CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Office of Retirement Services
Federated City Employees' Retirement System
Police and Fire Department Retirement Plan

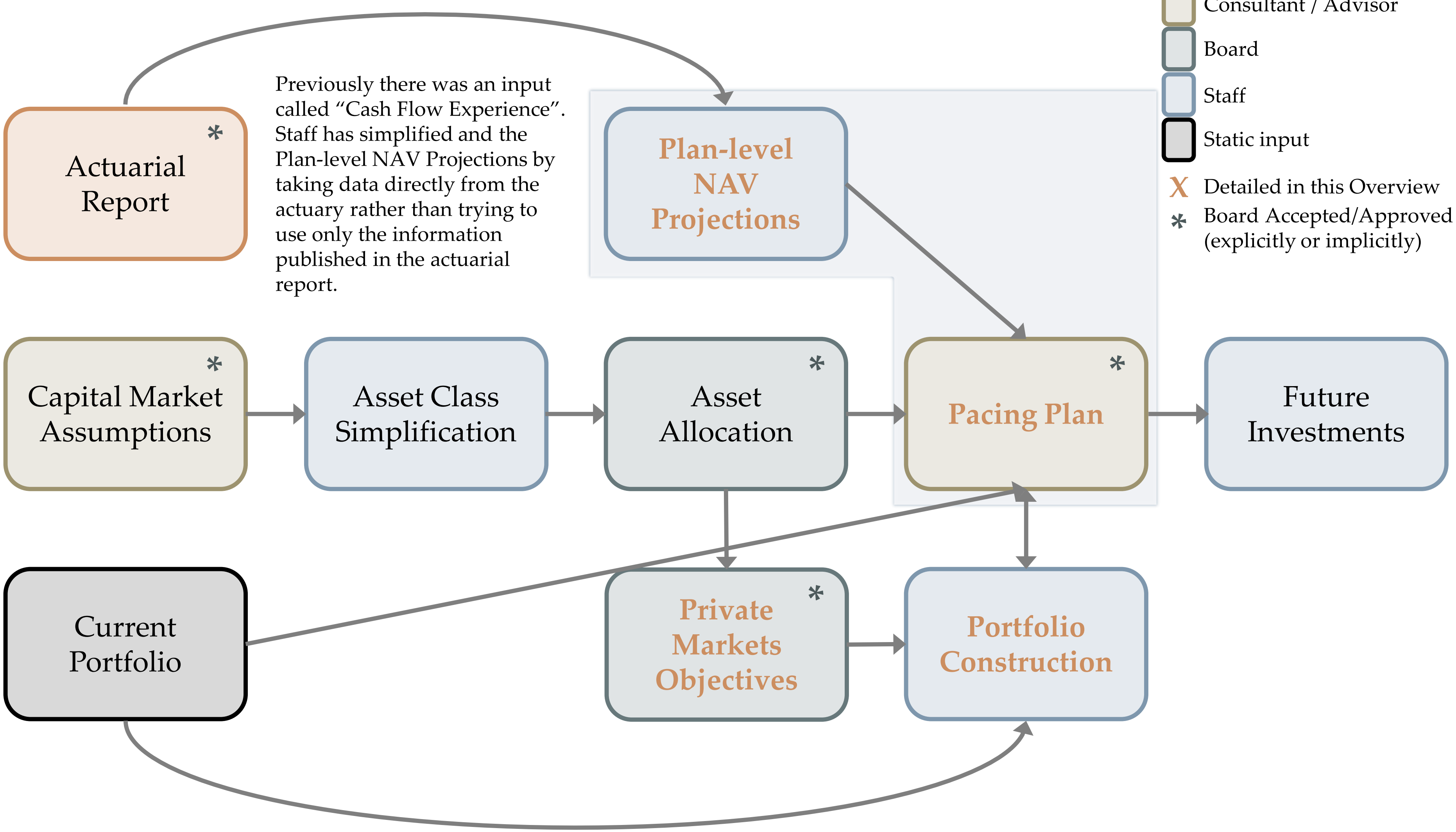
VENTURE CAPITAL PACING PLAN

Police & Fire Department Retirement Plan

Pacing plan

- The pacing plan models how the pension funds will reach and maintain its target allocation to private markets strategies.
- The key output is a target level of annual commitments to funds in each private market asset class.
- Many assumptions are incorporated into the pacing plan models. Because of the assumptions' high variance (actual vs. forecast), the pacing plan is revisited annually.
- Staff produces plan-level NAV targets for each private markets asset class, **and for venture anticipates reaching 75%-125% of the target in 7-9 years**.
- **In the future, s**taff **will** aggregate the output into a single pacing plan document to allow stakeholders to view the private markets program holistically.
- For Private Debt, Private Real Estate, and Private Real Assets, the Boards' approvals of their respective pacing plans sets the guideline for the constraints outlined in the IPS around delegation of manager selection to staff.
- For Buyout, the plans control the pacing of investments not through approval of the pacing plan, but rather by the level of commitments to the Neuberger Berman fund-of-ones. Over time, these are approximately equivalent methodologies.
- For Venture Capital, staff **has incorporated target allocations of 20% fund-of-funds, 70% direct funds, and 10% co-investments, to be achieved in 5-7 years.**
- **The amounts recommended in the pacing plan are completely separate from the limited delegated authority approved in closed session of the 10/3/2019 Police & Fire board meeting. It does not expand the amounts of delegation of direct fund investments, nor does it expand to the areas of fund-of-funds or co-investments.**

Private markets process / data flow



Mapping strategy to implementation

