

Price Effects of the Austrian Fuel Price Fixing Act:
A Synthetic Control Study –
Online Appendix

Maike Becker

Gregor Pfeifer

Karsten Schweikert

University of Hohenheim

University of Sydney

University of Hohenheim

1 Check for anticipation effects - gasoline

Figure 1: **Austria versus synthetic control (gasoline, intervention in 2008)**

This figure plots the gasoline prices for Austria and the synthetic control from 2000 to 2018. The intervention is set to 2008.

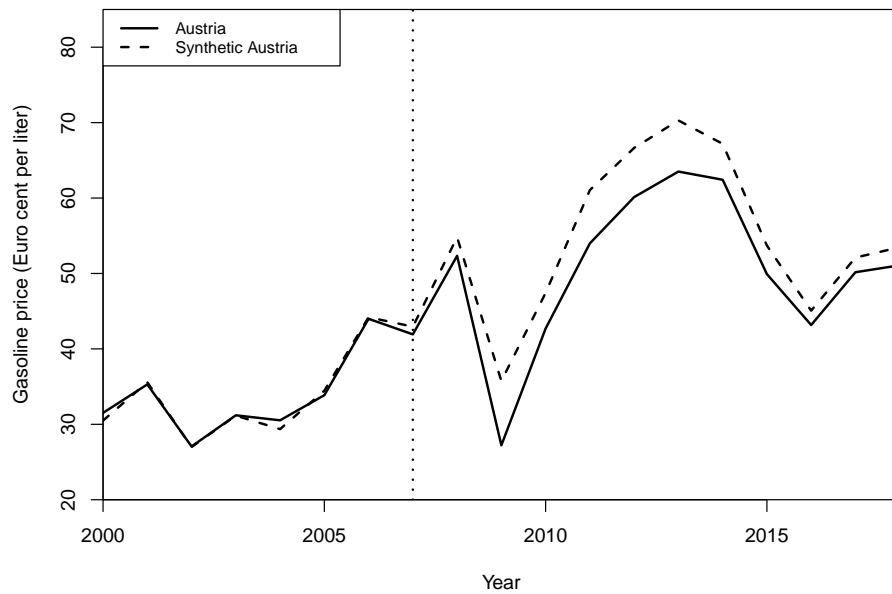
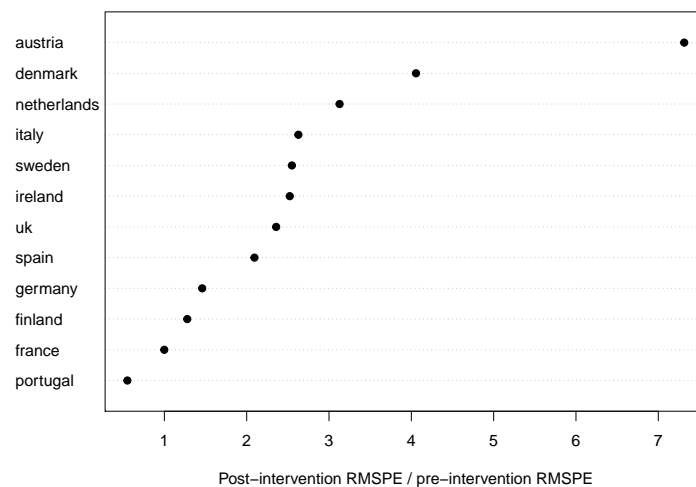


Figure 2: **Ratio of post-RMSPE to pre-RMSPE (gasoline, intervention in 2008)**

This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE when the intervention is set to 2008.



2 Check for anticipation effects - diesel

Figure 3: **Austria versus synthetic control (diesel, intervention in 2008)**

This figure plots the diesel prices for Austria and the synthetic control from 2000 to 2018. The intervention is set to 2008.

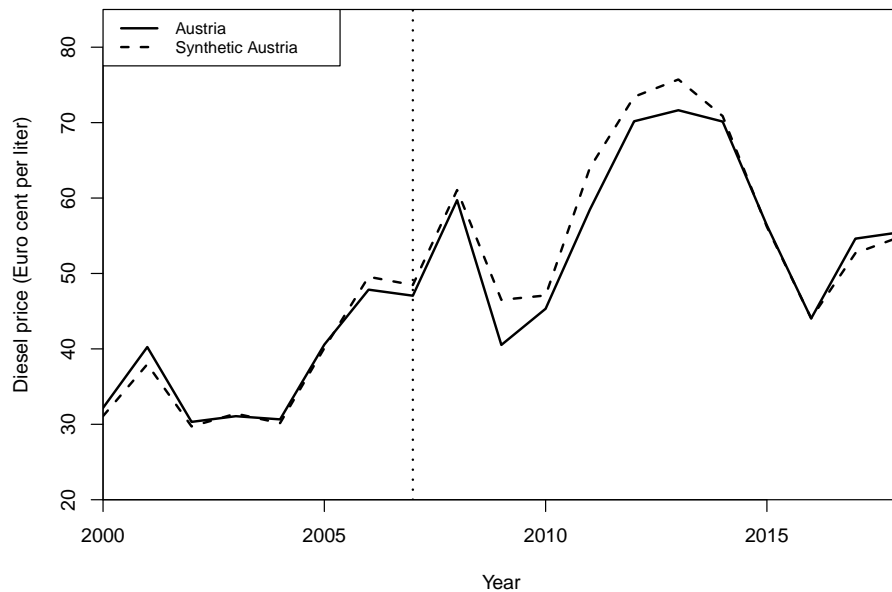
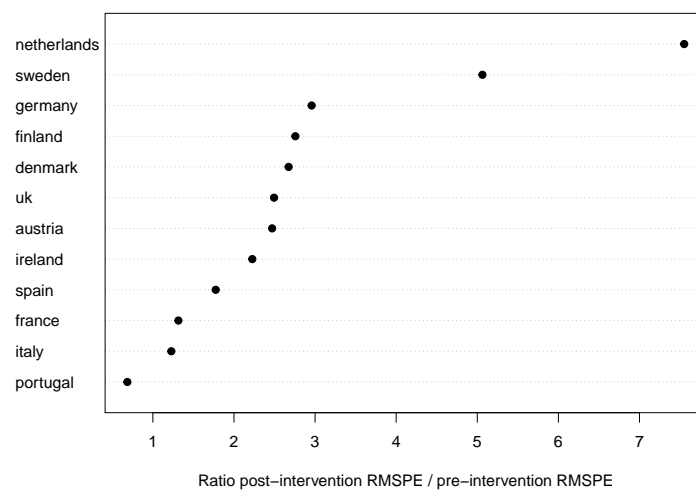


Figure 4: **Ratio of post-RMSPE to pre-RMSPE (diesel, intervention in 2008)**
This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE when the intervention is set to 2008.



