Revenue Management - Update II: Mongolia's Sovereign Wealth Funds and Their Economic Impact

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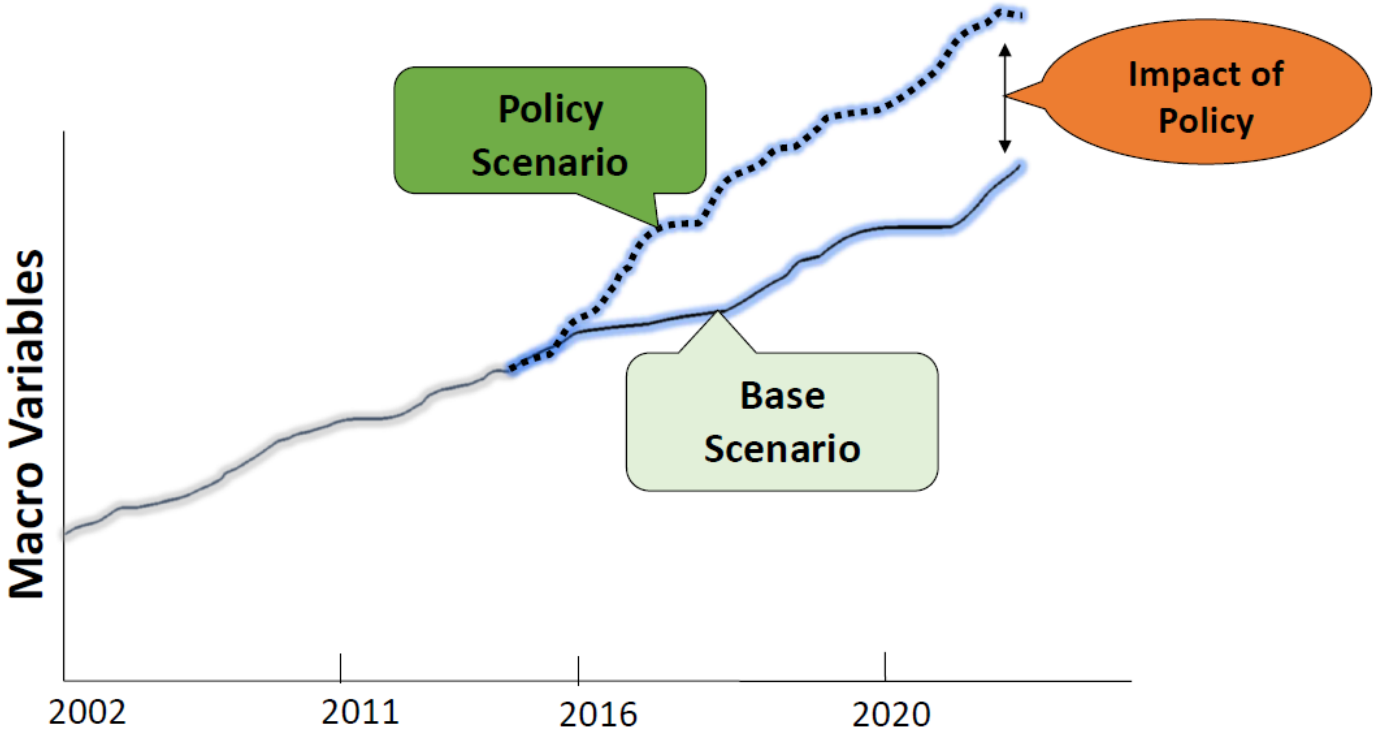
Introduction - Objective

- Main objective: Evaluating the long-term economic impacts of Wealth Funds in Mongolia

  - Fiscal Stability Fund (2011) – Aimed to mitigate fluctuations related to the mineral commodity prices and encourage the economic growth

  - Future Heritage Fund (2017) – Designed to save a portion of mineral revenues for the benefit of future generations

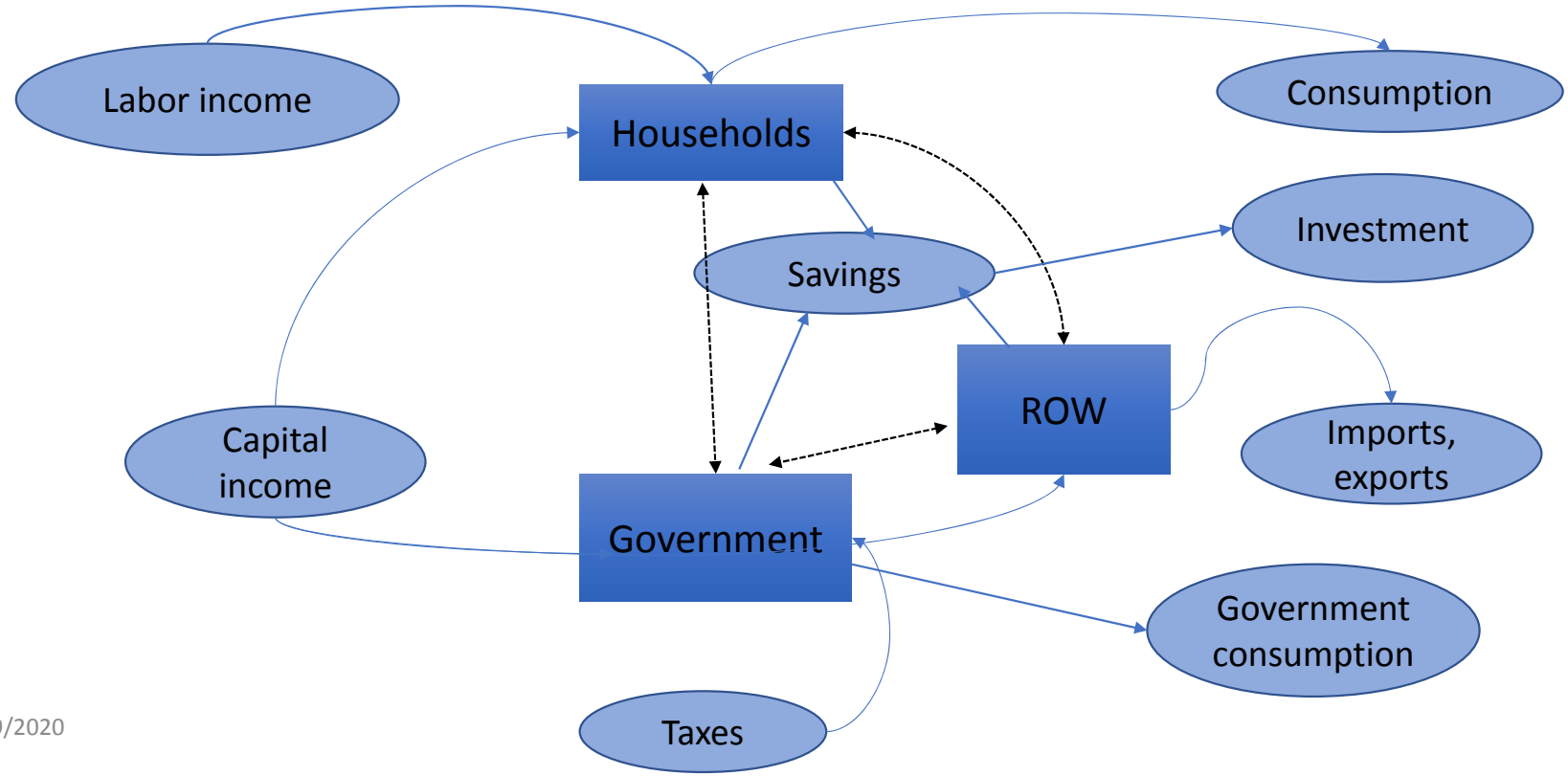
Methodology (CGE Model)



