

# Compact trust funds in Micronesia

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# Background:

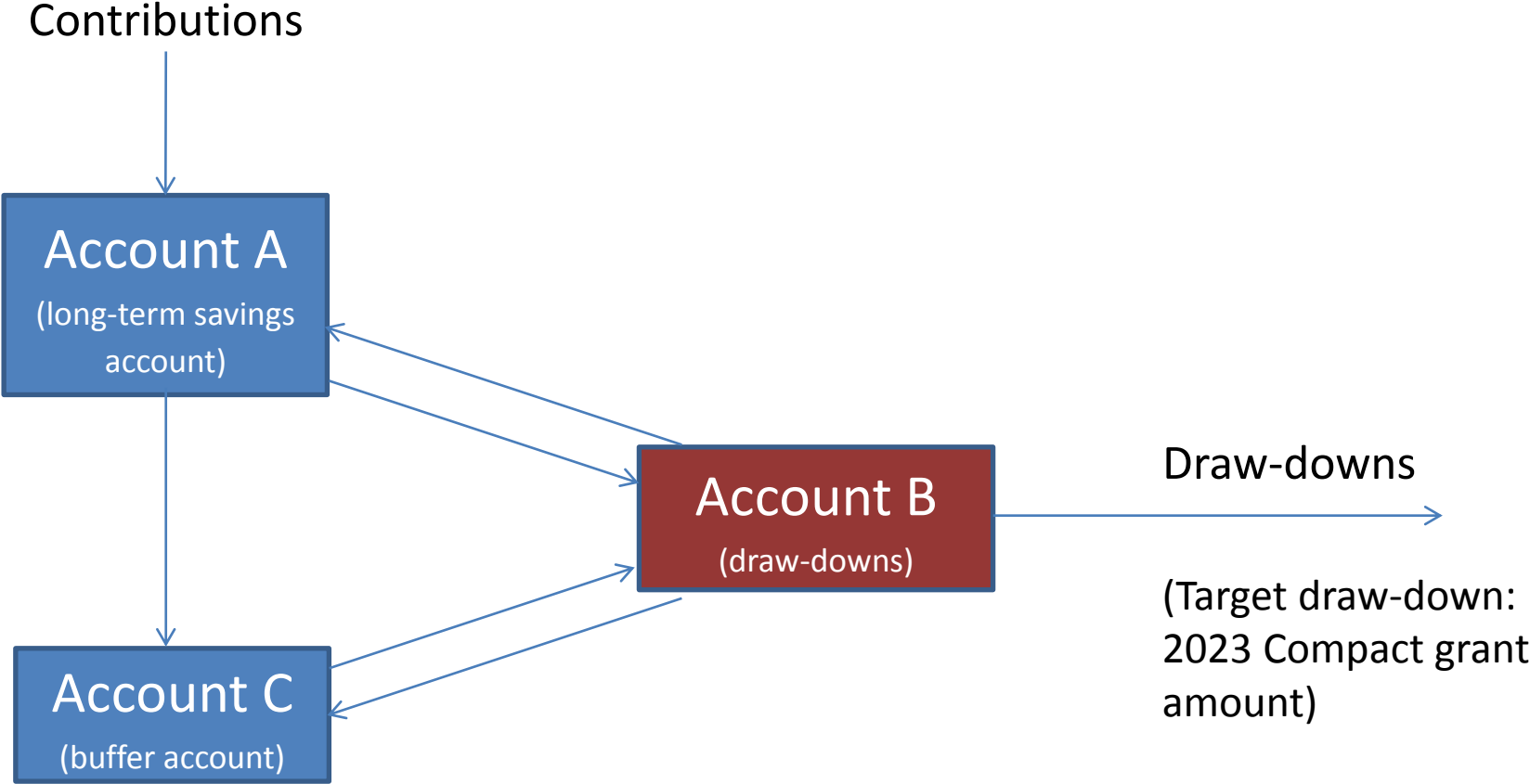
## Compact Trust Funds of FSM and RMI

- FSM - Federated States of Micronesia
- RMI - Republic of the Marshall Islands
- Part of Compact of Free Association
- Compact grants cease after 2023
  - Large % of GDP – 20% for RMI\*, 29% for FSM\*\*
  - Spending priorities in healthcare, education and infrastructure
- After 2023, Compact Trust Fund (CTF) income
  - Designed to provide 2023 compact grant amount
- Can the CTFs deliver?
  - Contributions, investment returns, draw-downs

\* In 2013

\*\* In 2012

# Account structure and draw-down rules

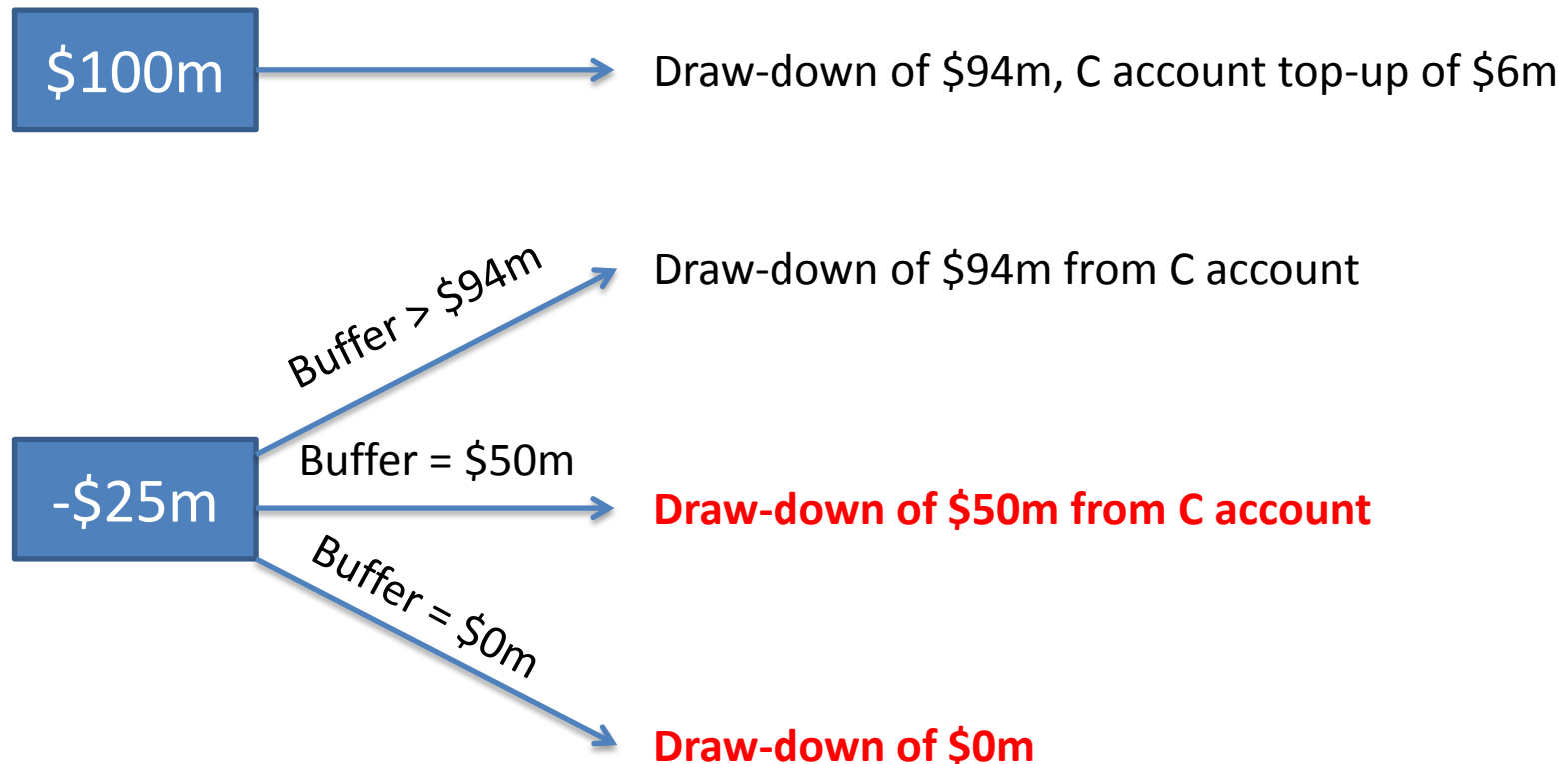


# Account structure and draw-down rules – FSM

(FSM target draw-down of \$94m)

