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Linking in the New Zealand ETS: lessons learned (and what to watch)

Judd Ormsby and Suzi Kerr

Contributed paper prepared for presentation at the 59th AARES Annual Conference,
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Linking in the New Zealand ETS: lessons learned (and what to watch)

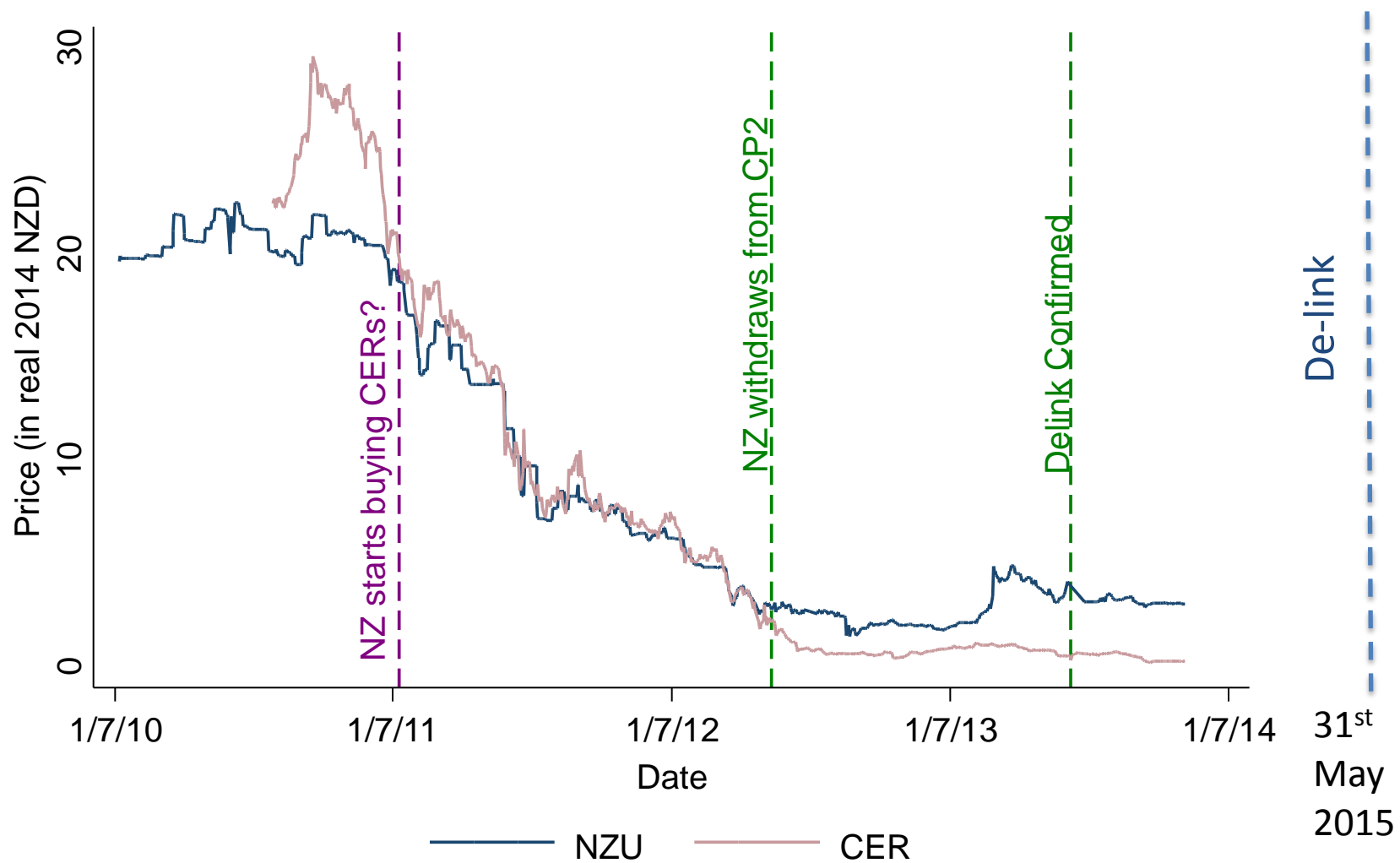
AARES

11 February, 2015

Judd Ormsby and Suzi Kerr

