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The Role of the Government Pension Fund Global (GPFG) in the new model

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Outline

- Background and motivation
- Conceptional and technical limitations related to permanently increasing the level of oil fund withdrawals/take-out rate
- Costs of temporarily increasing oil fund withdrawals/the take-out rate

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Background and Motivation

Motivation

- A model for fiscal policy analysis in Norway should describe the trade-offs involved in using more oil money / increasing the take-out rate
- Benefits of using more oil money obvious… costs less so
- Some options:
  1. “Manna from heaven” → No costs
  2. Ad-hoc additions (e.g. effects on risk premia) → lack of empirical evidence
  3. Include a simple model of the oil fund
     - Potential costs related to changes in taxation resulting from increasing oil fund withdrawals/the take-out rate
     - Approach explored in this presentation

Scope of this work

- Modelling the oil fund in the “baseline” model
- Baseline model describes a steady-state world
  - No trend growth in GDP
  - No trend growth in government expenditures
  - All variables in the model converge to a (possibly changing) long-run steady state
- Include a simple model of the oil fund
  - No inflows to the fund → No model of oil production
  - Fund is held in domestic currency → No exchange rate effects
  - Exogenous and constant real rate of return
  - In the long-run the take-out rate from the oil fund must equal its real rate of return → ensures fund converges to a (possibly changing) steady-state

The government budget in the current model

Balanced budget:

$$\underbrace{T_t}_{\text{Revenue}} + \underbrace{OILR_t}_{\text{Withdrawals from GPFG}} = \underbrace{G_t}_{\text{Government spending}}$$

$$T_t = \underbrace{T_t^L}_{\text{Lump-sum tax}} + \underbrace{C_t\tau_t^C}_{\text{Consumption tax}} + \underbrace{(w_tN_t^P + w_t^GN_t^G)(\tau_t^{OI} + \tau_t^{BT} + \tau_t^{SS,H} + \tau_t^{SS,F})}_{\text{Labor income and social-security tax}}$$
$$+ \underbrace{K_t[u_tR_t^k - (\delta_0 + \Gamma(u_t))P_t^i]\tau_t^{OI}}_{\text{Capital income tax - allowances}} + \underbrace{(\Pi_{H,t} + \Pi_{X,t})\,\tau_t^{\Pi,F}}_{\text{Corporate tax}} + \underbrace{DIV_t\tau_t^{OI}}_{\text{Dividend tax}}$$
$$+ \underbrace{\left[\frac{P_{t-1}}{P_t}D_{t-1}(R_{t-1}-1) + e_t\frac{P_{t-1}^*}{P_t}B_{t-1}\left(R_{t-1}^*\phi(A_{t-1}) - \frac{e_{t-1}}{e_t}\frac{P_t}{P_{t-1}}\right)\right]\tau_t^{OI}}_{\text{Tax on returns to bonds}}.$$

$$G_t = \underbrace{P_{h,t}C_t^G}_{\text{Government purchases}} + \underbrace{P_t^iI_t^G}_{\text{Government investment}} + \underbrace{UB_t(L_t - N_t)}_{\text{Unemployment benefits}}$$
$$+ \underbrace{TR_t}_{\text{Lump-sum transfers}} + \underbrace{w_t^GN_t^G(1+\tau_t^{SS,F})}_{\text{Government wage bill}} + \underbrace{DI_t}_{\text{Debt interest payments}}$$

A simple theory of the fund

- Let *GPF* be the real value of the fund with an exogenous and constant rate of return $\overline{r^F}$:

$$GPF_t = (1 + \overline{r^F})GPF_{t-1} - OILR_t$$

- In steady state:

$$\underbrace{\overline{TOR}}_{\text{Take-out rate}} := \underbrace{\overline{OILR}/\overline{GPF}}_{\text{SS OILR divided by SS GPF}} = \underbrace{\overline{r^F}}_{\text{Rate of return on the fund}}$$

- If the take-out rate in the long-run is not equal to the rate of return, the value of the fund does not stabilize