Methodology

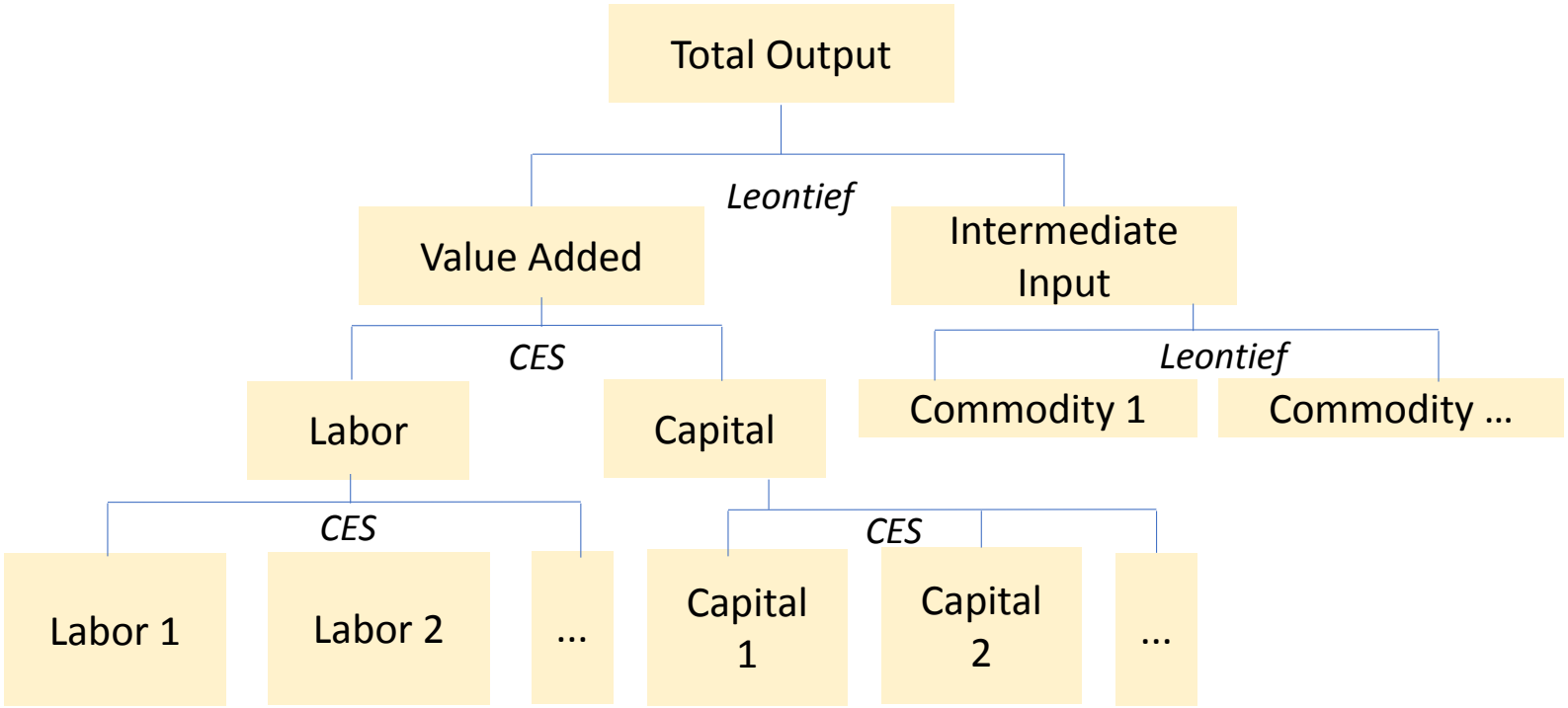
- Modelling tool: ERI Standard Dynamic Computable General Equilibrium Model (CGE)
  - Derived from conditions of profit and utility maximization
  - Walras Law – All markets are in equilibrium condition
  - System of linear and non-linear equations
  - Single country – Dynamic model
  - Multi-sectoral
  - Production factors: Labor and Capital
  - Agents: Households, Government, and Rest of the World
  - Tax elements

Methodology – Model features



Methodology – Model features

- Production function has a Nested structure :



Data

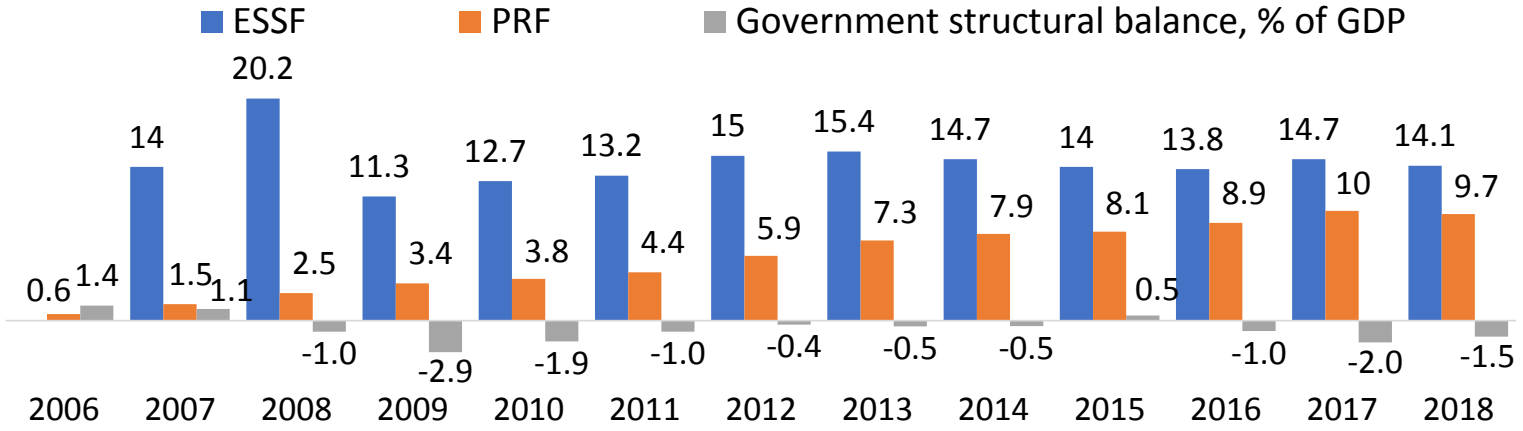
- Main database: 2017 Social Accounting Matrix - Square matrix with 47 columns and rows
  - 3 agents (Household, Government and Rest of the World)
  - 2 production factors (capital and labor)
  - 12 sectors
  - 12 commodities
  - 3 types of taxes
  - Savings/Investment accounts

Macro SAM 2017 (% of GDP)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Labor								0.55	45.15						46
2	Capital								0.07	45.36						45
3	Households	44.76	33.55		11.58				2.10							92
4	Government			3.15		13.12	1.73	7.38	0.21	0.38		0.00				26
5	TD			13.12												13
6	TM										1.73					2
7	TI										7.38					7
8	ROW	0.93	11.89	0.71	2.00						56.32					72
9	Sectors										126.21	53.75				180
10	Commodities			53.53	12.74					89.07	15.16	4.93	18.74	5.90	6.73	207
11	Export								58.68							59
12	INV_PRI			17.44	(0.28)				8.31							26
13	INV_PUB			4.04	(0.06)				1.93							6
14	VSTK												6.73			7
15	TOTAL	46	45	92	26	13	2	7	72	180	207	59	25	5.9	7	

Sovereign Wealth Funds and Fiscal Rules: Chile

- Chile – The leading copper exporter and resource-rich county
  - Economic and Social Stabilization Fund (2006)– Subjected to support fiscal stability by accumulating fiscal surpluses during periods of economic boom and higher commodity prices
  - Pension Reserve Fund (2007) - Accumulation of savings for future pension payments