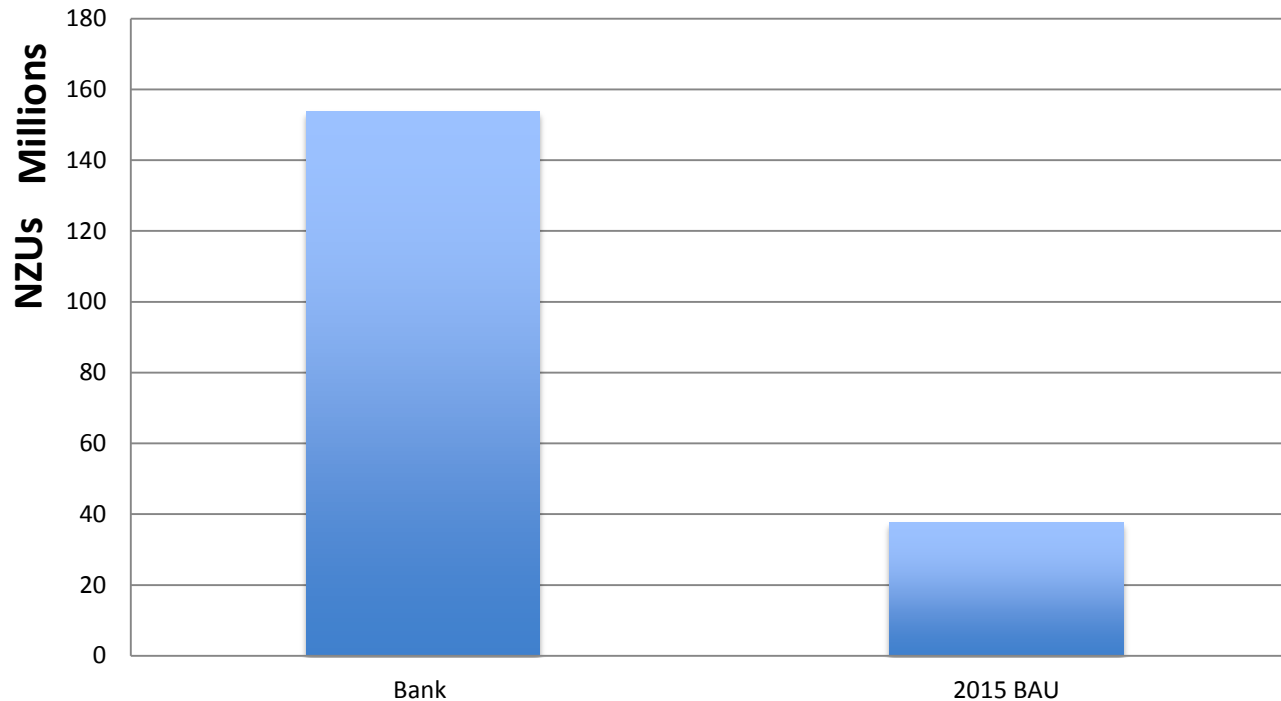
Motu Economic and Public Policy Research

NZ ETS historical prices



Data Source: OM Financial

So now we have a huge bank!



What does this big bank mean for New Zealand? When will it run out? What drives price formation in a de-linked world....



Build a model

What's going to happen going forward?

$$\min \sum_0^T \frac{1}{(1+r)^t} Costs(\text{mitigation}_t)$$

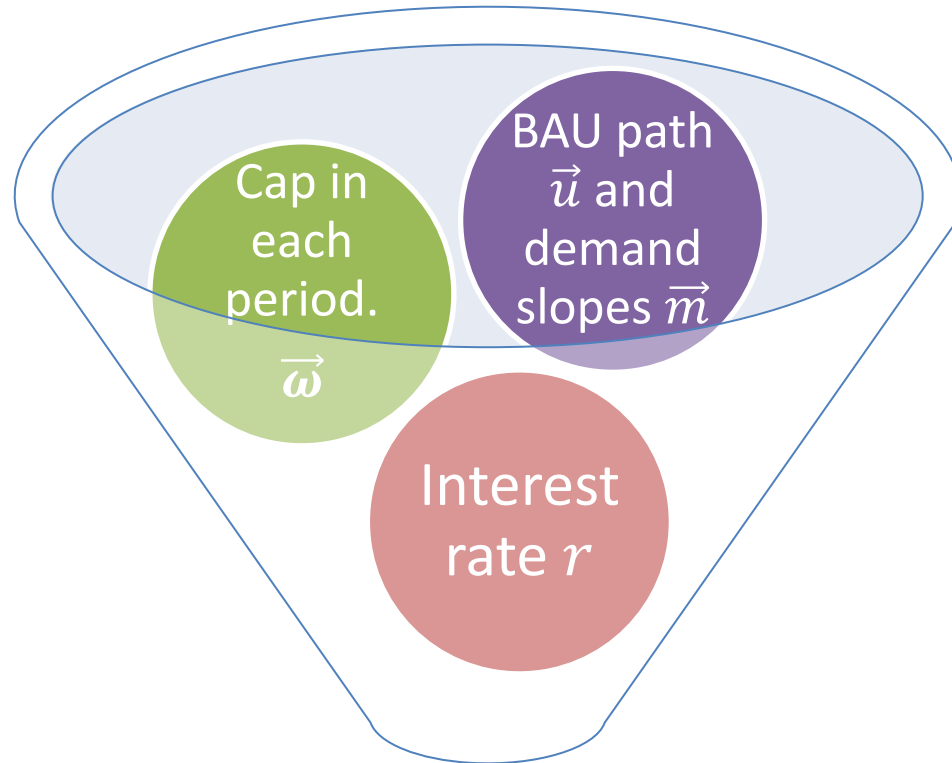
Subject to:

$$F(\cdot)$$

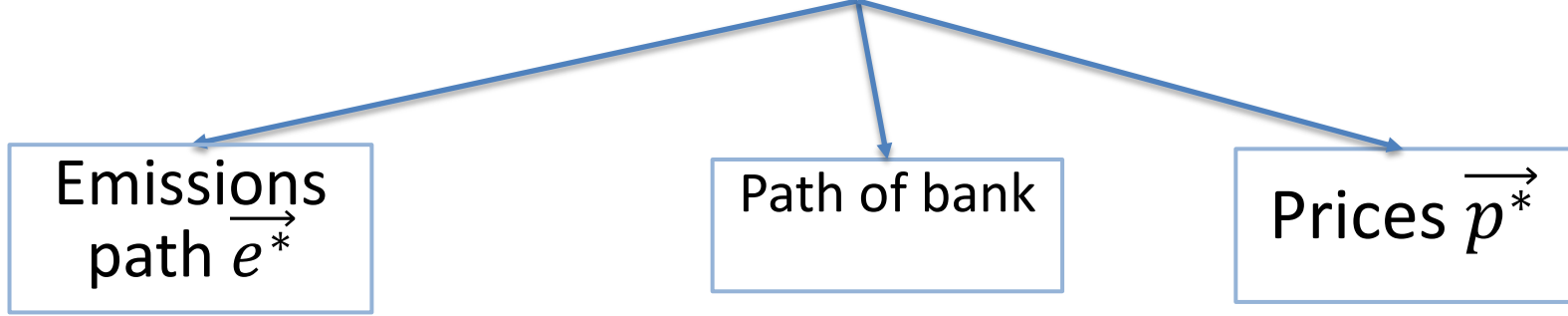
$F(\cdot)$ is a set of carbon constraints (sectors covered, size of caps, international linkages and initial bank)

Results from the first order conditions

- Prices equal marginal abatement costs in each period → The aggregate marginal abatement cost curve is the demand curve for units.
- Prices are increasing in stringency of the cap and business-as-usual (BAU) emissions.
- Prices rise at rate of interest *or* bank is empty.