*If the investment  
return is:*

*Draw-downs and “C” (buffer) account  
will be:*



# Investment return model

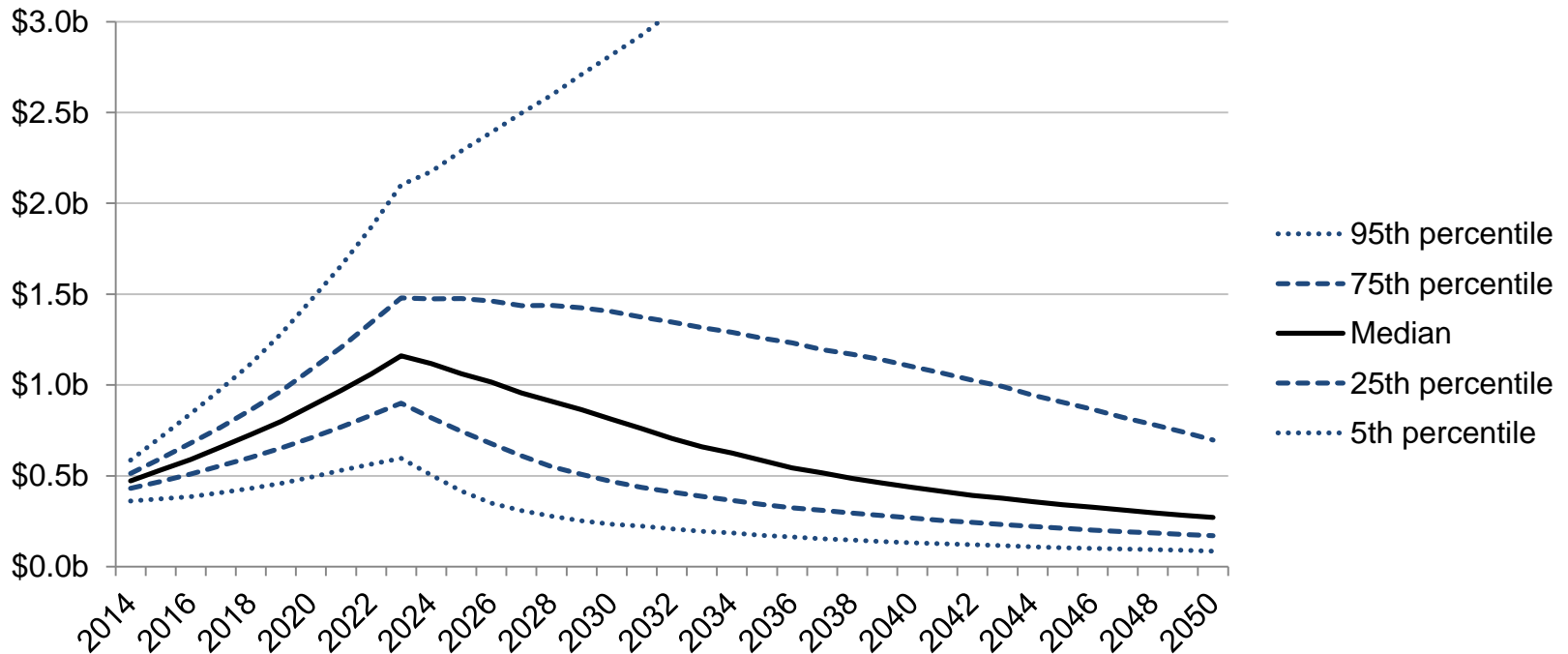
- Monte Carlo simulation
- Can assess investment volatility & its effects

Investment returns (%)	2014	2015	...	2023	2024	...	2049	2050
Simulation 1	0%	9%	...	1%	17%	...	10%	-2%
Simulation 2	-2%	9%	...	8%	0%	...	15%	-8%
...	...	...	...	...	...	...	...	...
Simulation 10,000	1%	-2%	...	15%	-5%	...	7%	12%

- For each randomly generated simulation, can calculate:
  - Compact Trust Fund size in each year
  - Draw-downs in each year
- Assume maximum is drawn down each year