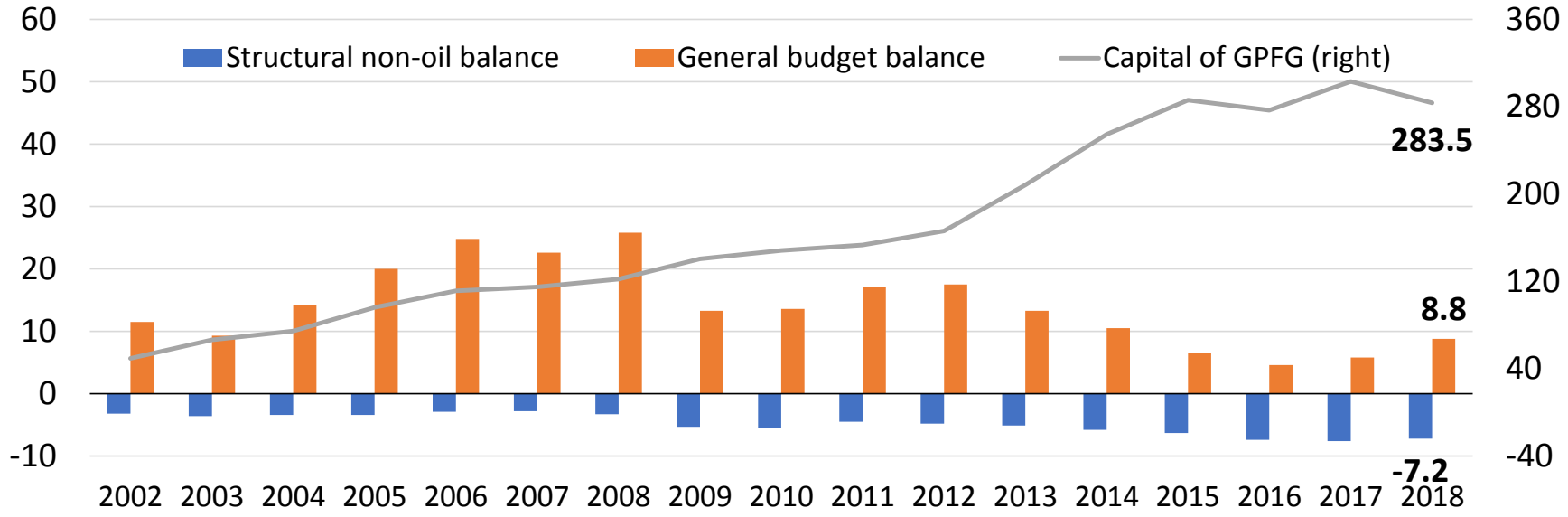


Sovereign Wealth Funds and Fiscal Rules: Norway

- Pension Reserve Fund
  - Shall receive a contribution of at minimum 0.2 percent and at maximum 0.5 percent of the previous year's GDP depending on effective fiscal surplus
  - Accumulation should be continued until the fund asset reaches USD 41 billion
  - Finances state guaranteed solidarity pension benefits and contributions for the elderly and disabled people
- Economic and Social Stabilization Fund
  - Shall receive any remaining fiscal surplus after contributions to the PRF made
  - Resources can be withdrawn from the ESSF at any time in purpose of financing fiscal deficits and pay public debt, but the spending is subject to the structural balance rule

Sovereign Wealth Funds and Fiscal Rules: Norway

- Norwegian Wealth Fund - Government Pension Fund (1990)
  - Set up to avoid higher economic volatility caused by dependency of oil prices



Sovereign Wealth Funds and Fiscal Rules: International Practices

Government Pension Fund

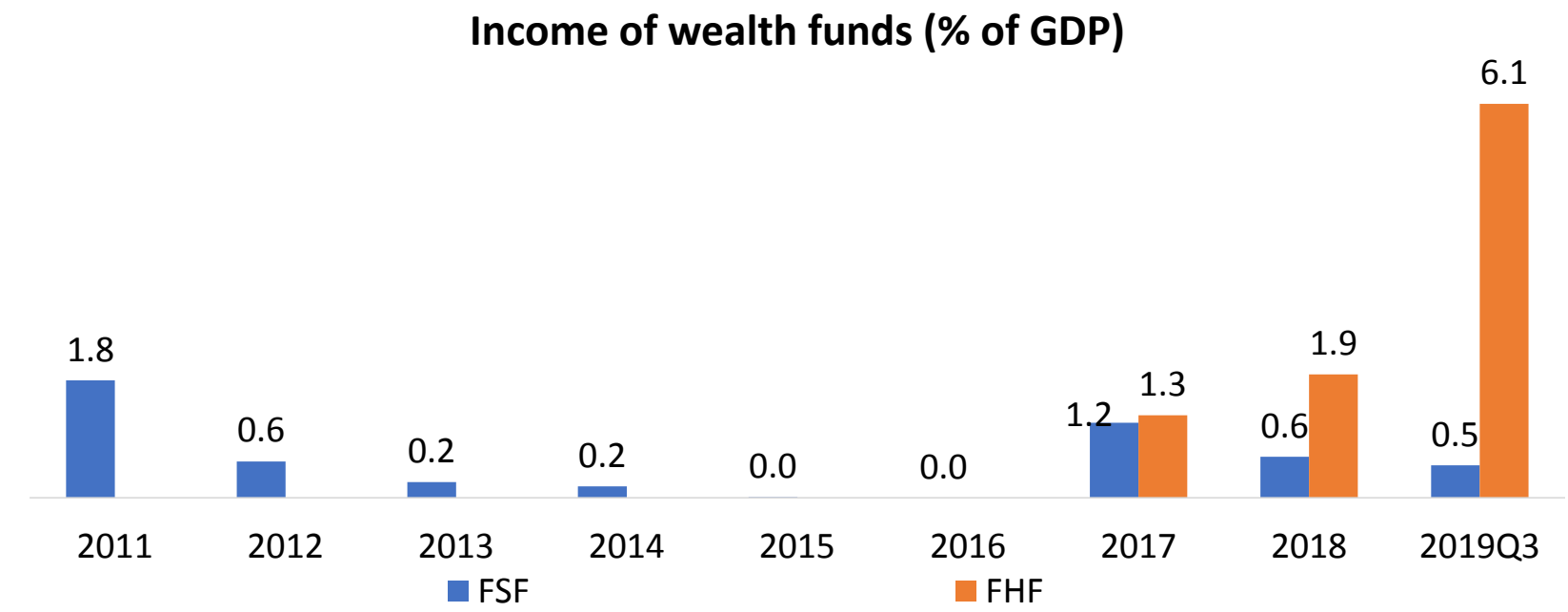
- Fund's income
  - Receives the transfer from petroleum income over the budget expenditure (consumption and investment) plan
  - Return on the capital shall be deposited in the Fund itself.
- Fund's spending
  - Up to the 3 percent of the fund (the estimated expected real return) can be withdrawn to the central government budget to cover the non-oil budget deficit
  - Fund's capital shall be fully invested abroad

Mongolia's Sovereign Wealth Funds

1. **Fiscal Stability Fund (2011)** – Aimed to mitigate fluctuations related to the mineral commodity prices and encourage the economic growth

2. **Future Heritage Fund (2017)** – Designed to save a portion of mineral revenues for the benefit of future generations
   - A total of 231 trillion MNT is expected to be accumulated by 2075
     - 56 trillion MNT will be from revenues generated by the mining sector
     - 165 trillion MNT from returns on savings

Mongolia's Sovereign Wealth Funds



Mongolia: Fiscal Stability Fund

➢Fiscal Stability Fund Sources:

- Additional **surcharge** revenue from major commodities prices' increase above the equilibrated price
- Net profit of equilibrated balance
- Net income of the FSF activity

