



THE ÖRESUND BRIDGE CREATED UNEXPECTEDLY MUCH NEW TRADE BETWEEN DENMARK AND SWEDEN

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STUDY IN A NUTSHELL



- Focus on **fixed links** – bridges, tunnels, etc – that turn water barriers between neighboring countries into land connections.
- Specifically, we ask: How much extra aggregated bilateral goods trade was created between Denmark and Sweden when the **Øresund Bridge** was opened?
- With the help of a so-called **synthetic control method**, we find that the bilateral trade in goods between Denmark and Sweden is **25% greater** than it would have been if the bridge had never been built.
- The effect is at least as great as that of joining the EU.

EMPIRICAL CONTEXT

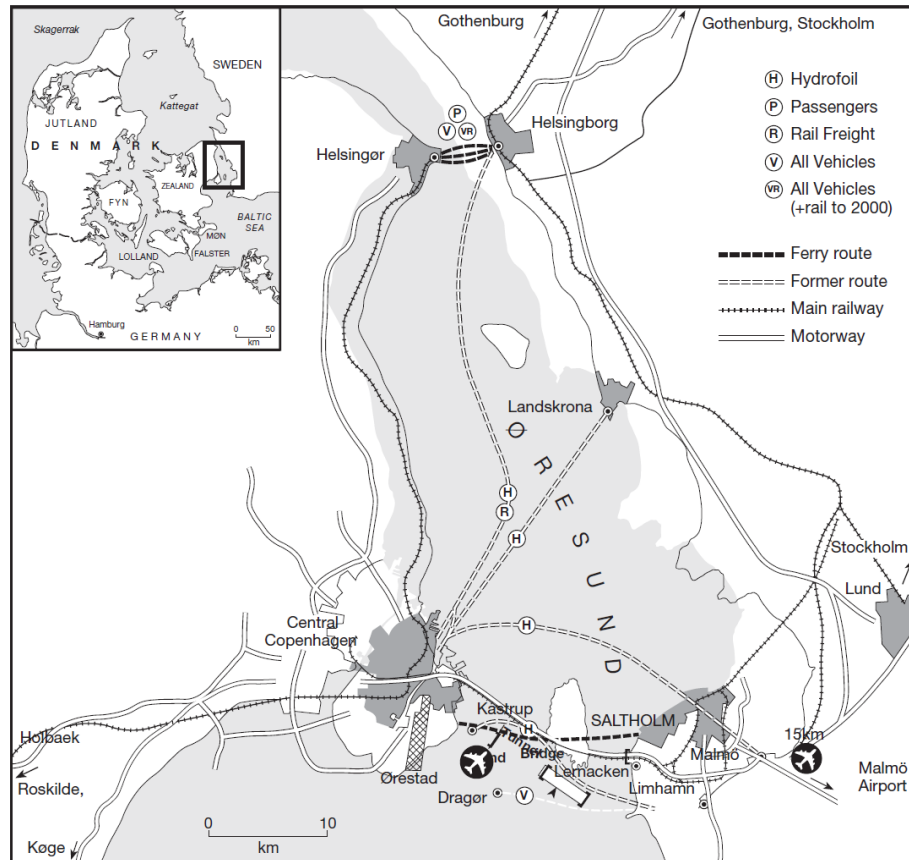


Figure 1. Trans-Öresund transport routes. Modified from Knowles 2006.

- Sweden and Denmark has close political, economic, cultural and linguistic ties. Long history of Nordic integration that predates the EU. Thus, many trade barriers are very low.
- Sea border separates Denmark and Sweden.
- Before the bridge, people and goods could cross the water via ferries and hydrofoil services.
- Thus, even with respect to transportation, the region was already pretty well-integrated, but...
- ...a change in the mode of transportation was required to cross the border.

EMPIRICAL CONTEXT



- In 1991, decision taken to build a fixed link.
- Construction started in 1995
 - Bridge plus tunnel to connect Copenhagen and Malmö.
 - Road and rail.
- Officially opened July 1, 2000.
- Note: Ferries are still in operation, so not replaced by the new fixed link.

METHODOLOGY

- Want to know if the bridge **causes** more trade.
- It is not enough to state that the bridge opens, and then Denmark and Sweden trade more. Maybe something else happened at the same time?
- Central methodological difficulty!
- Need to create a counterfactual world where the bridge was never built, and compare how much trade there is in that world with how much trade there is in the real world.
- We do this using the synthetic control method.

METHODOLOGY

- We use trade flows between other European countries.
- The better a given country in the rest of Europe is at predicting trade between Sweden and Denmark before the bridge opens, the higher the weight is that country pair given by an algorithm.
- We then use these weights, along with trade data from the rest of Europe, to create **synthetic trade flows** between Sweden and Denmark.
- These synthetic trade flows represent the counterfactual world in which the bridge was never built.

MAIN RESULT

Figure 3. Average actual and synthetic bilateral trade flows between Denmark and Sweden.