3 Large donor pool - gasoline

Figure 5: **Austria versus synthetic control (gasoline)**

This figure plots the gasoline prices for Austria and the synthetic control from 2000 to 2018.

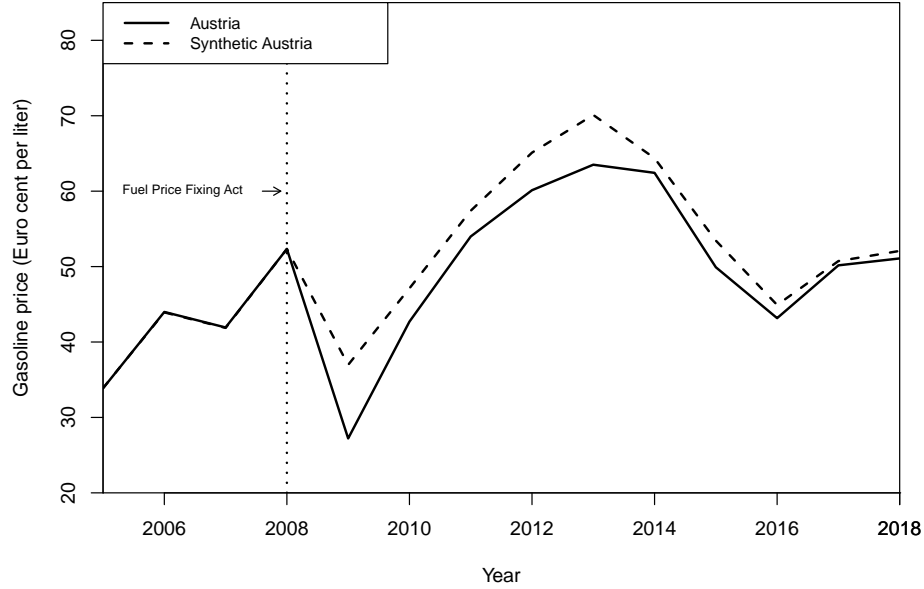


Table 1: **Predictor means (gasoline, large donor pool)**

	Austria	Synthetic	Sample Mean
gdppc	38336.39	29811.55	28905.98
mgpcpc	0.24	0.24	0.24
urb	58.39	59.05	72.09
gsprc	52.34	52.34	53.19

This table shows the predictor means of Austria, the donor pool and the synthetic control from 2005 to 2008. The variable codes are 'gdppc': GDP per capita (in euros), 'mgpcpc': per capita motor gasoline consumption in road (in tons), 'urb': urbanization (in % of total population), 'gsprc': gasoline prices (euro cents per liter).

Table 2: **Country weights (gasoline, large donor pool)**

country	weight
cyprus	0.0
czech republic	0.3
denmark	0.2
estonia	0.5
finland	0.4
france	1.6
germany	1.3
greece	0.1
hungary	0.4
ireland	32.8
italy	0.2
latvia	0.3
lithuania	0.6
malta	0.0
the netherlands	0.1
poland	0.4
portugal	14.7
slovakia	38.5
slovenia	5.8
spain	0.6
sweden	0.7
uk	0.5

This table lists the weights for the donor pool countries (in %) used to construct the synthetic control for the gasoline model.

Figure 6: **Composition of synthetic Austria (gasoline, large donor pool)**
This figure highlights countries contributing to the synthetic control for gasoline prices. Austria is marked in black.

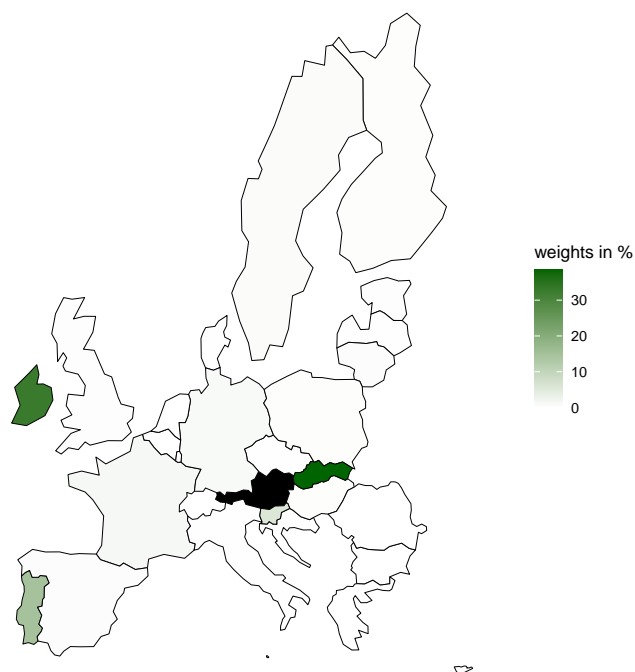


Figure 7: **Effect on gasoline prices (large donor pool)**

This figure plots difference in gasoline prices. The gap is calculated as observed gasoline prices minus counterfactual gasoline prices.

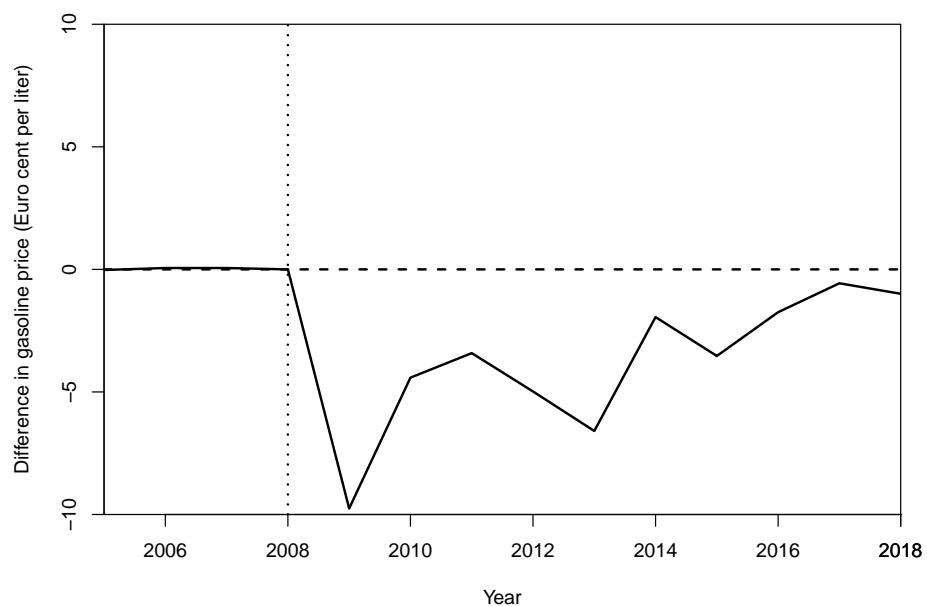


Figure 8: **Ratio of post-RMSPE to pre-RMSPE (gasoline, large donor pool)**
This figure ranks countries by their ratio of post-RMSPE to pre-RMSPE obtained from in-country placebo tests.

