CWW INDEX METHODOLOGY 4.0

CWW INDEX

全球存储产业链指数双语白皮书

Global Memory & Storage Value Chain · Bilingual Whitepaper

公开资格筛选，公开权重计算，全程可复核

Public eligibility. Transparent weights. Fully reproducible.

CWW 覆盖中国内地、中国台湾、中国香港以外的合格主上市；CWWCN 仅覆盖上述三个市场的合格主上市。

CWW LEVEL	CWWCN LEVEL	BASE	INDEX DATA
4,852.51	4,156.50	1,000	2026-07-16
113 constituents	92 constituents	2024-12-31	certified v4 snapshot

FINAL v4 RESTATEMENT AND BACKCAST

Published 2026-07-17 · Index data as of 2026-07-16 · 编制与维护 KZG

01 IDENTITY

三个日期，三个不同含义

Three dates with three different meanings

2024.12.31

基准日

BASE DATE

指数设为 1,000 的数学锚点

Mathematical anchor set to 1,000

2025.01.02

家族原始起源日

ORIGINAL FAMILY ORIGIN

2025 年第一个美国交易日

First US trading day of 2025

2026.07.16

v4 重述采用日

V4 ADOPTED

新地域分区回溯至基准日

New partition backcast to base

历史口径

HISTORICAL BASIS

2025-01-02 是 CWW 指数家族的原始起源日。v4.0 后来采用新的地域分区，并将新方法回溯计算至 2024-12-31，以形成可比较的历史序列。

January 2, 2025 is the original origin of the CWW Index Family. Methodology v4.0 was adopted later and backcast the new geographic partition to December 31, 2024 for comparable history.

不得误述

NO HISTORICAL MISSTATEMENT

CWWCN 在 2025-01-02 当时并未作为独立指数对外发布。它是 v4.0 新口径下的回溯序列。任何图表、下载或宣传都必须保留这一说明。

CWWCN was not historically published as a separate index on January 2, 2025. It is a v4.0 backcast series. Every chart, download and communication must retain this disclosure.

中文理念源流

CHINESE CONCEPTUAL ORIGIN

“存为王”是 CWW 的中文理念源流，仅指以存储产业链为研究主线；它不是正式指数名称，不是权重因子，也不构成投资主张。正式名称仅为 CWW Index、非中国 CWW 指数（CWW）与中国 CWW 指数（CWWCN）。

The Chinese phrase Cun Wei Wang is the conceptual origin behind CWW: a memory-and-storage value-chain research lens. It is not the formal public index name, not a weighting factor and not an investment claim. The formal names remain CWW Index, Non-China CWW Index (CWW) and China CWW Index (CWWCN).

Status: V4_METHODOLOGY_RESTATEMENT_BACKCAST · Restatement count 4 · Base 2024-12-31 = 1,000.

MAP

最终版白皮书地图

Final whitepaper map

01	身份与使命	Identity and mission	02-04
02	指数家族与系统	Family and system	05-06
03	价值链与技术分类	Value-chain and technology taxonomy	07-12
04	方法论、权重与复核	Methodology, weighting and review	13-17
05	认证历史与最新快照	Certified history and latest snapshot	18-21
06	数据下载与运行脉冲	Downloads and operating pulse	22-24
07	公开证据供应链图	Public-evidence supply-chain graph	25-28
08	治理与术语	Governance and glossary	29-30
09	衍生分析、复算与披露	Derived analytics, replay and disclosure	31-47

阅读图例

READING KEY

黄色用于 CWW，蓝色用于 CWWCN。每家公司只设一个 S1-S7 主要价值链角色；HBM、传统 DRAM、NAND 等是可重叠且不可加总的技术标签。每种数据层均单独标注截止日。

Amber denotes CWW and blue denotes CWWCN. Each company has one S1-S7 primary value-chain role; HBM, conventional DRAM and NAND are overlapping, non-additive technology tags. Each data layer has its own as-of date.

01 EXECUTIVE

把存储产业变成可复算、可选择、可追溯的公共语言

A reproducible, selectable and traceable language for memory

核心结构

CORE STRUCTURE

v4.0 以同一组状态、纯度、规模、流动性和可计算性门槛筛出合格池，再按主上市市场确定 CWW 或 CWWCN 范围；同一证券只计算一次，本轮 205 只合格标的全部归入对应范围。

Methodology v4.0 applies one common screen for status, purity, size, liquidity and computability, then assigns each eligible security by primary listing market to its CWW or CWWCN scope. Each security is counted once and all 205 eligible names are covered.

ELIGIBLE POOL	CWW	CWWCN	CAP-EVENT LIMIT
205 complete	113 global ex-China	92 China markets	8% both indices

01 地域先于排名 Geography before ranking

主上市地是唯一地域分区依据。

Primary listing is the sole geographic partition.

02 不为凑数降门槛 No fill-down

没有固定成分数，也没有后备补足层。

No fixed count and no threshold-relaxing reserve layer.

03 技术标签可多选 Technology is multi-label

HBM、DRAM、NAND 暴露不能相加为 100%。

HBM, DRAM and NAND exposures are not additive to 100%.

04 研究层不改点位 Research stays separate

运行脉冲与供应链图不进入指数计算。

Operating pulse and graph data do not enter index calculation.

Certified snapshot: methodology 4.0 · selection audit 2026-06-19 · index data 2026-07-16.

02 SCOPE

同一资格门槛，按主上市市场确定范围

One eligibility screen, scope set by primary listing market

维度 / Dimension	CWW	CWWCN
定位 / Role	全球非中国存储链	中国存储链
主上市地域	排除中国内地/中国台湾/中国香港	仅中国内地/中国台湾/中国香港
共同门槛	完全相同	完全相同
成分数 / Count	113	92
地域重叠	0	0
封顶事件日上限	8%	8%
基准 / Base	2024-12-31 = 1,000	2024-12-31 = 1,000
历史状态	v4 回溯	v4 回溯; 起源日未历史发布

CWW

合格主上市不在中国内地、中国台湾、中国香港。当前 113 只。

Eligible primary listings outside Mainland China, China Taiwan and China Hong Kong. Current count: 113.