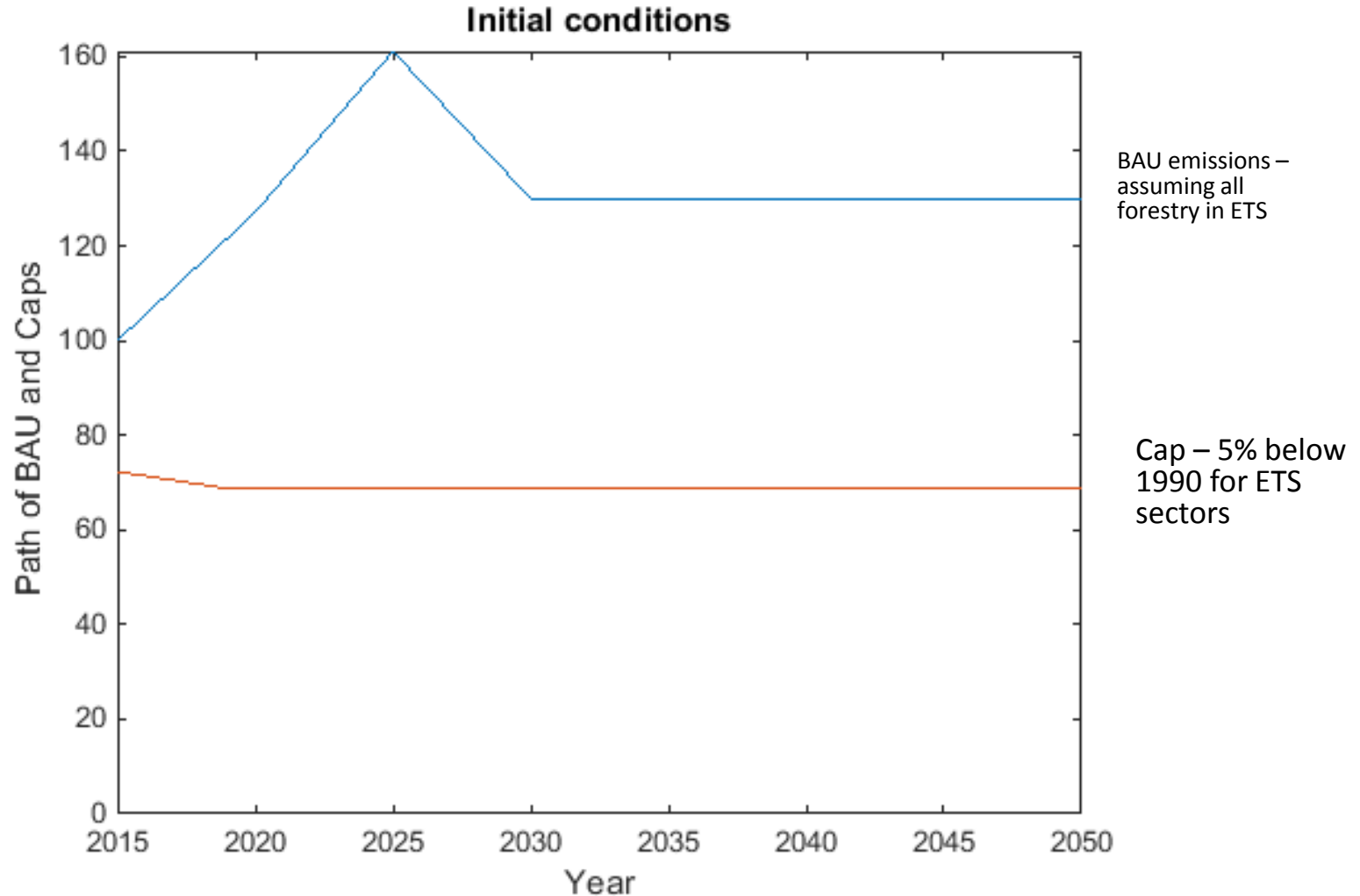


Matlab

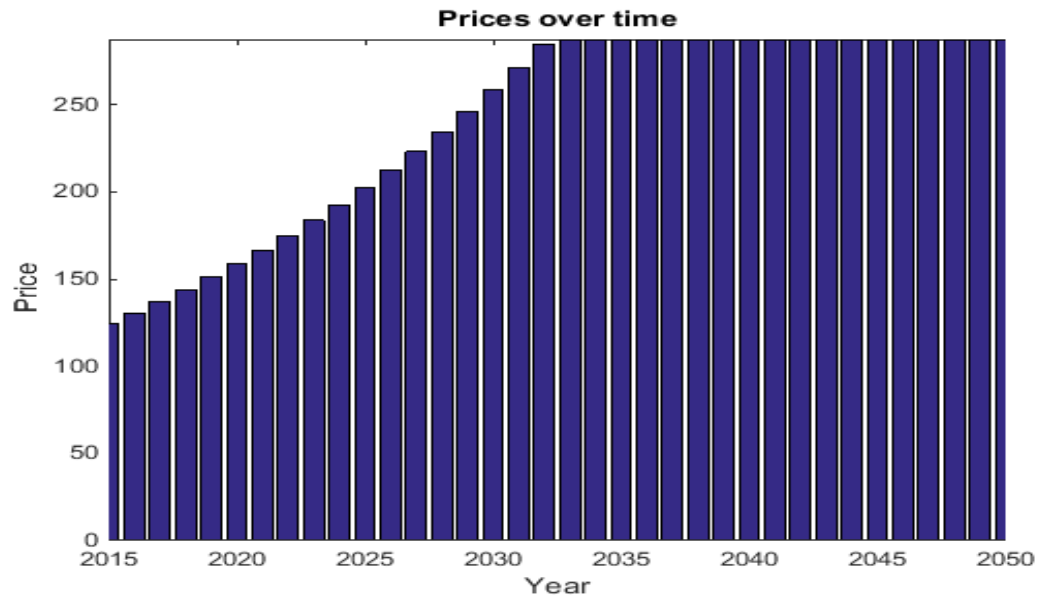


Simple illustrative model: cap

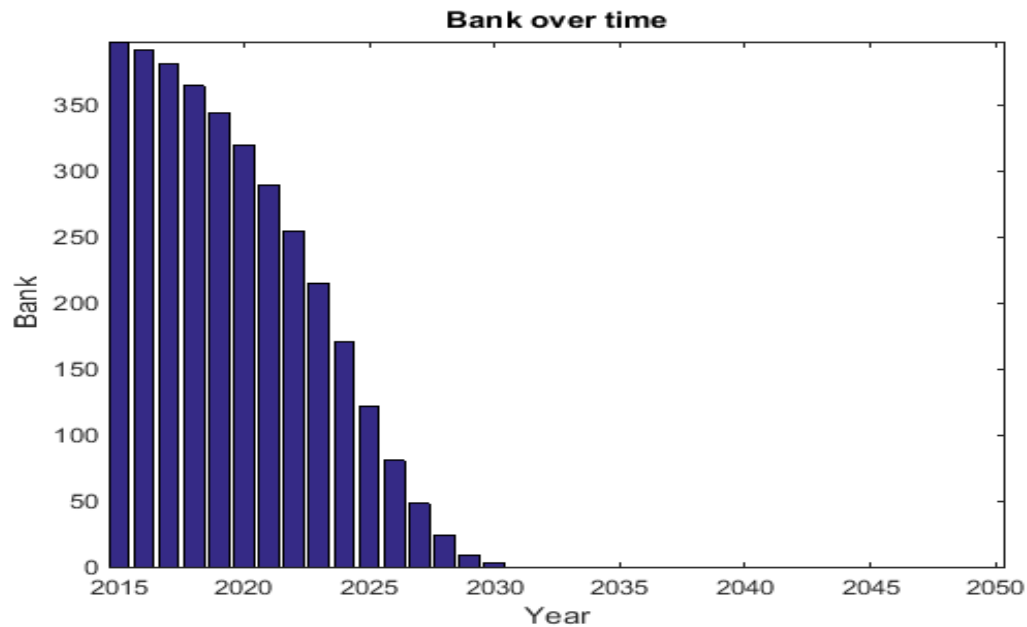
Bank is four times BAU (ETS sectors) in 2015



