The Price of Nails since 1695: What Can We Learn from Prices of a Simple Manufactured Product?

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Development of the American Economy SI
June 13, 2021
Why nails?

- Basic, non-revolutionary manufactured product
- Form and quality have changed little in 300+ yrs
- Process for producing them changed dramatically:
  - Nails produced in one minute of worker time increased 3500x.
- Useful prism for changes in manufacturing and implications
Bottom Line

- Real nail prices fell dramatically: about $10x$ from late 1700s to mid 20th century

- Share of nails in GDP dropped from 0.4 percent in 1810 to de minimis share today.

- Implications:
  - Downstream effects
  - "Precious" to "throw-away"

- What accounted for price declines?
  - Materials prices ↓ and MFP ↑
Hand forged; Machine Cut, & Wire

to early 1800s

to about 1890

modern era
Nominal Price of Nails, 1695-2018
(cents/lb)
Adjustments to Nominal Prices

- cents / lb $\rightarrow$ cents / nail
- Nominal $\rightarrow$ Real (relative to consumer prices)
- Matched-model index (linked segments)
Real Price of Nails: Matched-Model, 1695-2018
cents/nail 2012 $

10x decline

later price increase: see paper
• Downstream changes (esp. balloon-frame construction)

• Nail go from “precious” to “throw away”
What Accounted for Price Changes, 1790-2018?

- Decompose price changes into proximate sources: capital, labor, energy, materials, purchased services, & multifactor productivity

- Use dual of 5-factor KLEMS production function with data on factor prices and factor shares.

- Relied on wide range of well-known sources
Figure 8
Nails: Contributions to Real Price Change, 1791-2018
(annual rate, percentage points)
Nails for long span
Prices down; precious to not
Simple, but insights