



Australian Government
**Department of Agriculture
and Water Resources**
ABARES

Developing monthly agricultural export price indexes

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**Australian Bureau of Agricultural
and Resource Economics and Sciences**

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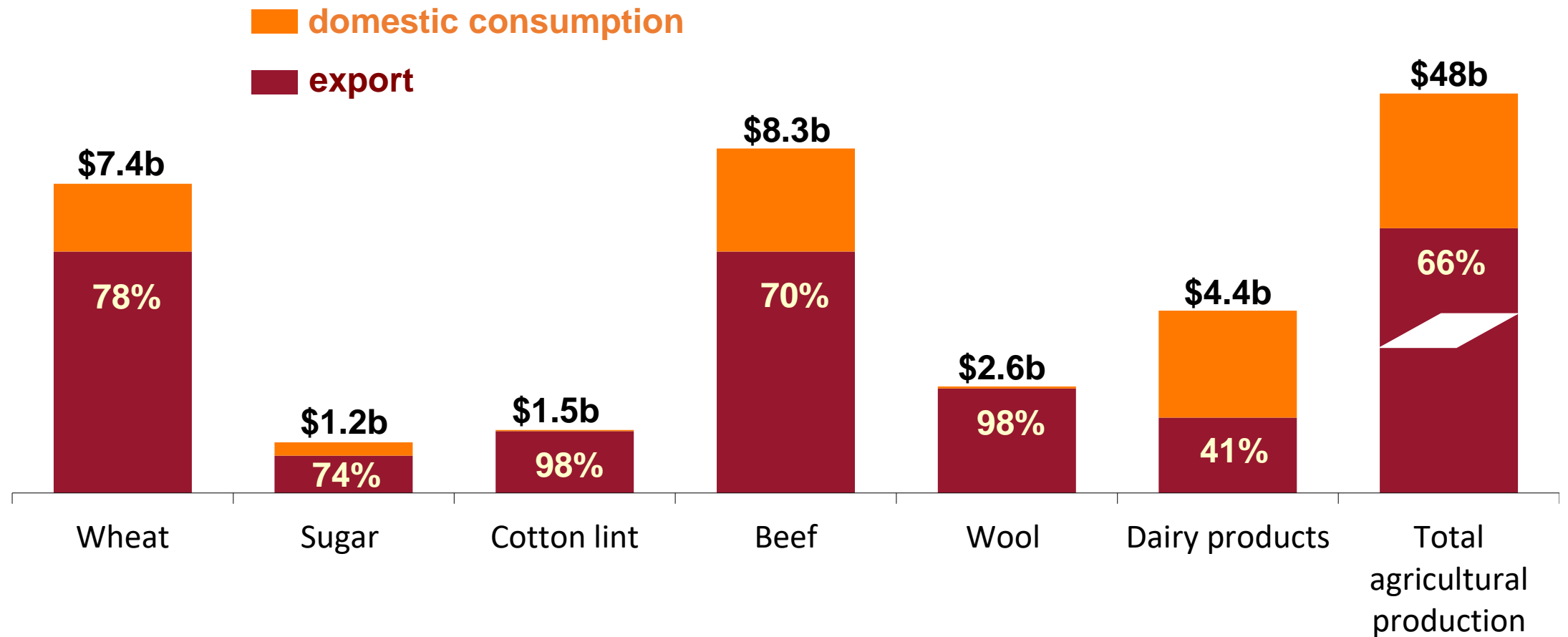
Research by the
Australian Bureau of Agricultural and Resource Economics and Sciences

Outline

- **Why ABARES developed this price index**
- What are the main features of this price index?
- How did we construct the index?
- Results

Agriculture is highly export oriented

Average values, 2012-13 to 2014-15



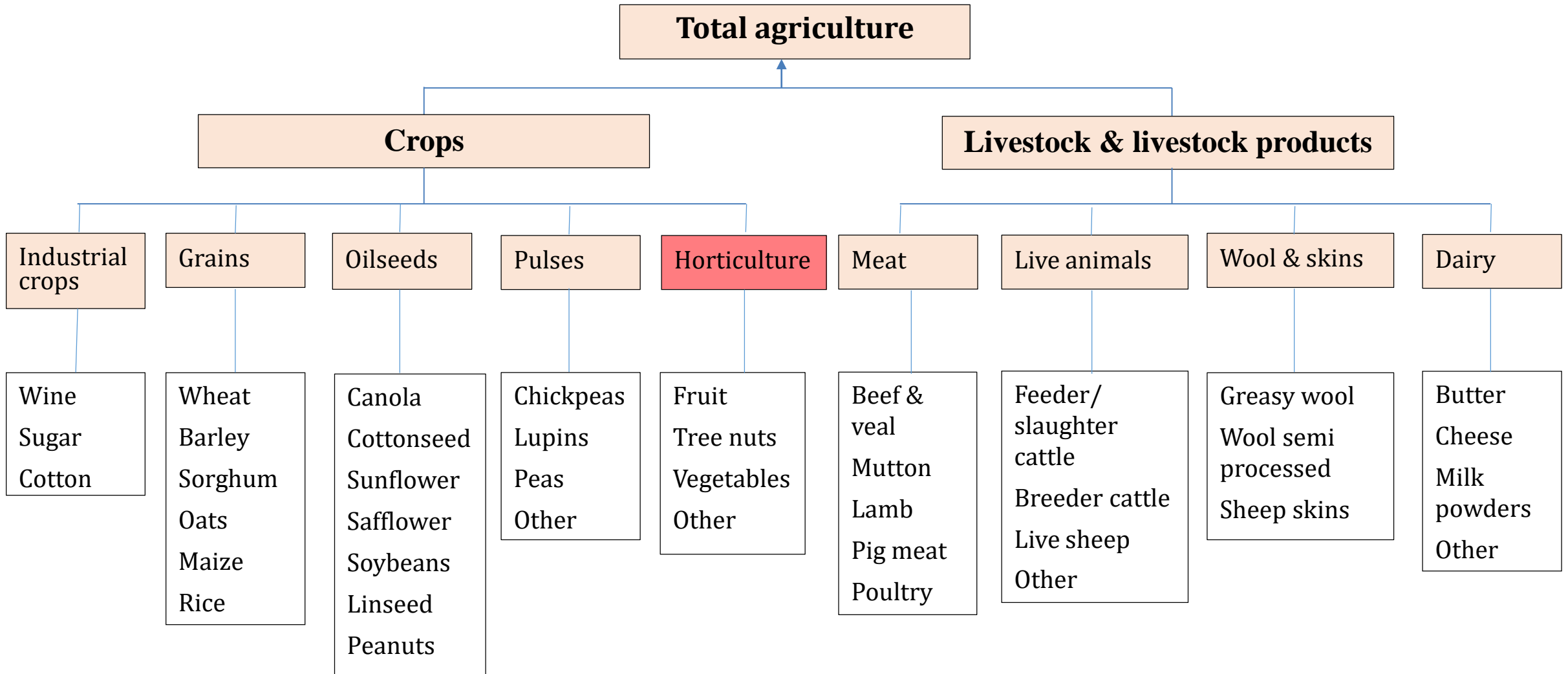
Existing indexes do not meet our needs

	ABS IPD	ABS EPI	RBA ICP	ABARES unit returns
Index	Current weighted Paasche	Annually weighted chained Laspeyres	Annually weighted chained Laspeyres	Annually weighted chained Fisher
Weights		Average of the most recent two years	Average of the most recent two years	Annual average
Price data source	Average export unit values (AUV)	Survey and limited use of AUVs	Indicator prices	AUVs
Coverage	100%	100%	~65%	~75%
Subindexes	Yes	Yes	No	No
Frequency	Quarter	Quarter	Month	Annual
Classification	BOP	ANZSIC, BOP AHECC	Top eight exports by value	ABARES

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ABARES commodity classification

