

Using transactions data to enhance the CPI

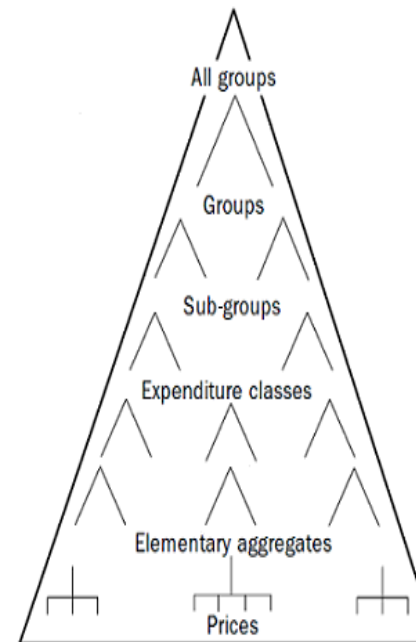
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Outline

- Traditional Australian CPI method
- Maximising transactions data – a phased approach
- Phase 1 – replacement
- Phase 2 – using more price observations, real time quantity data
- Phase 3 – multilateral indexes
- Conclusion

Traditional Australian CPI method

- Field collection
- Non-probability sample
- Lowe formula used to produce indexes above the EC
- Jevons formula is used to produce indexes below the EC level



All groups is the highest level of the index containing all the groups, sub-groups and expenditure classes.

Expenditure classes are groups of similar goods or services. They are the lowest level at which indexes are published and weights are fixed. There are 87 expenditure classes in the 16th series CPI.

Elementary aggregates are the basic building blocks of the CPI. Each elementary aggregate contains several prices for a particular good or service. There are approximately 1,000 elementary aggregates in each capital city. About 100,000 price observations are collected each quarter across the capital cities.

Maximising scanner data

- Current CPI high quality, but demand for enhancements
- Benefits of transactions data well established
- Transactions data recently secured
- Careful implementation required - phased

Stage 1 - Replacement

- Significantly expanded the use of transactions data in March quarter 2014
- Now approx 25% of the weight.
- Replacement / change in collection method
- Stock Keeping Unit rather than GTIN
- Unit prices
- Additional processes required...

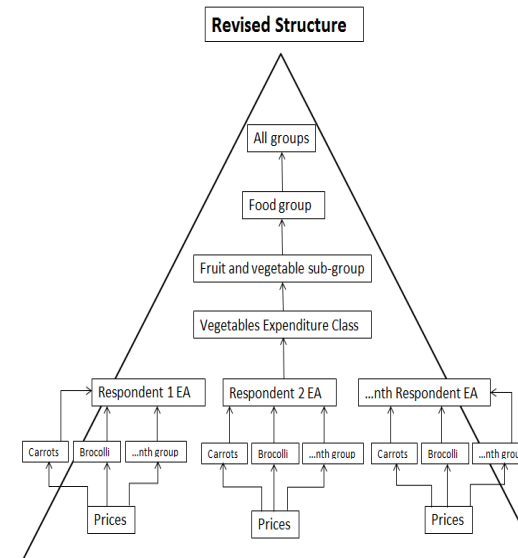
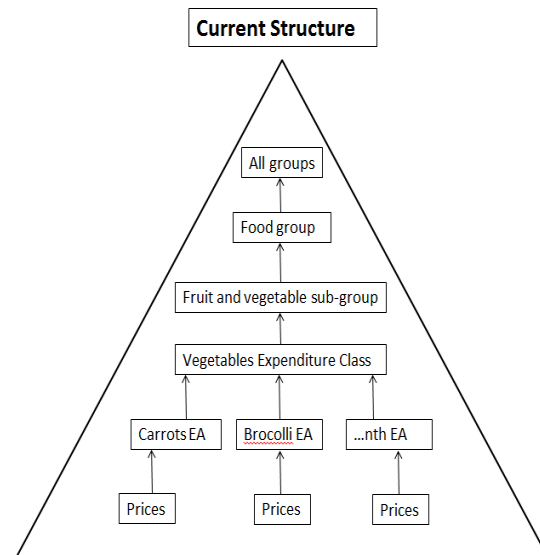
Stage 1 – additional processes

- Quality change.
- Maintaining a representative sample.
- Introducing a new products into the sample.