Mongolia: Fiscal Stability Fund

➢Funds from the FSF shall be transferred to the state budget in case:

- The budget deficit is 4 percent of GDP higher than Budget Plan
- Budget revenue disruption due to a decrease in major mineral commodity prices
- Budget revenue disruption due to a 20 percent or more decrease in the volume of major mineral commodities

Mongolia: Fiscal Stability Fund

$$Stock_{FSF,t} = Stock_{FSF,t-1} * (1 + int\_rate_t) + Net\_change_{FSF,t}$$

$$Net\_change_{FSF,t} = YG_t - YG\_Eq_t - Net\_change_{FHF,t}$$

(FSL 16.2.1, 16.2.4)

Mongolia: FHF

➢Future Heritage Fund sources:

- Dividends distributable to state owned mining enterprises
- 65 percent of remaining Royalty payments after distribution to the FSF
- Fund's investment net income (90% of investment net income since 2030)

Mongolia: FHF

➢Future Heritage Fund's spending:

- Other spending is prohibited until 2030 by the FHF Law
- 10 percent of Fund's investment **NET** income shall be transferred to State Budget starting from 2030

Mongolia: FHF

$$Net\_change_{FHF,t} = 0.65 * 0.05 * Sum\left[mc, EXD_{mc,t} * PEfob_{mc,t} + Q_{mc,t} * PC_{mc,t}\right] + YGK_t$$

(FHFL 7.1.1, 7.1.2)

$$Stock_{FHF,t} = Stock_{FHF,t-1} * (1 + int\_rate_t) + Net\_change_{FHF,t}$$

(Until 2030)

$$Stock_{FHF,t} = Stock_{FHF,t-1} * \left(1 + 0.9 * int_{rate_t}\right) + Net_{change_{FHF,t}}$$

$$YG_t = YGK_t + Taxes_t + Transfers_t + Stock_{FHF,t-1} * (1 + 0.1 * int\_rate_t)$$

(Since 2030)

(FHFL 9.5, 9.6)

Other Changes Made to the Model

- Equilibrated Budget Revenue:

$$YG\_Eq_t = YG_t - Net\_change_{FSF,t} - Net\_change_{FHF,t}$$

(FSL 6.1.1)

- Funds' Revenue Management: Invests in foreign market only

$$Total\_investment_t = SH_t + SG_t + SROW_t - Net\_change_{FSF,t} - Net\_change_{FHF,t}$$

$$YROW_t = Imports_t + Transfers_t + Net\_change_{FHF,t} + Net\_change_{FSF,t}$$

(FSL 17.1, FHFL 12.1.5)

Model Assumptions

- Potential labor supply grows by the population growth 1.83 percent for the until 2020 and 1.6 percent in the following years

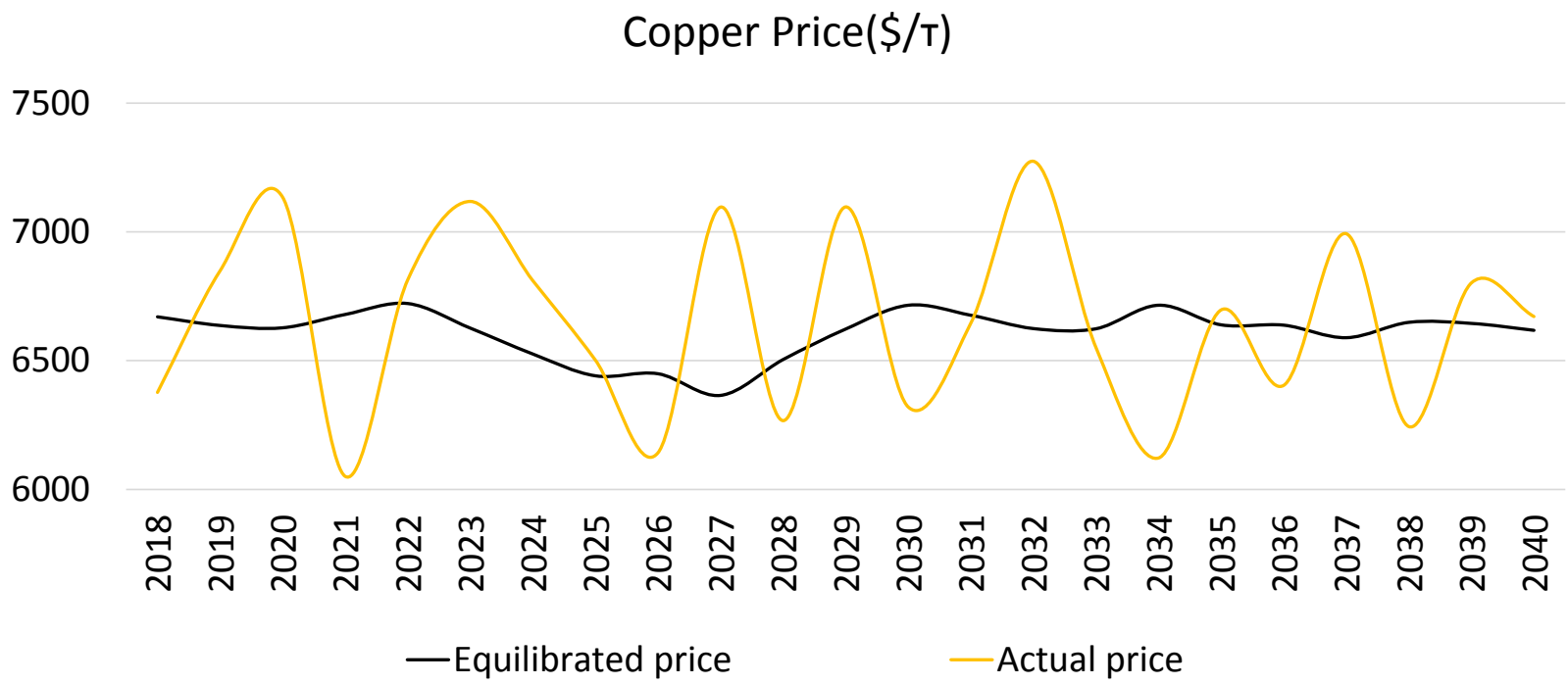
- The weighted average of TFP growth will be maintained near the historical value of 3.4 percent per annum

- Following exogenous variables grow by the sum of population and the average TFP growth rates:
  - Government spending on goods
  - Government capital expenditure
  - Current account balance
  - Remittances from the rest of the world
  - Investment expenditure on livestock sector
  - Inventory changes in all commodities except for other mining and livestock
  - Investment in public, mining and livestock sectors