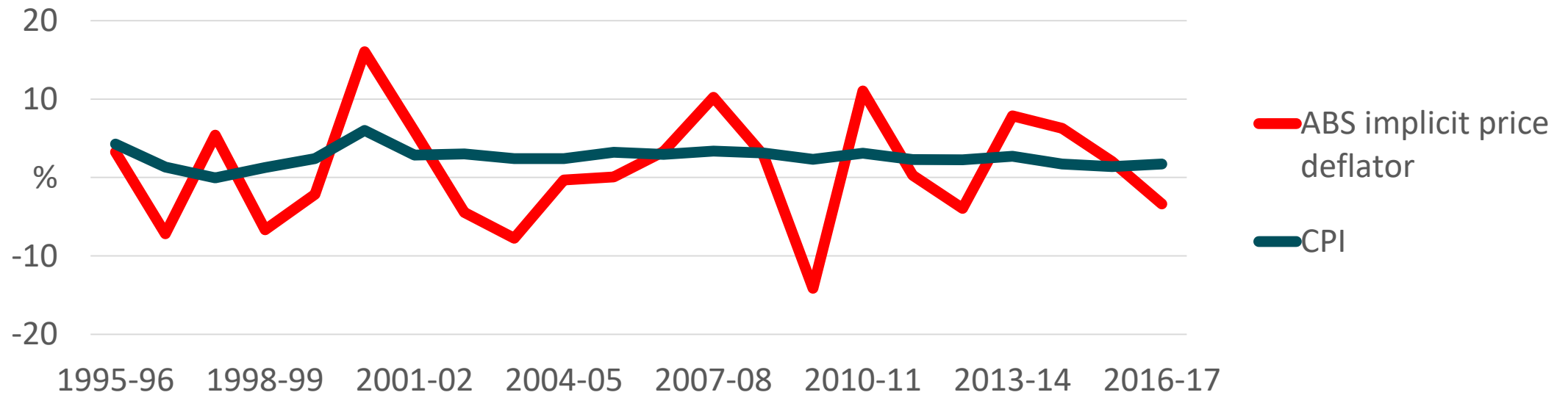


Source data – average export unit values (AUV)

- Suited for agricultural products (homogeneous)
- Measure of prices received
- Comprehensive coverage
- Readily available

Monthly index

- Agricultural prices are volatile



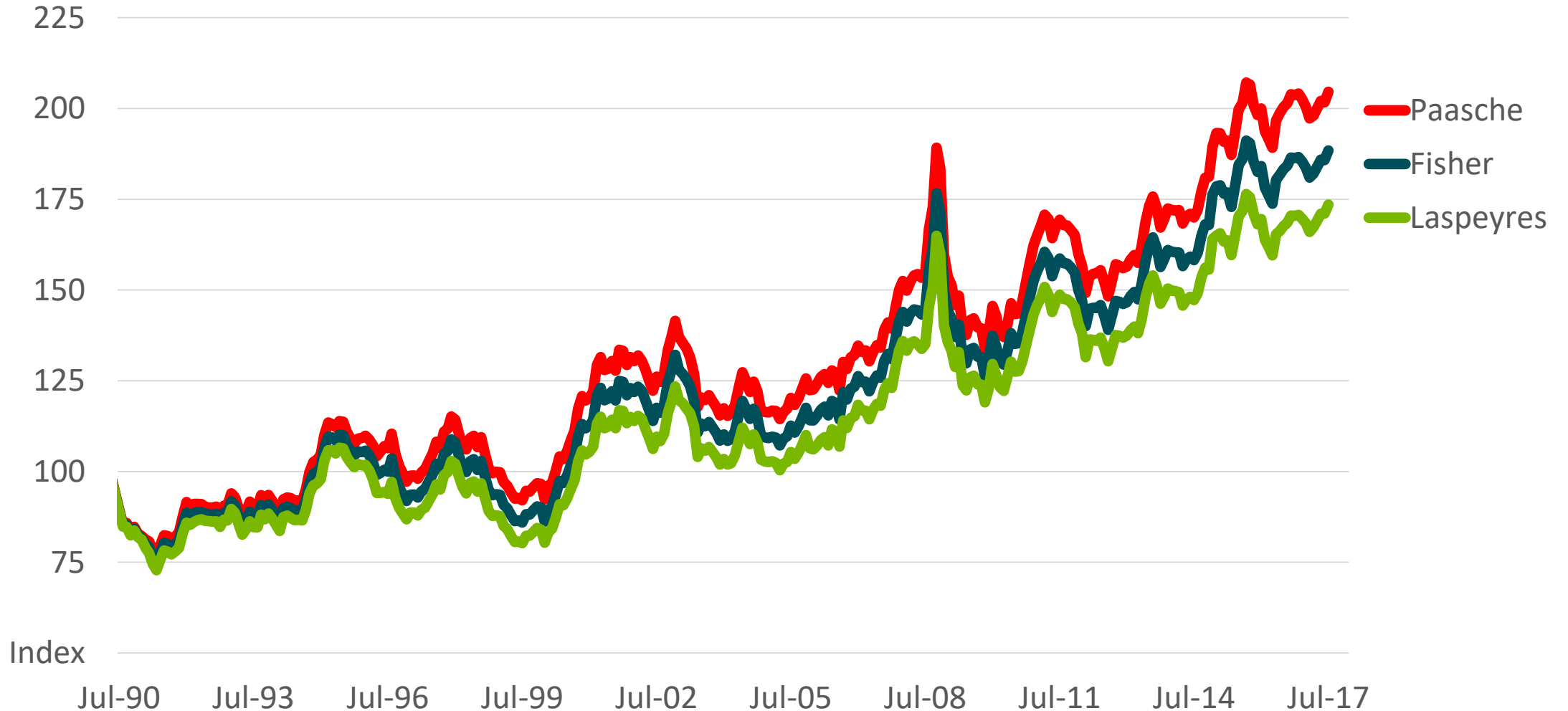
- Useful for analysis
- Can be aggregated

Outline

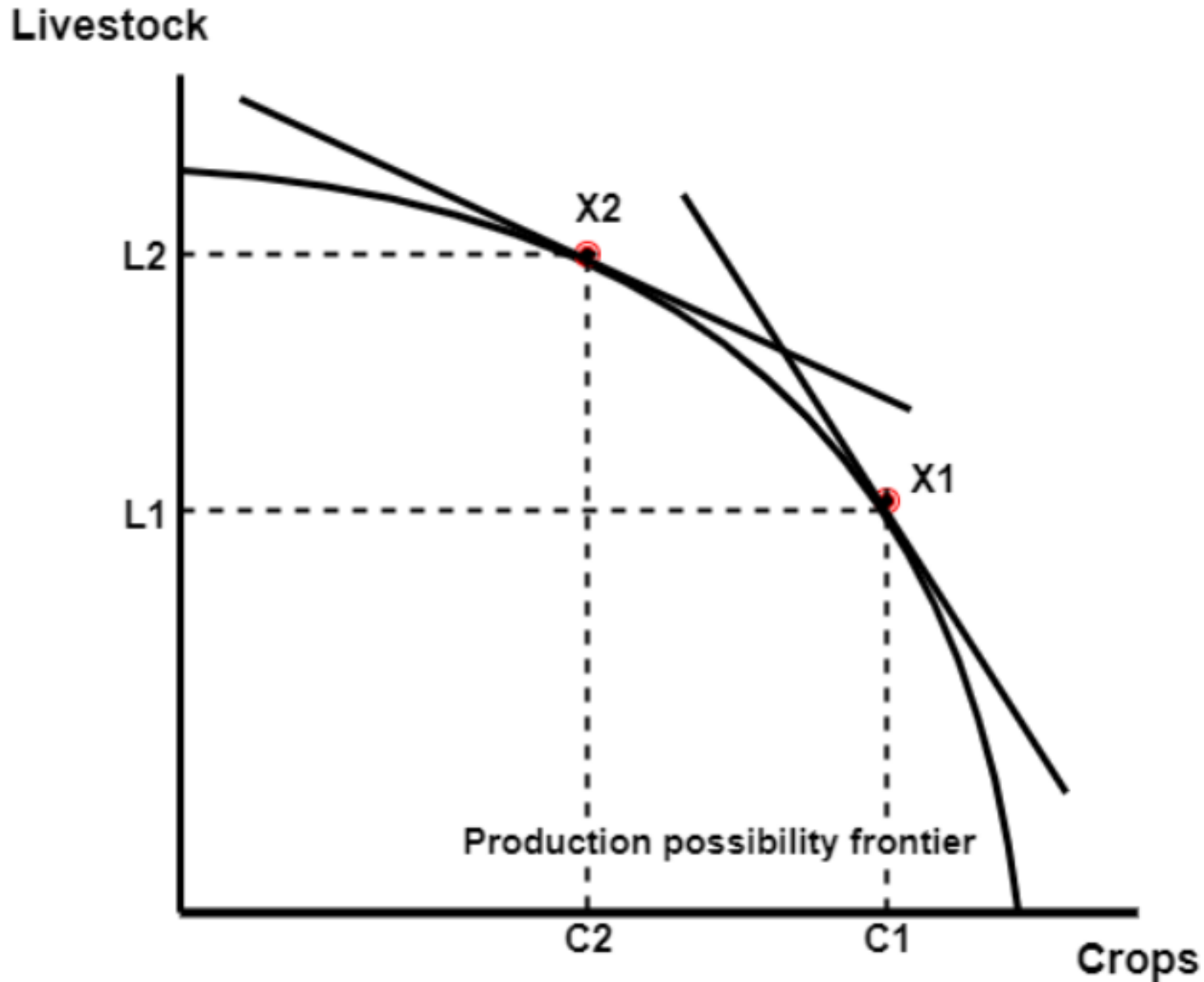
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We chose the Fisher index