The three-pillared approach will be implemented via fund-of-funds, direct funds, and co-investments.

Fund-of-Funds

Invest with the best.
Fund-of-funds may provide quicker access to Tier 1 managers.

Invest with future leaders.
Fund-of-funds may provide quicker access to Tier 2 managers.

Direct Funds

Invest with the best.
Where possible, the intention is to invest directly with Tier 1 managers.

Invest with future leaders.
Where possible, the intention is to invest directly with Tier 2 managers.

Invest strategically.
Creative options provide access to Tier 1 and Tier 2 managers without having access to those managers' funds.

Co-investments

Invest with the best.
If possible, invest alongside Tier 1 managers.

Plan-level net asset value

The following plan-level net asset values and asset class target NAVs are the same forecasts used in the private markets pacing plan.

POLICE & FIRE

	Target	6/30/2019	6/30/2020	6/30/2021	6/30/2022	6/30/2023	6/30/2024	6/30/2025	6/30/2026	6/30/2027	6/30/2028	6/30/2029	6/30/2030
Net Asset Value		**3,623**	**3,844**	**4,080**	**4,325**	**4,560**	**4,800**	**5,058**	**5,325**	**5,541**	**5,721**	**5,943**	**6,157**
Previous NAV forecast		*3,623*	*3,816*	*4,019*	*4,236*	*4,464*	*4,694*	*4,933*	*5,188*	*5,454*	-	-	-
Difference		*0%*	*1%*	*2%*	*2%*	*2%*	*2%*	*3%*	*3%*	*2%*	-	-	-
Private Markets	**22%**	**797**	**846**	**898**	**951**	**1,003**	**1,056**	**1,113**	**1,171**	**1,219**	**1,259**	**1,307**	**1,355**
Buyout	8%	290	308	326	346	365	384	405	426	443	458	475	493
Venture capital	4%	145	154	163	173	182	192	202	213	222	229	238	246
Private debt	4%	145	154	163	173	182	192	202	213	222	229	238	246
Private real estate	3%	109	115	122	130	137	144	152	160	166	172	178	185
Private real assets	3%	109	115	122	130	137	144	152	160	166	172	178	185

Venture Capital Sub-Allocation targets:

- 40% Fund-of-Funds / 50% Direct Funds / 10% Co-investments, achieved around Years 5-7 (previously: 20% / 70% / 10%)
- 75%-125% of Target NAV, achieved around Years 7-9