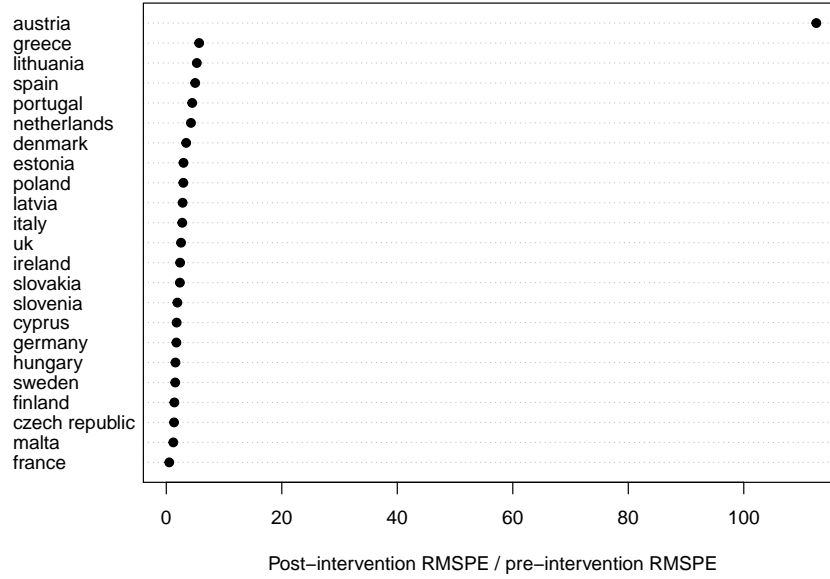


Table 3: **Predictor weights large donor pool (gasoline)**

Predictor	Weight
gdppc	0.0025
mgcpc	0.0771
urb	0.0265
gsprc	0.8939

This table shows predictor weights obtained in the gasoline model using the large donor pool. The variable codes are ‘gdppc’: GDP per capita (in euros), ‘mgcpc’: per capita motor gasoline consumption in road (in tons), ‘urb’: urbanization (in % of total population), ‘gsprc’: gasoline prices (euro cents per liter).

4 Large donor pool - diesel

Figure 9: **Austria versus synthetic control (diesel, large donor pool)**
This figure plots the diesel prices for Austria and the synthetic control from 2000 to 2018.

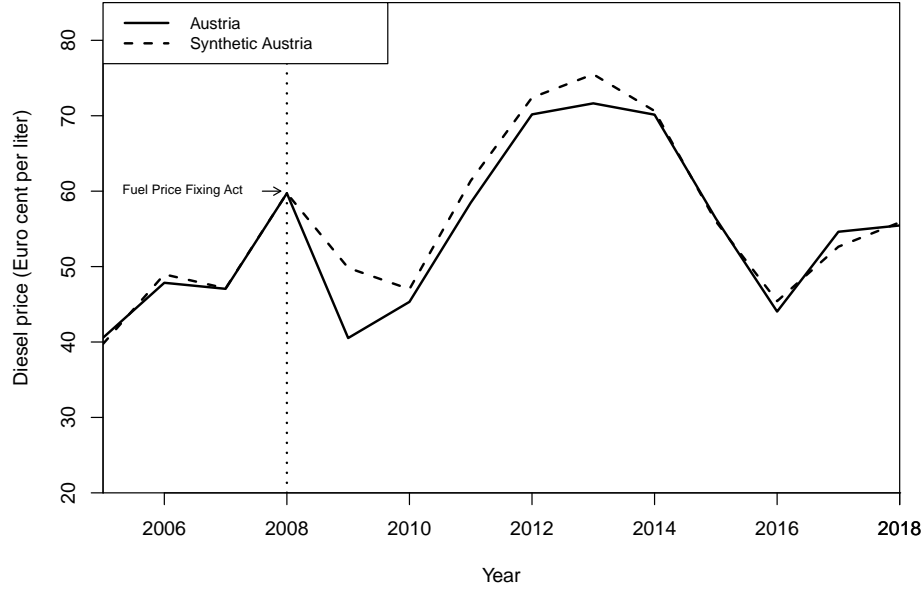


Table 4: **Predictor means (diesel, large donor pool)**

	Austria	Synthetic	Sample Mean
gdppc	38336.39	35107.69	29318.91
urb	58.39	67.23	72.26
gdpgrwth	2.72	2.73	3.57
dslprc	59.72	59.72	60.68

This table shows the predictor means of Austria, the donor pool and the synthetic control from 2005 to 2008. The variable codes are 'gdppc': GDP per capita (in euros), 'urb': urbanization (in % of total population), 'gdpgrwth': GDP growth rate (in %), 'dslprc': diesel prices (euro cents per liter).

Table 5: **Country weights (diesel, large donor pool)**

country	weight
cyprus	0.6
czech republic	0.3
denmark	0.0
finland	0.7
france	24.7
germany	0.3
greece	0.5
hungary	0.9
ireland	35.8
italy	0.0
latvia	0.6
lithuania	1.2
malta	0.5
the netherlands	0.6
poland	0.9
portugal	12.4
slovakia	1.9
slovenia	7.0
spain	0.7
sweden	8.0
uk	2.4

This table lists the weights for the donor pool countries (in %) used to construct the synthetic control for the diesel model.

Figure 10: **Composition of synthetic Austria (diesel, large donor pool)**
This figure highlights countries contributing to the synthetic control for diesel prices. Austria is marked in black.

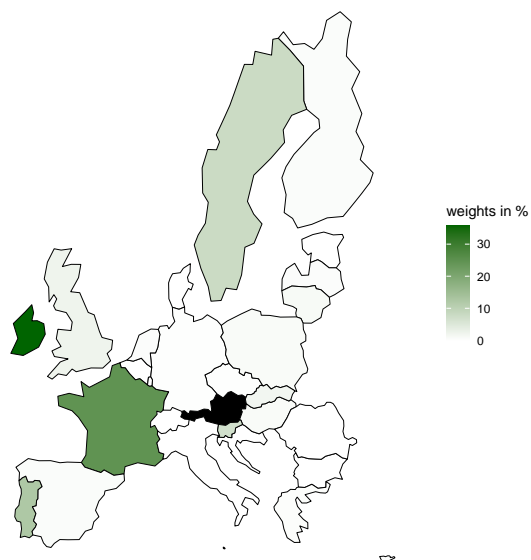


Figure 11: **Effect on diesel prices (large donor pool)**

This figure plots difference in diesel prices. The gap calculated as observed diesel prices minus counterfactual diesel prices.

