

The effects of fiscal policy at the effective lower bound*

ONLINE APPENDIX

(NOT FOR PUBLICATION)

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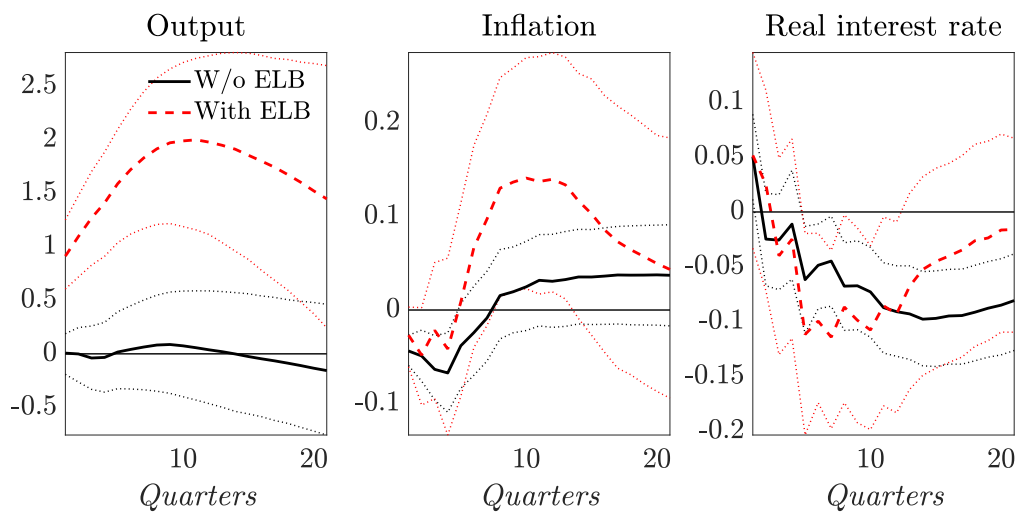
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*The views expressed do not necessarily reflect the official position of De Nederlandsche Bank or the Eurosystem.

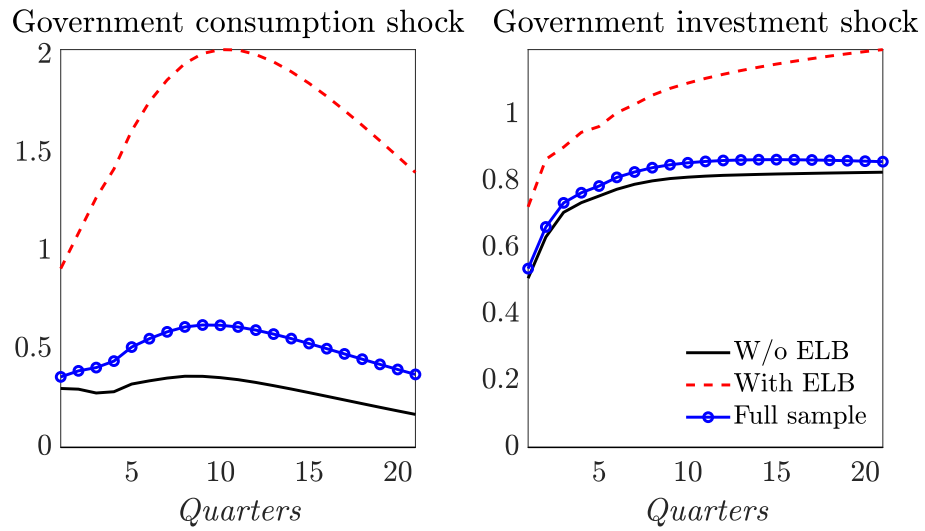
1 Additional figures

Figure 1: Cumulative multipliers following a government consumption shock, replacing GDP series with ‘private GDP’