Agricultural export price indexes

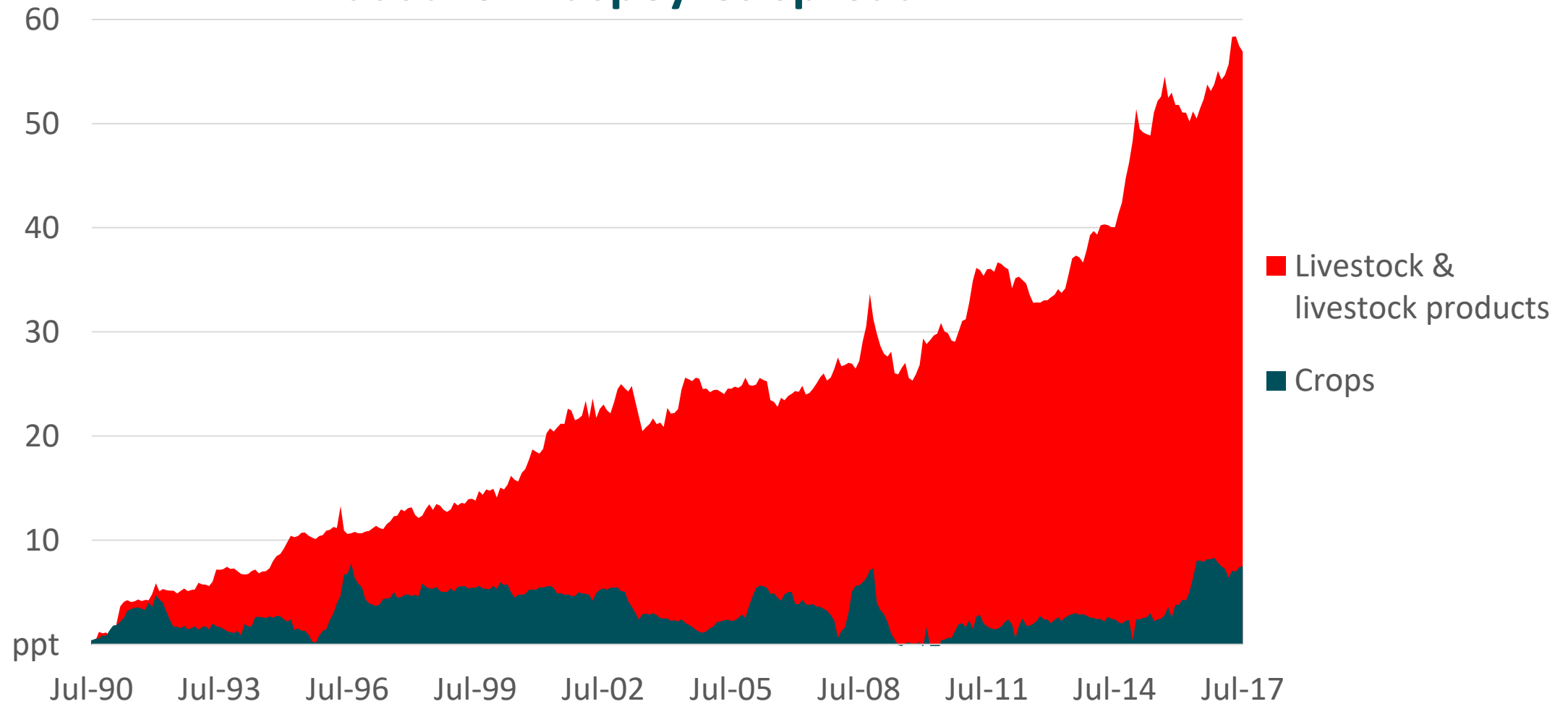


The Fisher index controls for substitution bias



Positive relationship between price and quantity is more prevalent in 'Livestock & livestock products'