Commitment pacing

Heavier initial use of fund-of-funds will provide early access, diversification, and resources to assist staff in building out internal capabilities. Ongoing pursuit of Tier 1, Tier 2, and strategic investments will anchor the implementation. Co-investment capabilities may or may not develop over time, and are not anticipated in the first year.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Commitments											
Fund-of-funds	27.0	21.0	17.0	15.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0
Direct funds	13.0	17.0	21.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Co-investments	-	1.5	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
% of Venture NAV											
Fund-of-funds	42%	46%	46%	45%	43%	42%	40%	39%	38%	36%	35%
Direct funds	58%	48%	48%	48%	49%	49%	50%	50%	50%	50%	50%
Co-investments	0%	6%	6%	8%	8%	9%	10%	11%	13%	15%	15%
Net Asset Values											
Fund-of-funds	1.8	8.1	18.0	31.2	45.7	59.0	72.0	82.6	89.2	92.1	91.8
Direct funds	2.4	8.4	18.8	33.4	51.2	70.1	88.5	104.7	117.7	127.3	133.8
Co-investments	0.0	1.1	2.5	5.3	8.3	12.8	17.7	23.9	30.4	37.6	40.5
Total NAV	**4**	**18**	**39**	**70**	**105**	**142**	**178**	**211**	**237**	**257**	**266**
% of Target NAV	*3%*	*11%*	*23%*	*38%*	*55%*	*70%*	*84%*	*95%*	*104%*	*108%*	*108%*

Previous draft commitment pacing

The original draft pacing plan targeted 20% Fund-of-Funds / 70% Direct Funds / 10% Co-investments, achieved around Years 5-7.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Commitments											
Fund-of-funds	20.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Direct funds	35.0	35.0	35.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Co-investments	-	1.5	2.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
% of Venture NAV											
Fund-of-funds	17%	20%	20%	20%	20%	19%	19%	19%	19%	19%	19%
Direct funds	83%	76%	75%	74%	73%	73%	71%	69%	67%	65%	64%
Co-investments	0%	4%	5%	6%	7%	8%	10%	12%	14%	16%	17%
Net Asset Values											
Fund-of-funds	1.3	5.6	11.4	18.4	25.4	31.3	37.4	42.9	46.4	48.6	49.8
Direct funds	6.5	20.7	42.2	67.7	94.3	118.7	139.1	153.8	163.3	168.3	170.7
Co-investments	0.0	1.1	2.5	5.3	8.7	13.5	19.0	25.9	33.5	41.7	45.9
Total NAV	**8**	**27**	**56**	**91**	**128**	**164**	**196**	**223**	**243**	**259**	**266**
% of Target NAV	*5%*	*17%*	*32%*	*50%*	*67%*	*81%*	*92%*	*100%*	*106%*	*109%*	*108%*