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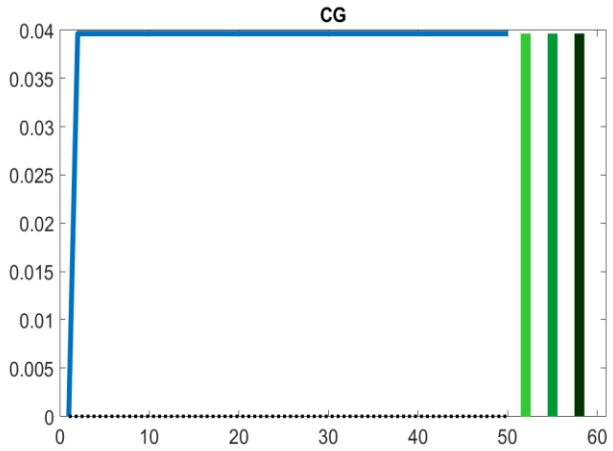
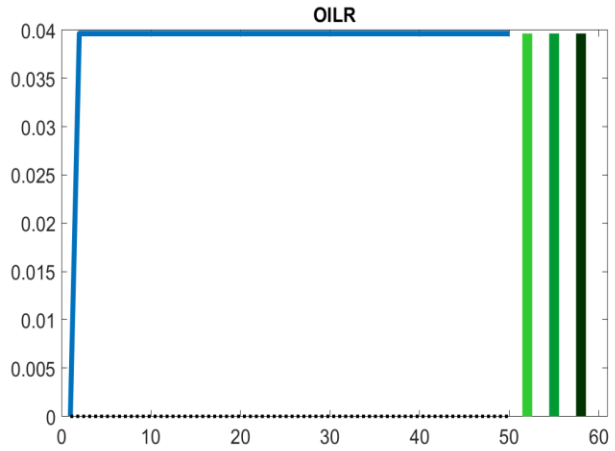
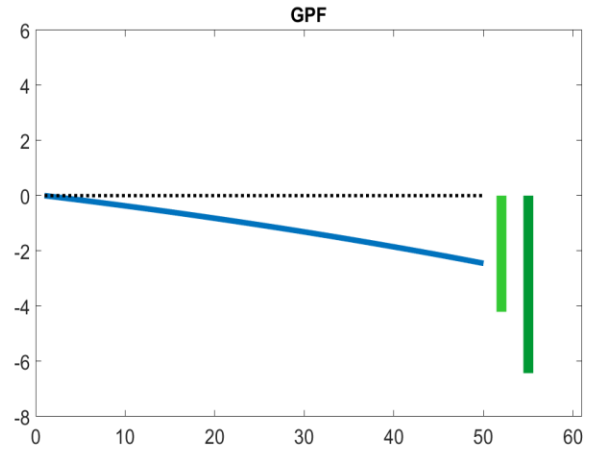
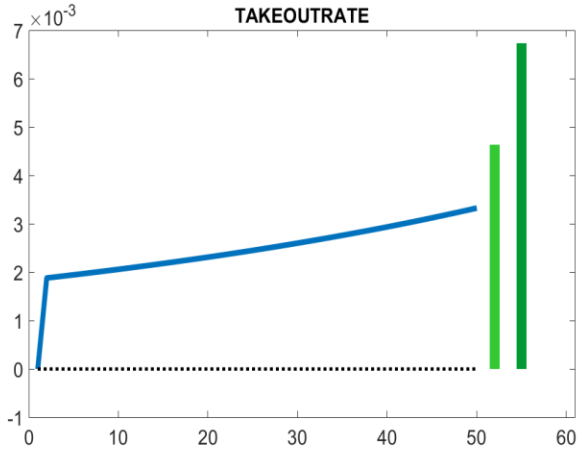
Conceptional and technical limitations related to permanently increasing the level of oil fund withdrawals/take-out rate

1) Permanent increase in government purchases financed by fund withdrawals (OILR)