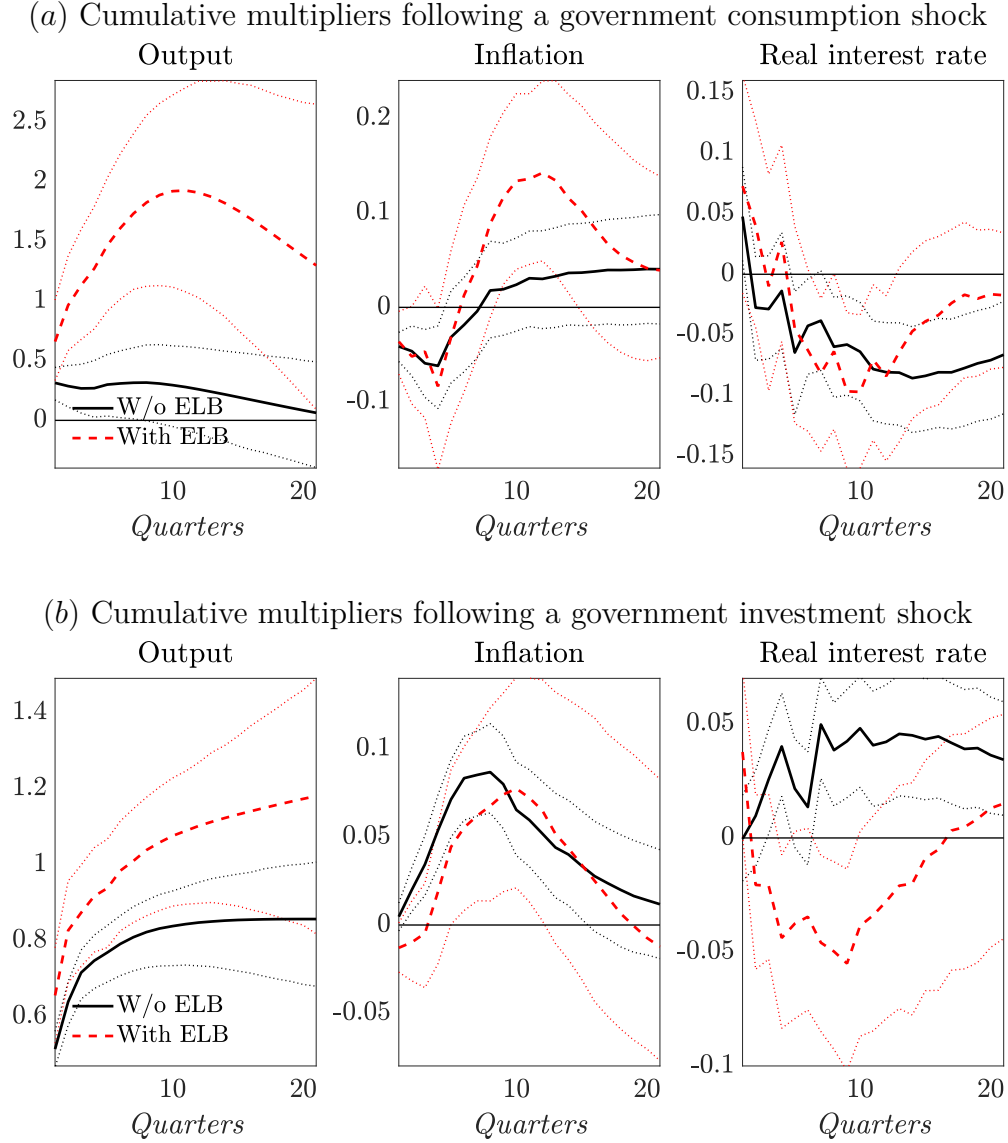
Note: The shock is scaled to be 1 percent of GDP. The dotted lines show the 90% confidence interval. ‘Private GDP’ measures total GDP minus the government expenditures component. Units are in percentages for output, and in percentage points for inflation and the real interest rate.

Figure 2: Cumulative fiscal multipliers, with and without controlling for ELB



Note: The shocks are scaled to be 1 percent of GDP. The dotted lines reflect the 90% confidence interval. Units are in percentages.

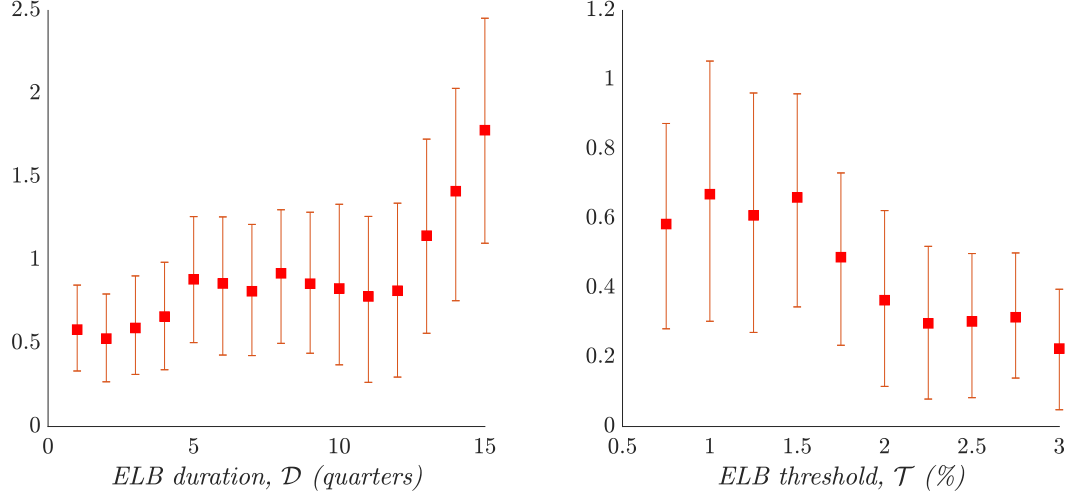
Figure 3: Using the short-term market rate to define the ELB and real interest rate