Phase 2 – using more price observations, real time quantity data

- Move from simple replacement, to using the majority of price observations.
- Expansion of relevancy rules and method for determining a previous period price.

Phase 2 – continued... real time quantity data



Phase 3 – Multilateral methods

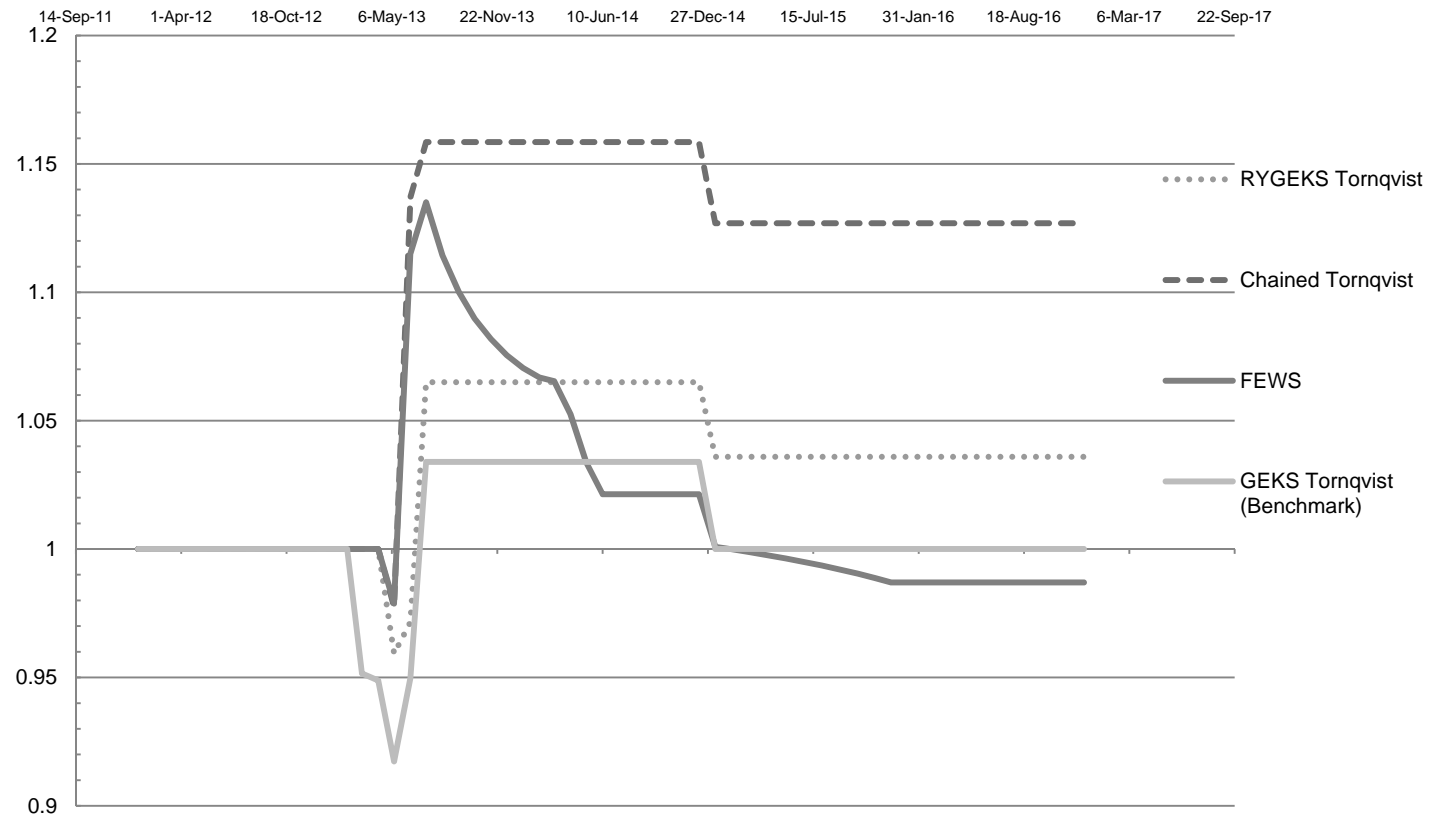
- Multilateral methods represent best way to maximise use of transactions data.
- Rapidly evolving field.
- Comparisons quickly focused on RYGEKS and FEWS.
- Mixture of transactions data and simulated data.