# FSM CTF likely to be unsustainable

Size of FSM CTF, 2023 US dollars

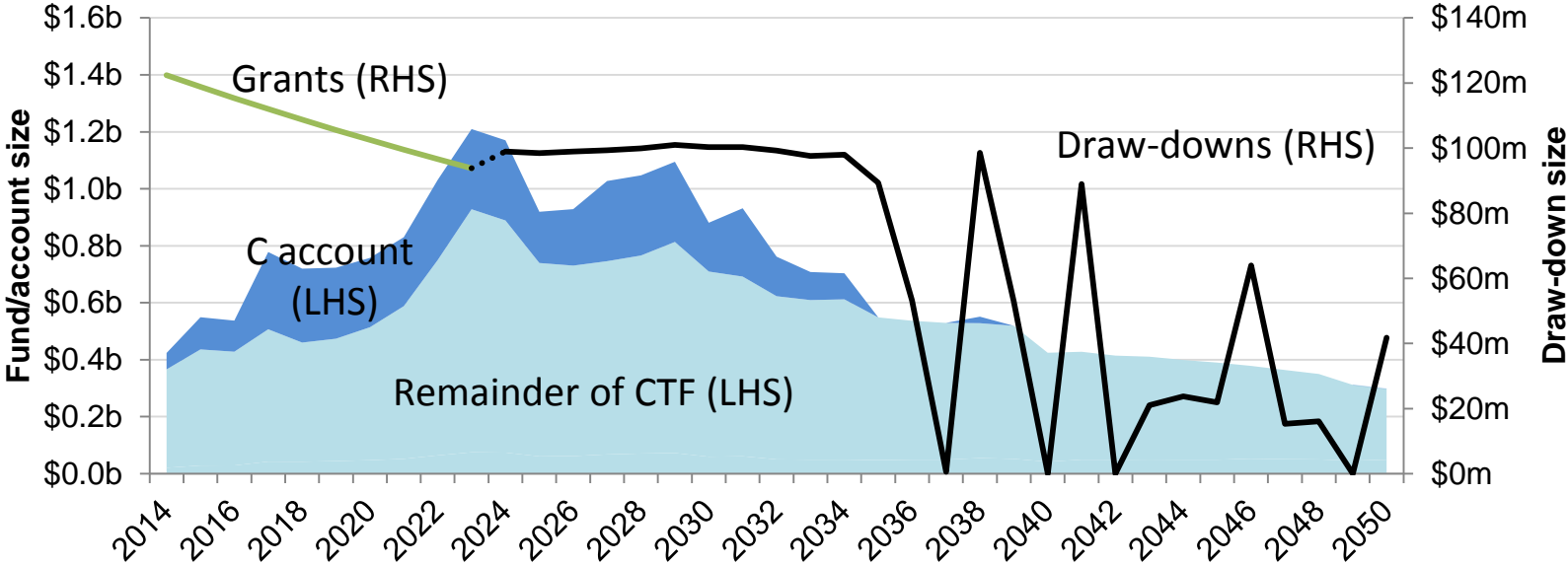


Probability of maintaining 2023 size to 2050: 18%

# Draw-downs likely to be unpredictable

**FSM CTF - Stylised fund and draw-down pattern**

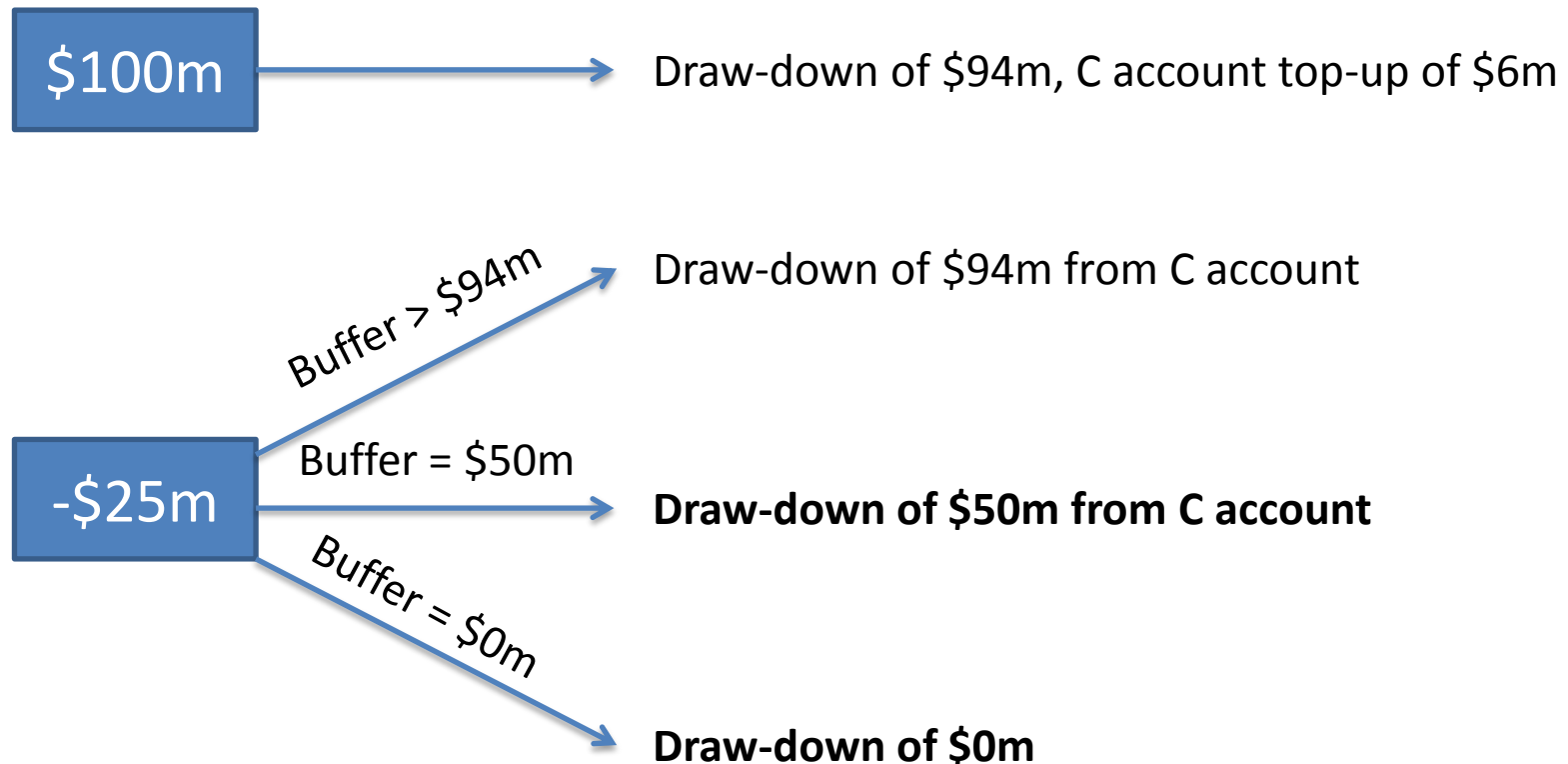
USD \$m, 2023 dollars



# What can be done?

*If the investment  
return is:*

*Draw-downs and "C" (buffer) account  
will be:*

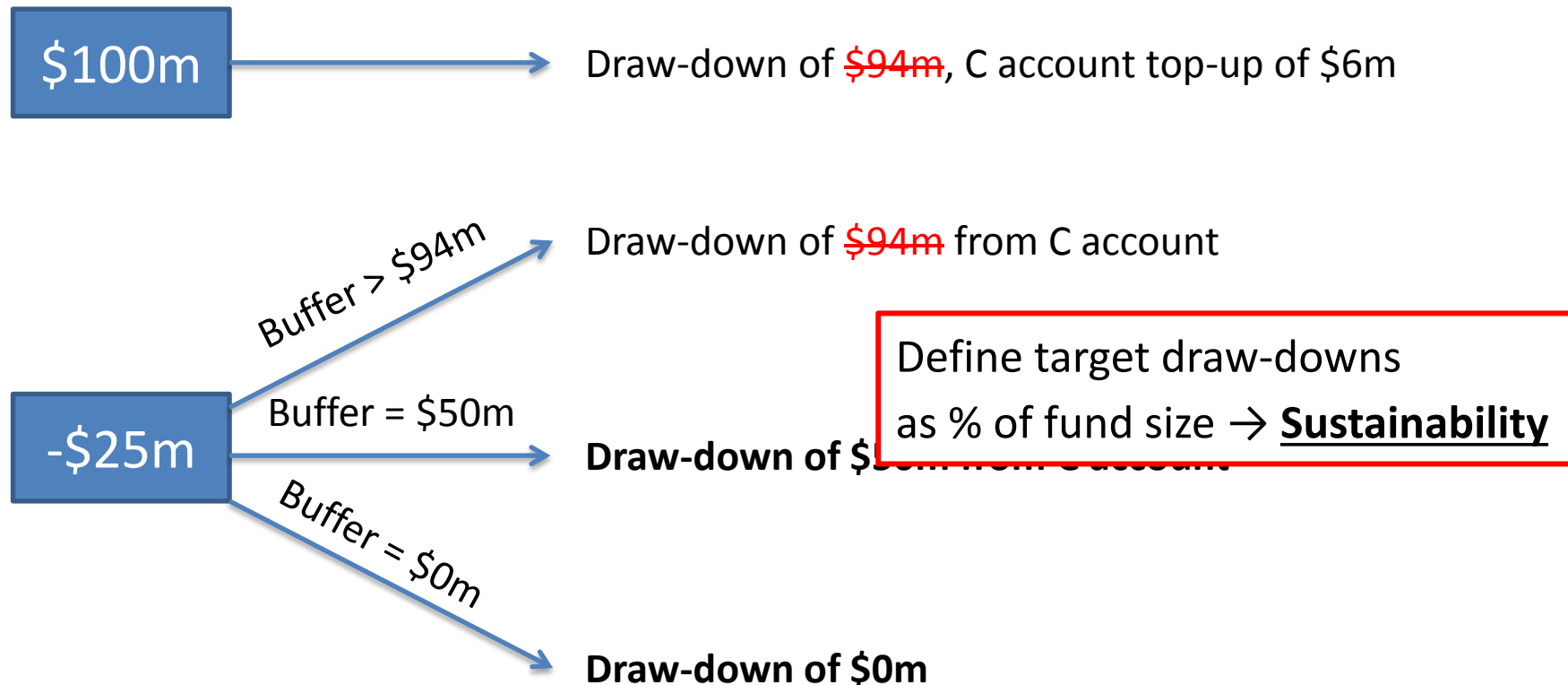




# What can be done?

*If the investment return is:*

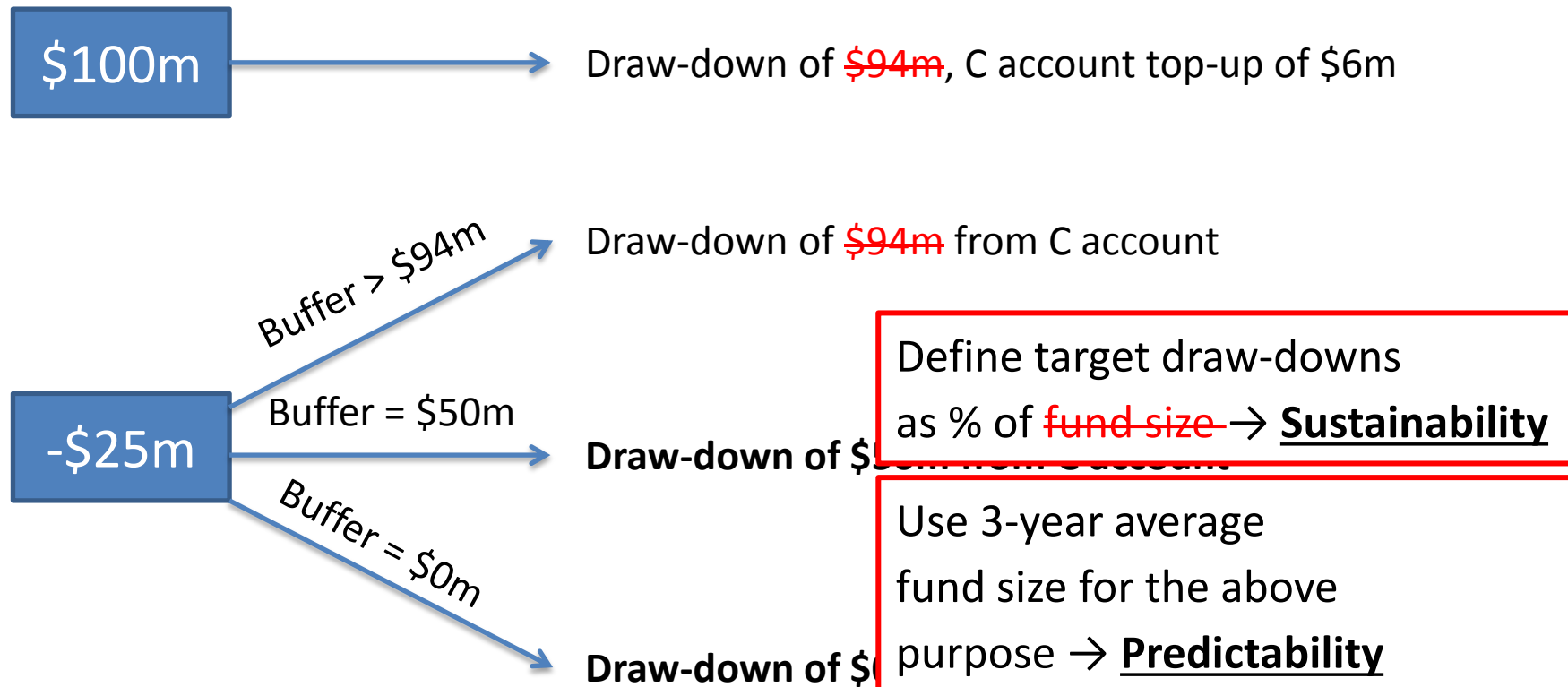
*Draw-downs and "C" (buffer) account will be:*