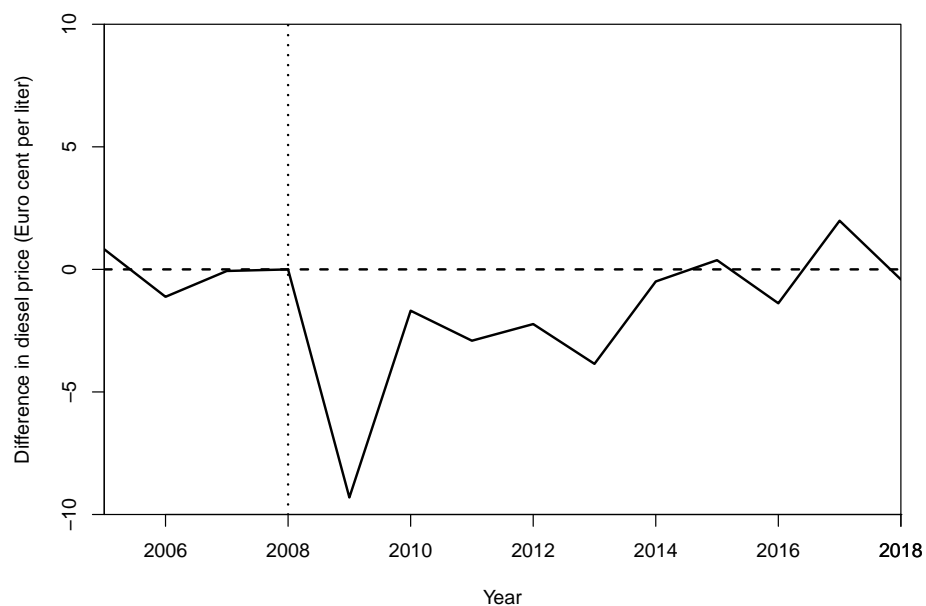


Figure 12: **Ratio of post-RMSPE to pre-RMSPE (diesel, large donor pool)**
This figure ranks countries by their ratio of post-RMSPE to pre-RMSPE obtained from in-country placebo tests.

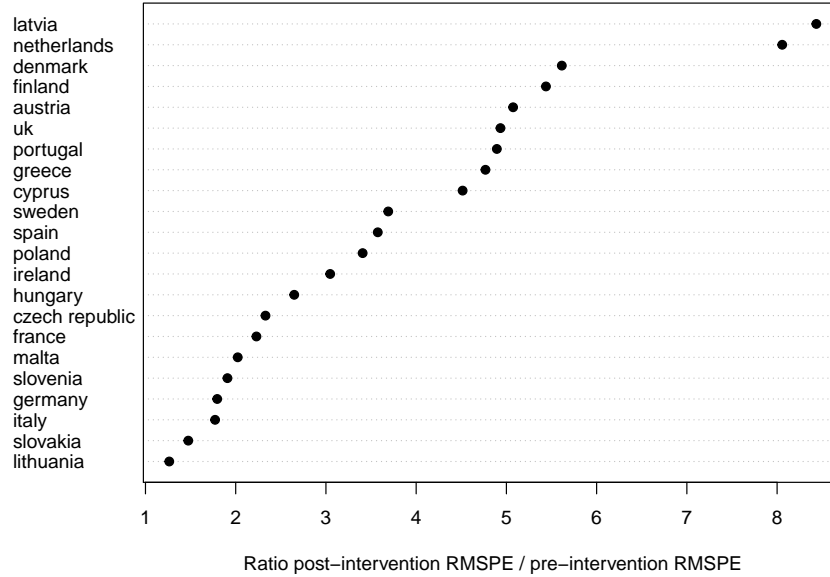


Table 6: **Predictor weights large donor pool (diesel)**

Predictor	Weight
gdppc	0.0001
urb	0.0007
gdpgrwth	0.2157
dslprc	0.7836

This table shows predictor weights obtained in the diesel model using the large donor pool. The variable codes are 'gdppc': GDP per capita (in euros), 'urb': urbanization (in % of total population), 'gdpgrwth': GDP growth rate (in %), 'dslprc': diesel prices (euro cents per liter).

5 Placebo in variable - heating oil

Figure 13: **Austria versus synthetic control (heating oil, gasoline model)**
This figure plots the heating oil prices for Austria and the synthetic control from 2000 to 2018.