Phase 3 – real transactions data

- Monthly indexes were constructed for each respondent at the EC level.
- Chained Tornqvist exhibited drift.
- FEWS / RYGEKS generally behaved similarly
- FEWS could adjust correctly for simultaneous changes in quantity / price. RYGEKS did not.

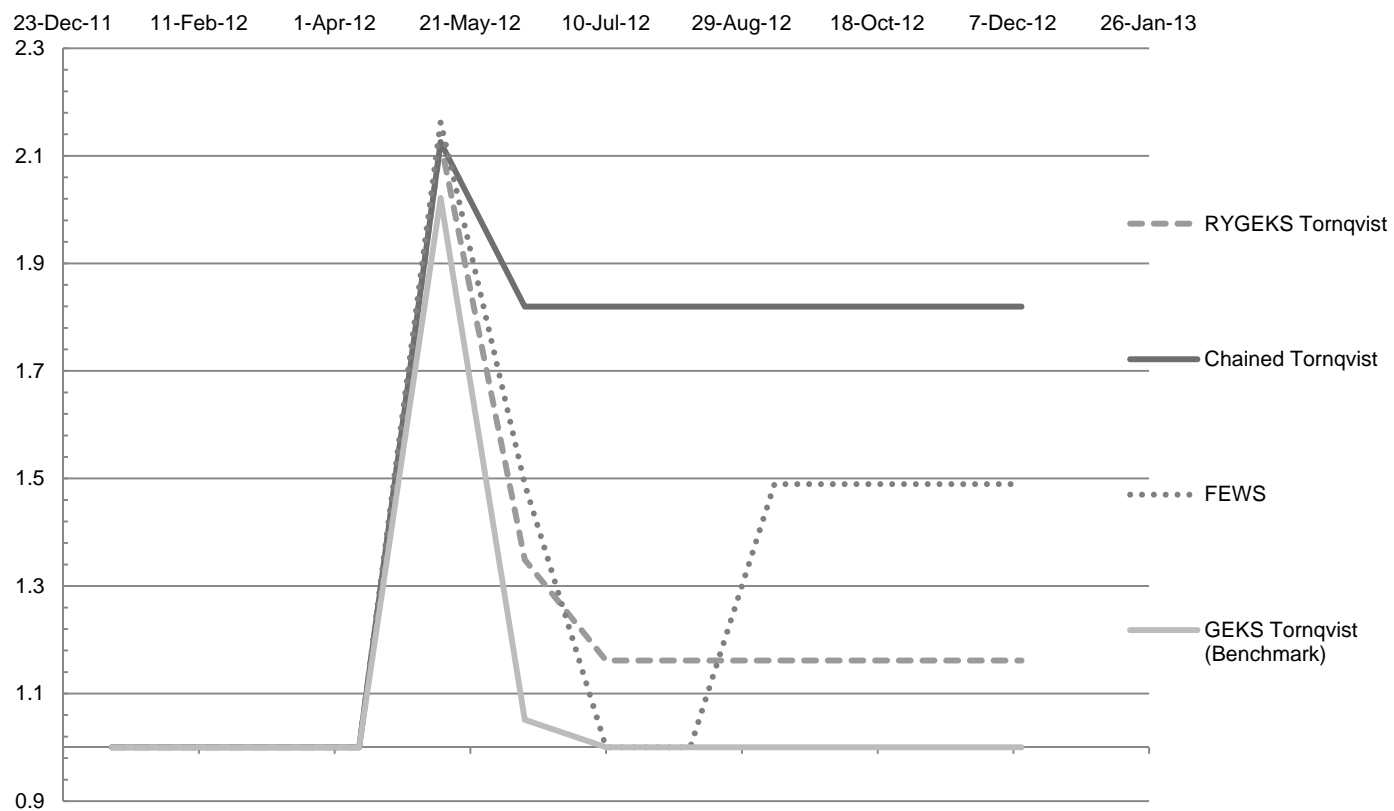
Phase 3 - Simulation 1: Loss of identity in the FEWS index