# What can be done?

*If the investment return is:*

*Draw-downs and "C" (buffer) account will be:*

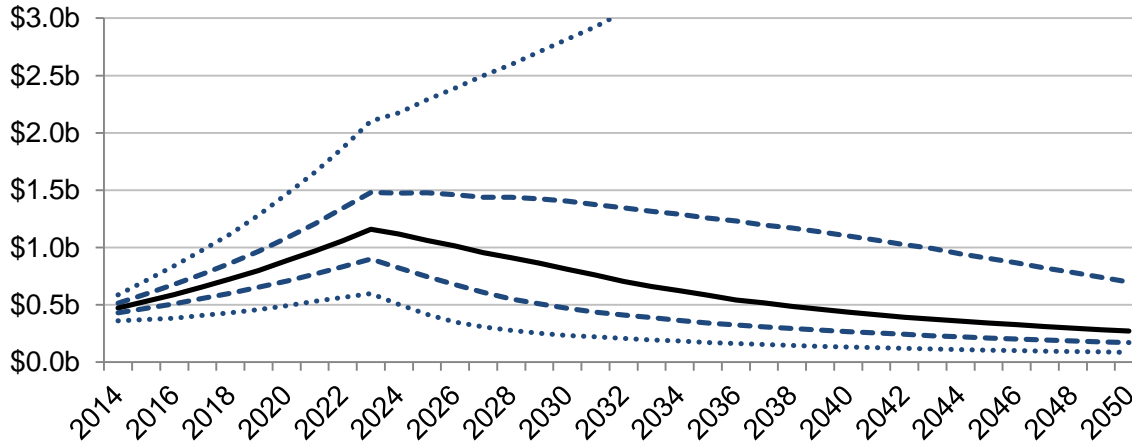


# FSM CTF sustainability rectified

Current



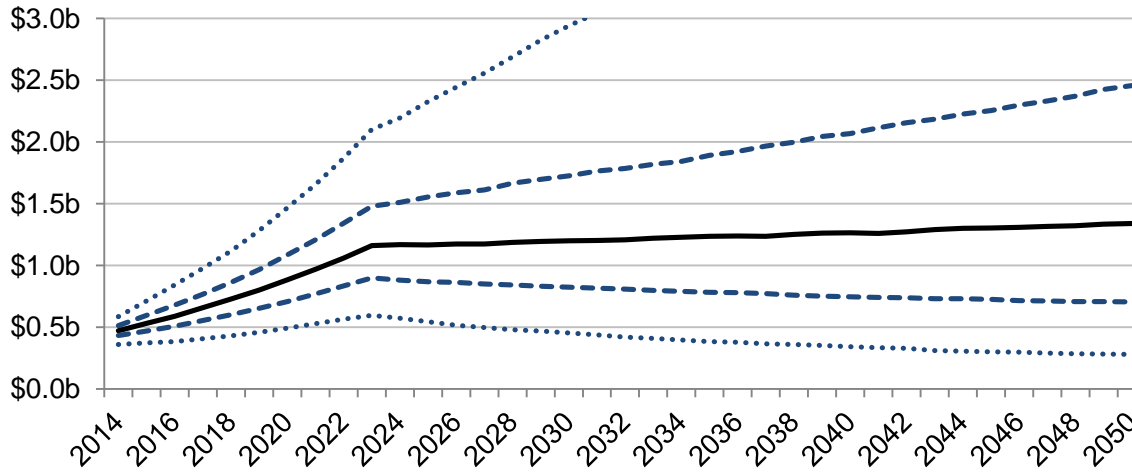
Size of FSM CTF, 2023 US dollars



Probability of sustainability: 18%

- ..... 95th percentile
- - - 75th percentile
- Median
- · - · 25th percentile
- ..... 5th percentile

Recommended  
(4% p.a. drawn down)



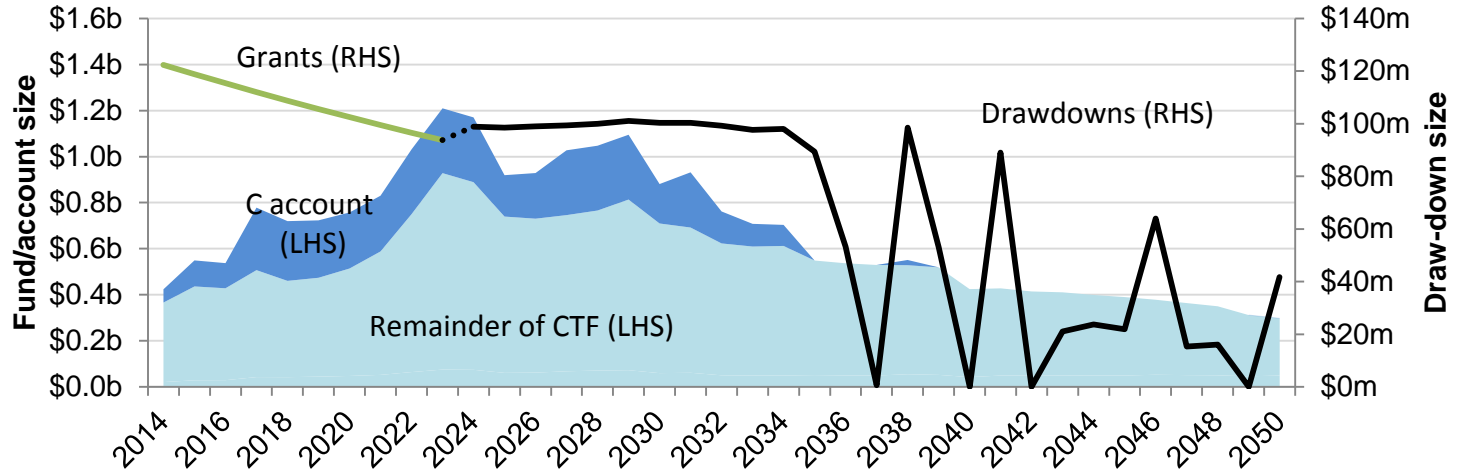
Probability of sustainability: 59%

- ..... 95th percentile
- - - 75th percentile
- Median
- · - · 25th percentile
- ..... 5th percentile