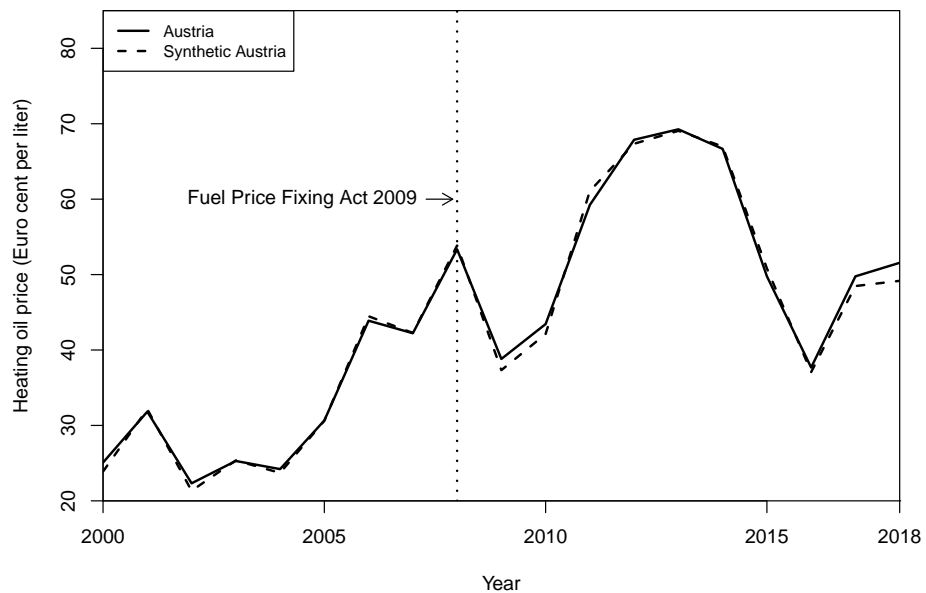
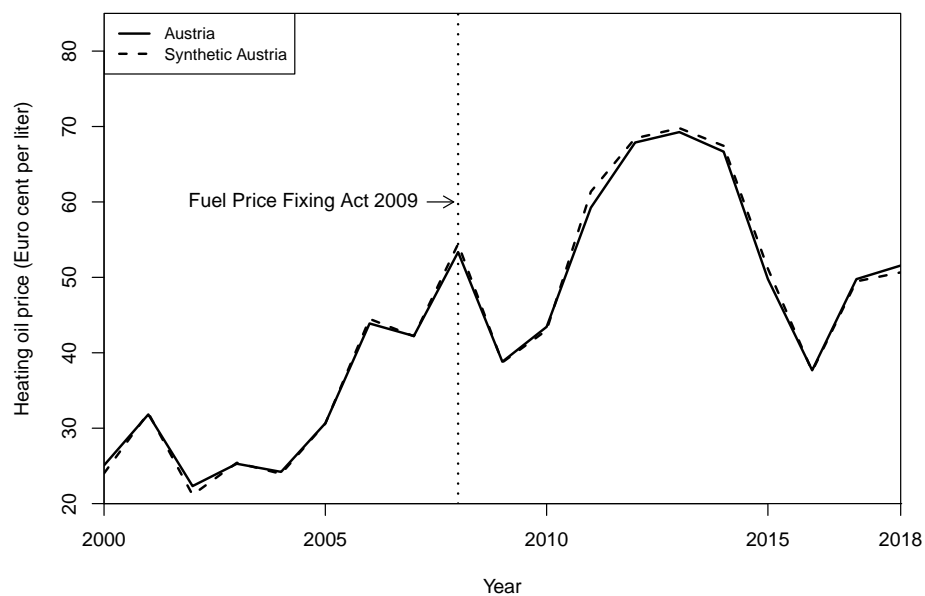


Figure 14: **Austria versus synthetic control (heating oil, diesel model)**
This figure plots the heating oil prices for Austria and the synthetic control from 2000 to 2018.



Portugal deleted – missing obs in pre-intervention period

6 Gasoline - including tax and duty

Figure 15: **Austria versus synthetic control (gasoline, including tax and duty)**
This figure plots the gasoline prices for Austria and the synthetic control from 2000 to 2018.

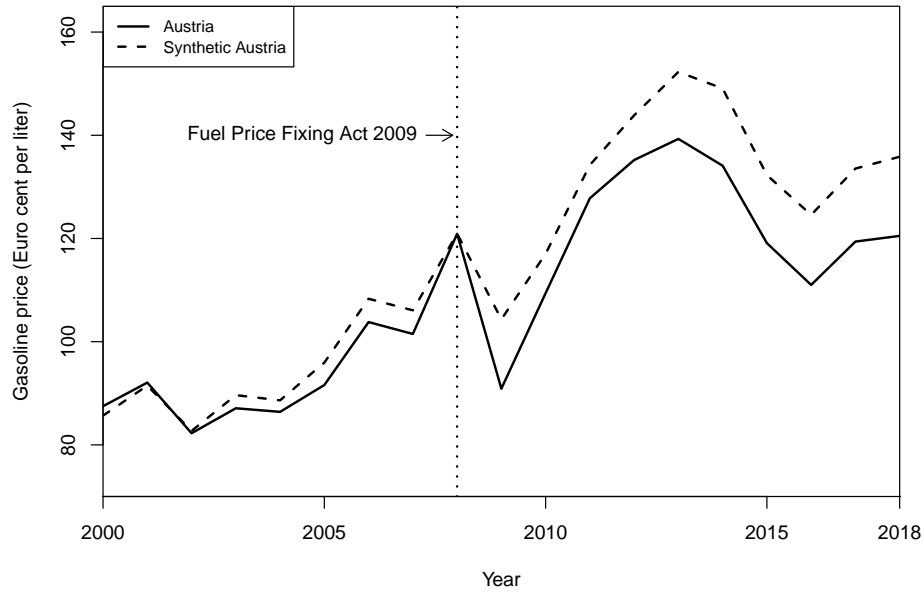


Table 7: **Predictor means (gasoline, including tax and duty)**

	Austria	Synthetic	Sample Mean
gdppc	34385.69	31599.08	31818.31
mgepc	0.25	0.26	0.29
psngrcrs	503.75	432.37	450.48
crd	48.85	47.78	47.44
urb	59.09	69.75	75.28
gsprcITD	120.90	120.95	132.58
rddnsty	129.46	141.46	140.72
mtrwys	1.58	2.41	3.20

This table shows the predictor means of Austria, the donor pool and the synthetic control from 2000 to 2008. The variable codes are ‘gdppc’: GDP per capita (in euros), ‘mgepc’: per capita motor gasoline consumption in road (in tons), ‘psngrcrs’: passenger cars per one thousand inhabitants, ‘crd’: crude oil import prices (in USD), ‘urb’: urbanization (in % of total population), ‘gsprcITD’: gasoline prices including tax and duty (euro cents per liter), ‘rddnsty’: density of road (km per 100 km²), ‘mtrwys’: share of motorways in total road network (in %).

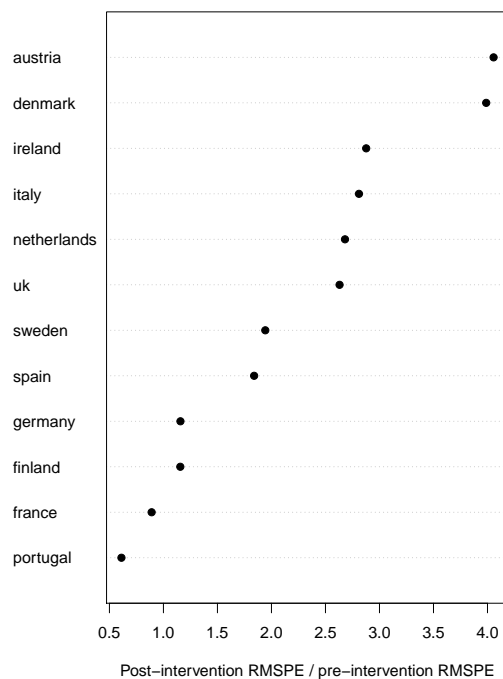
Table 8: **Country weights (gasoline, including tax and duty)**

country	weight
denmark	0.0
finland	0.0
france	27.5
germany	0.0
ireland	34.3
italy	0.3
the netherlands	0.0
portugal	7.2
spain	30.7
sweden	0.0
uk	0.0

This table lists the weights for the donor pool countries (in %) used to construct the synthetic control for the gasoline model.