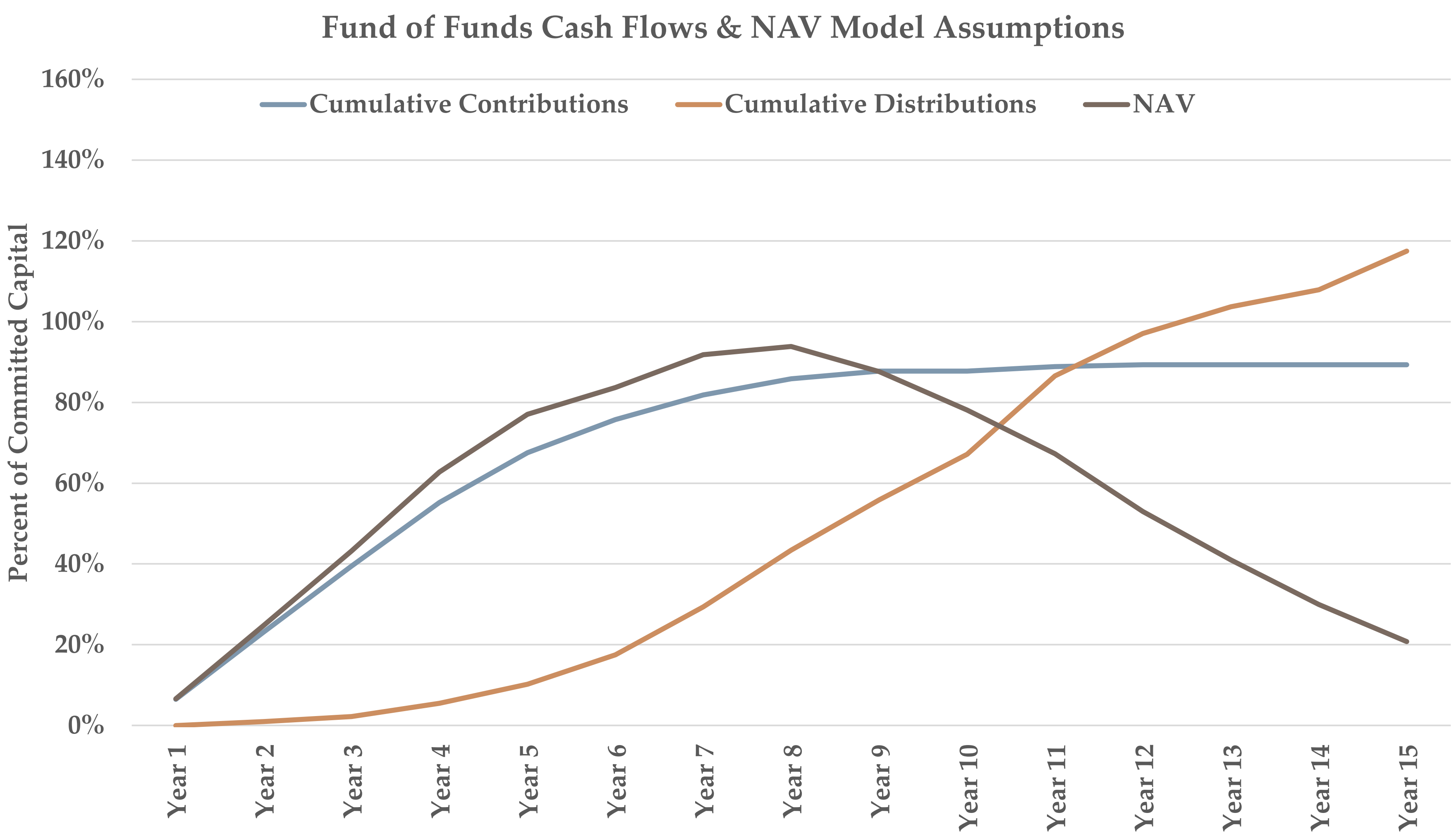
Appendix – Methodology

Each of fund-of-funds, direct funds, and co-investments are modelled according to their unique characteristics.

- Fund-of-funds
  - Staff took actual cash flow and NAV data from 19 fund-of-funds from three different fund-of-funds managers between vintage years 1997 through 2017 and used normalized simple averages to establish baseline contributions, distributions, and net asset values, as a percentage of committed capital in a given vintage year.
- Direct funds
  - Staff solicited the assumptions that Meketa Investment Group and Neuberger Berman utilize in their own pacing models for venture capital fund investments. The simple average of those data are the source of forecast direct fund contribution, distribution, and net asset values, as a percentage of committed capital in a given vintage year.
- Co-investments
  - Co-investment pose a unique modeling challenge because the dispersion of outcomes is disproportionately large relative to the "expected" outcome. As such, unless hundreds of co-investments were made in each vintage year, the "expected" outcome is somewhat irrelevant. For example, the model anticipates an "average" co-investment is estimated as 3.0x and 16% IRR – however the range of successful co-investments is 9x-56x and 63%-65% IRRs, with every other co-investment being 0x and -100% IRRs.
  - Staff's model anticipates a seed stage co-investment that experiences four potential decision nodes. At each decision node, either the co-investment fails (returns -100%), or raises a subsequent round of capital (except at the last node, which is modeled as an exit). Further, at each decision node where a subsequent round of capital is raised, there is a "maintain pro rata" or "be diluted" decision by the plan. Each node is modeled two years after the previous, and each subsequent round is for a standard percentage of equity at a standard uplift from the previous node valuation. All assumptions related to size of rounds, valuations, and probability of success are roughly comparable to actual observable data obtained from Pitchbook and CB Insights.