CWWCN

合格主上市仅在中国内地、中国台湾、中国香港。当前 92 只。

Eligible primary listings only in Mainland China, China Taiwan and China Hong Kong. Current count: 92.

Coverage audit: 113 + 92 = 205; each security is counted once. No fixed count and no fill-down layer.

02 SYSTEM

从共同筛选到三层公开产品

From common screening to three public data layers

01	02	03	04	05
合格池	地域分区	权重与封顶	连续除数	发布与审计
Eligible pool	Geo partition	Weight and cap	Divisor continuity	Publish and audit
205	113 / 92	PF FF CF	0 error	CSV JSON PDF

OFFICIAL INDEX / 正式指数

收盘价、汇率、股份、FF、PF、CF 与除数共同形成正式点位。

Close, FX, shares, FF, PF, CF and divisor form official levels.

INTRADAY INDICATIVE / 盘中指示

美股聚合行情可形成 15 分钟延时指示值，但不能覆盖正式日线。

US equity aggregates can power a 15-minute delayed indication, but never overwrite the official ledger.

RESEARCH EVIDENCE / 研究证据

技术标签、运行脉冲和供应链边提供解释，不改变成员、权重或点位。

Technology tags, operating pulse and graph edges add context without changing membership, weights or levels.

Cap-event limit 8% · reference 2026-06-22 · current weights may drift between governed cap events · continuity error 0.

03 TAXONOMY

S1-S7 与 DRAM/NAND/HBM 各自回答什么

What S1-S7 and DRAM/NAND/HBM each answer

单一主要角色 + 可重叠技术标签

ONE PRIMARY ROLE + OVERLAPPING TECHNOLOGY TAGS

S1-S7 回答公司主要位于存储价值链哪一环，每家公司仅有一个主要角色。技术标签回答公司暴露于何种产品或技术路径，一家公司可以同时拥有 HBM、传统 DRAM 和 NAND 等多个标签。

S1-S7 answers where a company primarily sits in the memory value chain, with one primary role per company. Technology tags answer which products or technologies it touches, allowing one company to carry HBM, conventional DRAM and NAND at the same time.

S1	S2	S3	S4	S5	S6	S7
存储芯片	介质· 硬盘· 模组	主控· 接口· IP	企业级存储系统	云存储与数据管理	设备与材料	封测· 基板· 分销
Memory silicon	Media, drives & modules	Controllers, interfaces & IP	Enterprise storage systems	Cloud storage & data management	Equipment & materials	Packaging, substrates & distribution

VALUE CHAIN

205 / 205

所有成分已获得一个 S1-S7 主角色。

Every constituent has one S1-S7 primary role.

SPECIFIC TECH

62

62 只具备书面证据支持的细分技术标签。

62 names have evidence-backed specific technology tags.

UNCLASSIFIED

0

广义价值链未分类为 0；未映射细分技术不等于无暴露。

Broad unclassified count is zero; missing specific tags do not prove no exposure.

Certified taxonomy version 1.0. Technology exposure weights are multi-label and non-additive; category totals are not expected to equal 100%.

03 VALUE CHAIN

芯片、介质、控制与企业系统

Silicon, media, control and enterprise systems

S1 存储芯片

Memory silicon

CWW 8 CWWCN 14

DRAM、NAND、NOR、EEPROM、新型存储的 IDM、fabless 与存储代工。

IDM, fabless and foundry exposure to DRAM, NAND, NOR, EEPROM and emerging memory.

S2 介质· 硬盘· 模组

Media, drives & modules

CWW 9 CWWCN 10

HDD、SSD、模组、卡、盘、消费与工业存储及 HDD 核心零部件。

HDD, SSD, modules, cards, consumer and industrial storage, plus critical HDD components.

S3 主控· 接口· IP

Controllers, interfaces & IP

CWW 5 CWWCN 5

SSD 主控、内存接口芯片、CXL/连接及存储相关 IP。

SSD controllers, memory-interface chips, CXL/connectivity and storage-related IP.

S4 企业级存储系统

Enterprise storage systems

CWW 7 CWWCN 5

存储阵列、NAS、超融合及服务器存储子系统。

Storage arrays, NAS, hyperconverged infrastructure and server storage subsystems.

Counts are certified v4 constituent counts as of 2026-07-16. Each company has one primary S role; technology exposure remains multi-label.

03 VALUE CHAIN

软件、制造与交付

Software, manufacturing and delivery

S5 云存储与数据管理

Cloud storage & data management

CWW 5 CWWCN 1

云存储、备份、数据保护与数据管理软件。

Cloud storage, backup, data protection and data-management software.

S6 设备与材料

Equipment & materials

CWW 68 CWWCN 35

晶圆厂设备、测试设备、硅片、气体、湿化学品、CMP 与靶材等。

Fab and test equipment, wafers, gases, wet chemicals, CMP, targets and related inputs.

S7 封测· 基板· 分销

Packaging, substrates & distribution

CWW 11 CWWCN 22

存储封测、HBM/内存基板及存储芯片分销。

Memory packaging and test, HBM/memory substrates and memory-chip distribution.

- S6 may serve many memory technologies. S7 may include HBM packaging or substrates, but the S label alone does not prove a specific technology exposure.