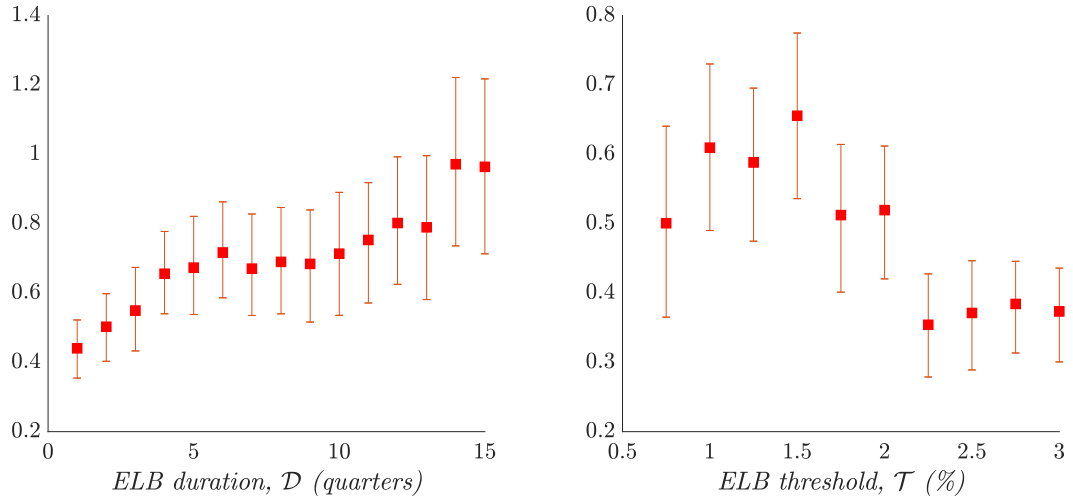
Note: The shocks are scaled to be 1 percent of GDP. The dotted lines show the 90% confidence interval. The interest rate used to define the ELB and the ex-post real interest rate is the three-months market rate. In the main text, we used the policy rate. Units are in percentages for output, and in percentage points for inflation and the real interest rate.

Figure 4: The role of \mathcal{D} and \mathcal{T} when using the short-term market rate to define the ELB