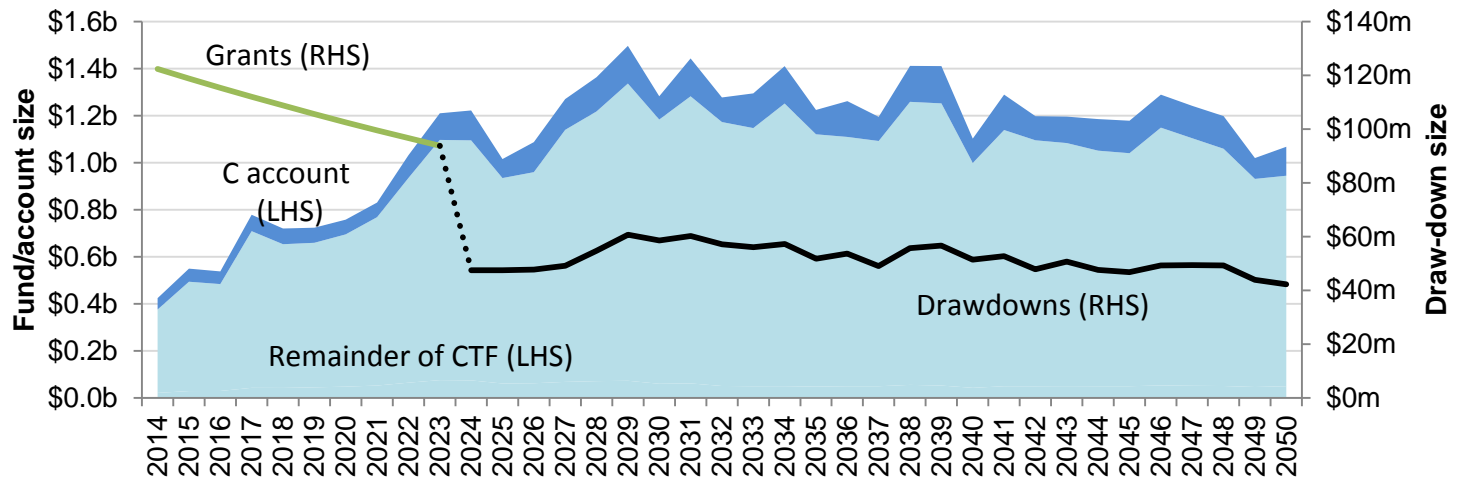
# FSM draw-down volatility rectified

**FSM CTF - Stylised fund and draw-down pattern**  
 USD \$m, 2023 dollars

Current



Recom-  
 mended  
 (4% p.a.  
 drawn  
 down)



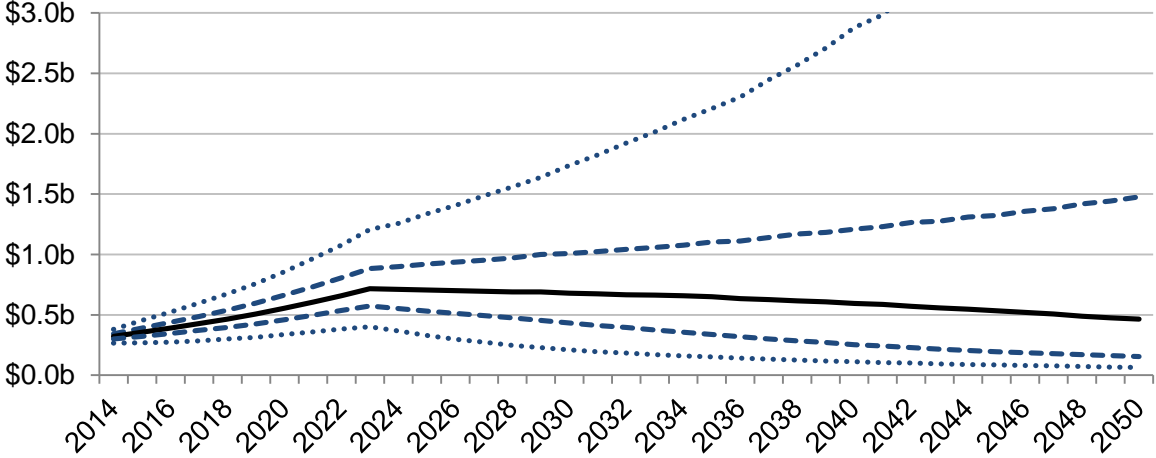
# RMI CTF sustainability rectified

Current



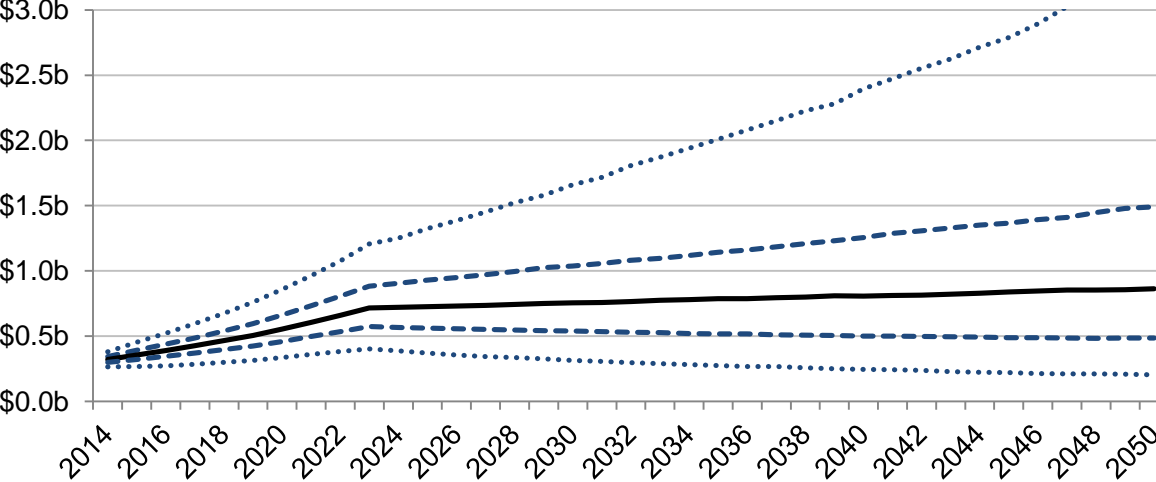
Recommended  
(3.5% p.a.  
drawn  
down)

Size of RMI CTF 2023 US dollars



Probability of sustainability: 39%

- ..... 95th percentile
- - - 75th percentile
- Median
- · - 25th percentile
- ..... 5th percentile



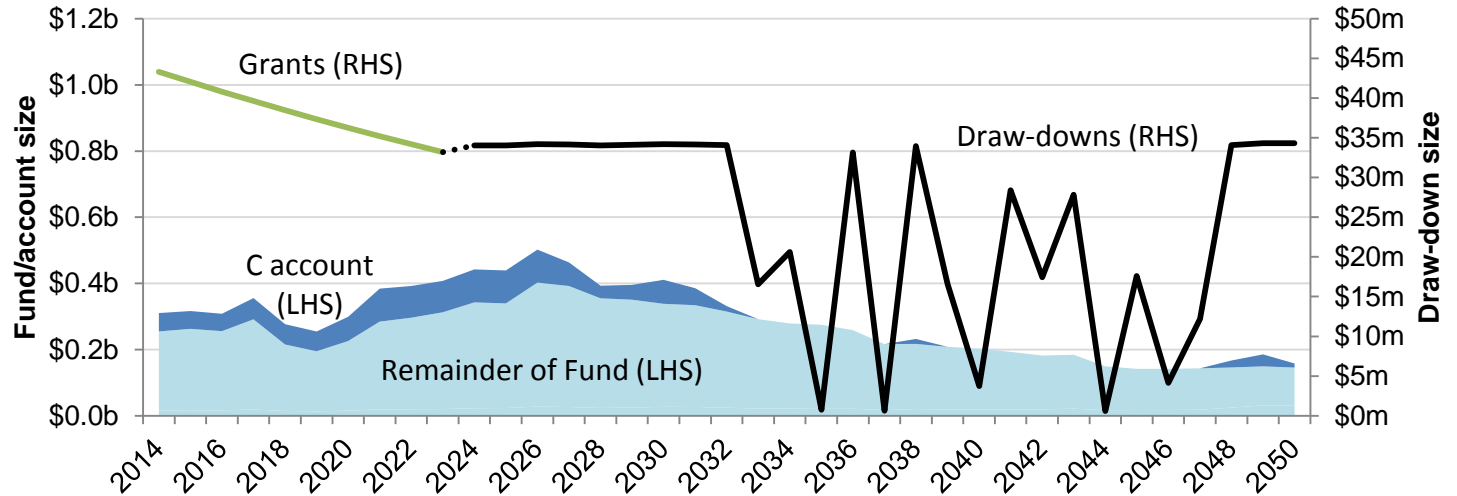
Probability of sustainability: 61%

- ..... 95th percentile
- - - 75th percentile
- Median
- · - 25th percentile
- ..... 5th percentile