Bank and price with no linking



Bank and price with no linking

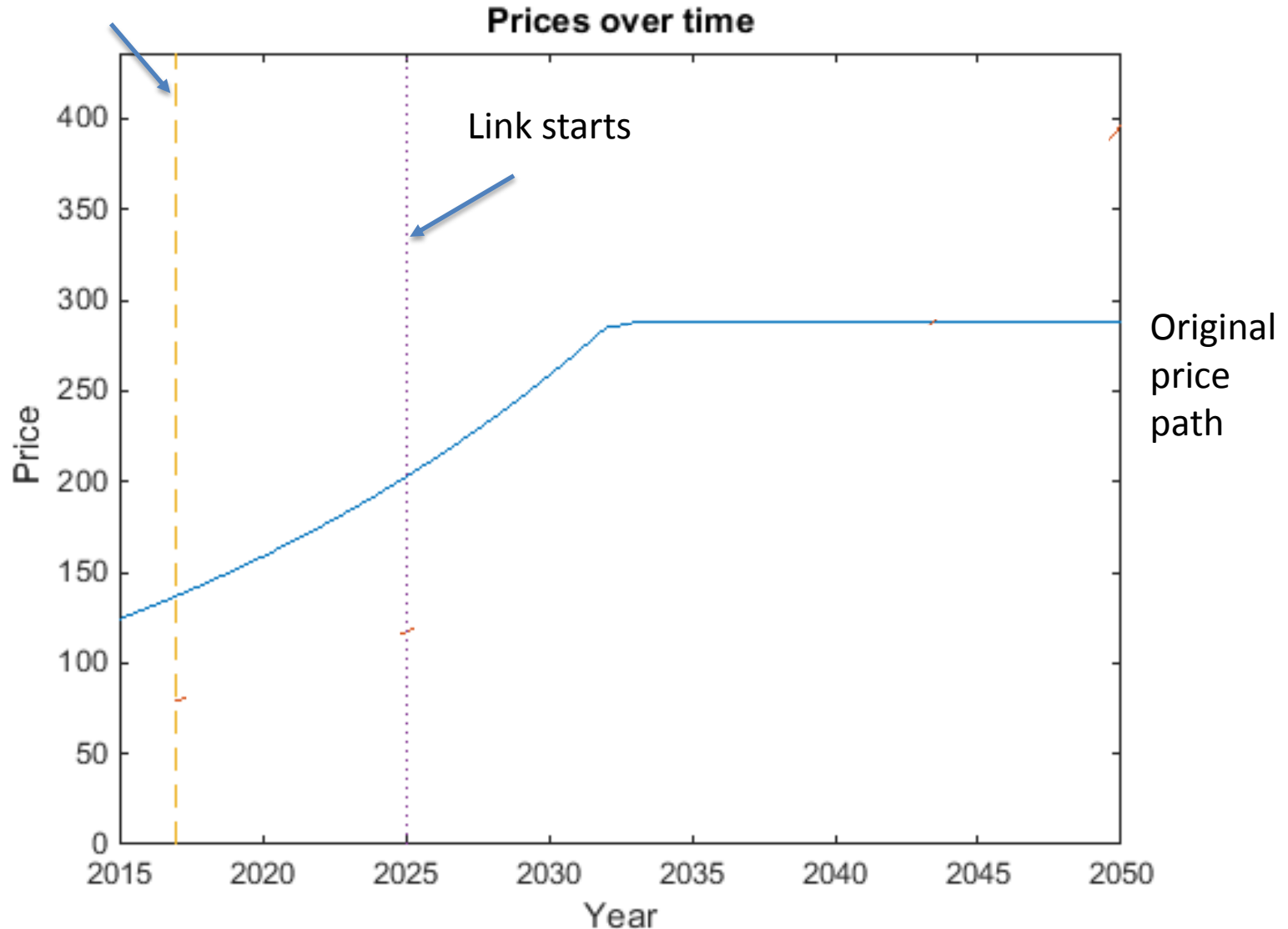


What if we link?