(a) Impact government consumption multiplier

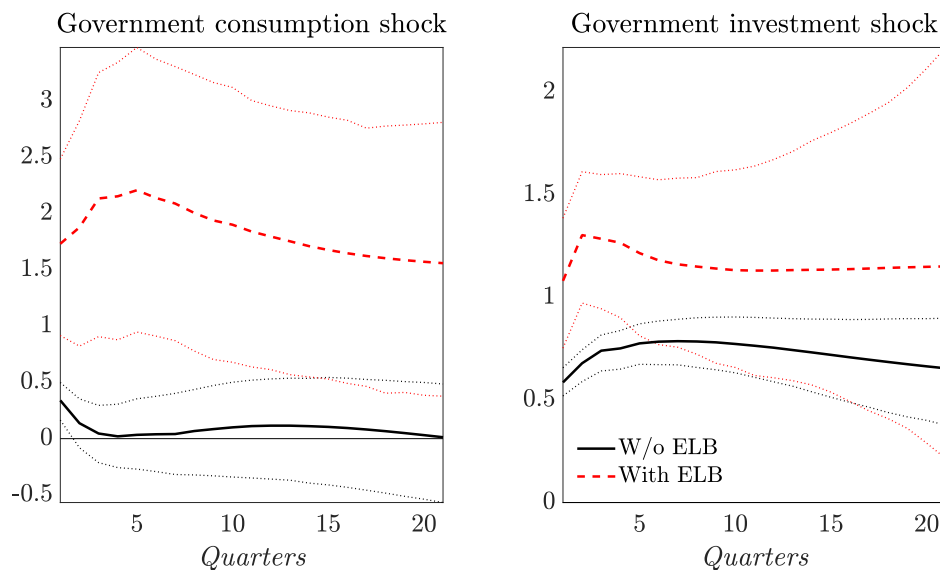


(b) Impact government investment multipliers



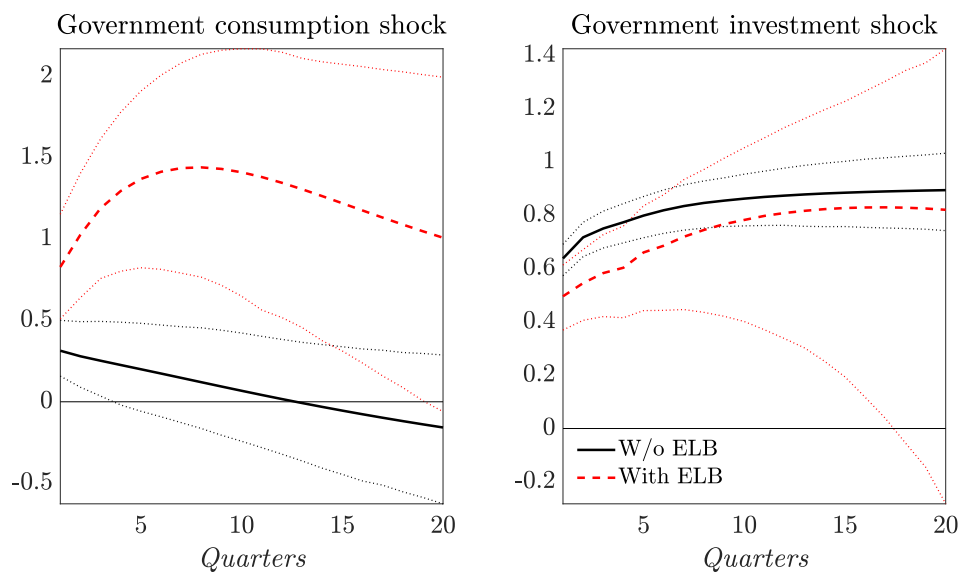
Note: The ELB proxy refers to episodes when the nominal short-term rate (rather than the policy rate) is below \mathcal{T} percent for \mathcal{D} consecutive quarters. In the left panels, we keep the threshold fixed at $\mathcal{T} = 1$ percent; in the right panels, we keep the ELB duration fixed at $\mathcal{D} = 4$ quarters. The error bars reflect the 90% confidence interval. Units are in percentages.

Figure 5: Cumulative fiscal multipliers when using the short-term market rate to define the ELB and a smaller country sample



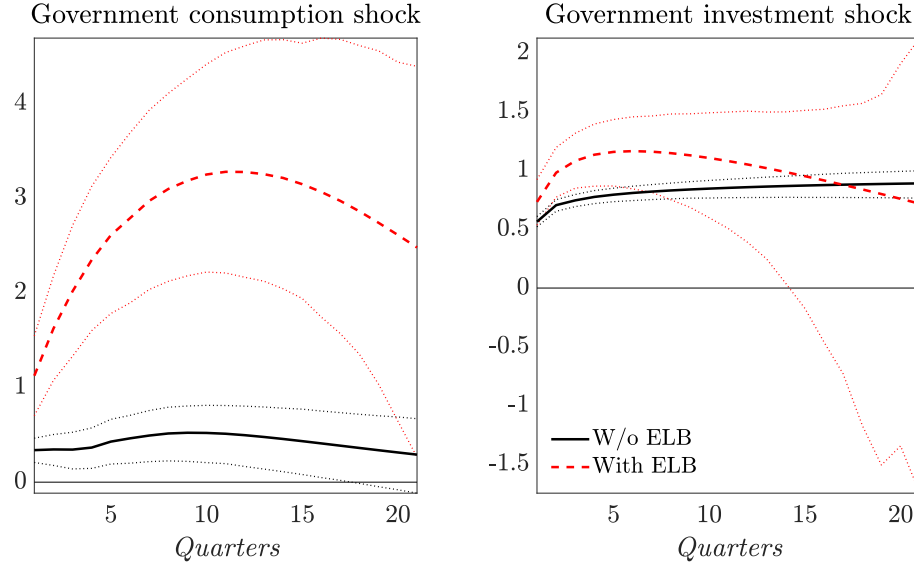
Note: The shocks are scaled to be 1 percent of GDP. The dotted lines reflect the 90% confidence interval. The results are generated using a smaller sample of countries, which excludes all euro area countries, except for Germany. Units are in percentages.