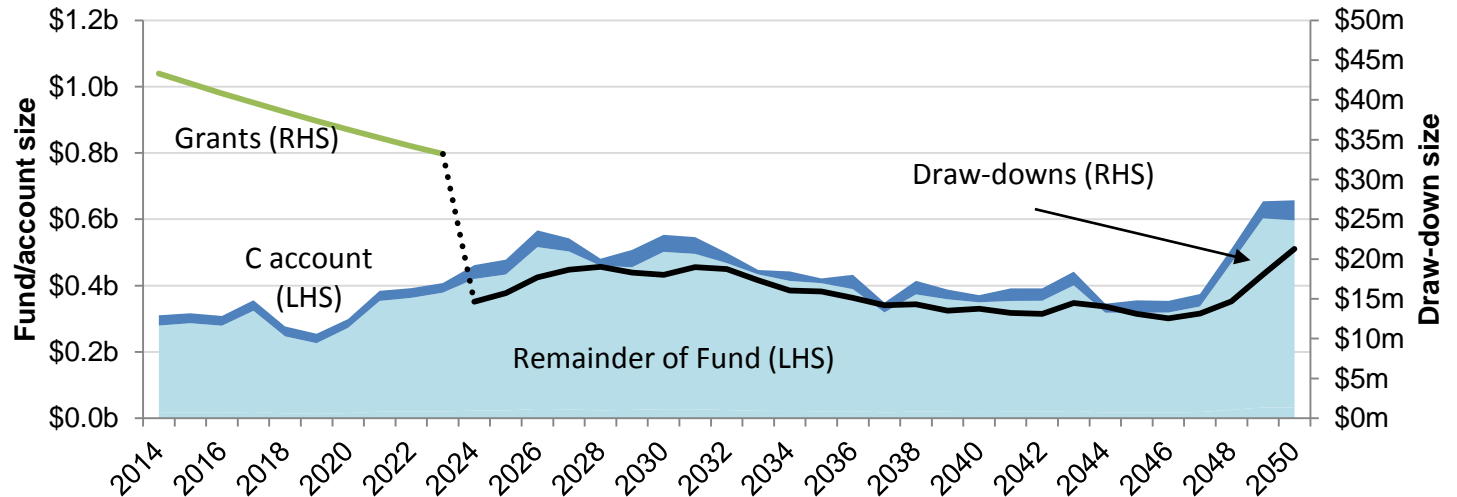
# RMI draw-downs rectified

RMI CTF – stylized fund and draw-down pattern #1  
USD \$m, 2023 dollars

Current



Recom-  
mended  
(3.5% p.a.  
drawn  
down)



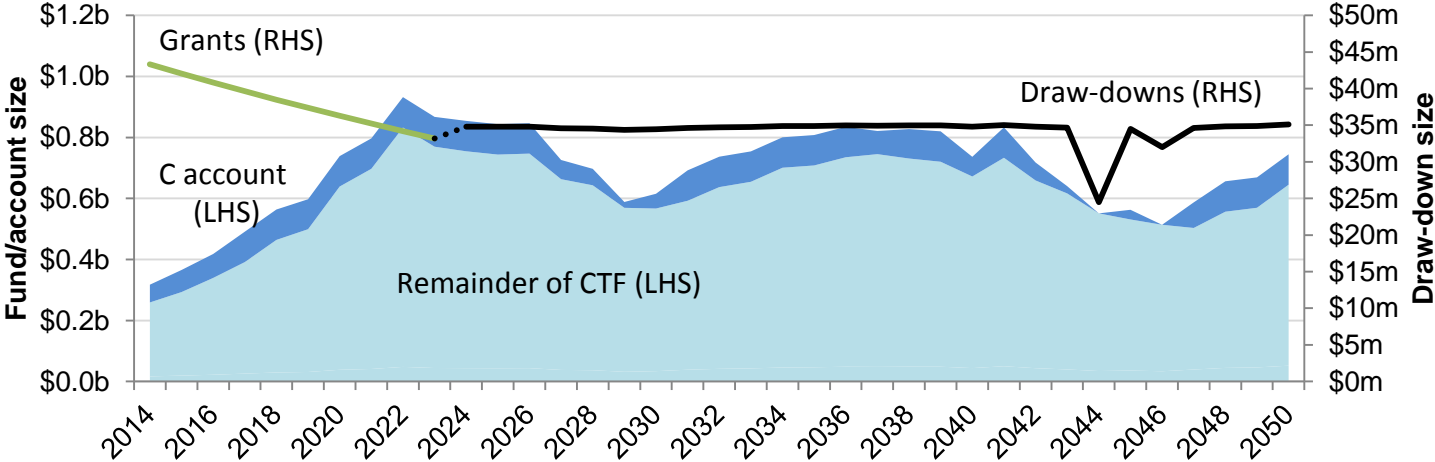
# Concluding remarks

- Investment returns are tougher love than grants
- Beware of unnecessary complexity
- Unintended consequences