Paasche - Laspeyres spread

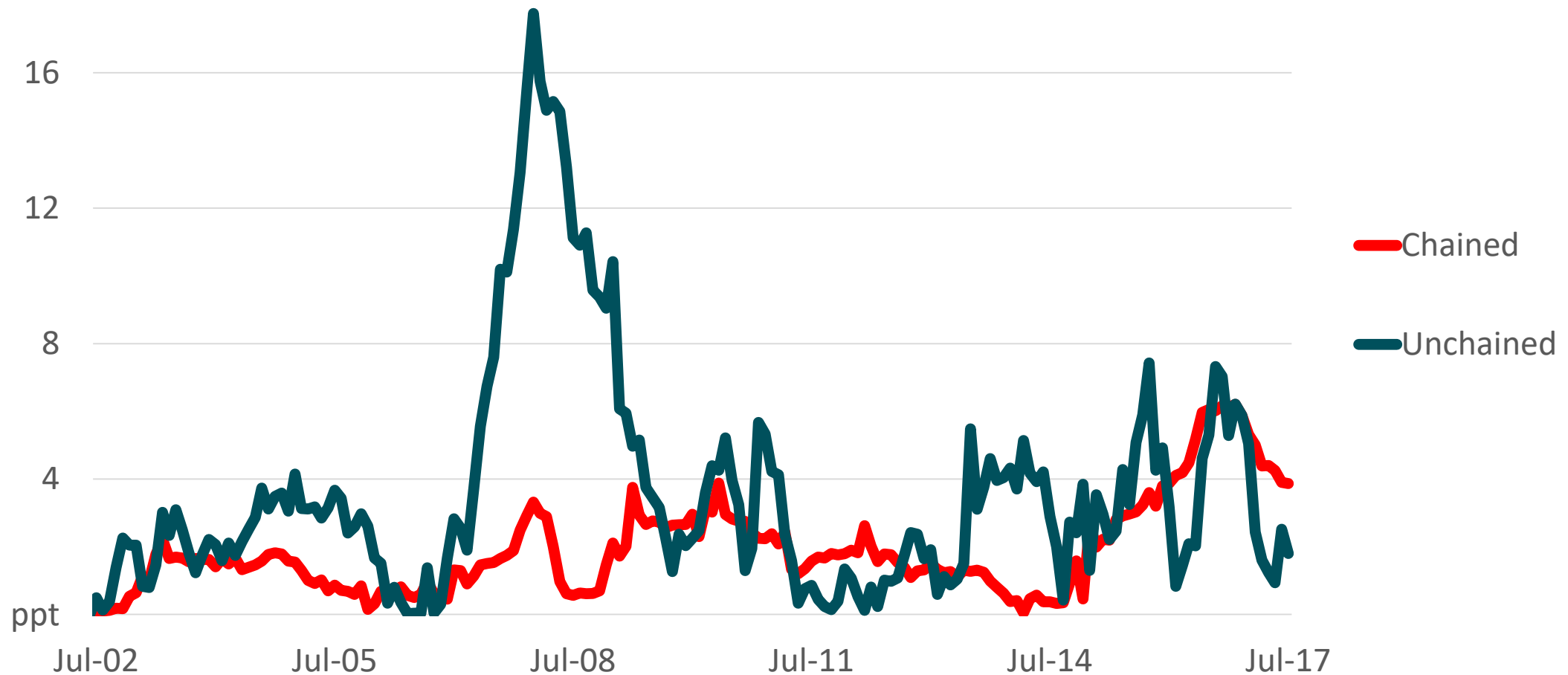


The Fisher index has desirable axiomatic properties

- Factor reversal
- Approximately consistent in aggregation

Controlling divergence between the Laspeyres and Paasche Indexes

Paasche - Laspeyres spread



Fisher test of transitivity

THE MAKING OF INDEX NUMBERS

*A Study of Their