03 TECHNOLOGY

用户可以按 DRAM、NAND、HBM 重新选择

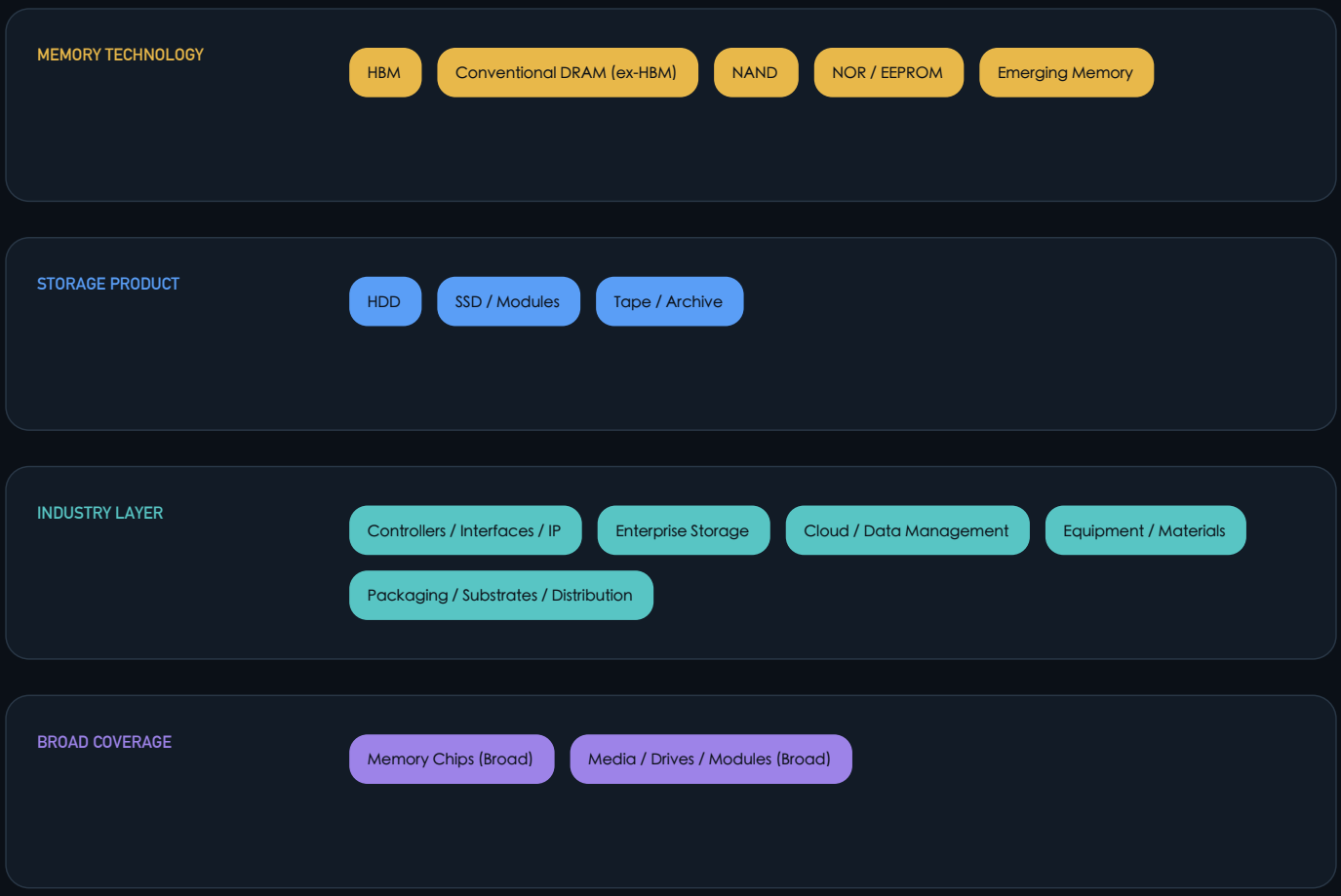
Users can select by DRAM, NAND, HBM and more

从价值链到技术暴露

FROM VALUE CHAIN TO TECHNOLOGY EXPOSURE

技术层不是 S1-S7 的替代命名，而是可重叠的第二选择轴。选择 HBM 时可以跨越芯片、设备、材料、测试、键合和封装；选择 NAND 时也可以跨越芯片、设备、介质与主控。

Technology is a second overlapping selection axis, not a renaming of S1-S7. An HBM selection may span silicon, equipment, materials, inspection, bonding and packaging; a NAND selection may span silicon, equipment, media and controllers.



证据门槛

EVIDENCE GATE

标签仅在书面证据支持时赋值。细分技术未映射表示证据尚不足，不表示公司绝对没有该项暴露。所有技术权重必须显示成分数、权重、截止日和不可加总提示。

A tag is assigned only with written evidence. An unmapped specific technology means evidence is insufficient, not that the company has zero exposure. Every technology view must show count, weight, as-of date and a non-additive warning.

03 EXPOSURE

CWW 技术与产品暴露

CWW technology and product exposure

当前认证视图

CURRENT CERTIFIED VIEW

CWW 是中国内地、中国台湾、中国香港以外的全球存储链。下表按 2026-07-16 正式成分权重聚合。标签可重叠，因此任何类别之和都不得被解释为 100%。

CWW is the global storage chain outside primary listings in Mainland China, China Taiwan and China Hong Kong. The table aggregates official constituent weights as of 2026-07-16. Tags overlap, so category weights must never be interpreted as summing to 100%.

LEVEL	CONSTITUENTS	SPECIFIC MAPPED	TAXONOMY
4,852.51 2026-07-16	113 official	62 family pool	1.0 non-additive

CATEGORY / 类别	RELATIVE WEIGHT SCALE	COUNT	WEIGHT
HBM		9 names	24.46%
传统 DRAM / Conventional DRAM		7 names	30.96%
NAND		7 names	43.90%
NOR / EEPROM		0 names	0.00%
新型存储 / Emerging		2 names	0.06%
HDD		6 names	14.76%
SSD / 模组		7 names	2.97%
主控 · 接口 · IP		5 names	4.08%
企业级存储 / Enterprise		7 names	7.50%
云与数据管理 / Cloud		5 names	1.50%
设备与材料 / Equipment		68 names	36.15%
封测 · 基板 · 分销		11 names	0.74%
磁带与归档 / Tape		3 names	0.63%
存储芯片总类 / Broad S1		8 names	35.41%
介质硬盘模组总类 / Broad S2		9 names	14.57%

Broad S1/S2 coverage appears alongside specific technology tags for completeness. It is not a substitute for evidence supporting a specific technology.