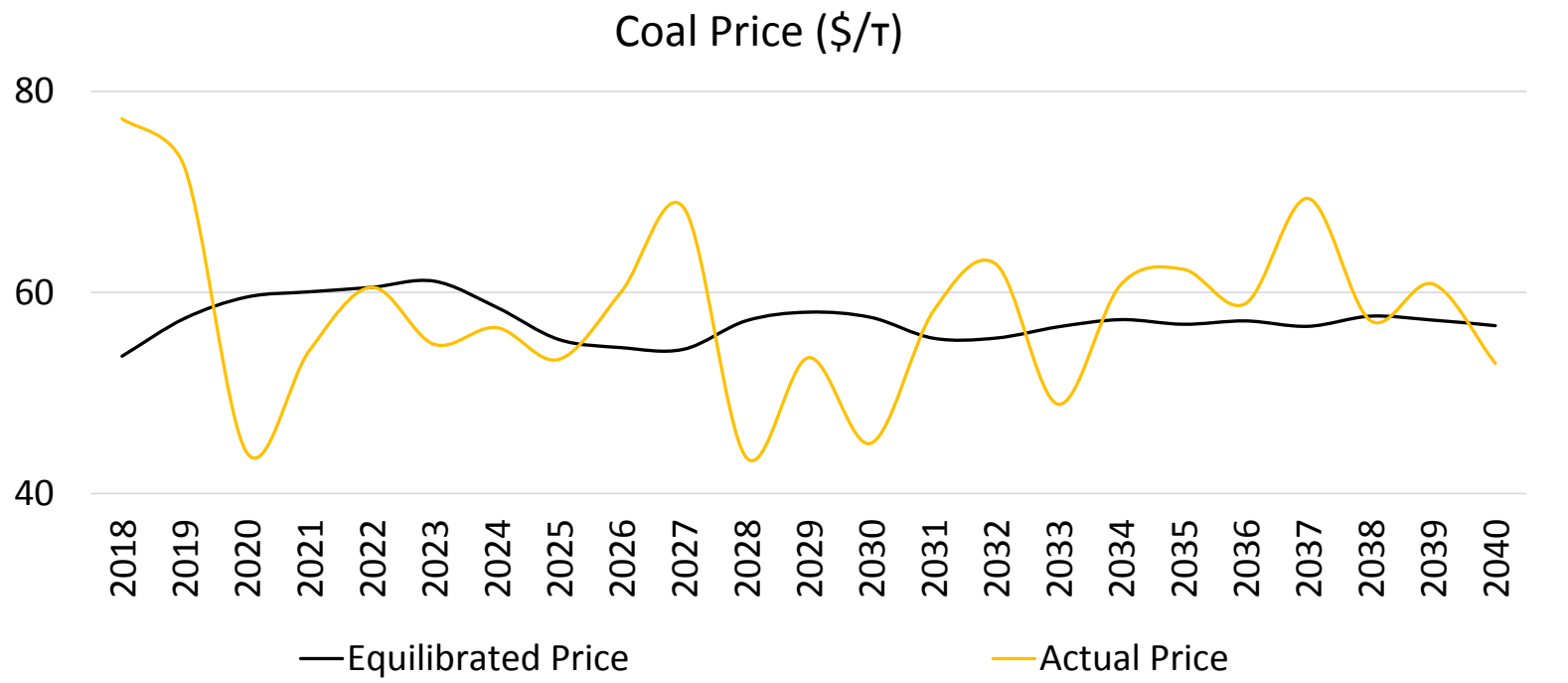
Model Assumptions

- Livestock sector's TFP will remain constant from 2030 in consideration of pastureland degradation
- Taxes and savings rates will remain constant at the calibrated value from SAM
- World market prices of commodities except coal and copper will be stable
- Coal and copper prices are volatile
- Fiscal deficit is equal to 2 percent of GDP

Model Assumptions



Model Assumptions



Simulation scenarios

- Commodity price shocks will be introduced under following scenario:

  1. Baseline: Both FSF and FHF are absent.
  2. SIM1: FSF is present, FHF is absent.
  3. SIM2: FSF is absent, FHF is present.
  4. SIM3: Both FSF and FHF are present.

- Effects on macroeconomic and budget variables are compared.