Varieties, Tests, and Reliability*

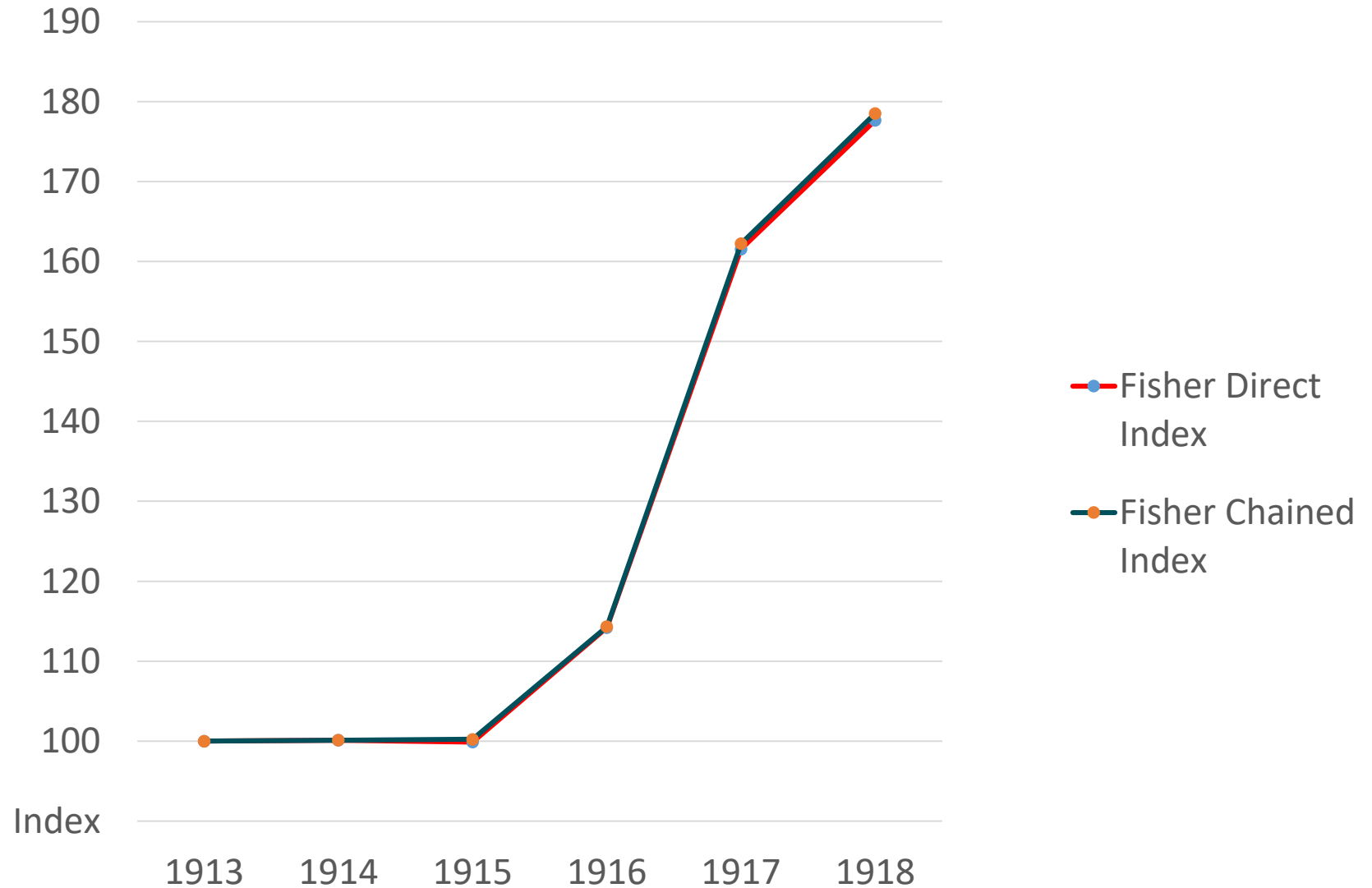
BY
IRVING FISHER

PROFESSOR OF POLITICAL ECONOMY, YALE UNIVERSITY

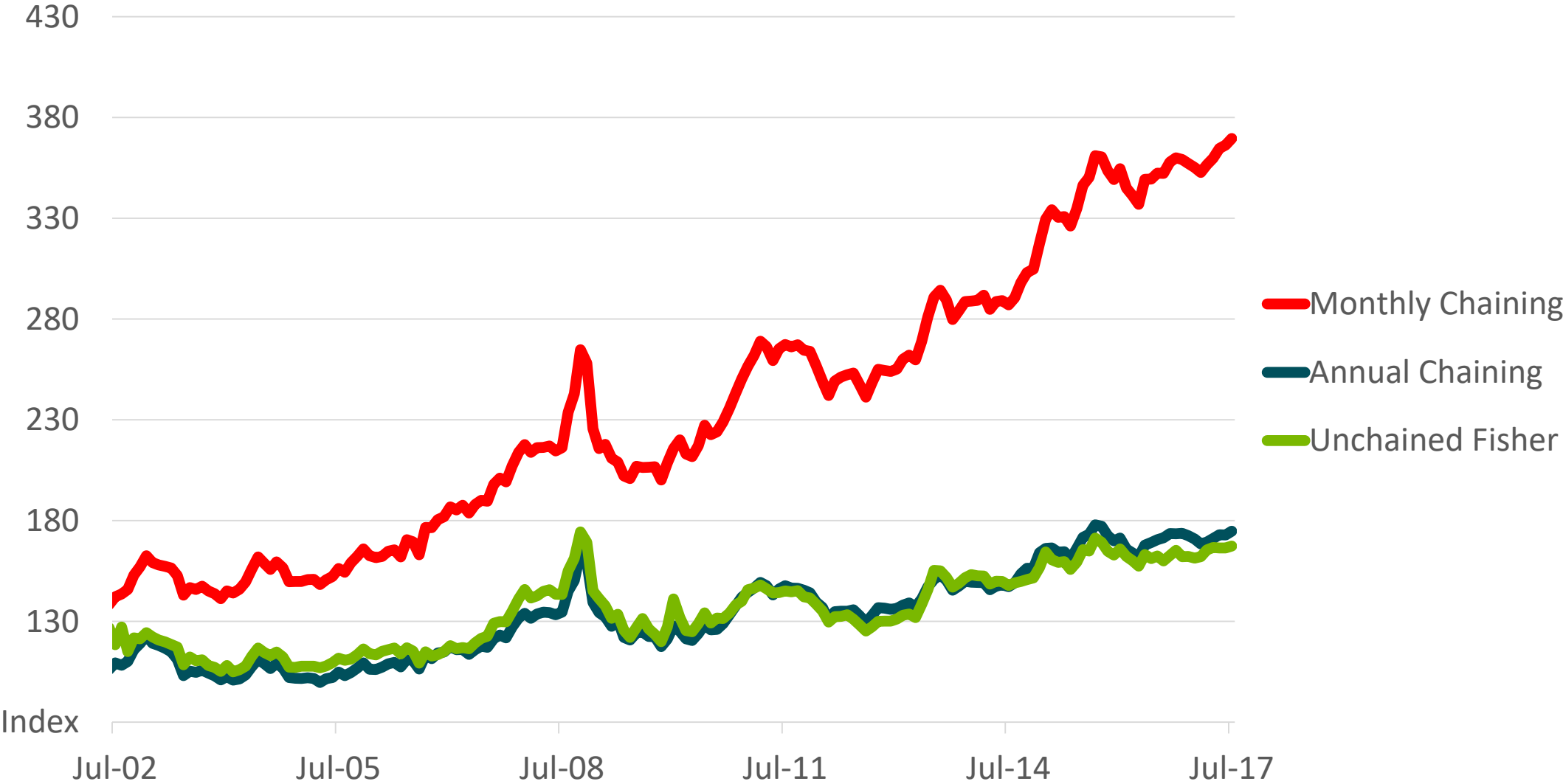
THIRD EDITION, REVISED



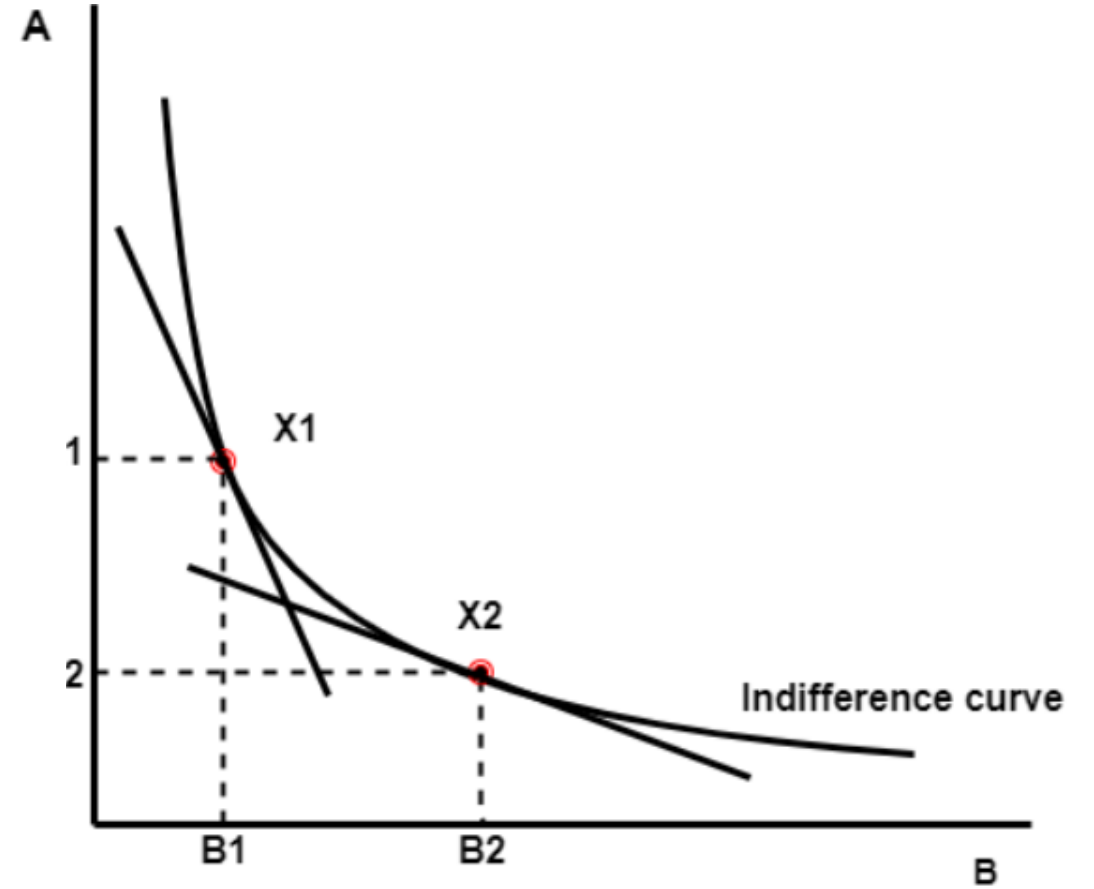
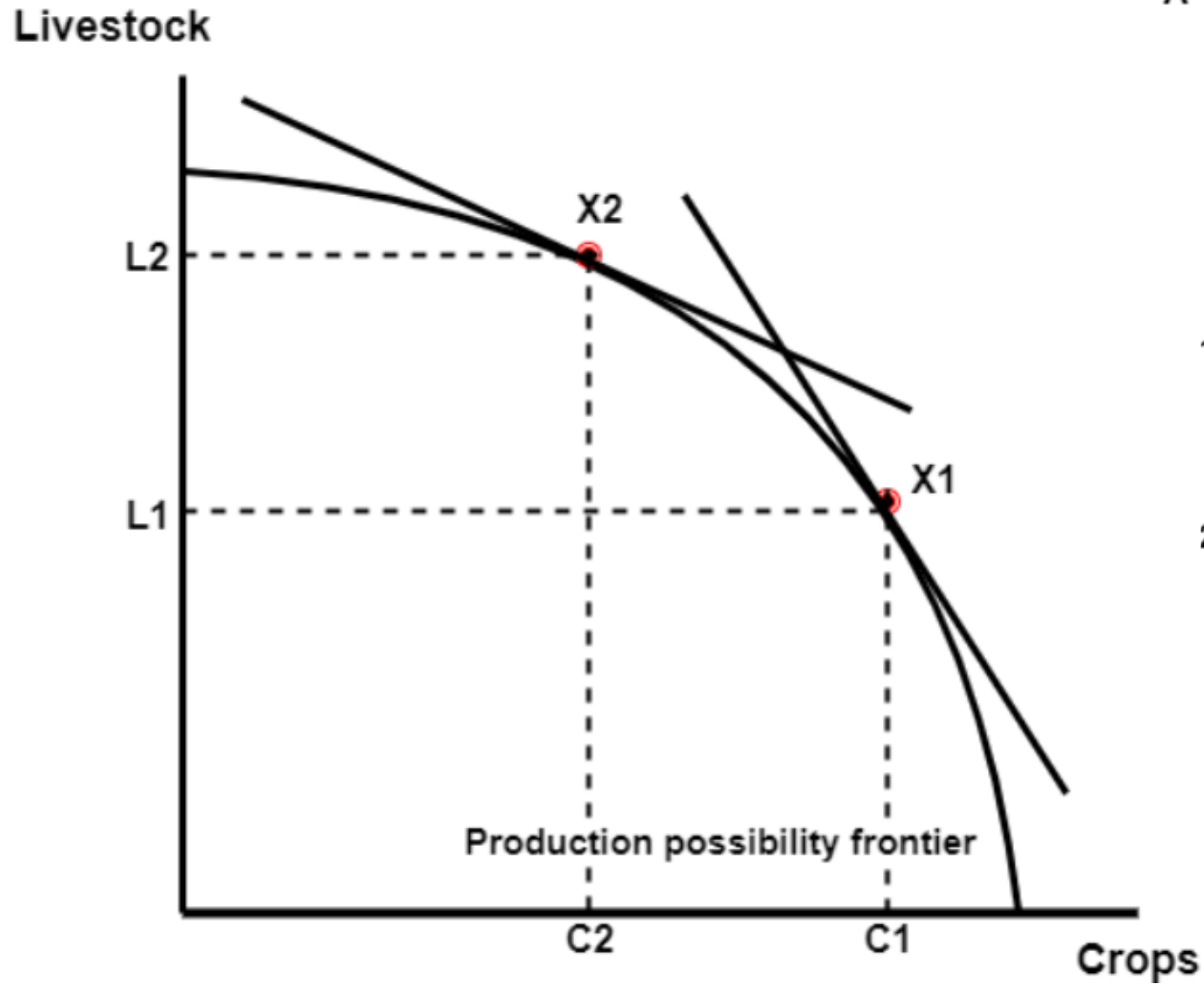
BOSTON AND NEW YORK
HOUGHTON MIFFLIN COMPANY
The Riverside Press Cambridge
1927