03 EXPOSURE

CWWCN 技术与产品暴露

CWWCN technology and product exposure

当前认证视图

CURRENT CERTIFIED VIEW

CWWCN 是仅覆盖中国内地、中国台湾、中国香港主上市的中国存储链。下表按 2026-07-16 正式成分权重聚合。标签可重叠，因此任何类别之和都不得被解释为 100%。

CWWCN is the China storage chain limited to primary listings in Mainland China, China Taiwan and China Hong Kong. The table aggregates official constituent weights as of 2026-07-16. Tags overlap, so category weights must never be interpreted as summing to 100%.

LEVEL	CONSTITUENTS	SPECIFIC MAPPED	TAXONOMY
4,156.50 2026-07-16	92 official	62 family pool	1.0 non-additive

CATEGORY / 类别	RELATIVE WEIGHT SCALE	COUNT	WEIGHT
HBM		2 names	9.64%
传统 DRAM / Conventional DRAM		10 names	25.72%
NAND		6 names	16.49%
NOR / EEPROM		10 names	17.65%
新型存储 / Emerging		0 names	0.00%
HDD		0 names	0.00%
SSD / 模组		11 names	20.62%
主控 · 接口 · IP		5 names	9.93%
企业级存储 / Enterprise		5 names	2.95%
云与数据管理 / Cloud		1 names	0.06%
设备与材料 / Equipment		35 names	17.54%
封测 · 基板 · 分销		22 names	21.58%
磁带与归档 / Tape		0 names	0.00%
存储芯片总类 / Broad S1		14 names	27.89%
介质硬盘模组总类 / Broad S2		10 names	20.02%

Broad S1/S2 coverage appears alongside specific technology tags for completeness. It is not a substitute for evidence supporting a specific technology.

03 SELECTION

从哪里选到哪里：六个明确维度

From where to where: six explicit dimensions

A	**指数边界** Index coverage	CWW / CWWCN / 双指数比较	AVAILABLE
B	**价值链角色** Value-chain role	全部 / S1 / S2 / S3 / S4 / S5 / S6 / S7	AVAILABLE
C	**技术与产品** Technology and product	HBM / DRAM / NAND / NOR / HDD / SSD / Tape / 更多	AVAILABLE
D	**市场与因子** Market and factors	主上市市场 / PF 档 / 权重 / 成分状态	AVAILABLE
E	**时间窗口** Time window	单日 / YTD / 30 / 90 / 180 / 300 / 自定义	AVAILABLE
F	**数据与导出** Data and export	点位 / 成分 / 权重 / 标签 / CSV / JSON / PDF	AVAILABLE

选择合同

SELECTION CONTRACT

筛选顺序固定为：先选 CWW 或 CWWCN，再选价值链和技术标签，最后叠加市场、因子与时间。技术标签采用 OR 或 AND 时必须显式显示，避免多标签样本被误读。

Selection order is fixed: choose CWW or CWWCN, then value-chain and technology tags, then market, factor and time filters. The interface must state whether technology tags use OR or AND to avoid multi-label ambiguity.

04 METHODOLOGY

先做共同筛选，再按主上市地分区

Common screening first, primary-listing partition second

01	状态与排除	ACTIVE only; explicit exclusions and ST or *ST risk-warning names are removed.
02	存储纯度	PF must be at least 0.05.
03	自由流通市值	At least USD 150 million.
04	63 日成交额中位数	At least USD 1 million.
05	可计算性	Primary listing, price, shares, free float and FX must be computable.
06	一次性地域分区	Assign each eligible name to exactly one of CWW or CWWCN.

地域决策树 / GEOGRAPHY DECISION

CWW	主上市不在中国内地、中国台湾、中国香港。	Primary listing outside Mainland China, China Taiwan and China Hong Kong.
CWWCN	主上市仅在中国内地、中国台湾、中国香港。	Primary listing only in Mainland China, China Taiwan and China Hong Kong.
OUT	未通过共同门槛，不得为凑数而放宽。	Fails common screen; thresholds are never relaxed to fill a count.

Selection audit as of 2026-06-19 · policy CWW-FAMILY-v4.0 · eligible pool 205.

04 FACTORS

把公司规模转成存储相关、可投资、受控的权重

From company scale to storage-relevant, investable and controlled weight

调整后市值

ADJUSTED MARKET VALUE

v4.0 使用价格、汇率、股份、自由流通、存储纯度和上限调整因子。CF 仅在受治理的封顶事件日重新计算，事件间保持固定；所有输入必须可复算。

Methodology v4.0 uses price, FX, shares, free float, storage purity and a capping factor. CF is recalculated only at governed cap events and remains fixed between events; every input must be reproducible.

P 本币收盘价

Local close

官方索引日可用价格

Available price for the official index date

FX 兑美元乘数

FX to USD

统一为美元价格收益

Normalizes the USD price-return series

FF 自由流通

Free float

折算可投资股份

Converts to investable shares

PF 存储纯度

Storage purity

门槛不低于 0.05

Minimum eligibility level is 0.05

CF 封顶因子

Capping factor

事件日执行 8% 上限

8% at cap events; fixed between events

D 指数除数

Index divisor

隔离非市场市值变化

Isolates non-market value changes

$$AMV_i = P_i \times FX_i \times Shares_i \times FF_i \times PF_i \times CF_i$$

$$Index_t = \Sigma\ AMV_{i,t} / Divisor_t$$

PF eligibility requires PF >= 0.05. Both indices use an 8% cap-event limit; fixed CF allows price and FX drift between events.