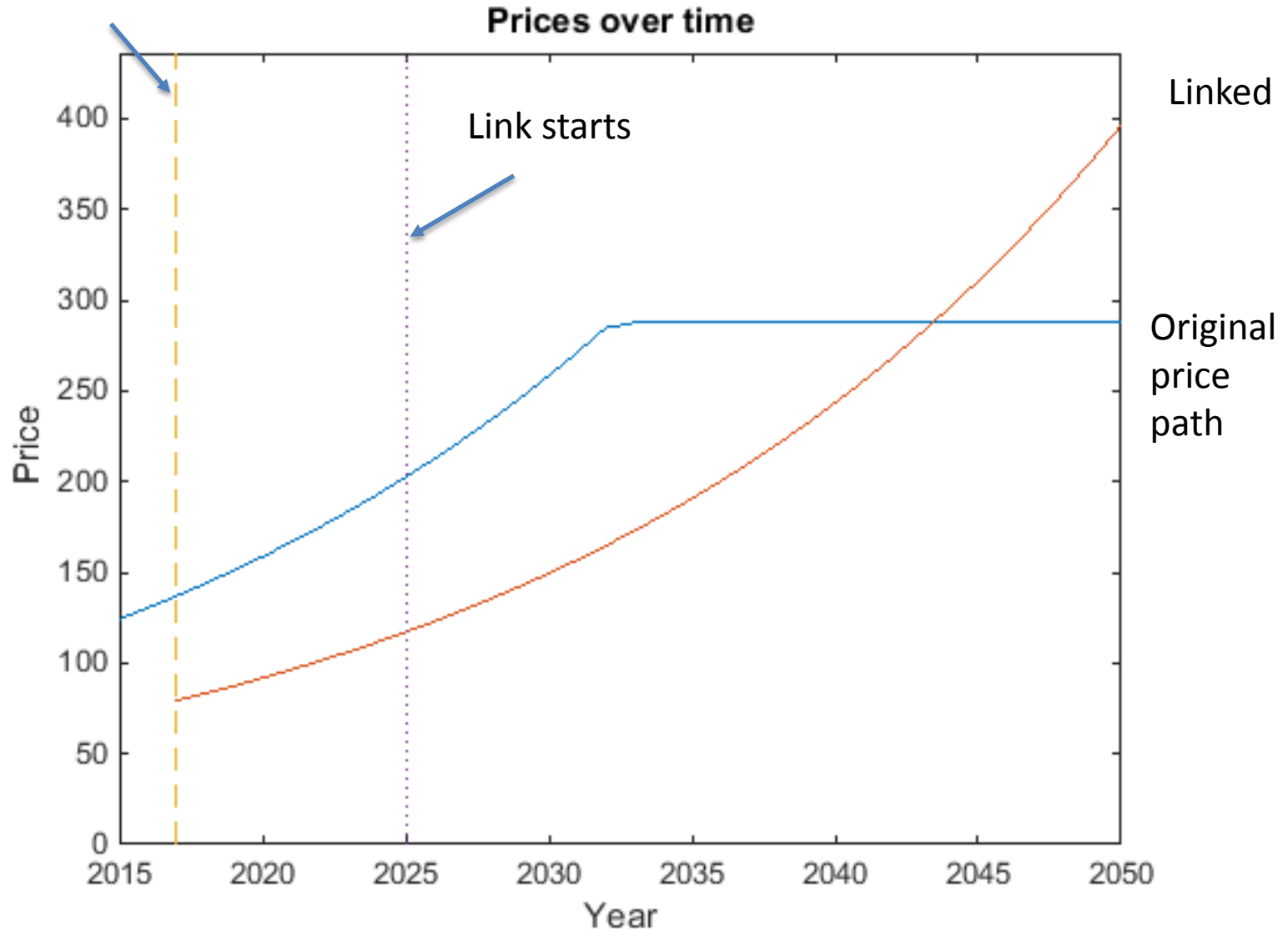
What if we think we will be able to link in 2025?