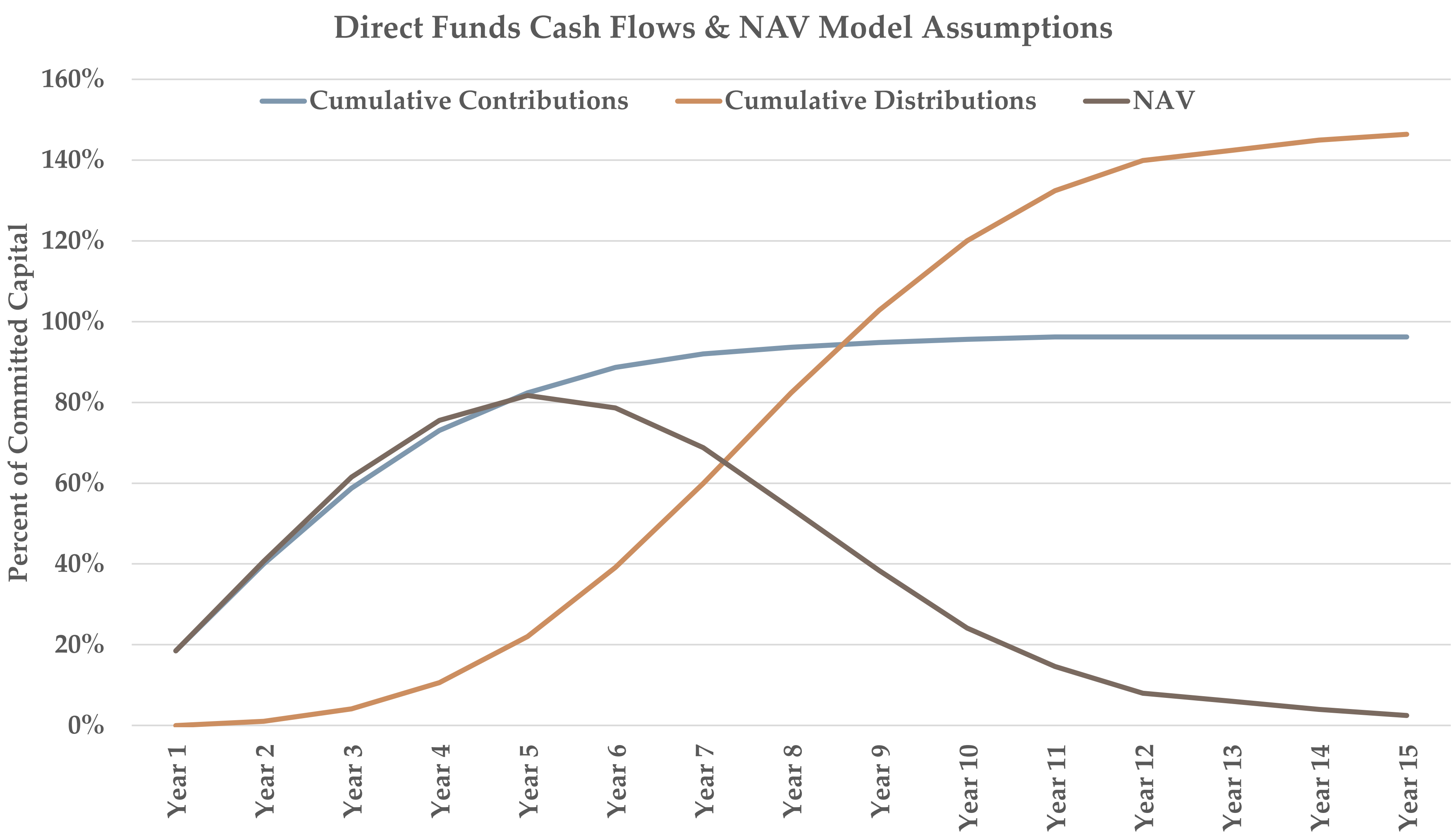
Appendix – Fund-of-funds

The following curves reflect the output of the fund-of-funds model.