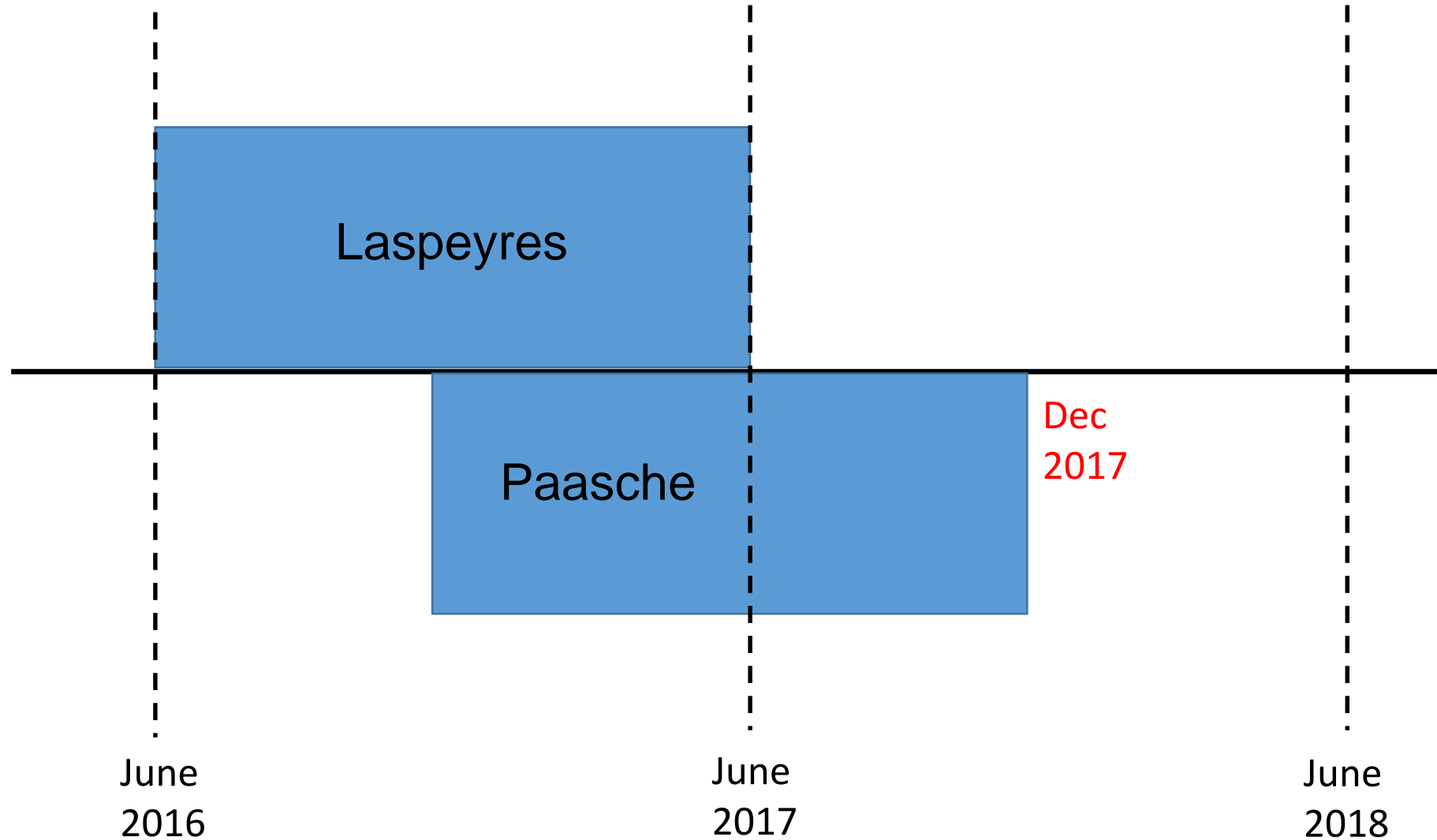
But how frequently should we chain?