04 AUDIT

事件日封顶，事件间随价格漂移

8% at cap events; price drift between events

事件日约束与事件间漂移

EVENT-DATE CAP AND BETWEEN-EVENT DRIFT

CF 仅在封顶事件日迭代计算，使参考权重不高于 8%。事件间 CF 与除数固定，价格和汇率推动当前权重漂移；超过 8% 不自动构成违规。

CF is set only at governed cap events so reference weights are at or below 8%. It stays fixed with the divisor between events. Price and FX then move current weights, which may exceed 8% without a breach.

CWW

CAP-EVENT LIMIT	8.00%
REFERENCE DATE	2026-06-22
CAP APPLIED TODAY	NO
CURRENT MAX	8.410560%
DRIFT VS LIMIT	+0.410560 pp
CONTINUITY ERROR	0.00000000
DIVISOR BETWEEN EVENTS	FIXED

CWWCN

CAP-EVENT LIMIT	8.00%
REFERENCE DATE	2026-06-22
CAP APPLIED TODAY	NO
CURRENT MAX	9.160826%
DRIFT VS LIMIT	+1.160826 pp
CONTINUITY ERROR	0.00000000
DIVISOR BETWEEN EVENTS	FIXED

EVENT	reference w_i <= 8% after iterative redistribution
BETWEEN	CF and divisor fixed; P and FX move current weights
CURRENT	w_i may exceed 8% without an event-date cap breach
DIVISOR	D_new = D_old × MV_new / MV_old for non-market changes

- Audit as of 2026-07-16 · policy EVENT_ONLY_CAP_WITH_PRICE_DRIFT · last governed cap event 2026-06-22 (QUARTERLY_REVIEW_EFFECTIVE) · reference 2026-06-22.

04 GOVERNED CHANGE

每次变化都带日期、成员差异和连续性证明

Every change carries dates, membership deltas and continuity proof

2026-06-19 2026-06-22 2026-07-16 2026-09-21

2026-06-22 季检 / REVIEW EFFECTIVE 2026-06-22

CWW 086390.KQ, 092870.KQ, 3156.T, QMCO

CWWCN 301666.SZ

复核顺序

REVIEW ORDER

季度复核先应用共同门槛，再按主上市地域分区。不存在固定成分数，任何新增也只能进入与主上市市场相符的一条指数。

Quarterly review applies the common screen first, then partitions by primary-listing geography. There is no fixed constituent count, and any addition may enter only the matching geographic index.

重述边界

RESTATEMENT BOUNDARY

v4.0 属于方法论重述与回溯计算。原始家族起源仍是 2025-01-02；CWWCN 的 v4 历史不能描述为当时已发布。回溯不改变基准日 2024-12-31 = 1,000。

Methodology v4.0 is a restatement and backcast. The original family origin remains January 2, 2025; CWWCN's v4 history must not be described as published then. The backcast preserves the base of December 31, 2024 = 1,000.

Review note: 2026-06-22 季检生效：CWW 113 只；CWWCN 92 只 · v4 adopted 2026-07-16.

05 HISTORY

从 1,000 基准回溯的双指数序列

Two v4 series backcast from a 1,000 base

历史解释

两条曲线均按 v4.0 现行地域分区回溯。2024-12-31 是 1,000 基准；2025-01-02 是家族原始起源日。CWWCN 曲线是后来生成的 v4 回溯，不代表当日已有历史发布。

HOW TO READ THE HISTORY

Both curves are backcast under the current v4.0 geographic partition. December 31, 2024 is the 1,000 base and January 2, 2025 is the original family origin. The CWWCN curve is a later v4 backcast, not evidence of historical publication on that

BASE	ORIGIN	SERIES POINTS	DATA AS OF
1,000 2024-12-31	2025-01-02 family	385 incl. base	2026-07-16 certified

Source: current certified public latest.json. The chart is a USD price-return backcast and does not include dividends.

05 SNAPSHOT

指数数据截至 2026-07-16

Index data as of 2026-07-16

CWW

4,852.51

DAY	-7.04%
YTD	+143.47%
SINCE BASE	+385.25%
CONSTITUENTS	113
TOP 10 WEIGHT	72.00%

CWWCN

4,156.50

DAY	-5.67%
YTD	+94.62%
SINCE BASE	+315.65%
CONSTITUENTS	92
TOP 10 WEIGHT	53.25%

统一起算点

COMMON STARTING POINT

YTD 以 2024-12-31 的 1,000 基准为起点，因此 2025 年首个交易日后的全部变动都进入累计收益。点位为美元价格收益，不含股息。

YTD starts from the 1,000 base on December 31, 2024, so all movement from the first 2025 trading day enters the cumulative return. Levels are USD price return and exclude dividends.

CWWCN 历史状态

CWWCN HISTORY STATUS

CWWCN 的点位与 YTD 均来自 v4 回溯。它们适用于现行方法下的历史比较，但不得反推为 2025-01-02 当日已经发布的产品记录。

CWWCN level and YTD come from the v4 backcast. They support historical comparison under the current methodology but must not be reverse-labeled as a product published on January 2, 2025.

- Exact certified values: CWW 4,852.51 and 113 constituents; CWWCN 4,156.50 and 92 constituents.