Price index for simulation 1



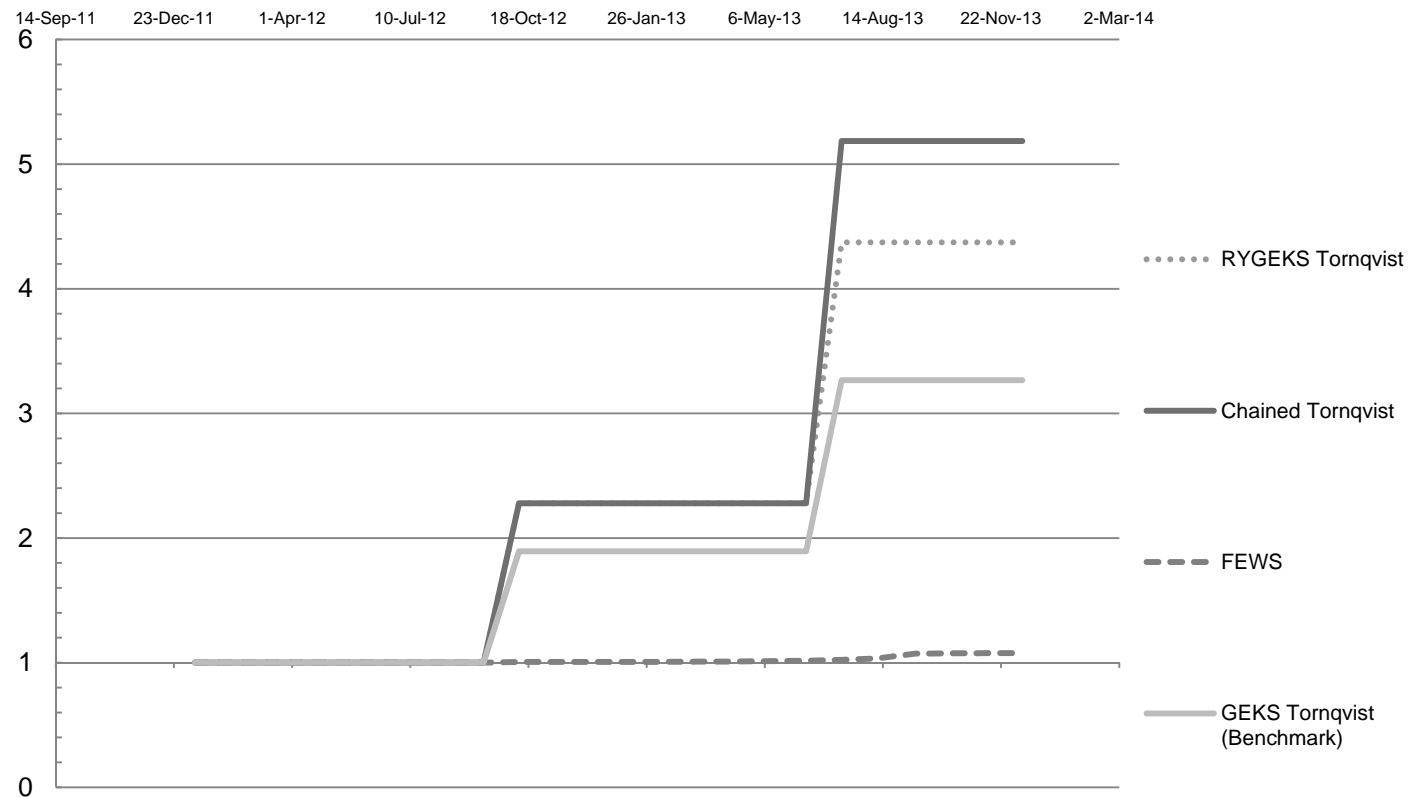
Phase 3 - Simulation 2: Undesirable properties of FEWS due to product rotation