Figure 6: Cumulative fiscal multipliers when using the short-term market rate to define the ELB and excluding Japan



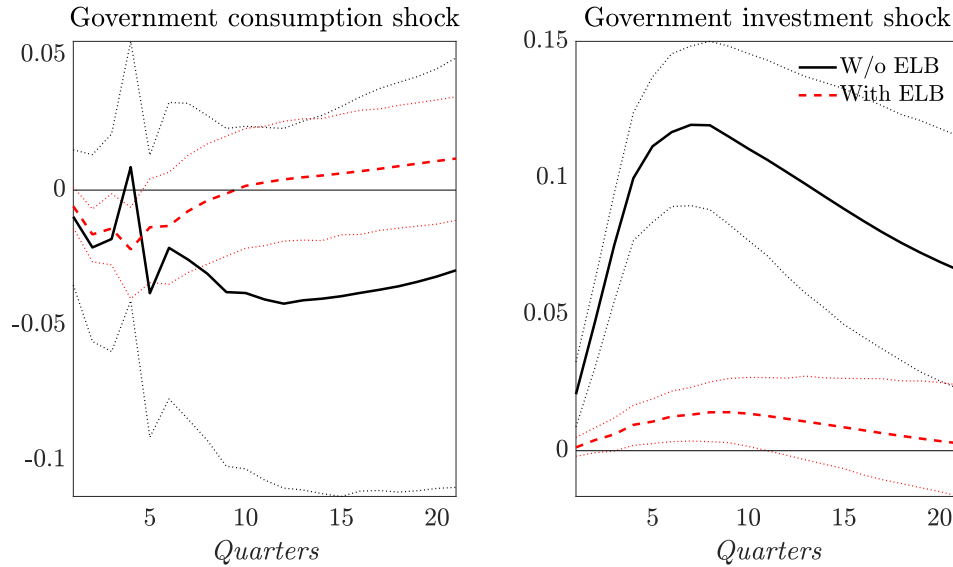
Note: The shocks are scaled to be 1 percent of GDP. The dotted lines reflect the 90% confidence interval. The results are generated using a smaller sample of countries, which excludes Japan. In contrast to the baseline model for government consumption, where we used $K = 5$ lags, here we used $K = 3$ lags. Units are in percentages.

Figure 7: Cumulative fiscal multipliers when using the short-term market rate to define the ELB and an additional output-gap restriction



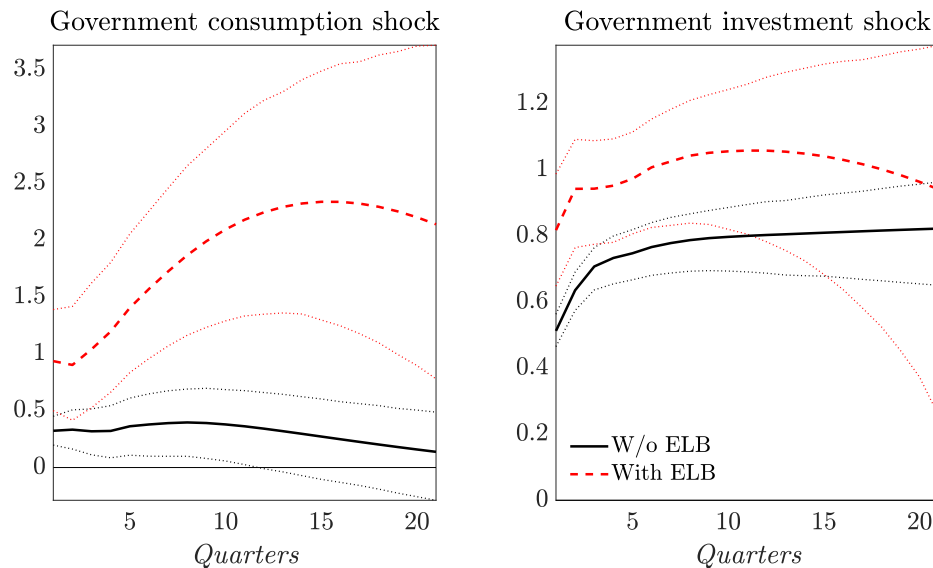
Note: The shocks are scaled to be 1 percent of GDP. The dotted lines reflect the 90% confidence interval. Units are in percentages.