Figure 16: **Ratio of post-RMSPE to pre-RMSPE (gasoline, including tax and duty)**

This figure ranks countries by their ratio of post-RMSPE to pre-RMSPE obtained from placebo in space tests.



7 Diesel - including tax and duty

Figure 17: **Austria versus synthetic control (diesel, including tax and duty)**
This figure plots the diesel prices for Austria and the synthetic control from 2000 to 2018.

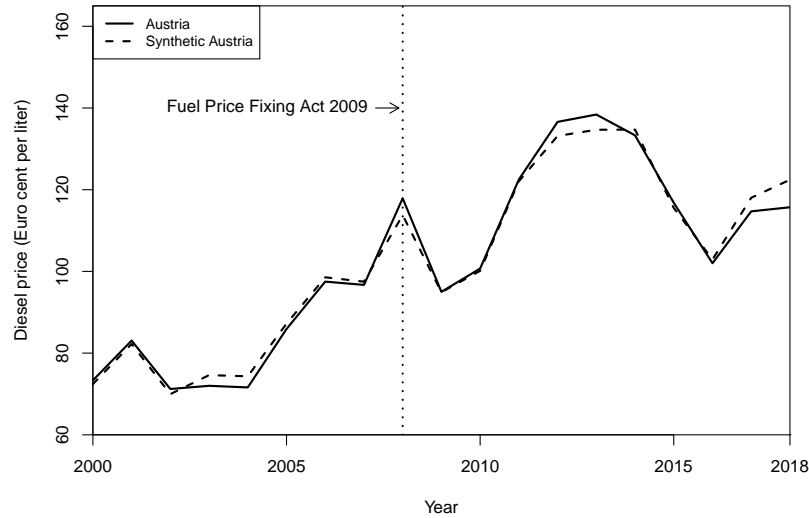


Table 9: **Predictor means (diesel, including tax and duty)**

	Austria	Synthetic	Sample Mean
gdppc	34385.69	28811.13	31818.31
dcpc	0.61	0.49	0.39
psngrcrs	503.75	465.34	450.48
crd	48.85	46.95	47.44
urb	59.09	76.95	75.28
gdpgrwth	2.32	2.57	2.41
dslprcITD	117.90	113.77	121.90
rddnsty	129.46	163.02	140.72
gdsvhcl	5.87	15.66	15.46
mtrwys	1.58	1.43	3.20

This table shows the predictor means of Austria, the sample mean over the donor pool and the synthetic control from 2000 to 2008. The variable codes are 'gdppc': GDP per capita (in euros), 'dcpc': per capita diesel oil consumption in road (in tons), 'psngrcrs': passenger cars per one thousand inhabitants, 'crd': crude oil import prices (in USD), 'urb': urbanization (in % of total population), 'gdpgrwth': GDP growth rate (in %), 'dslprcITD': diesel prices including tax and duty (euro cents per liter), 'rddnsty': density of road (km per 100 km²), 'gdsvhcl': share of goods road motor vehicles in total road motor vehicles (in %), 'mtrwys': share of motorways in total road network (in %).

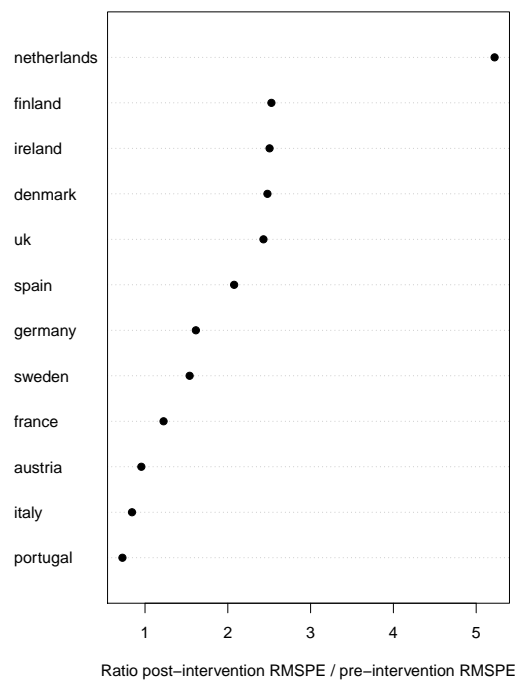
Table 10: **Country weights (diesel, including tax and duty)**

country	weight
denmark	0.0
finland	0.0
france	55.6
germany	0.0
ireland	0.0
italy	0.0
the netherlands	0.
portugal	0.0
spain	44.3
sweden	0.0
uk	0.0

This table lists the weights for the donor pool countries (in %) used to construct the synthetic control for the diesel model.

Figure 18: **Ratio of post-RMSPE to pre-RMSPE (diesel, including tax and duty)**

This figure ranks countries by their ratio of post-RMSPE to pre-RMSPE obtained from placebo in space tests.



8 Leave-one-out tests - gasoline

Figure 19: **Austria versus synthetic Austria (gasoline, without Germany)**

This figure plots the gasoline prices for Austria and the synthetic control after having excluded Germany from the donor pool.

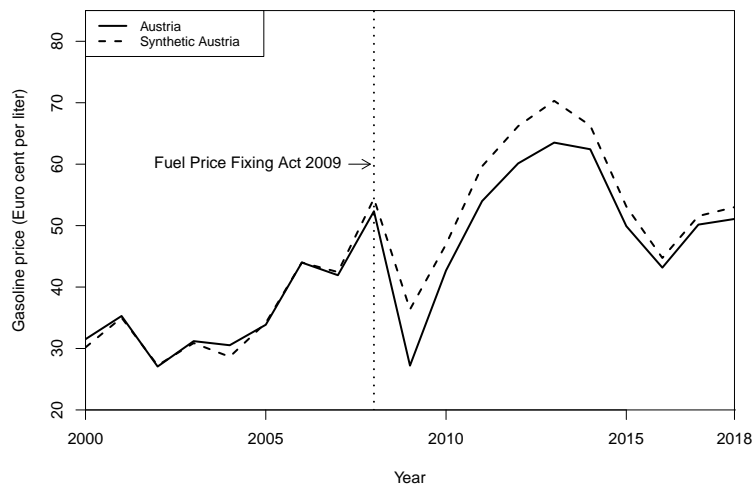


Figure 20: **Ratio of post-RMSPE to pre-RMSPE (gasoline, without Germany)**

This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE obtained after having excluded Germany.