Price Index for simulation 2



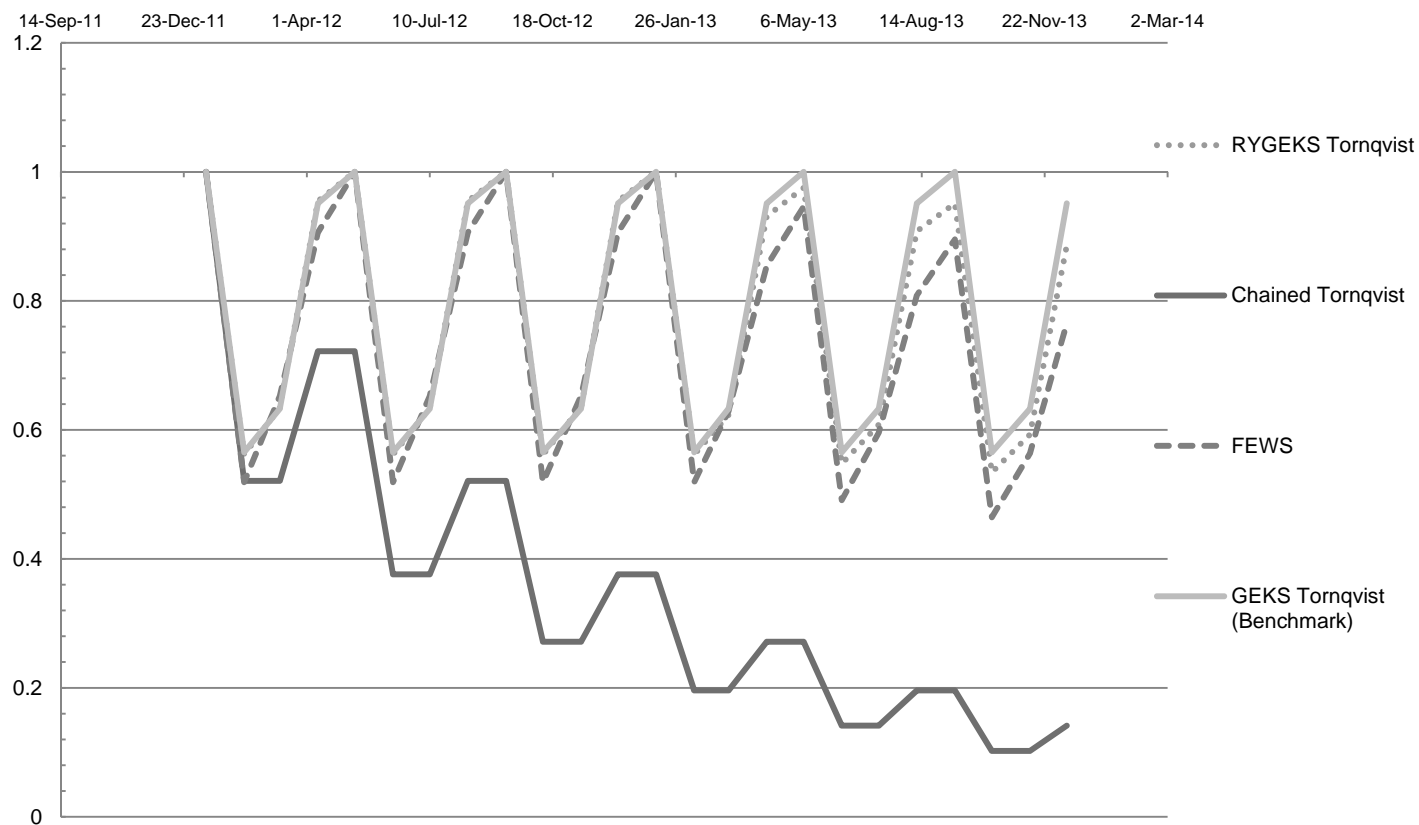
Phase 3 - Simulation 3: Undesirable properties of RYGEKS due to loss in market share

