Prolific Pigs?
Mating Capacity with Market Price in Early Twentieth Century Pig Breeding

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Data Sources
Example

American Berkshire Record

BLACK PRINCE 1235.
Parrowed February 21, 1876.
Owned by S. D. Smith, Demopolis, Ala.
Bred by T. S. Cooper, Coopersburg, Penn.

Berkshire World Cornbelt Stockman

Data Sources
Example

Historical Data Reconstruction

Genealogy

Transaction

Data Analysis

Reproductive Capacity

Immigration Pattern

Comparison between avg. prices of boars and sows

No. | Price
---|---
1. | $95.00
2. | $80.00
3. | $65.00

1. Lady Goods 18th 121729, sire Royal Goods 6th 93874, dam Robinhood's Lady Lee 8th 100459 by Purdue's Robinhood 85421, to W. K. Pickens, Livingston, Ala. 

Reproductive Capacity
Immigration Pattern
Comparison between avg. prices of boars and sows

Price
Berkshire Pig Transaction Map from 1900 to 1920

Immigration pattern — one of our exploratory data analysis from transaction data.
Summary

Motivation

Are livestock markets efficient?
What might be the source of inefficiency?
Do breeders price pigs rationally?

Results

\[ Price_i = \beta_1 \times PorkPrice_i + \beta_2 \times AgeMonths_i + \beta_3 \times nChildren + \epsilon_i \]
\[ \epsilon_i \sim N(0, \sigma^2) \]

|                | Estimate | Std. Error | t value | Pr(>|t|) |
|----------------|----------|------------|---------|----------|
| nChildren      | 0.2877   | 0.0414     | 6.95    | 0.0000   |
| PorkPrice      | 3.4215   | 0.5121     | 6.68    | 0.0000   |
| Age            | 1.8482   | 0.2803     | 6.59    | 0.0000   |

Berkshire pig transaction price is influenced by factors including the age of the pig, the number of offspring and the prevailing pork price.

And we can conclude that within 1910 - 1920, breeders and buyers did price Berkshire pig rationally to a large extent.

Difficulties

Detailed but incomplete archives
Difference between the number of actual offspring and that of recorded offspring
Cross-referencing and reconstruction needed