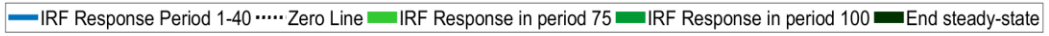








- Permanent increase in OILR/take-out rate is inconsistent with a stable value of the oil fund (within the steady-state world described by the model)



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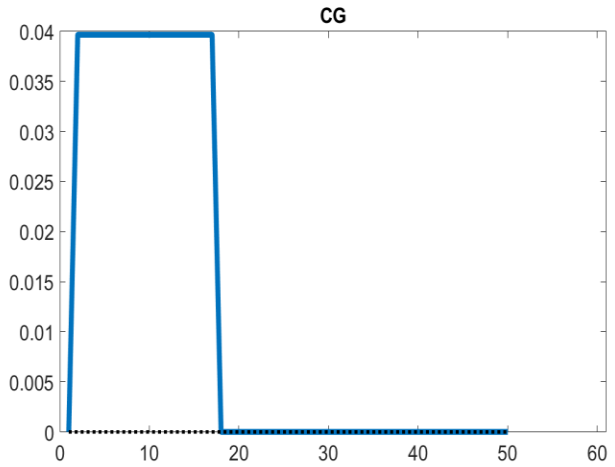
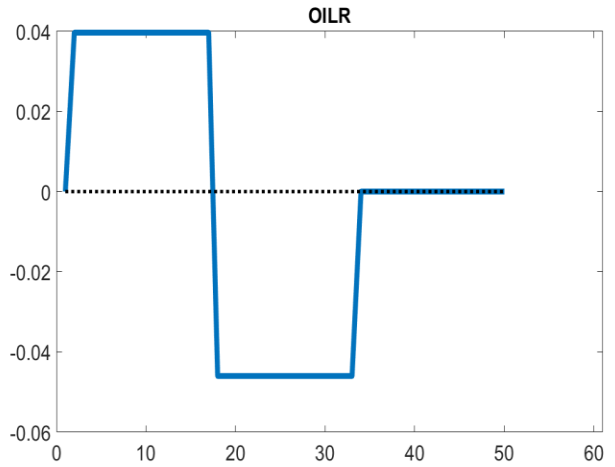
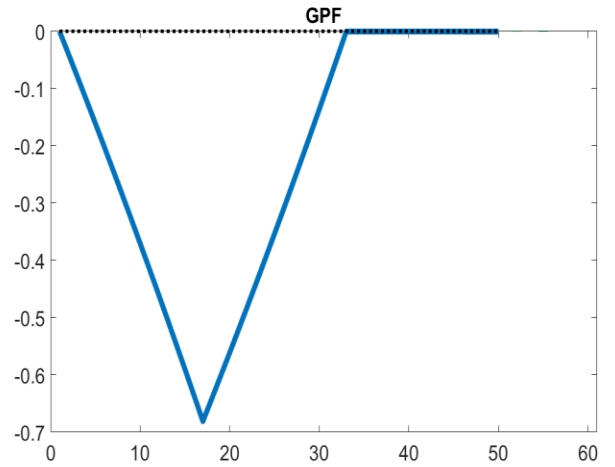
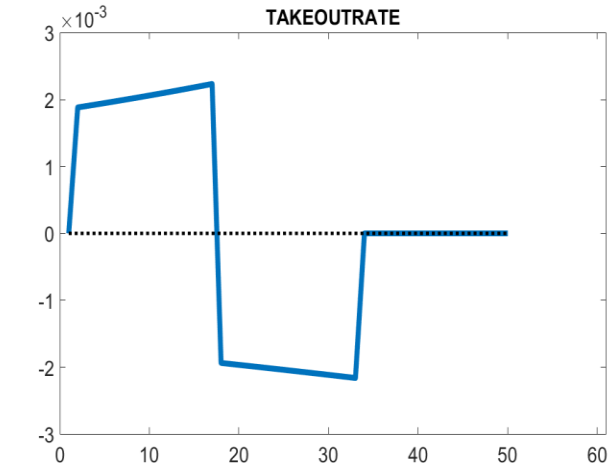
Costs of temporarily increasing oil fund withdrawals/the take-out rate