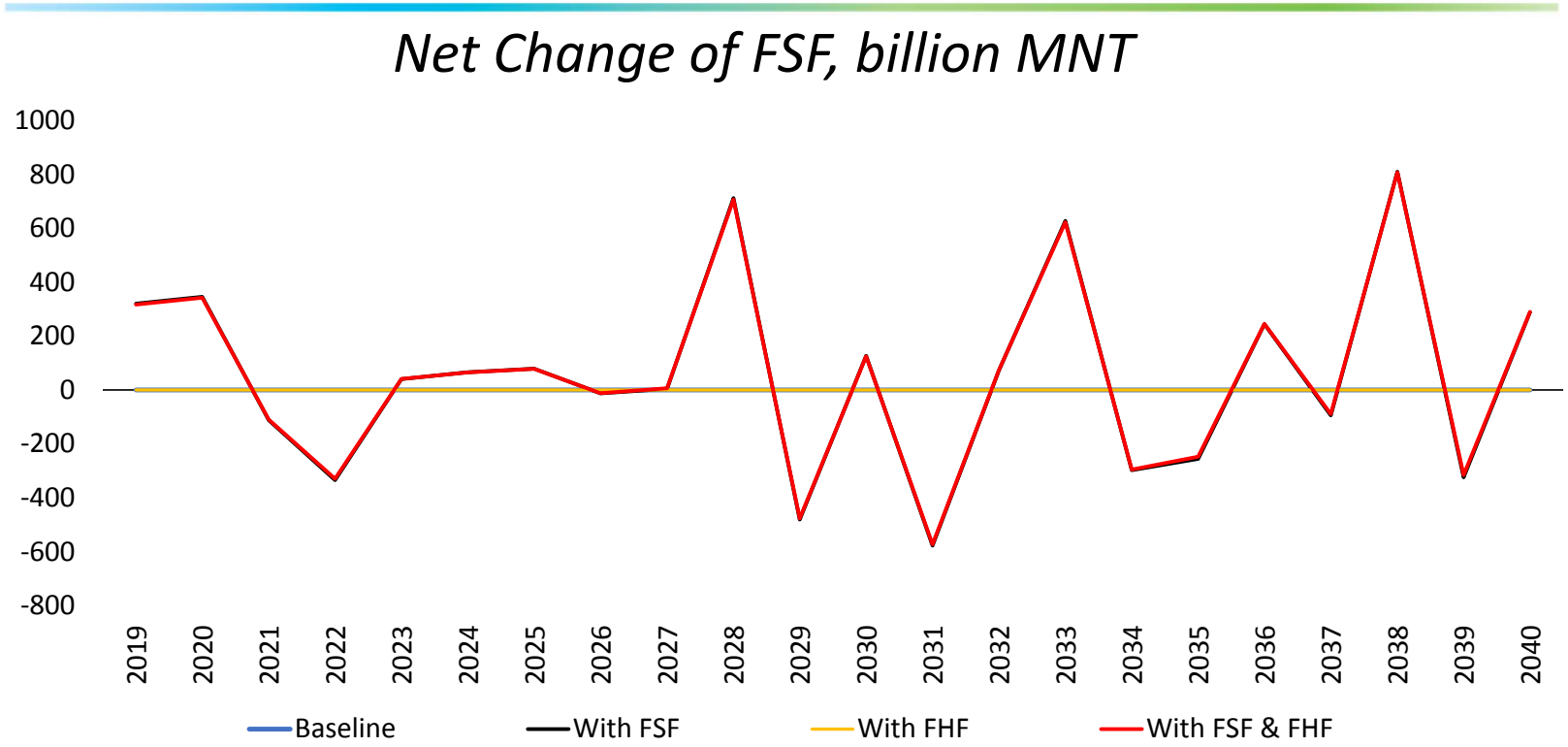
Simulation steps

1. Run the baseline scenario with equilibrated prices and obtain:

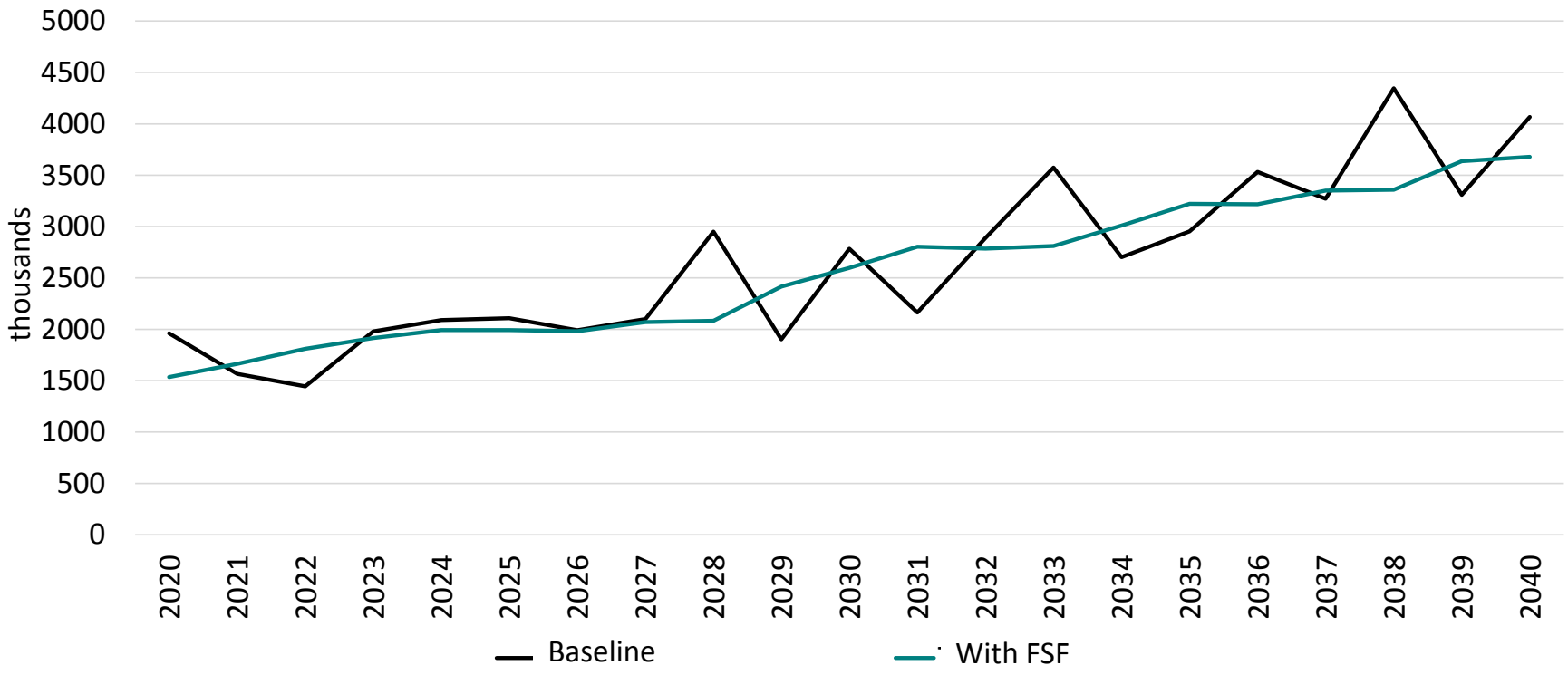
   - Dynamics of equilibrated budget revenue

2. Run the baseline scenario with volatile commodity prices. Estimate the net change of FSF using the dynamics of equilibrated budget revenue.