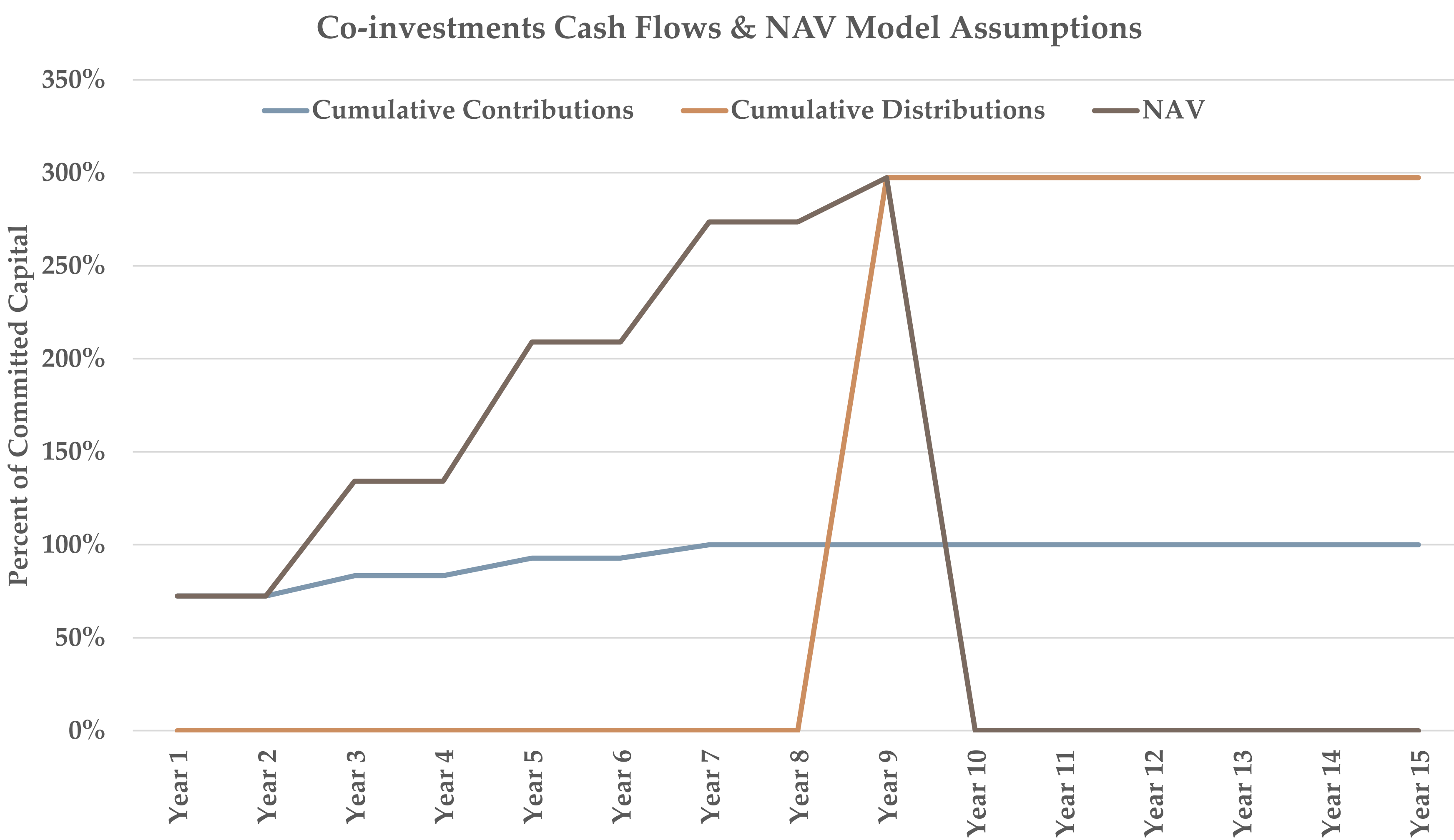
Appendix – Direct funds

The following curves reflect the output of the direct funds model.