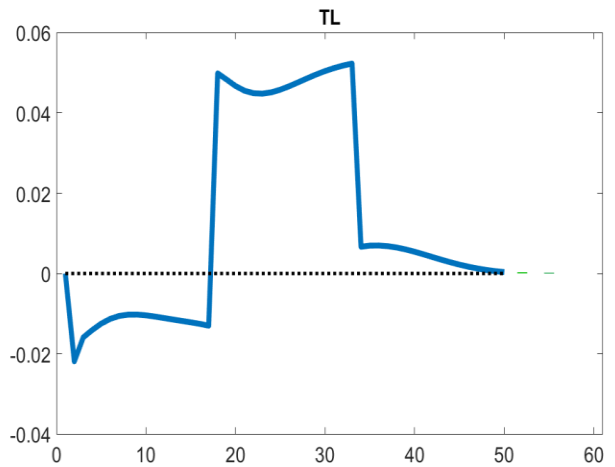
2 a) Temporary increase in government purchases; temporary increase and subsequent decrease in the take-out rate





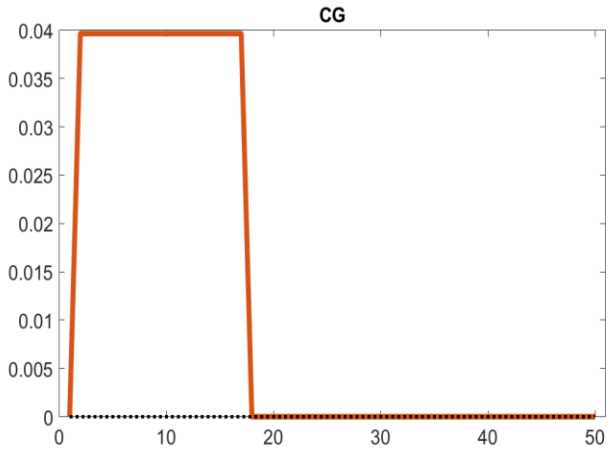


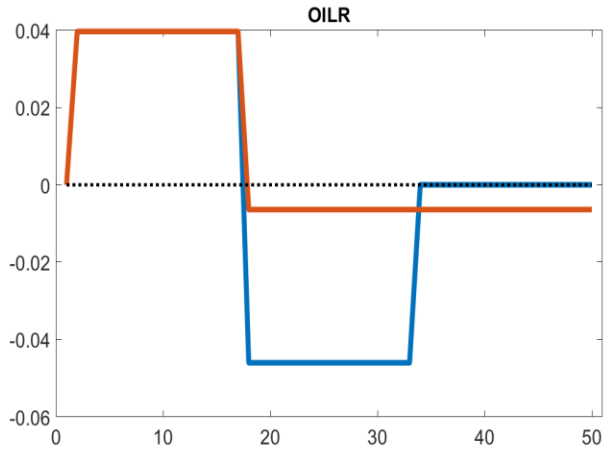


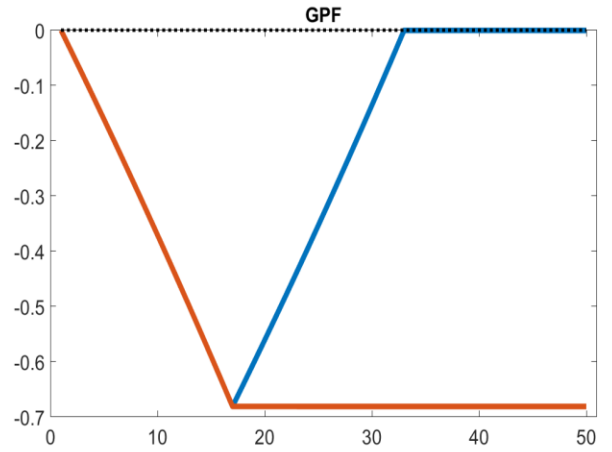


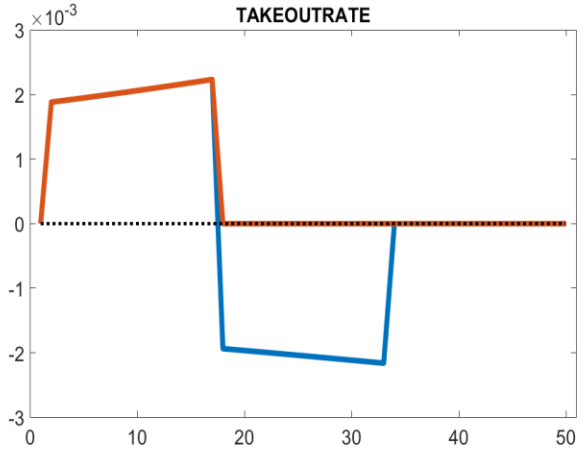
- Decrease in OILR/take-out rate sufficient to bring fund back to its initial value
- Lump-sum taxes required to balance budget initially fall due to fiscal stimulus, but increases when OILR falls
- Consistent with a stable value of the oil fund

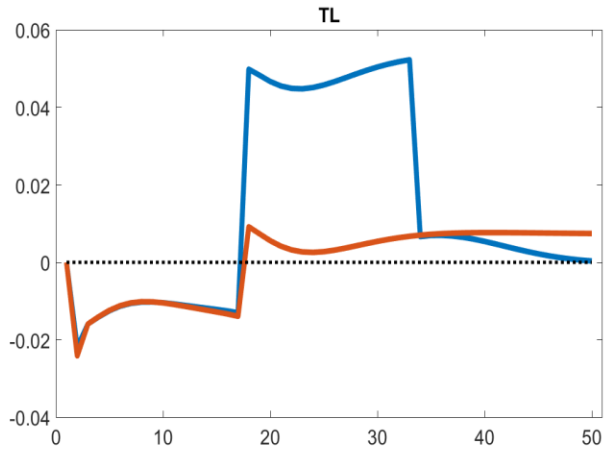
2 b) Temporary increase in government purchases; temporary increase in the take-out rate