05 SEGMENTS

同一价值链语言，两种地域结构

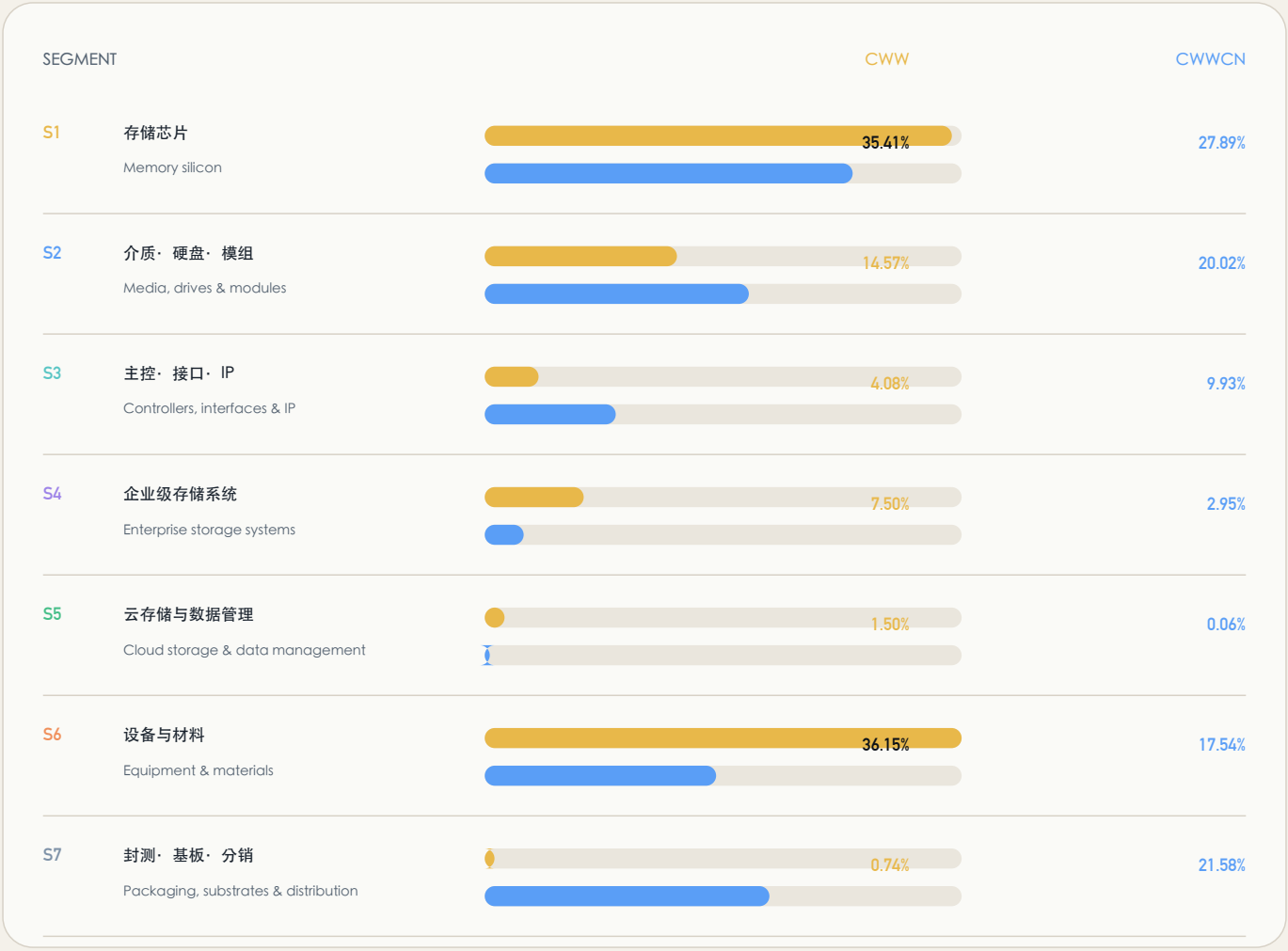
One value-chain language, two geographic structures

可加总的价值链轴

ADDITIVE VALUE-CHAIN AXIS

板块权重来自 2026-07-16 正式成分权重。每家公司只设一个 S1-S7 主要角色，因此每条指数的七个板块合计约为 100%；它们不能替代 HBM、DRAM、NAND 等可重叠技术暴露。

Segment weights use official constituent weights as of 2026-07-16. Each company has one primary S1-S7 role, so the seven segments sum to approximately 100% within each index; they do not replace overlapping HBM, DRAM or NAND exposure.



CWW S1	CWW S6	CWWCN S1	CWWCN S7
35.41% memory chips	36.15% equipment	27.89% memory chips	21.58% packaging

Weights may differ by rounding. Segment membership counts appear on pages 8-9; technology exposure appears on pages 11-12.

05 CONSTITUENTS

前十大权重：集中度与技术标签同时可见

Top ten weights with concentration and technology context

CWW

TOP 10 72.00%

01	LRCX	Lam Research	8.41%
	S6 · NAND · EQUIPMENT_MATERIALS		
02	ASML.AS	阿斯麦	8.16%
	S6 · CONVENTIONAL_DRAM · EQUIPMENT_MATERIALS		
03	005930.KS	三星电子	7.98%
	S1 · HBM · CONVENTIONAL_DRAM · NAND · MEMORY_CHIPS		
04	MU	美光科技	7.56%
	S1 · HBM · CONVENTIONAL_DRAM · NAND · MEMORY_CHIPS		
05	STX	希捷科技	7.32%
	S2 · HDD · MEDIA_DRIVES_MODULES		
06	000660.KS	SK海力士	6.98%
	S1 · HBM · CONVENTIONAL_DRAM · NAND · MEMORY_CHIPS		
07	WDC	西部数据	6.84%
	S2 · HDD · MEDIA_DRIVES_MODULES		
08	SNDK	闪迪	6.66%
	S1 · NAND · MEMORY_CHIPS		
09	285A.T	铠侠控股	6.11%
	S1 · NAND · MEMORY_CHIPS		
10	AMAT	应用材料	5.98%
	S6 · EQUIPMENT_MATERIALS		