Figure 8: Cumulative responses of the nominal policy interest rate to government spending shocks



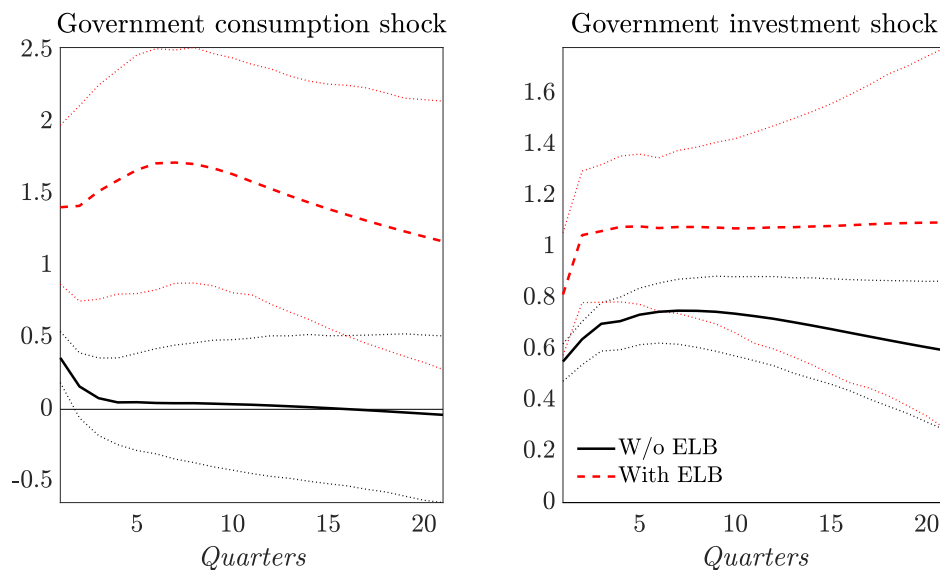
Note: The shocks are scaled to be 1 percent of GDP. The results are obtained from an alternative model where we replaced the real interest rate with the nominal policy rate. The dotted lines reflect the 90% confidence interval. Units are in percentages.

Figure 9: Cumulative fiscal multipliers when using additional unemployment-gap restriction



Note: The shocks are scaled to be 1 percent of GDP. The dotted lines reflect the 90% confidence interval. The ELB is presumed to be binding when the nominal interest rate has been below 1 percent for the last 4 consecutive quarters and the unemployment gap has been negative for the last 3 consecutive quarters. Units are in percentages.

Figure 10: Cumulative fiscal multipliers when using only data for the euro area



Note: The shocks are scaled to be 1 percent of GDP. The dotted lines reflect the 90% confidence interval. The model uses only aggregate data for 19 euro area countries (changing composition), starting in 1999Q1. Units are in percentages.

2 Additional tables

Table 1: Descriptive statistics: Average government consumption (% of GDP)

Country	Full sample	ELB	No ELB
Austria	0.20	0.20	0.19
Australia	0.17	-	0.17
Belgium	0.22	0.24	0.22
Canada	0.21	0.21	0.21
Spain	0.18	0.19	0.18
Finland	0.22	0.24	0.22
France	0.21	0.24	0.20
Germany	0.19	0.19	0.19
Ireland	0.17	0.17	0.17
Italy	0.19	0.19	0.19
Japan	0.19	0.19	0.16
Netherlands	0.23	0.25	0.23
Norway	0.20	0.24	0.20
Portugal	0.19	0.18	0.19
Sweden	0.26	0.26	0.25
UK	0.18	0.20	0.18
US	0.16	0.15	0.16
Total	0.19	0.20	0.19

Table 2: Descriptive statistics: Average government investment (% of GDP)

Country	Full sample	ELB	No ELB
Austria	0.03	0.03	0.03
Australia	0.05	-	0.05
Belgium	0.03	0.02	0.03
Canada	0.03	0.04	0.03
Spain	0.03	0.02	0.03
Finland	0.04	0.04	0.04
France	0.04	0.04	0.04
Germany	0.02	0.02	0.02
Ireland	0.03	0.02	0.03
Italy	0.03	0.02	0.03
Japan	0.08	0.06	0.10
Netherlands	0.04	0.04	0.04
Norway	0.04	0.05	0.04
Portugal	0.04	0.02	0.04
Sweden	0.04	0.04	0.04
UK	0.02	0.03	0.02
US	0.04	0.04	0.04
Total	0.04	0.04	0.04