Link announced



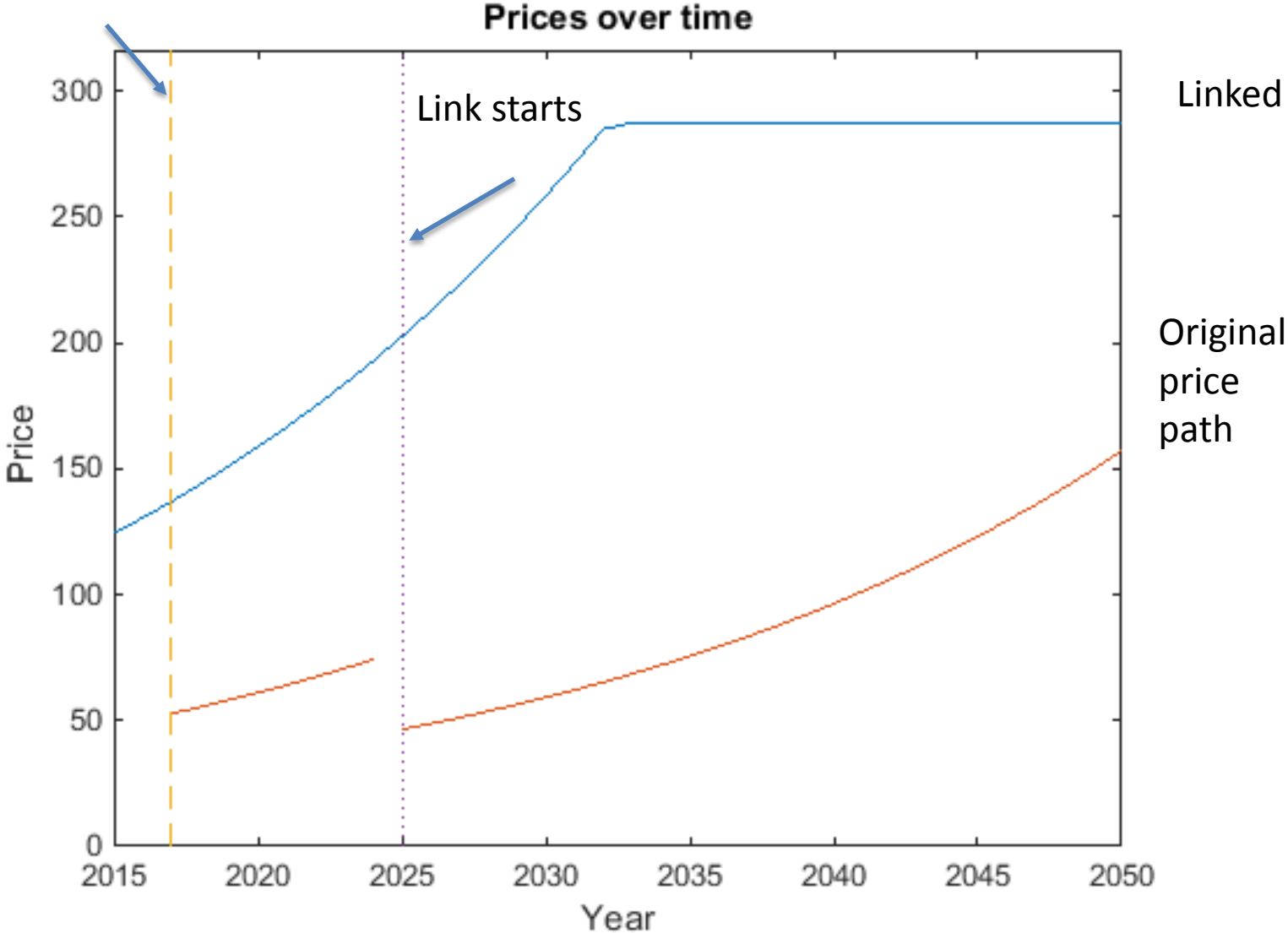
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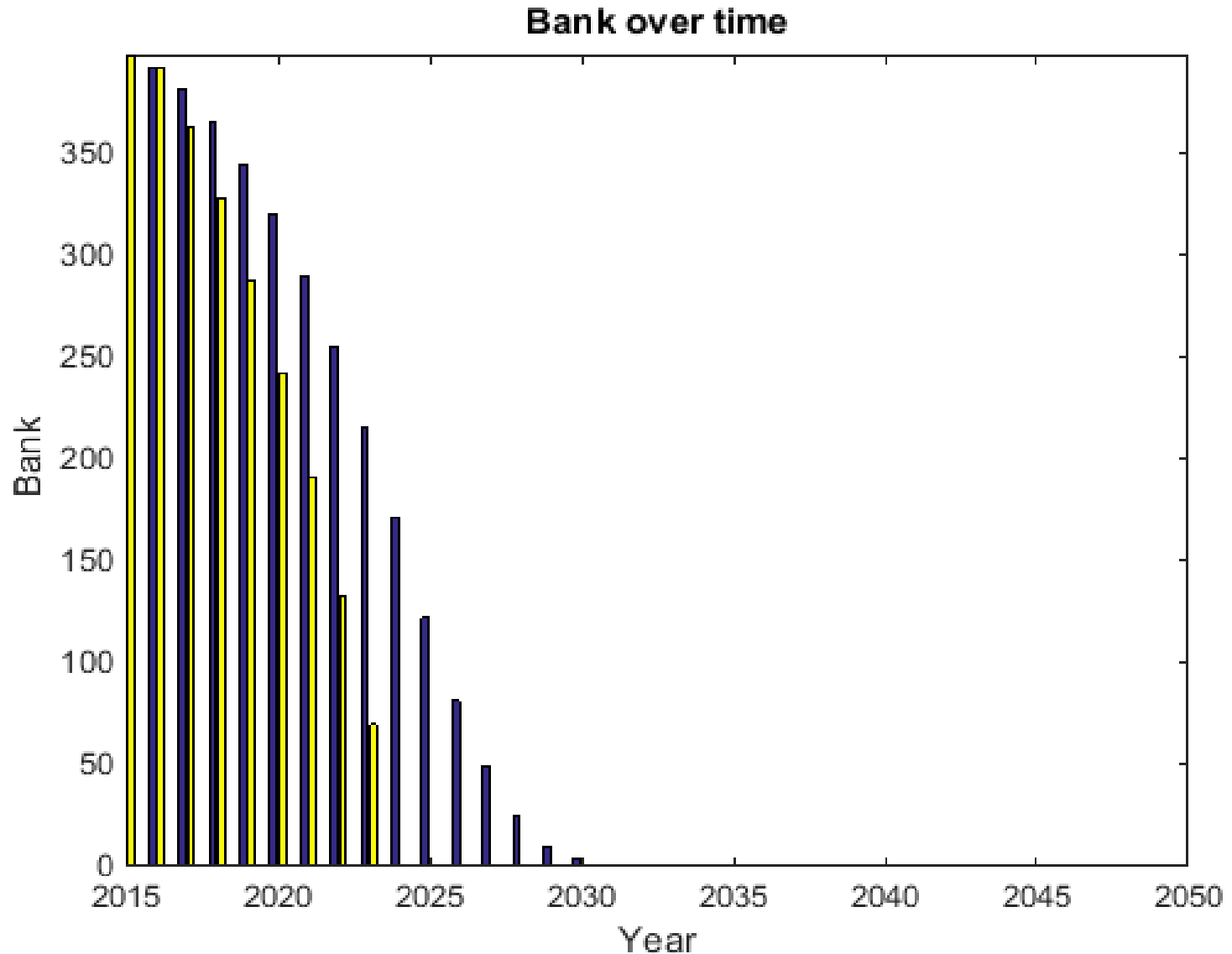