CWWCN

TOP 10 53.25%

01	2330.TW	台积电	9.16%
	S7 · HBM · PACKAGING_SUBSTRATES_DISTRIBUTION		
02	2408.TW	南亚科技	8.12%
	S1 · CONVENTIONAL_DRAM · MEMORY_CHIPS		
03	603986.SS	兆易创新	5.44%
	S1 · CONVENTIONAL_DRAM · NAND · NOR_EEPROM · MEMORY_CHIPS		
04	2344.TW	华邦电子	5.25%
	S1 · CONVENTIONAL_DRAM · NAND · NOR_EEPROM · MEMORY_CHIPS		
05	301666.SZ	大普微	5.13%
	S2 · SSD_MODULES · MEDIA_DRIVES_MODULES		
06	688008.SS	澜起科技	5.05%
	S3 · CONTROLLERS_INTERFACES_IP		
07	301308.SZ	江波龙	4.75%
	S2 · SSD_MODULES · MEDIA_DRIVES_MODULES		
08	688525.SS	佰维存储	3.54%
	S2 · SSD_MODULES · MEDIA_DRIVES_MODULES		
09	8299.TWO	群联电子	3.49%
	S3 · SSD_MODULES · CONTROLLERS_INTERFACES_IP		
10	001309.SZ	德明利	3.32%
	S2 · MEDIA_DRIVES_MODULES		

权重以 2026-06-22 事件日 CF 为锚并随价格漂移；8% 不是每日目标。当前最大权重：CWW 8.41%，CWWCN 9.16%。标签可重叠。

Weights drift from the 2026-06-22 event-date CF; 8% is not a daily target. Current maxima: CWW 8.41%, CWWCN 9.16%. Tags overlap.

Source: certified public constituent CSV files as of 2026-07-16. Full files include price, FX, shares, FF, PF, CF, adjusted market value and daily return.

06 DOWNLOAD

一个入口，下载方法、点位、成分、证据与 PDF

One entry point for methodology, levels, constituents, evidence and PDF

PDF	**CWW_Index_Whitepaper_Bilingual.pdf**	本双语最终白皮书 · This final bilingual whitepaper
MD	**CWW_METHODOLOGY_v4.md**	正式方法论 v4.0 · Final methodology v4.0
JSON	**latest.json**	最新点位、审计、分类、历史序列 · Latest levels, audits, taxonomy and series
CSV	**cww_levels.csv**	CWW 完整日度点位 · CWW full daily levels
CSV	**cwwcn_levels.csv**	CWWCN v4 回溯日度点位 · CWWCN v4 backcast daily levels
CSV	**cww_constituents.csv**	CWW 成分、因子、权重与标签 · CWW constituents, factors, weights and tags
CSV	**cwwcn_constituents.csv**	CWWCN 成分、因子、权重与标签 · CWWCN constituents, factors, weights and tags
JSON	**memory_operating_pulse.json**	公开披露运行脉冲 · Public-disclosure operating pulse
JSON	**supply_chain_graph.json**	3 链 16 节点 14 边证据图 · 3-chain, 16-node, 14-edge evidence graph

发布合同

PUBLICATION CONTRACT

下载包必须保留方法论版本、基准日、家族起源日、v4 回溯状态、指数日期、成分数、地域分区和最近复核信息。CSV 与 JSON 是可复算数据，PDF 是人类可读说明。

Every download must retain methodology version, base date, family origin, v4 backcast status, index date, counts, geography partition and latest review. CSV and JSON are reproducible data; PDF is the human-readable explanation.

06 OPERATING PULSE

经营信号层，不是现货价格指数或订单簿

An operating-signal layer, not a spot-price index or order book

数据集定位

DATASET POSITIONING

公开公司披露构成的可审计信号层；不是现货价格指数，也不是订单簿。

An auditable signal layer built from public company disclosures; not a spot-price index or order book.

SOURCES	OBSERVATIONS	DATA AS OF	COVERAGE END
15 authoritative	53 public	2026-02-12 separate layer	2025-12-31 period end

CONVENTIONAL DRAM	南亚科技季度方向性 ASP 与位元出货标签; 排除 HBM; 仅公司代理。	Nanya quarterly directional ASP and bit-shipment labels; excludes HBM; issuer proxy only.
NAND	铠侠季度美元口径 ASP 与位元增长方向标签; 无可重发连续价格。	Kioxia quarterly directional USD-basis ASP and bit-growth labels; no redistributable continuous price.
HBM VISIBILITY	美光供给分配、客户讨论、送样、收入里程碑与方向事件。	Micron events on allocated supply, customer discussions, samples, revenue milestones and direction.
COMPANY FUNDAMENTALS	精确季度收入; 仅同发行人、同口径、同单位计算增长和加速度。	Exact quarterly revenue; growth and acceleration only for same issuer, scope and unit.

对指数的影响

IMPACT ON THE INDICES

本数据集不改变 CWW 或 CWWCN 的成分、权重或指数点位。公司收入加速度仅为经营脉冲，不代表 DRAM、NAND 或 HBM 报价的二阶导。

This dataset does not change CWW or CWWCN constituents, weights, or index levels. Issuer-revenue acceleration is an operating pulse, not a second derivative of DRAM, NAND, or HBM prices.

Dataset cww-memory-operating-pulse · published 2026-07-16 · coverage 2024-08-29 to 2025-12-31.

06 DERIVATIVES

可以计算什么，以及坚决不计算什么

What may be calculated and what must not be calculated

LOG GROWTH

$$g_t = 100 \times (\ln(X_t) - \ln(X_{t-1}))$$

同发行人、同口径、同单位的精确正值 · Exact positive values with same issuer, scope and unit

ACCELERATION

$$a_t = g_t - g_{t-1}$$

需要三个连续可比观察值; 单位为百分点 · Requires three consecutive comparable observations; percentage points

EXACT	QUALITATIVE	DERIVED	PHYSICAL PRICE
28 observations	25 preserved labels	13 exact revenue only	0 numeric series

覆盖状态 / COVERAGE STATUS

Family	Public status	Numeric basis	Acceleration
Traditional DRAM	issuer proxy	no numeric price/order	not computed
NAND	issuer proxy	no numeric price/order	not computed
HBM	event series	no numeric price/order	not computed
Issuer fundamentals	exact public values	revenue only	available
Massive / member feeds	no values ingested	equity OHLCV or licensed	not applicable

零虚构警戒线

公司收入加速度只能称为经营脉冲，不能称为 DRAM、NAND 或 HBM 价格二阶导。讨论、送样、售罄和方向标签不得转换为订单金额或虚构数值。

ZERO-FABRICATION GUARDRAIL

Issuer-revenue acceleration is an operating pulse, not a second derivative of DRAM, NAND or HBM prices. Discussions, samples, sold-out statements and directional labels must not be converted into order values or fabricated numbers.