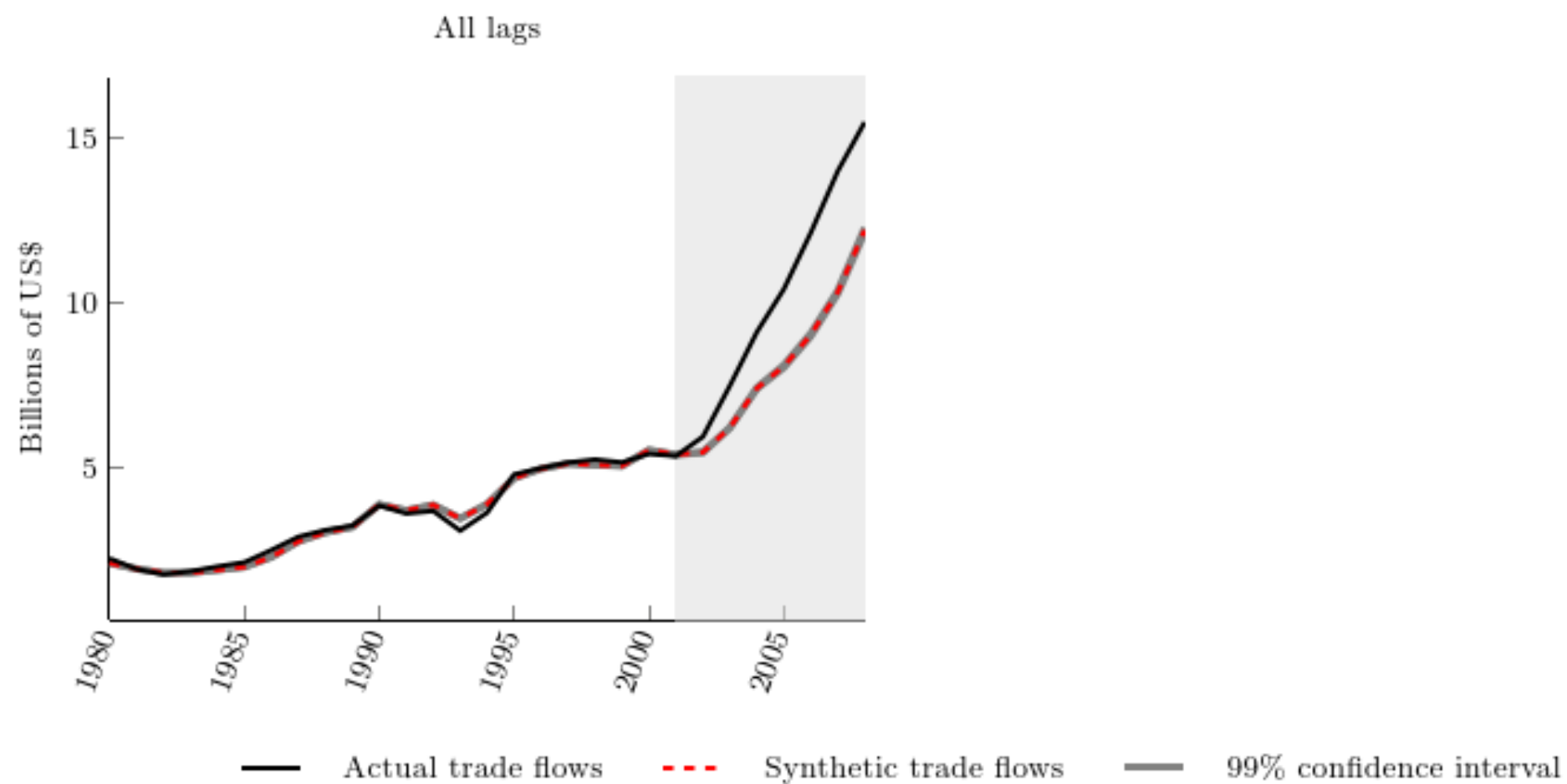


Table 1. Percentage difference between actual and synthetic Danish-Swedish bilateral trade and measures of fit.

	1980-2000	2001-2008	2001-2002	2003-2004	2005-2008
		2001-2008			
Diff. actual vs synth. (all lags)	0.288 (0.009)	24.563 (0.192)	3.943 (0.068)	21.794 (0.102)	31.177 (0.281)
RMSPE (all lags)	0.149 (0.000)	2.348 (0.014)	0.339 (0.003)	1.503 (0.006)	3.136 (0.020)
Post-RMSPE/Pre-RMSPE (all lags)		15.774 (0.078)	2.285 (0.022)	10.117 (0.035)	21.062 (0.109)
Diff. actual vs synth. (three lags)	-0.234 (0.048)	27.824 (0.296)	4.998 (0.126)	21.454 (0.292)	36.570 (0.398)
RMSPE (three lags)	0.219 (0.001)	2.653 (0.021)	0.334 (0.006)	1.492 (0.015)	3.584 (0.029)
Post-RMSPE/Pre-RMSPE (three lags)		12.175 (0.088)	1.501 (0.023)	6.793 (0.050)	16.462 (0.129)

CONCLUSION

- Sweden and Denmark trade about 25 % more with each other because the bridge was built.
 - This effect comes gradually.
- Is that a lot?
- Ongoing research suggests the trade effect is at least as big as that of joining the EU.