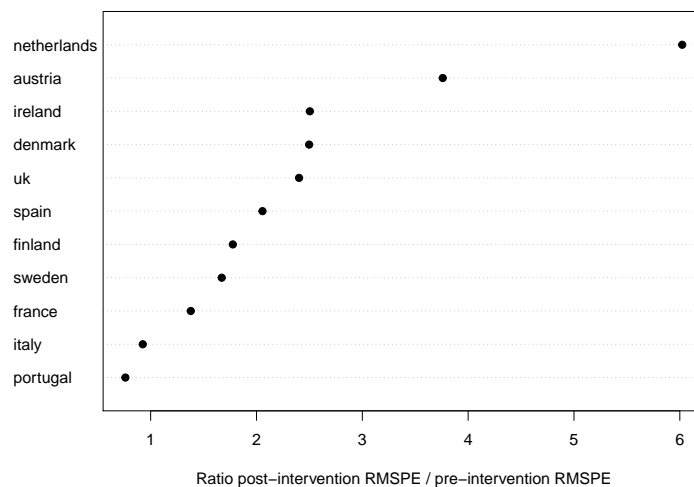


Figure 21: **Austria versus synthetic Austria (gasoline, without France)**
 This figure plots the gasoline prices for Austria and the synthetic control after having excluded France from the donor pool.

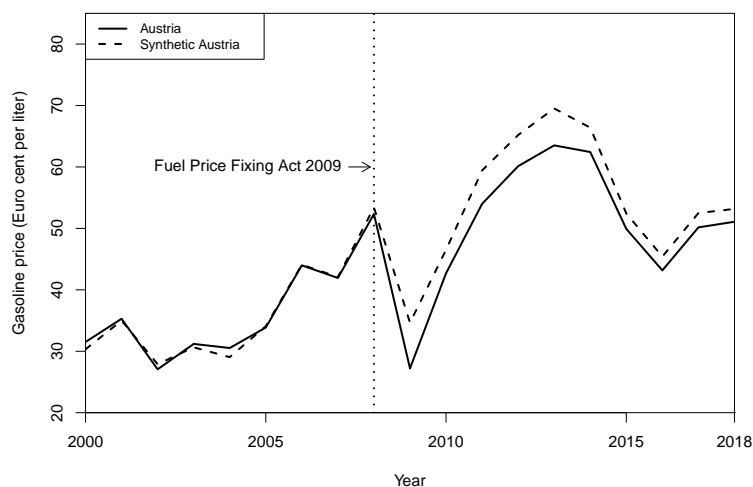


Figure 22: **Ratio of post-RMSPE to pre-RMSPE (gasoline, without France)**
 This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE obtained after having excluded France.

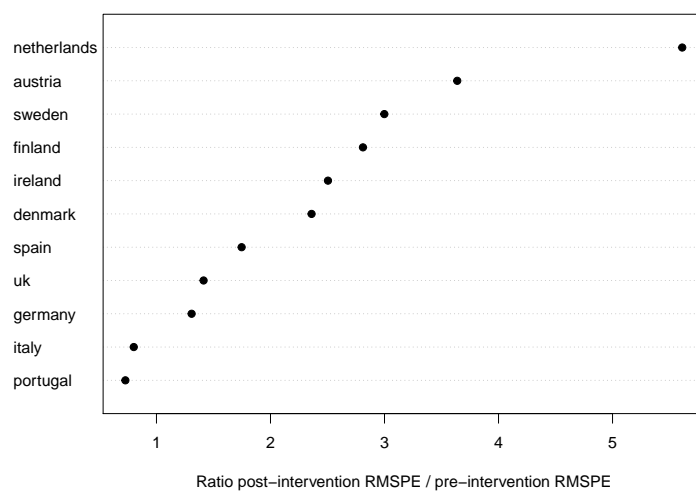


Figure 23: **Austria versus synthetic Austria (gasoline, without France and Germany)**

This figure plots the gasoline prices for Austria and the synthetic control after having excluded France and Germany from the donor pool.

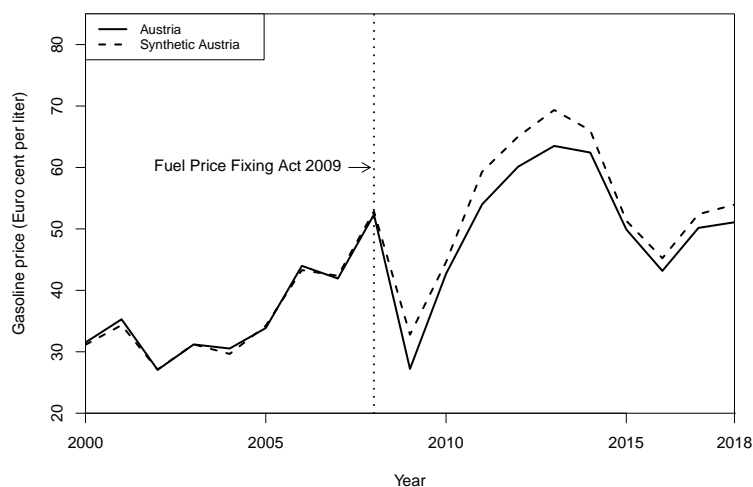
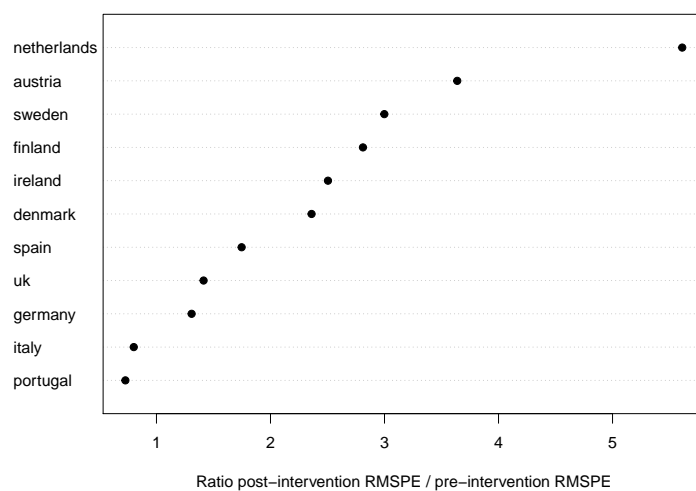


Figure 24: **Ratio of post-RMSPE to pre-RMSPE (gasoline, without France and Germany)**

This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE obtained after having excluded France and Germany.



9 Leave-one-out tests - diesel

Figure 25: **Austria versus synthetic Austria (diesel, without Germany)**

This figure plots the diesel prices for Austria and the synthetic control after having excluded Germany from the donor pool.