Construction of weights



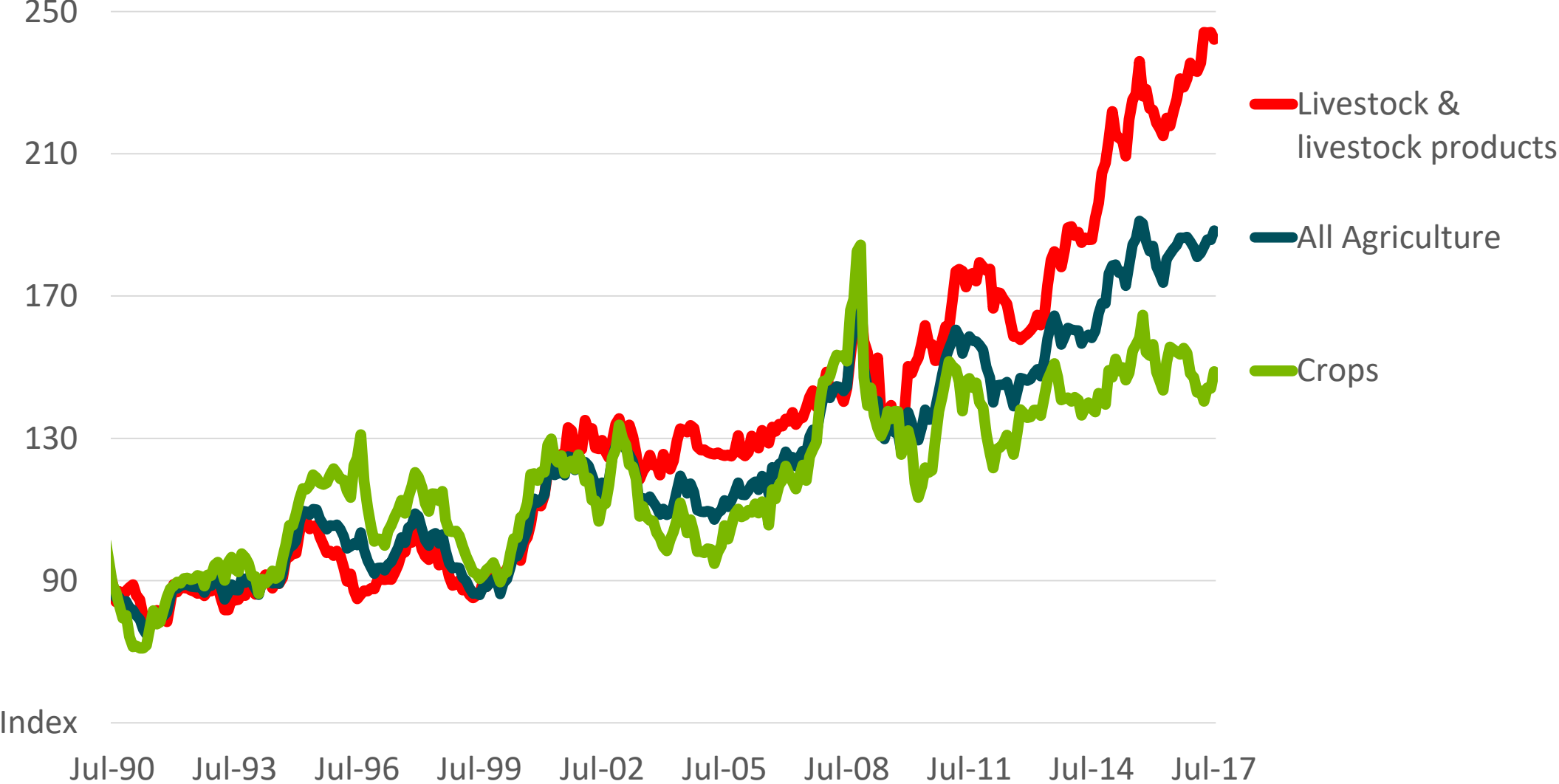
Construction of weights



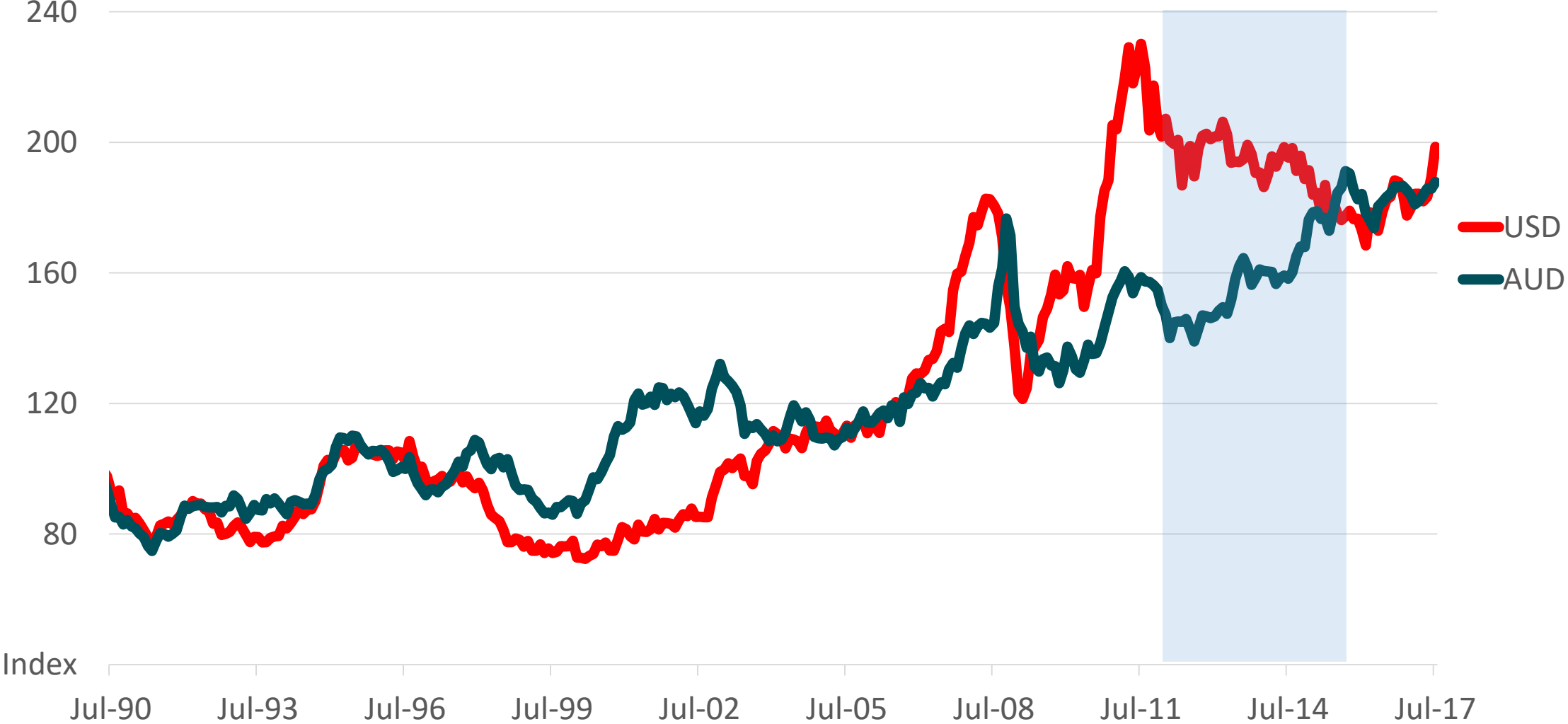
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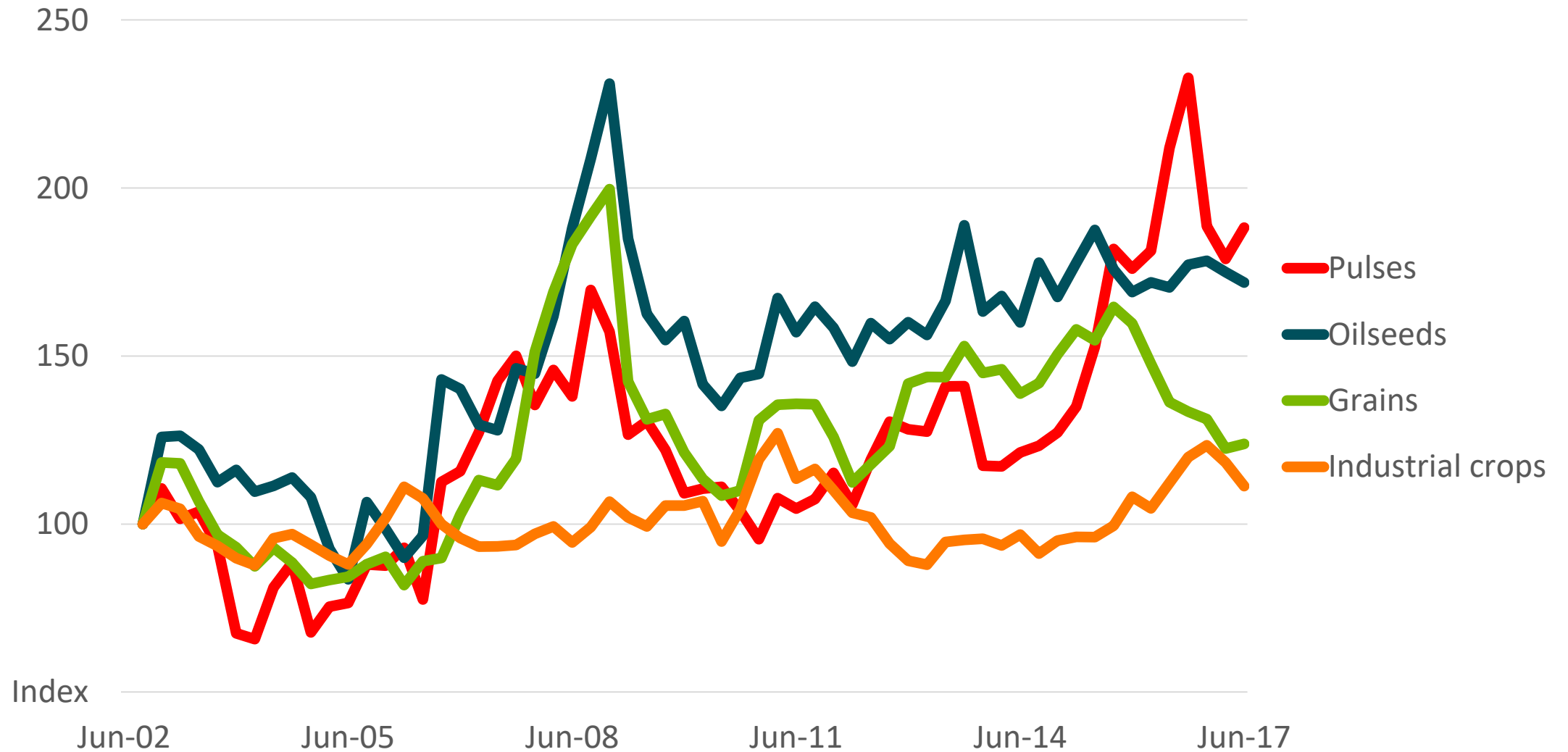
Monthly agricultural export price indexes