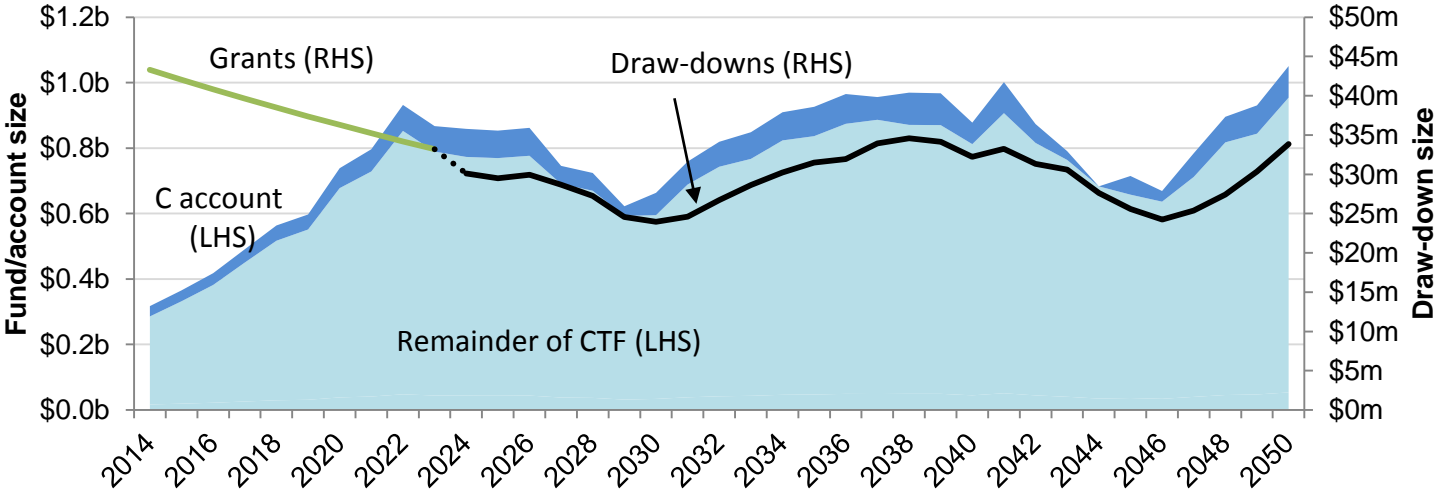
# RMI draw-downs, favourable scenario

**RMI CTF – Stylized fund and draw-down pattern #2**  
 USD \$m, 2023 dollars

Current



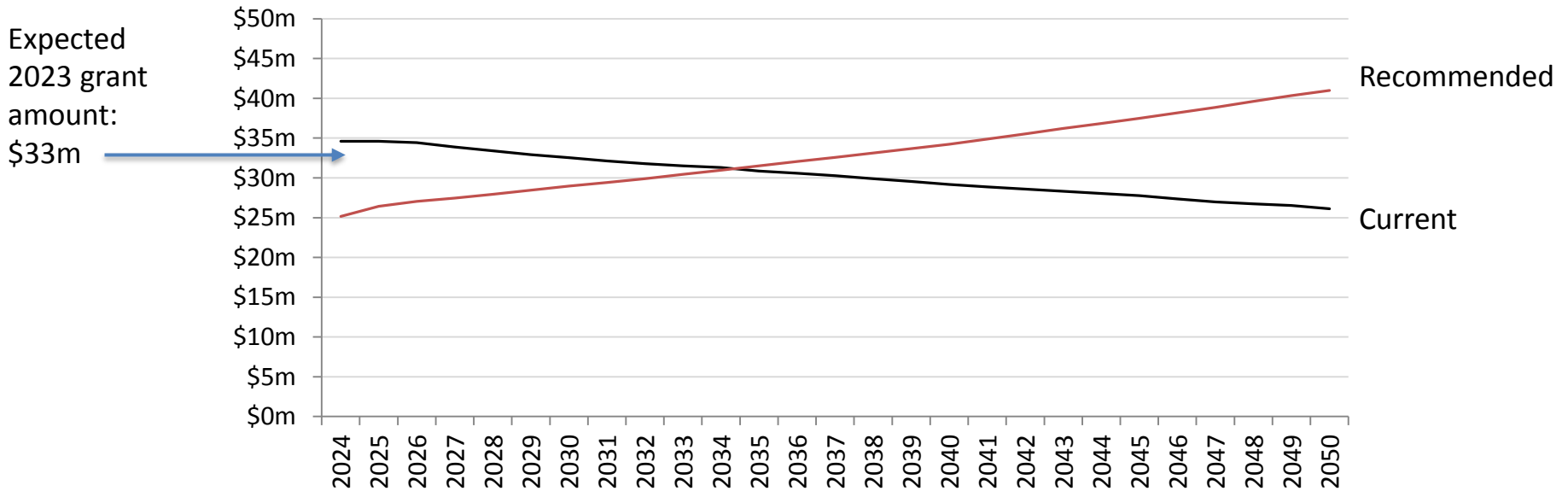
Recom-  
 mended  
 (3.5% p.a.  
 drawn  
 down)





# RMI: Different average draw-down profile

RMI: Average draw-downs, USD \$m, 2023 dollars



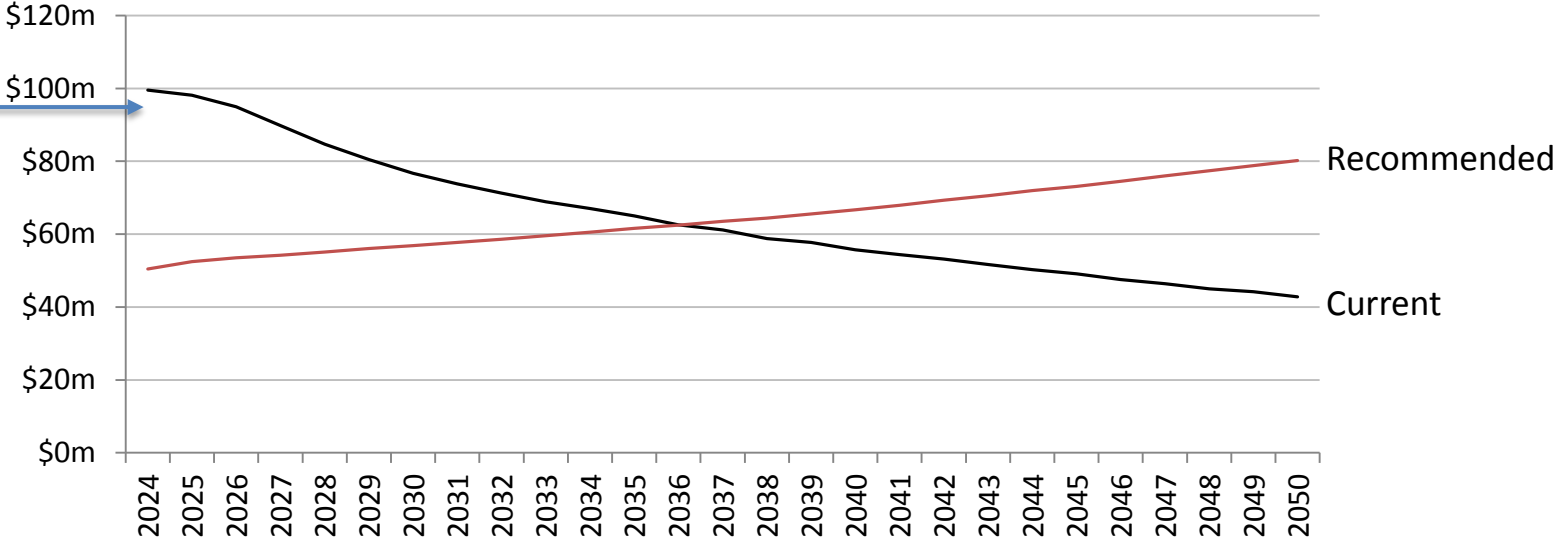
Expected drop in funding after 2023 under Recommended: \$8.1m (2.9% of GDP)

Average annual draw-down from 2024 to 2050: Current: \$30.3m (8.9% of GDP)  
Recommended: \$32.9m (9.5% of GDP)

# FSM: Different average draw-down profile

FSM: Average draw-downs, USD \$m, 2023 dollars

Expected  
2023 grant  
amount:  
\$94m



Expected drop in funding after 2023 under Recommended: \$43.4m (9.5% of GDP)

Average annual draw-down from 2024 to 2050: Current: \$64.8m (13.3% of GDP)  
Recommended: \$64.2m (12.9% of GDP)

# Full modelling results - FSM

	Average yearly draw-down, 2023 dollars		Draw-down volatility - number of years in 20 where draw-downs fall by more than:			CTF sustainability Chance that the CTF maintains its real 2023 value to 2050	Fiscal adjustment Average reduction in funding from 2023 to 2024 (\$m)	
	\$m	% of GDP	3% of GDP	5% of GDP	10% of GDP		\$m	% of GDP
<b>Alternative III: Draw-down defined as % of average CTF size over the last 3 years</b>								
3.5%	60.6	12.2%	0.2	0.0	0.0	64%	49.0	10.8%
4%	64.4	13.0%	0.2	0.1	0.0	58%	43.4	9.5%
4.5%	67.5	13.6%	0.3	0.1	0.0	52%	37.8	8.3%
<b>Alternative IV: Same as current structure but with target draw-down defined as % of average CTF size over the last 3 years</b>								
3.5%	60.4	12.2%	0.3	0.1	0.0	65%	49.0	10.8%
4%	64.2	12.9%	0.4	0.1	0.0	59%	43.4	9.5%
4.5%	67.3	13.6%	0.4	0.2	0.0	52%	37.8	8.3%
<b>Previous results, for comparison:</b>								
<b>Current structure: Existing A, B and C account structure, real draw-down target in 2023 dollars of \$94m</b>								
\$94m	64.8	13.3%	2.7	2.0	0.9	18%	None - reduction may occur later	
<b>Alternative I: Existing A, B and C account structure, real draw-down target in 2023 dollars of:</b>								
\$47m	46.4	9.4%	0.5	0.3	0.0	50%	41.1	9.0%
\$66m	56.5	11.5%	1.3	0.9	0.2	33%	22.4	4.9%
\$80m	61.5	12.6%	2.0	1.4	0.6	24%	8.3	1.8%
<b>Alternative II: Simplified structure, fixed % of CTF drawn down each year</b>								
3.5%	61.9	12.5%	0.8	0.3	0.0	63%	45.3	10.0%
4%	65.5	13.2%	0.9	0.3	0.1	57%	39.2	8.6%
4.5%	68.3	13.8%	1.0	0.4	0.1	50%	33.1	7.3%