Price Index for simulation 3



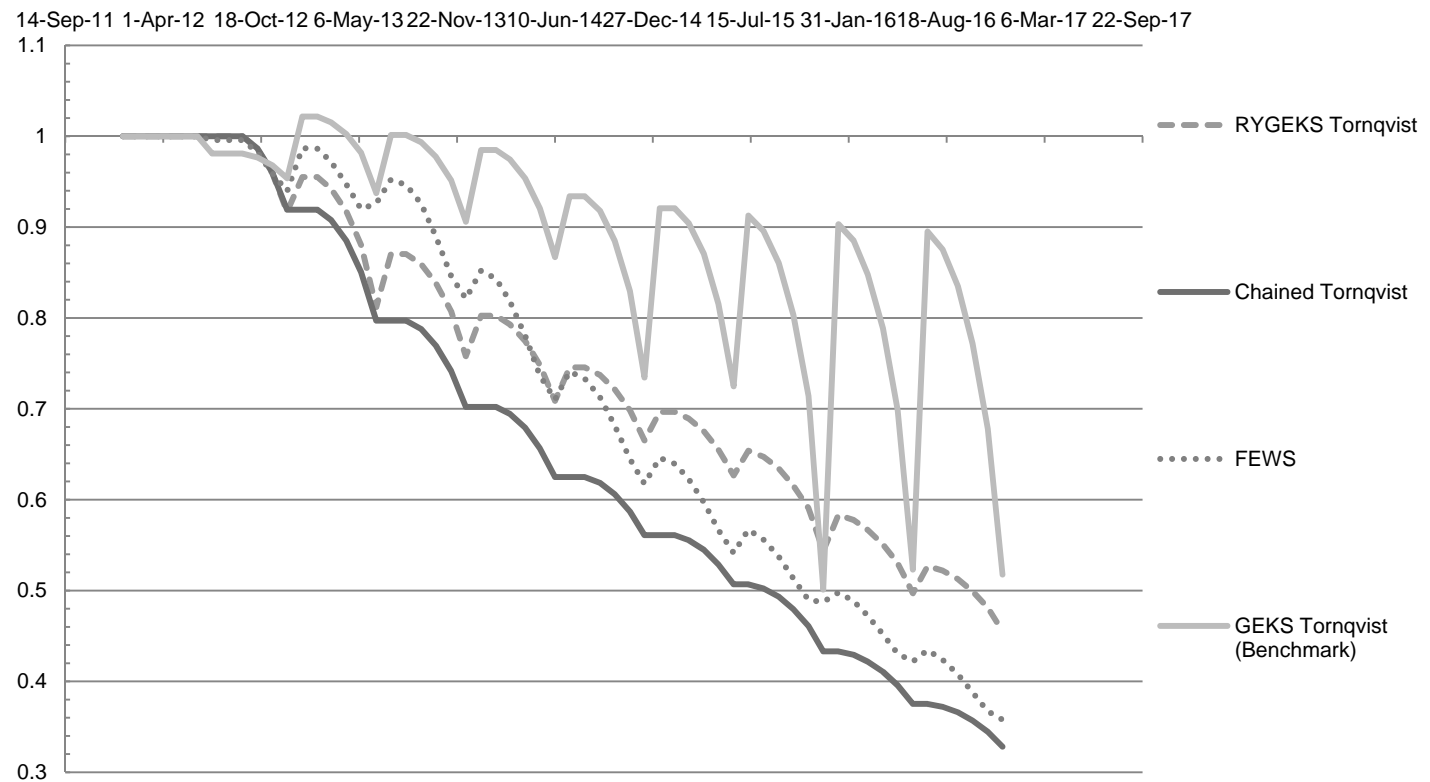
Phase 3 - Simulation 4: Drift in FEWS relative to GEKS