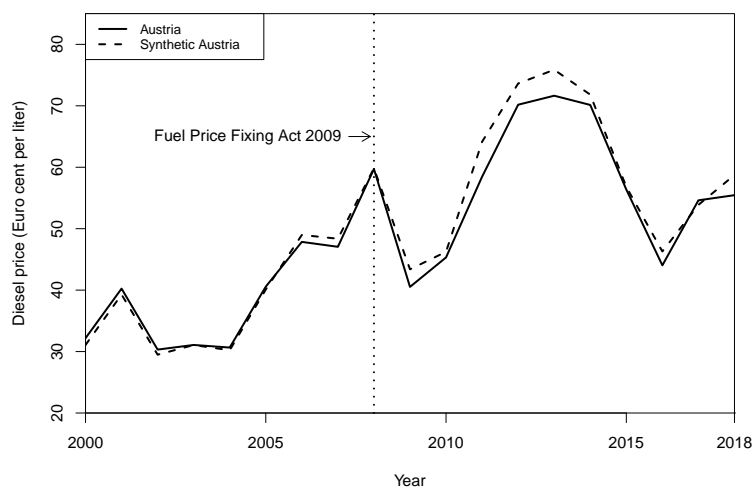


Figure 26: **Ratio of post-RMSPE to pre-RMSPE (diesel, without Germany)**

This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE obtained after having excluded Germany.

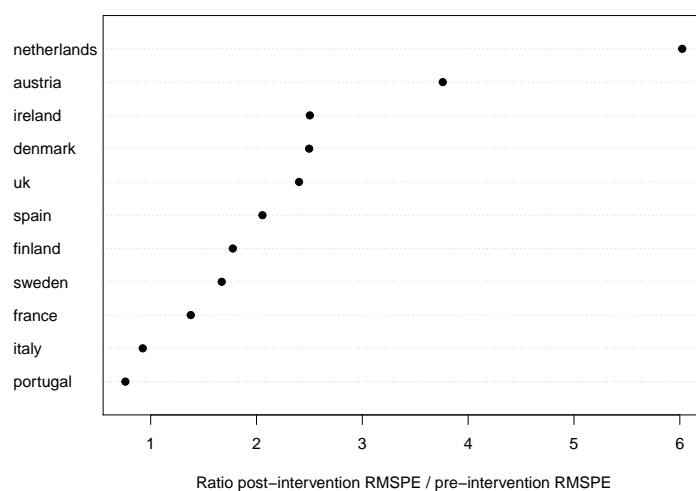


Figure 27: **Austria versus synthetic Austria (diesel, without France)**

This figure plots the diesel prices for Austria and the synthetic control after having excluded France from the donor pool.

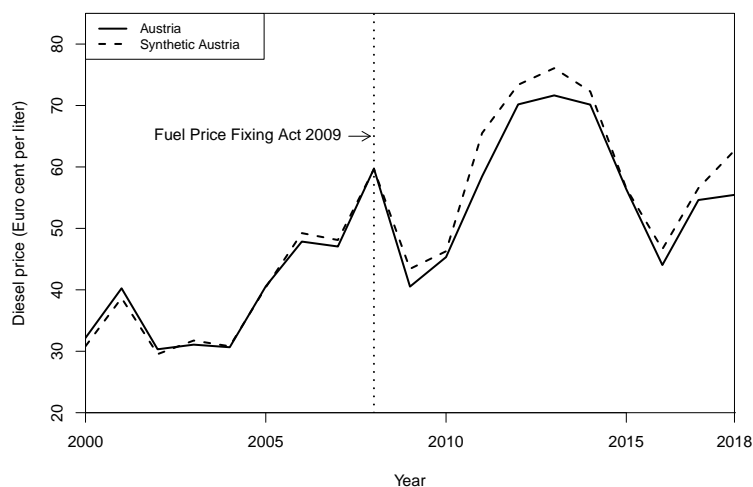


Figure 28: **Ratio of post-RMSPE to pre-RMSPE (diesel, without France)**

This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE obtained after having excluded France.

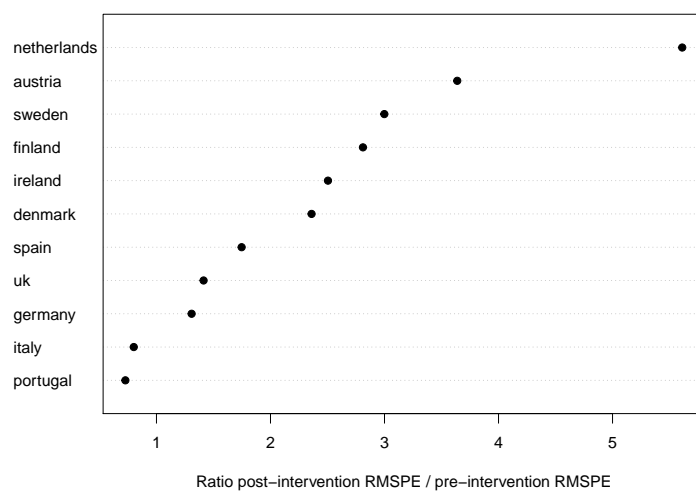


Figure 29: **Austria versus synthetic Austria (diesel, without France and Germany)**

This figure plots the diesel prices for Austria and the synthetic control after having excluded France and Germany from the donor pool.

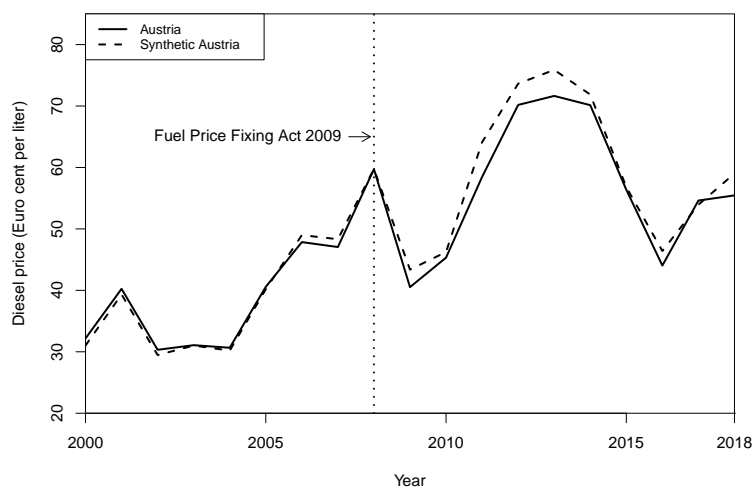


Figure 30: **Ratio of post-RMSPE to pre-RMSPE (diesel, without France and Germany)**

This figure ranks countries by their ratio of post-RMPSE to pre-RMSPE obtained after having excluded France and Germany.