# Full modelling results - RMI

	Average yearly draw-down, 2023 dollars		Draw-down volatility - number of years in 20 where draw-downs fall by more than:			CTF sustainability Chance that the CTF maintains its real 2023 value to 2050	Fiscal adjustment Average reduction in funding from 2023 to 2024 (\$m)	
	\$m	% of GDP	3% of GDP	5% of GDP	10% of GDP		\$m	% of GDP
<b>Alternative III: Draw-down defined as % of average CTF size over the last 3 years</b>								
3%	30.2	8.7%	0.0	0.0	0.0	67%	11.6	4.2%
3.5%	33.0	9.5%	0.1	0.0	0.0	60%	8.1	2.9%
4%	35.3	10.2%	0.1	0.0	0.0	53%	4.5	1.6%
<b>Alternative IV: Same as current structure but with target draw-down defined as % of average CTF size over the last 3 years</b>								
3%	30.2	8.6%	0.1	0.0	0.0	67%	11.6	4.2%
3.5%	32.9	9.5%	0.1	0.0	0.0	61%	8.1	2.9%
4%	35.2	10.2%	0.2	0.1	0.0	54%	4.5	1.6%
<b>Previous results, for comparison:</b>								
<b>Current structure: Existing A, B and C account structure, real draw-down target in 2023 dollars of \$33m</b>								
\$33m	30.3	8.9%	1.0	0.5	0.0	39%	None - reduction may occur later	
<b>Alternative I: Existing A, B and C account structure, real draw-down target in 2023 dollars of:</b>								
\$23m	23.7	6.9%	0.3	0.1	0.0	57%	8.6	3.1%
\$28m	27.3	8.0%	0.6	0.3	0.0	48%	3.6	1.3%
<b>Alternative II: Simplified structure, fixed % of CTF drawn down each year</b>								
3%	31.1	8.9%	0.2	0.1	0.0	66%	9.7	3.5%
3.5%	33.7	9.7%	0.3	0.1	0.0	59%	5.8	2.1%
4%	35.9	10.4%	0.4	0.1	0.0	52%	1.9	0.7%

# Asset modelling assumptions

	Expected return (% p.a.)	Standard deviation (% p.a.)
World equities	10.3%	18.3%
US fixed income	6.0%	8.6%
US private equity	13.7%	27.1%
Emerging market debt	7.1%	10.3%
US convertible bonds	7.1%	10.3%
US private real estate	7.1%	9.7%
Global hedge funds	7.1%	9.3%
FSM inflation (GDP deflator)	2.6%	1.8%
RMI inflation (GDP deflator)	3.0%	2.0%

	World equities	US fixed income	US private equity	Emerging market debt	US convertible bonds	US private real estate	Global hedge funds
Correlations, across all years							
World equities	1.00	0.14	1.00	0.80	0.80	0.98	0.99
US fixed income	0.14	1.00	0.13	0.61	0.61	0.21	0.16
US private equity	1.00	0.13	1.00	0.80	0.80	0.98	0.98
Emerging market debt	0.80	0.61	0.80	1.00	1.00	0.86	0.81
US convertible bonds	0.80	0.61	0.80	1.00	1.00	0.86	0.81
US private real estate	0.98	0.21	0.98	0.86	0.86	1.00	0.99
Global hedge funds	0.99	0.16	0.98	0.81	0.81	0.99	1.00

# Target asset allocations, FSM and RMI

	FSM	RMI
World equities	51.0%	60.0%
US fixed income	2.5%	20.0%
US private equity	9.5%	0.0%
Emerging market debt	10.0%	0.0%
US convertible bonds	6.5%	0.0%
US private real estate	10.0%	5.0%
Global hedge funds	10.5%	15.0%
Total	100.0%	100.0%

Source: FSM FY12 Compact Trust Fund Annual Report, RMI FY12 Compact Trust Fund Annual Report

# Contribution schedule, FSM

Financial year	FSM contributions (US \$m)	US contributions (US \$m)
2005	30.3	32.19
2006		16.44
2007		17.69
2008		19.00
2009		20.91
2010		21.52
2011		22.39
2012		23.59
2013		24.99
<b>Projections:</b>		
2014		26.24
2015		27.56
2016		28.91
2017		30.29
2018		31.71
2019		33.14
2020		34.59
2021		36.09
2022		37.61
2023		39.17

Source: FSM FY12 Compact Trust Fund Annual Report, US Congressional Budget Office, ADB

# Contribution schedule, RMI

Financial year	RMI contributions (US \$m)	Taipei,China contributions (US \$m)	US contributions (US \$m)
2004	25.00		7.00
2005	2.50	1.75	7.59
2006		0.75	8.22
2007		0.75	8.95
2008		0.75	9.71
2009		2.40	10.78
2010		2.40	11.13
2011		2.40	11.80
2012		2.40	12.47
2013	0.12	2.40	13.31

## Projections:

2014		2.40	14.06
2015		2.40	14.85
2016		2.40	15.66
2017		2.40	16.49
2018		2.40	17.34
2019		2.40	18.20
2020		2.40	19.08
2021		2.40	19.98
2022		2.40	20.90
2023		2.40	21.84

Source: RMI FY11 Compact Trust Fund Annual Report, US Congressional Budget Office, ADB



# Sensitivity testing

## 2% p.a. lower expected equity return

	Average yearly draw-down, 2023 dollars		Draw-down volatility - number of years in 20 where draw-downs fall by more than:			CTF sustainability Chance that the CTF maintains its real 2023 value to 2050	Fiscal adjustment Average reduction in funding from 2023 to 2024 (\$m)	
	\$m	% of GDP	3% of GDP	5% of GDP	10% of GDP		\$m	% of GDP
<b>RMI, current structure</b>								
Existing A, B and C account structure, real draw-down target in 2023 dollars of US \$33m								
Previous results	30.3	8.9%	1.0	0.5	0.0	39%	None - reduction may occur later	
Reduced expected equity return	26.6	7.9%	1.5	0.8	0.0	21%	None - reduction may occur later	
<b>RMI, recommended structure</b>								
Alternative IV, same as current structure but with target draw-down defined as 3.5% of average CTF size over the last 3 years								
Previous results	32.9	9.5%	0.1	0.0	0.0	61%	8.1	2.9%
Reduced expected equity return	24.6	7.2%	0.1	0.0	0.0	42%	10.6	3.8%
<b>FSM, current structure</b>								
Existing A, B and C account structure, real draw-down target in 2023 dollars of US \$94m								
Previous results	64.8	13.3%	2.7	2.0	0.9	18%	None - reduction may occur later	
Reduced expected equity return	52.3	10.8%	3.2	2.3	1.1	7%	None - reduction may occur later	
<b>FSM, recommended structure</b>								
Alternative IV, same as current structure but with target draw-down defined as 4% of average CTF size over the last 3 years								
Previous results	64.2	12.9%	0.4	0.1	0.0	59%	43.4	9.5%
Reduced expected equity return	46.4	9.4%	0.3	0.1	0.0	39%	49.3	10.8%

# Investment risk and return modelling results

Net of fees, excluding investment manager outperformance	Republic of the Marshall Islands	Federated States of Micronesia
Average long-term real return (% p.a.)	4.0%	4.5%
Standard deviation of annual returns (% p.a.)	13.0%	15.2%
Expected frequency of negative annual returns	4.7 years in 20	5.1 years in 20
5 <sup>th</sup> percentile annual real return (% p.a.)	-15.6%	-18.3%

# Yale endowment spending rule

- Defined as a percentage rate of investments two years prior
- Rate = 80% \* (previous year's spend) + 20% \* (long-term spending rate)
- Max. of 6%, min. of 4.5%
- Adjusted for inflation

Source: [http://www.yale.edu/investments/Endowment\\_Update.pdf](http://www.yale.edu/investments/Endowment_Update.pdf)