Price Index for simulation 4

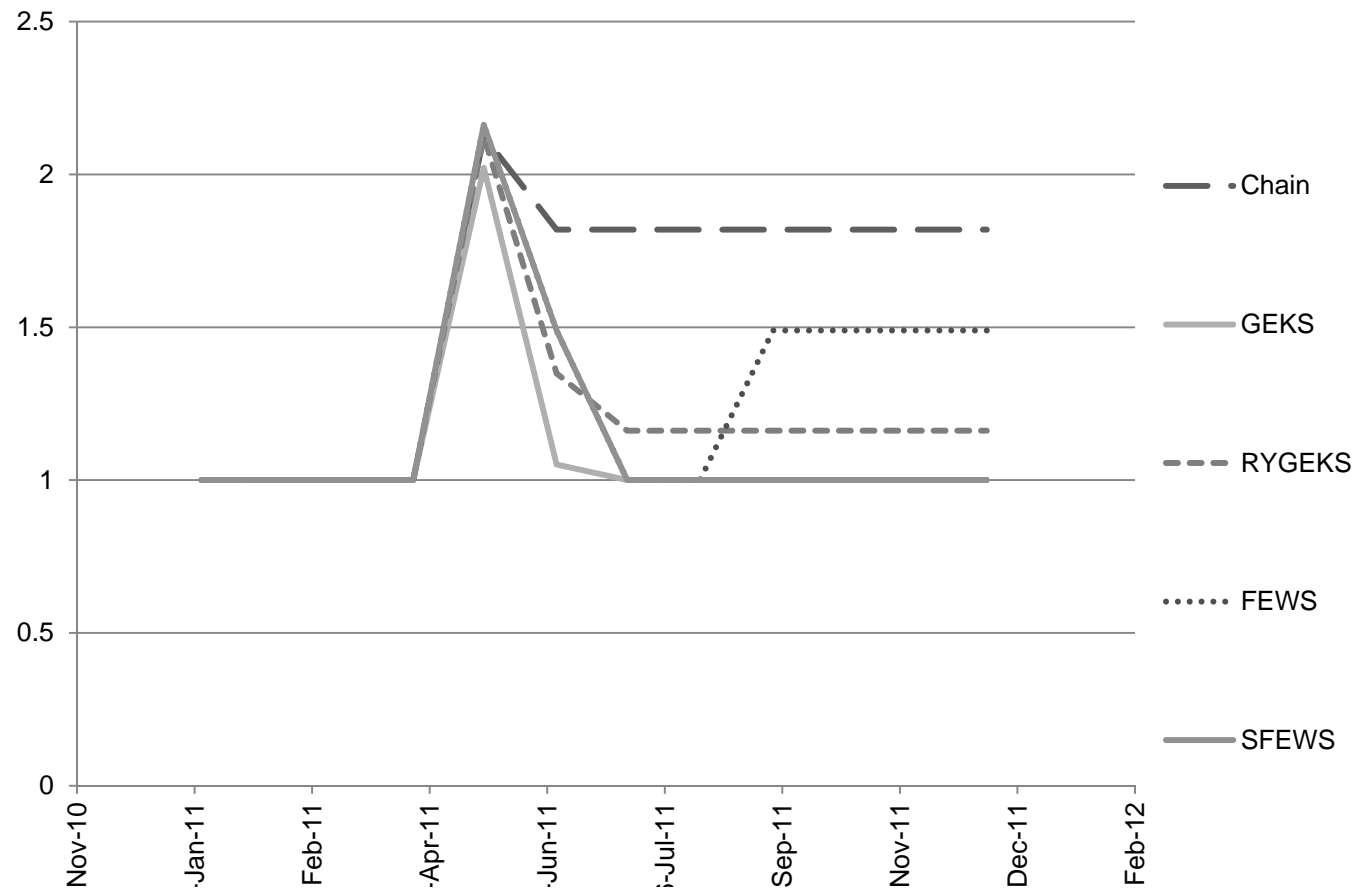


Phase 3 - Simulation 5: Further example of drift

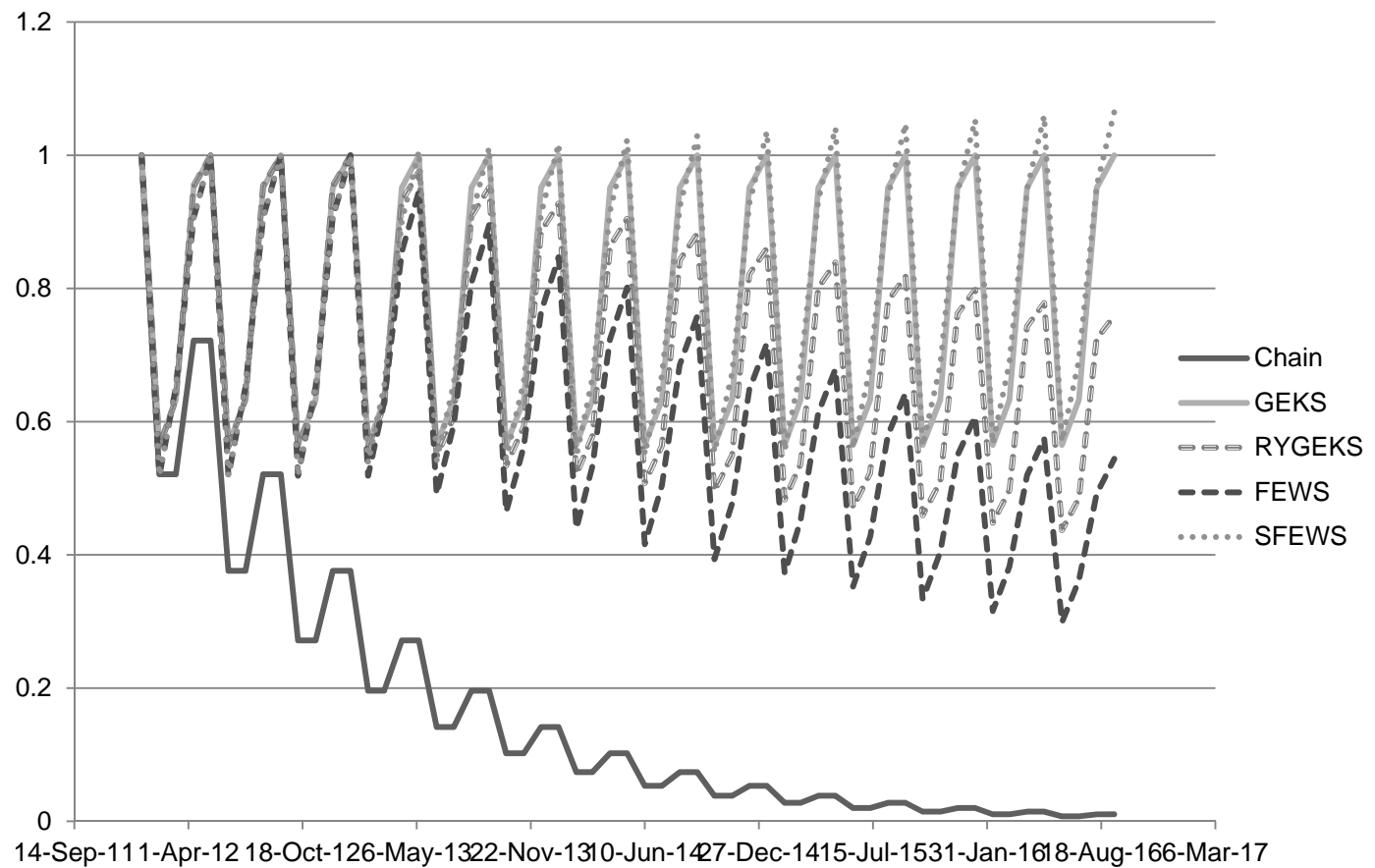
Price Indices for Simulation 5



Phase 3 – reducing the splice window



Phase 3 – reducing the splice window



Conclusion

- Work confirms transformational potential of transactions data
- Phased approach the ABS preferred method
- Additional research required
- Questions?