 1: Associates of access to services

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	Use of extension agent		Access to animal health worker		Distance to medicines	
Independent variables	Probit (marginal effect)		Probit (marginal effect)		log (minutes) – OLS	
Transport cost to Addis	-0.10**	-0.10***	-0.04*	-0.04*	0.38***	0.42***
Farm size (Default: small farm)						
Medium dairy farm (3-24 cows)	0.05	0.09**	0.09***	0.11***	-0.13	-0.15
Large dairy farm (≥25 cows)		0.50***		-0.02		-0.56
Constant					2.34***	2.24***
Observations	838	955	838	955	803	918

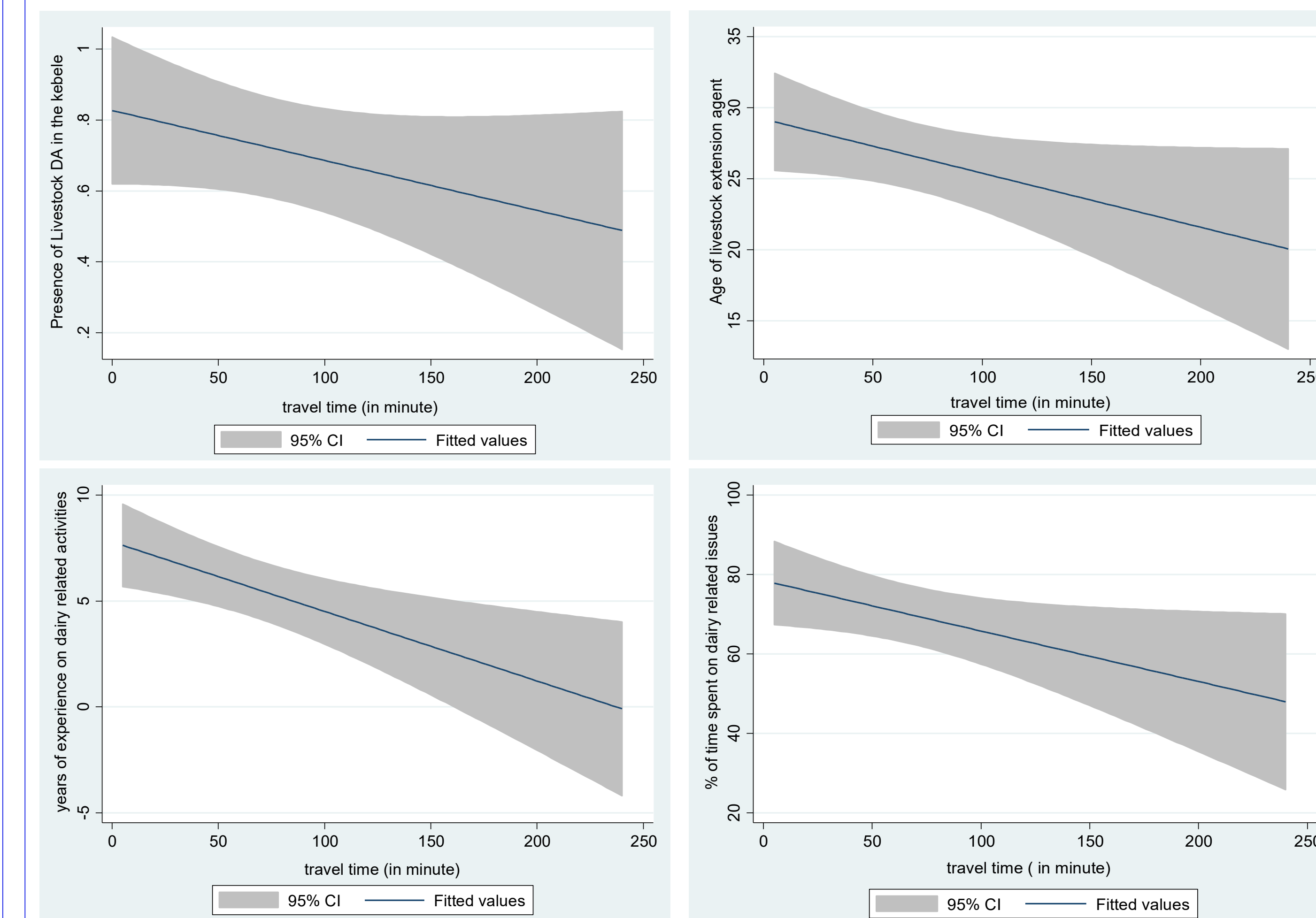
Table 2: Associates of use of trainings (Probit marginal effect)

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	On management of crossbred cows		On management of feed		On cow health management	
Distance from village (kebele) to district (woreda) center	-0.04***	-0.05***	-0.04***	-0.04***	-0.03***	-0.04***
Distance from the nearest agricultural cooperative	-0.03*	-0.04***	-0.03	-0.04**	-0.04*	-0.05***
Farm size (default = small farm)						
Medium farm (3-24 cows)	0.05	0.10**	0.07**	0.11***	0.05*	0.10***
Large farm (>24 cows)		0.37***		0.31***		0.34***
Observations	615	704	674	764	674	764

Table 2: Associates of use of trainings (Probit marginal effect) – continued

Dependent variables	(7)	(8)	(9)	(10)	(11)	(12)
	On food safety & hygiene		On improved milk processing		On shed construction	
Distance from village (kebele) to district (woreda) center	-0.04***	-0.05***	-0.06***	-0.07***	-0.02**	-0.03***
Distance from the nearest agricultural cooperative	-0.04*	-0.04***	-0.03**	-0.04**	-0.03	-0.03**
Farm size (default = small farm)						
Medium farm (3-24 cows)	0.05*	0.11***	0.03	0.10***	0.04	0.09***
Large dairy farm (>24 cows)		0.38***		0.32***		0.40***
Observations	615	704	556	644	615	704

- As shown by graphs above, there have been significant improvements in livestock extension and health animal service delivery and in the reduction of distances to walk to get medicines for livestock over the last decade. While the situation of more remote and relatively smaller farmers has improved, they benefit however significantly less from use and access to livestock services (Table 1). These results are robust to alternative specifications.
- We further look at the link of trainings (done by extension agents), size of farm, and remoteness (Table 2). Small farms received less training. Two types of remoteness matter for having received trainings: (1) distance from the household to the village (kebele) center (the last mile); (2) distance from the village (kebele) to the district (woreda) center. Both matter significantly.
- To better understand the latter, we look at the supply of extension services (as measured by characteristics of Development Agents (DAs)) by remoteness. We assess how they differ by the kebele's remoteness from the center of the woreda.
- The graphs below show how the supply of extension services differs significantly by remoteness. Some important patterns emerge:
 - The presence of livestock DAs decreases with remoteness;
 - Younger and less experienced DAs are located in more remote areas;
 - DAs in more remote areas use less of their time for dairy related activities.



Conclusions

- We see significant improvements in service delivery in the dairy sector over the last decade in Ethiopia. The Ethiopian government has improved service delivery in the livestock sector by increasing investments in public extension workers, animal health workers, and public pharmacies.
- Not all dairy farmers benefit equally from this improved service delivery as small farms and farms in more remote areas participate disproportionately less.
- Less access to extension agents shows up in farmers having had less trainings in more remote areas. More remote kebeles have less extension agents and if they have extension agents, they are younger and less experienced.
- More effort is needed to include remote and smaller farms in the unfolding transformation in Ethiopia's dairy sector. Adjusting incentives to stimulate public agents to move to more remote areas might be considered.