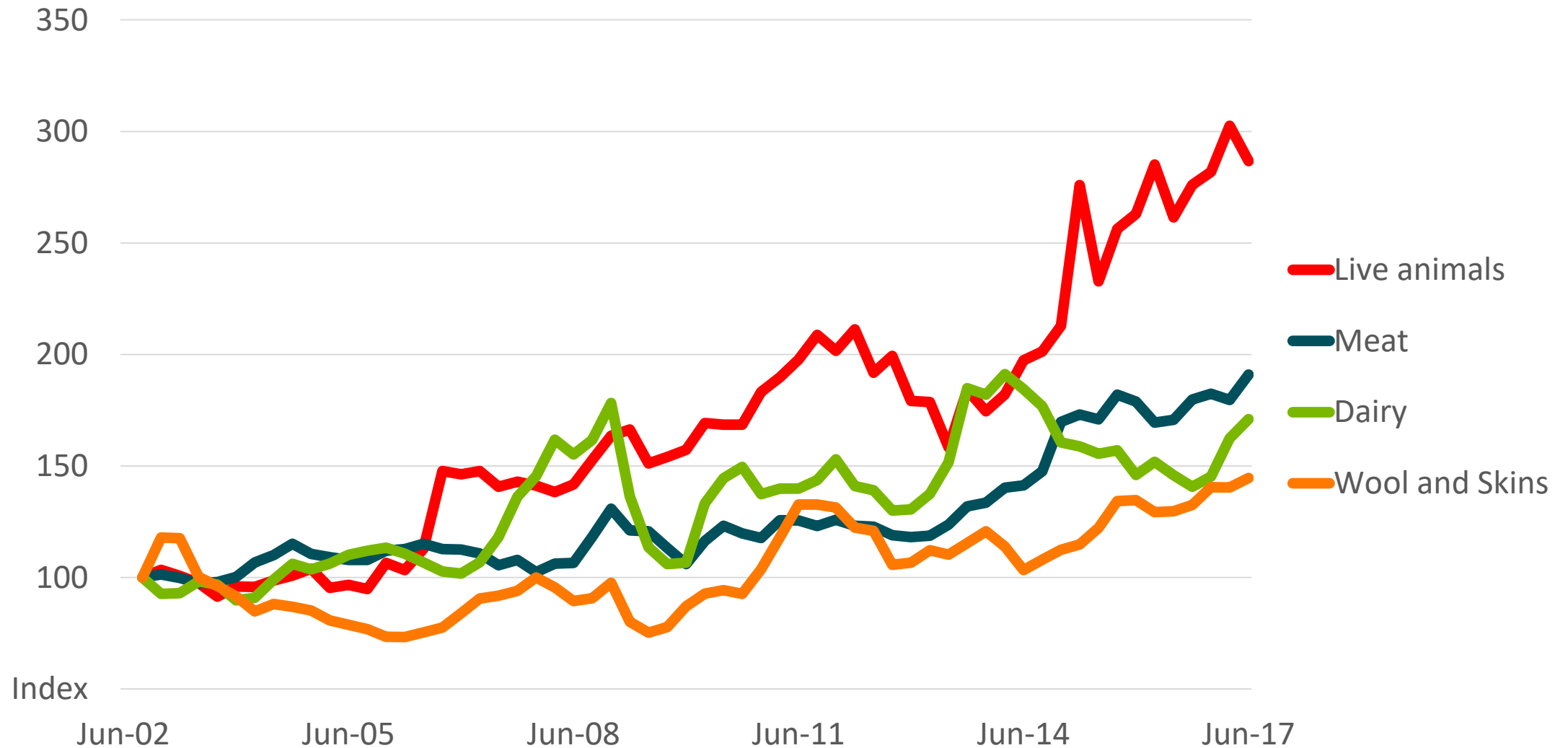
Monthly agricultural export price indexes



Subindexes – crops



Subindexes – livestock and livestock products



We would really appreciate your feedback on:

1. Chaining method
2. Construction of weights
3. Use of average unit values

Thank you



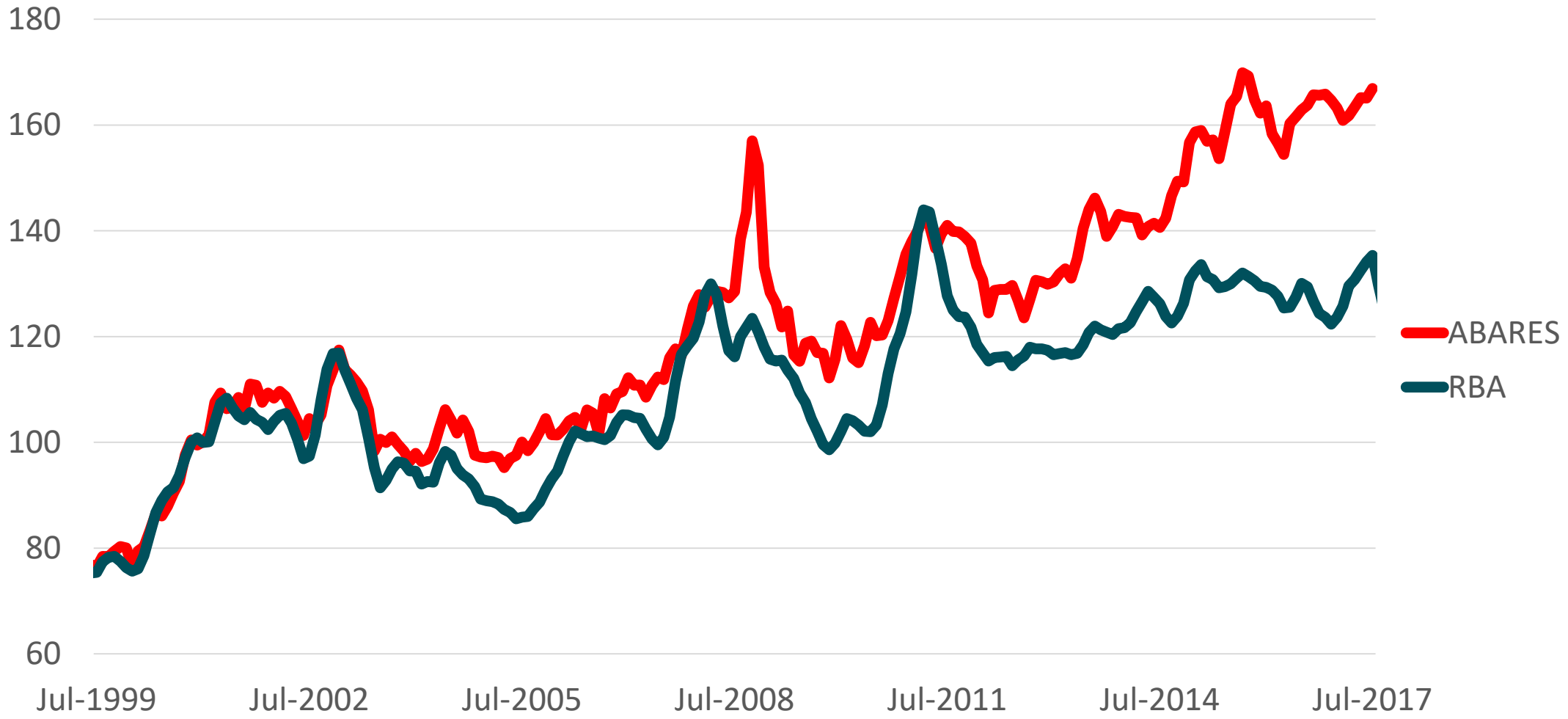
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Export price index comparison

Export price indexes



Indicator prices

- Available monthly

BUT:

- Difficult to build a comprehensive index
- Some indicator prices are approximate measures
- Each indicator price is measured differently
- Do not reflect the actual return to Australia

Cotton prices



Survey prices

- Gold standard

BUT:

- No access/very expensive
- Only available on a quarterly basis

Index formulas

Laspeyres Index:
$$L_t = \frac{\sum_i p_{it} q_{i0}}{\sum_i p_{i0} q_{i0}} = \frac{\sum_i v_{i0} (p_{it}/p_{i0})}{\sum_i v_{i0}} = \sum_i w_{i0} (p_{i1}/p_{i0})$$

Paasche Index
$$P_t = \frac{\sum_i p_{it} q_{it}}{\sum_i p_{i0} q_{it}} = \frac{\sum_i v_{it} (p_{it}/p_{i0})}{\sum_i v_{it}} = \{\sum_i w_{i1} (p_{i0}/p_{i1})\}^{-1}$$

Fisher Index
$$F_t = (L_t P_t)^{\frac{1}{2}}$$