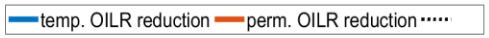






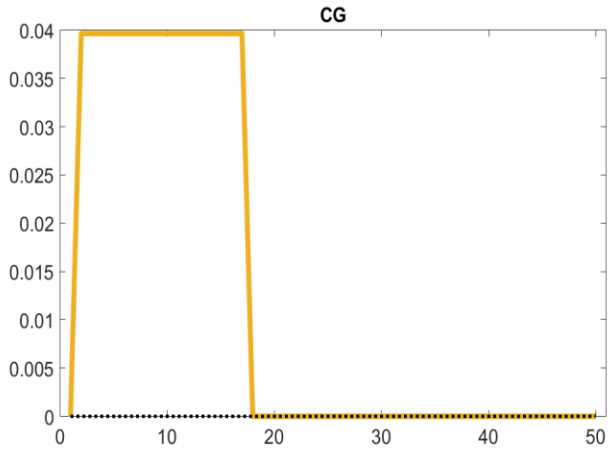


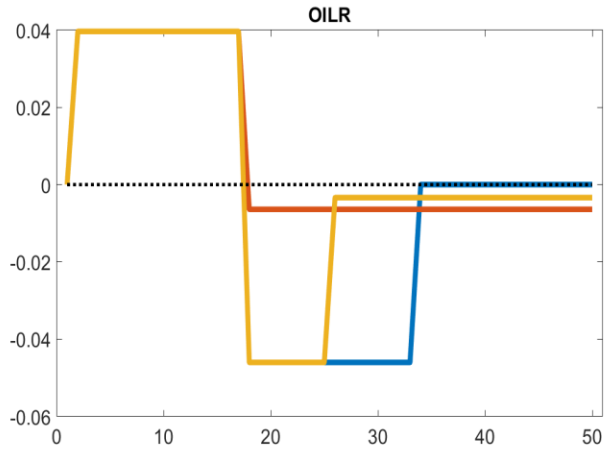


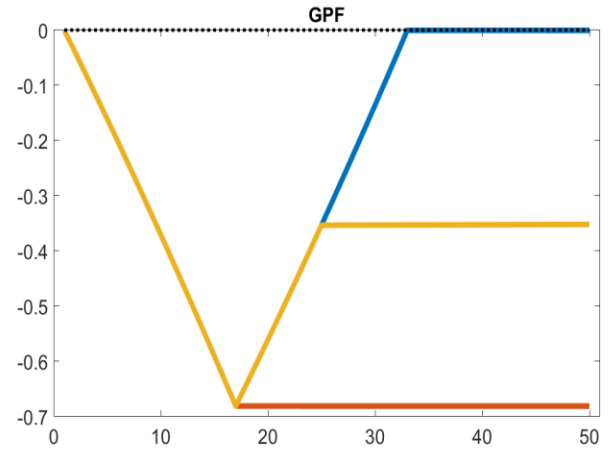


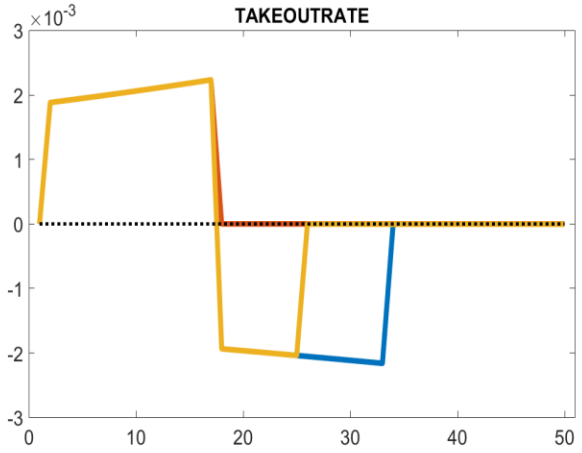
- Temporary increase in take-out rate
- Entails a permanently reduction in OILR and the value of the oil fund
- Requires a permanent increase in taxation (or cut in spending)
- Consistent with a stable value of the oil fund

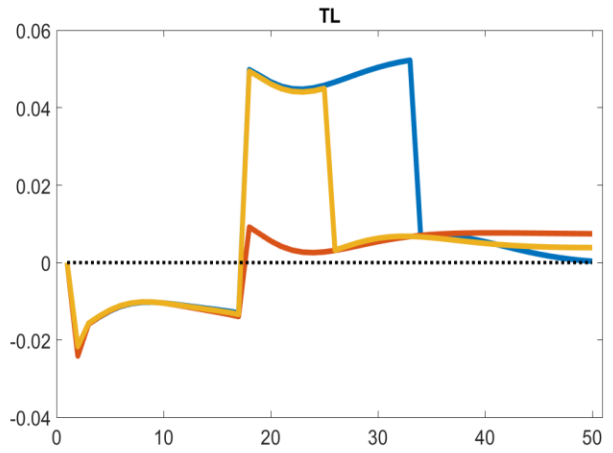
2 c) Temporary increase in government purchases; temporary increase and partial decrease in the take-out rate

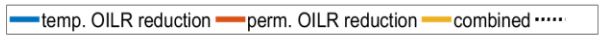












- Decrease in OILR/take-out rate insufficient to bring fund back to its original value
- Still consistent with a stable value of the oil fund

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Conclusion

Conclusions

- A permanent increase in oil fund withdrawals/the take-out rate is inconsistent with a stable value of the oil fund and the steady-state world described by the model
- To stabilize the value of the oil fund after a temporary increase in oil fund withdrawals/the take-out rate, it is necessary and sufficient that the take-out rate returns to its initial level
- A temporary increase in oil fund withdrawals/take-out rate entails costs due to higher taxation/lower spending in the future
- The level of the oil fund following an increase in withdrawals/take-out rate depends on how much/how long the take-out rate undershoots its initial level