Appendix – Co-investments

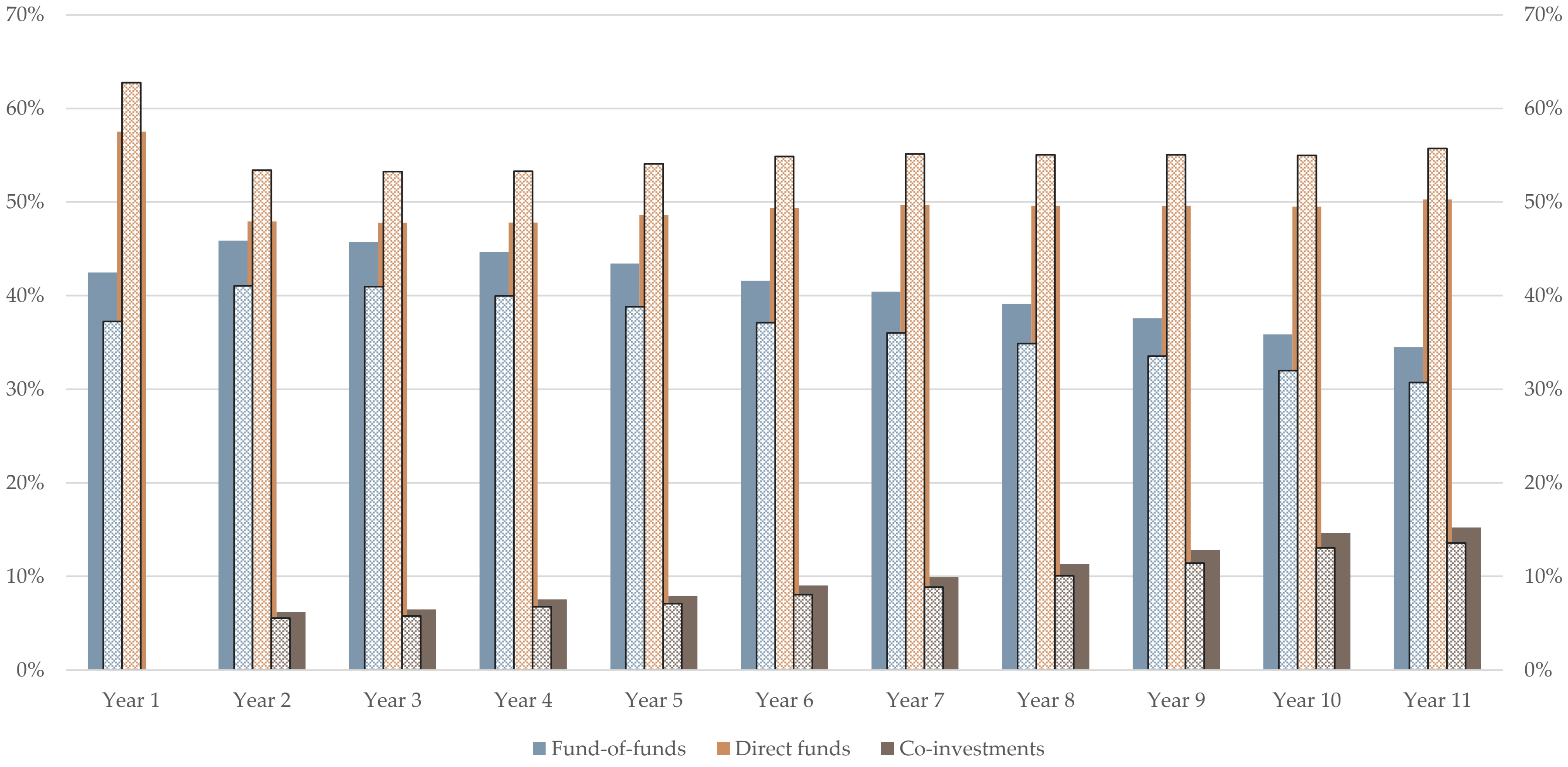
The following curves reflect the output of the co-investments model.



Appendix – Effects of Performance (i)

If the performance of direct fund investments was top quartile instead of median, the allocations to fund-of-funds and co-investments would shrink and the allocation to direct funds would grow unless adjustments were made. The effect is demonstrated in the thin shaded bars. In reality, the annual pacing plan would detect and respond to these effects.

Effect of Top Quartile Direct Fund Performance vs. Median Direct Fund Performance on Allocation between Venture Capital Investment Types



Appendix – Effects of Performance (ii)

If the performance of direct fund investments was top quartile instead of median, the NAV of the VC allocation would grow faster and further overshoot the asset allocation target, unless adjustments were made. In reality, the annual pacing plan would detect and respond to these effects.