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Economic Value of Expected Progeny Differences (EPDs) of Angus cattle in Argentina

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Introduction

- **Research Question**: What is the economic value of Angus and Brangus cattle traits in Argentina?
- What we do:
  1. Identify drivers of farmers' demand and preferences.
  2. Explore whether EPDs are relevant in price determination
- We use semen prices (Angus) and auction prices (Brangus) to answer these questions.

Motivation

- Favorable crop relative prices pushed livestock from the Pampas into hotter and dryer Northeastern lands.
- Farmers' adoption of cattle genetics is a tool for adapting to different climates through two main channels: breeding and selection.
- Opportunity to study how cattle markets work in this setting

Data Description

- **Bull Semen**: Angus sales catalogs and supply prices (not transactions) from 5 genetic centers from October 2022.
- **Bulls' auctions**: Sales data from a Brangus Association-sponsored auction in Córdoba held every August from 2015 to 2022.

Pedigree Networks

Figure 1:Aberdeen Angus, Brahman, and Brangus bullss

Distribution of breeders

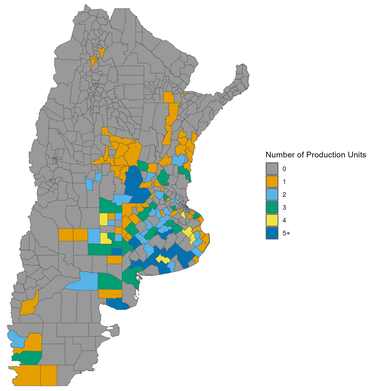

Figure 2:Spatial distribution of Angus farms

Event Study 2

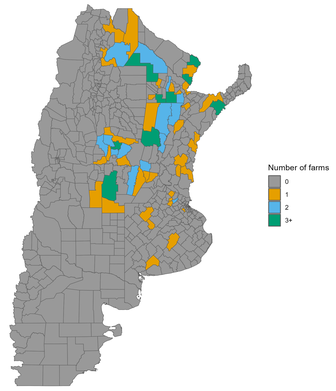

Figure 3:patial distribution of Brangus farms

Hedonic regression

The price of a bull can be decomposed into three kinds of determinants:

1. **Physical traits**: directly observed traits
2. **Genetic traits**: Expected Progeny Differences of the animal's characteristics.
3. **Market determinants**: factors that affect the price not related to the animal's characteristics, such as the firm that markets the bull, the sire (father) of the bull, and the transaction date.

$$\log(price_{it}) = Z_{it}\beta + X_{it}\gamma + M_{it}\delta + \varepsilon_{it}$$

Where $price_{it}$ is the price of the bull, Z_{it} are the genetic traits, X_{it} are observable, and M_{it} are the set of market factors, ε_{it} is the error term.

Results

- (Angus) EPDs generally not significant, except for the ribeye area.
- (Angus) Red animals have a positive premium.
- (Brangus) Weight, scrotal circumference, and age are statistically significant.
- (Brangus) Weaning weight, calving ease, and milk

Future Research

- Use panel data of cattle auctions to compare the value of traits within and between breeds.
- Develop and implement a choice experiment to study ranchers' preferences and perceptions of genetic traits.

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