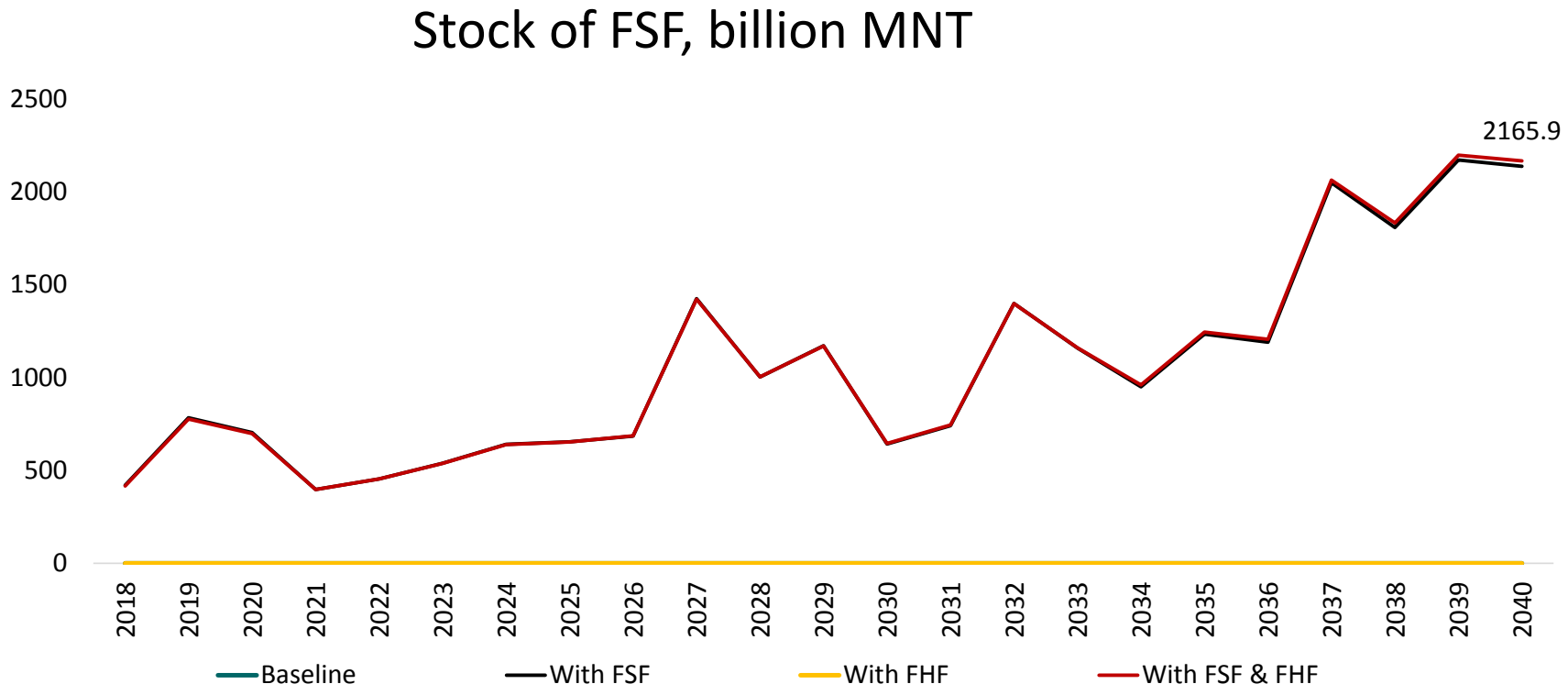
Results: Fiscal Stability Fund



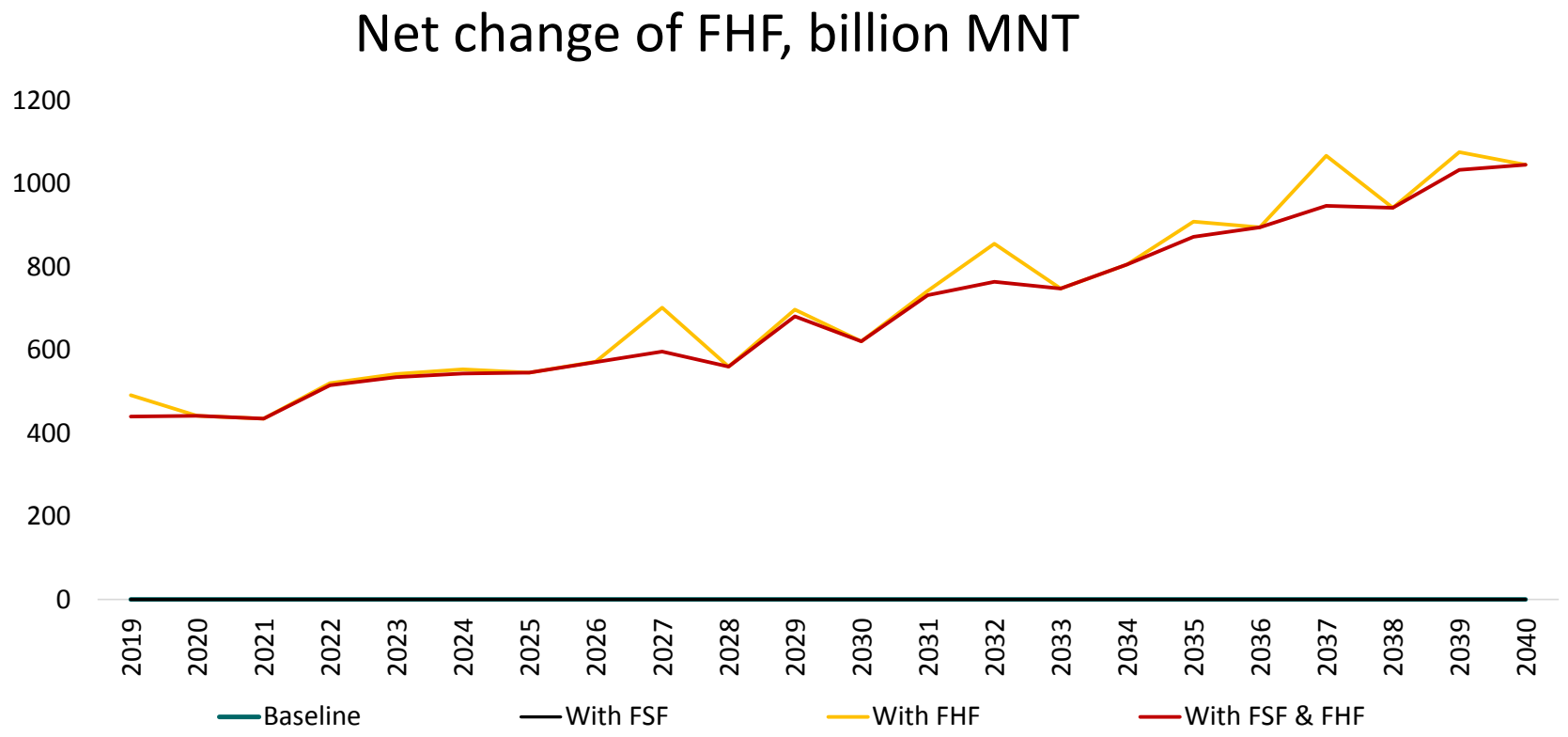
Results: Budget Capital Expenditure



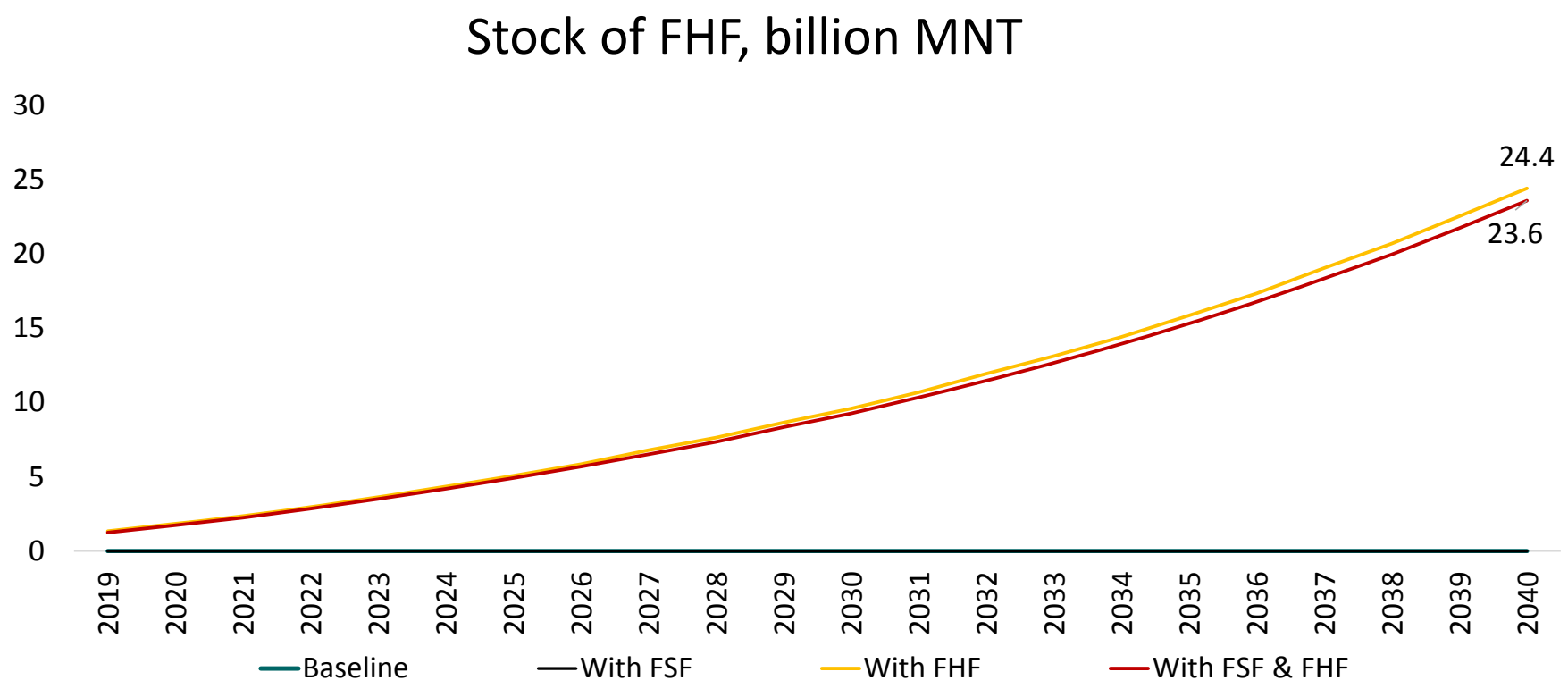
Results: Fiscal Stability Fund



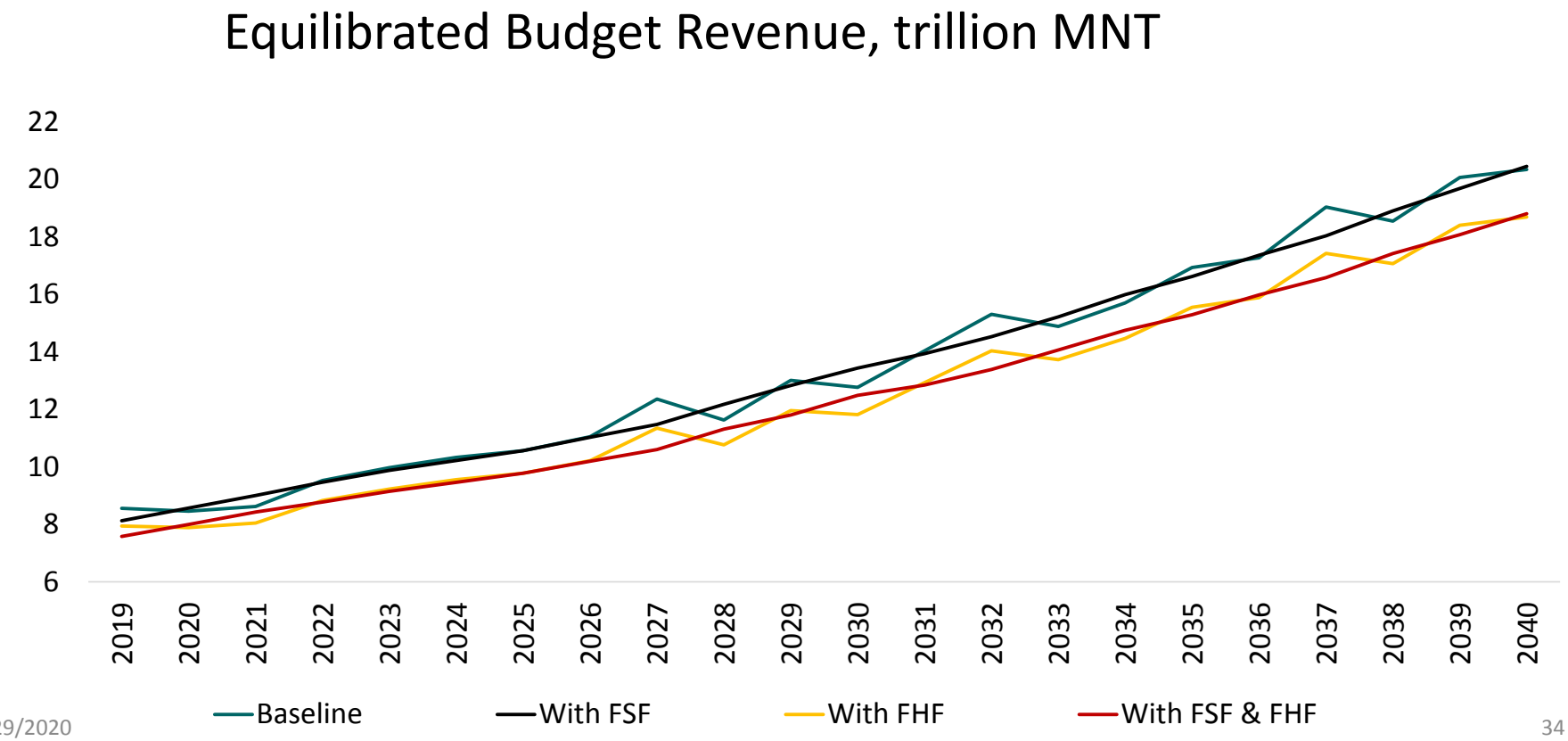
Results: Future Heritage Fund



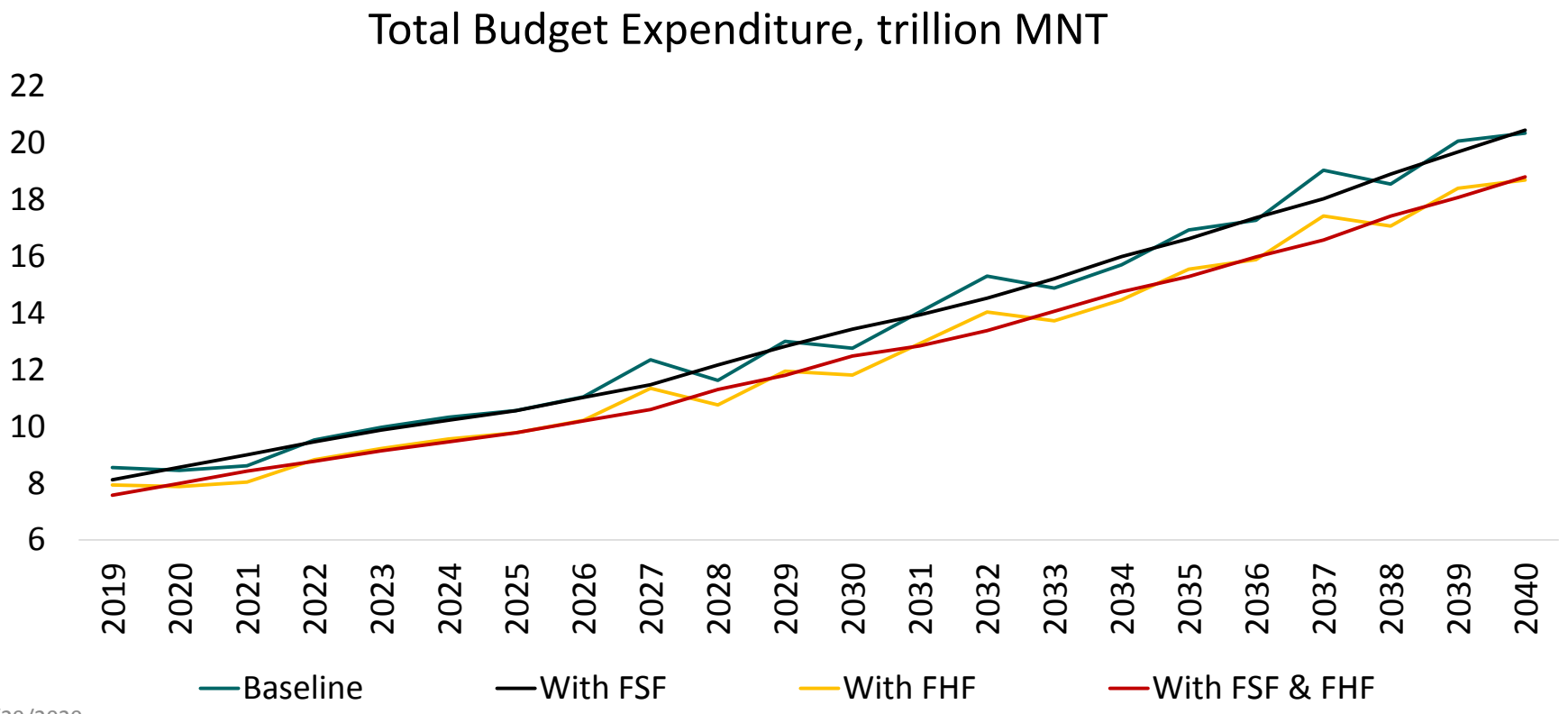
Results: Future Heritage Fund



Results: Impact of Sovereign Wealth Funds on Budget Indicators



Results: Impact of Sovereign Wealth Funds on Budget Indicators



Results: Impact of Sovereign Wealth Funds on Budget Indicators

Comparing the scenarios: Government Budget Accounts

	Дундаж өсөлт				Стандарт хазайлт			
	Baseline	With FSF	With FHF	With FSF & FHF	Baseline	With FSF	With FHF	With FSF & FHF
Budget revenue	4.3	4.4	4.2	4.3	5.1	0.8	4.6	1.0
Budget expenditure	4.3	4.4	4.2	4.3	4.7	0.7	4.3	0.9
Capital expenditure	4.8	4.2	4.8	3.3	20.3	6.4	27.8	13.5

Results: Impact of Sovereign Wealth Funds on Macroeconomic Variables

Macro variables	Average growth				Standard deviation			
	Baseline	With FSF	With FHF	With FSF & FHF	Baseline	With FSF	With FHF	With FSF & FHF
Real GDP	4.38	4.37	4.16	4.15	0.64	0.57	0.54	0.50
Non-mining GDP	4.21	4.24	4.10	4.13	3.36	2.35	3.31	2.37
Household consumption	4.22	4.23	4.07	4.07	3.76	3.64	3.80	3.70
Government consumption	3.87	3.83	3.93	3.90	2.92	2.32	2.88	2.33
Total Investment	3.77	3.77	3.59	3.58	7.18	3.58	7.04	3.61
Export	4.41	4.41	4.34	4.35	6.87	7.20	6.99	7.29
Import	4.15	4.16	4.08	4.09	5.02	3.43	4.95	3.46
CPI	-0.01	0.01	0.06	0.08	2.03	1.55	2.00	1.55

Conclusion

- The FSF plays a crucial role in counteracting and mitigating the economic fluctuations through the smoothing the budget expenditure
- The FHF, by its design, have impact of decreasing total demand of the economy through decreasing the budget expenditure but it could help to allocate the rents from mineral sector across the current and future generations
- Recent activities of GoM are implying the insufficient implementation of the FSL and Law on FHF
- The results imply that It is essential to implement fiscal rules of those funds persistently to counteract the economic cycle generated by the mineral commodities prices volatility

Thank you for
your attention