What if we think international price will be low? The bank is too small!

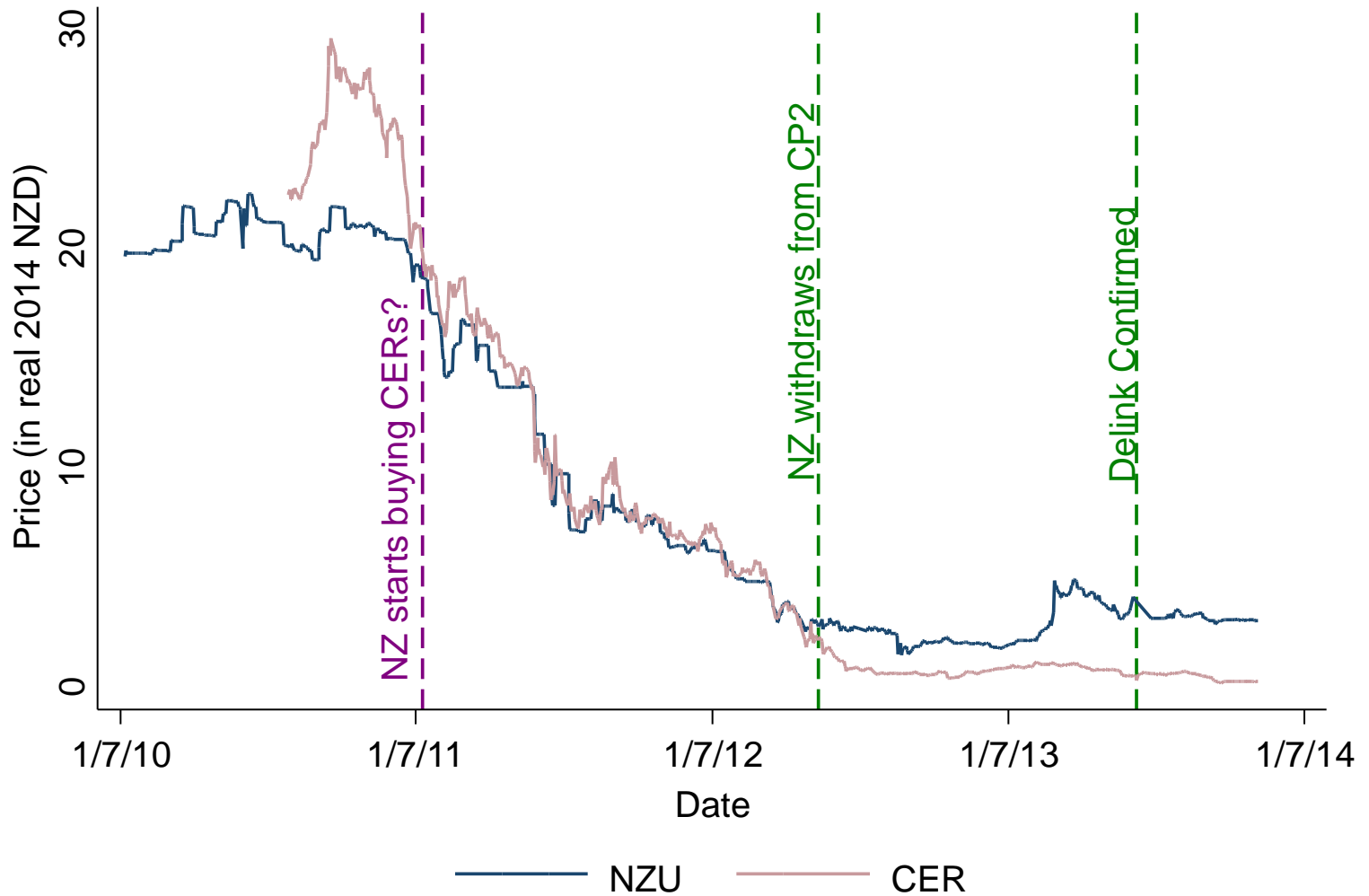
Link announced



Use up bank fast if ETS anticipates linking at low price



Back to reality



Data Source: OM Financial

Main Takeaways

This is a learning tool to play with.

Linking and stringency are key!

There is a disconnect between the prices required to achieve a 5% below 1990 target and what the market is predicting.