07 EVIDENCE GRAPH

三条链、十六节点、十四条公开证据边

Three chains, sixteen nodes and fourteen public-evidence edges

首发图谱范围

INITIAL GRAPH SCOPE

本首发数据集围绕三星电子、SK海力士和长鑫存储三条记名链，收录公司公告、公司产品页、监管文件或政府公告明确点名的关系。链是可重叠的分析视图，不是股权族谱、指数纳入名单或完整供应商名录。

This initial dataset covers three named views anchored on Samsung Electronics, SK hynix and CXMT. A relationship is included only when a company release, product page, regulatory filing or government announcement names both parties. Chains are overlapping analytical views, not a corporate family tree, an index-eligibility list or a complete vendor roster.

CHAINS	NODES	EDGES	CONFIDENCE
3 named views	16 companies	14 evidenced	13H / 1M no low

关系类型 / RELATIONSHIP TYPES

- 4 **共同研发** — Joint research and development
- 3 **直接供应/客户披露** — Direct supplier/customer disclosure
- 3 **技术/产品验证** — Technology or product validation
- 1 **战略/技术合作** — Strategic or technology cooperation
- 1 **已披露公司控制** — Disclosed corporate control
- 2 **知识产权许可** — Intellectual-property licence

纳入规则

INCLUSION RULE

每条边必须有第一方或权威监管/政府来源，并支持关系类型、方向和时间。不得推断未披露客户、采购份额、收入贡献、产能分配或排他性。

Every edge requires a first-party or authoritative regulatory or government source supporting type, direction and date. Undisclosed customers, purchase share, revenue contribution, capacity allocation and exclusivity are never inferred.

Graph data as of 2026-07-16 · schema 1.0.0 · complete public dataset contains no low-confidence published edge.

07 ANCHOR CHAIN

三星存储链

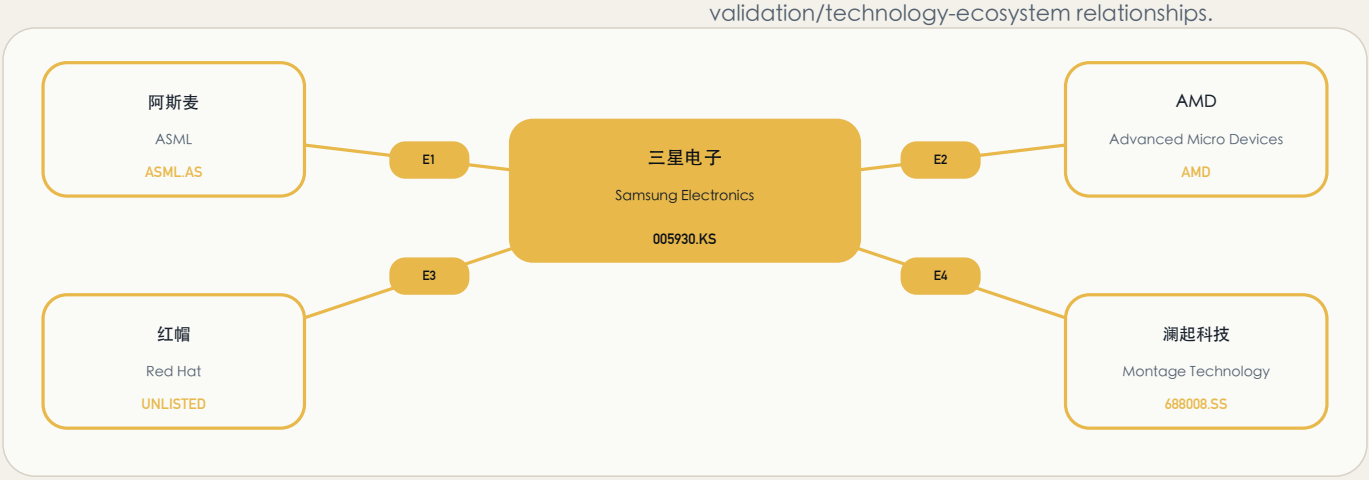
Samsung Memory Chain

公开证据视图

PUBLIC-EVIDENCE VIEW

从EUV联合研发到HBM/DDR5下游平台和CXL软硬件生态的公开连接。ASML关系是共同研发，不等同于本图披露采购份额；AMD关系含明确HBM供给；红帽与澜起关系属于验证或技术生态合作。

Publicly disclosed links spanning joint EUV R&D, HBM/DDR5 downstream platforms and the CXL hardware-software ecosystem. The ASML link is joint R&D rather than disclosed procurement share; the AMD link includes explicit HBM supply ; Red Hat and Montage are validation/technology-ecosystem relationships.



证据边 / EVIDENCE EDGES

E1	阿斯麦 -> 三星电子 共同投资建设下一代EUV工艺研究设施	共同研发 Joint investment in a next-generation EUV process research facility	2023-12-13	HIGH
E2	三星电子 -> AMD HBM3E主要合作与下一代AMD加速器HBM4供给协同	直接供应/客户披露 Primary HBM3E partnership and aligned HBM4 supply for next-generation AMD accelerators	2026-03-18	HIGH
E3	三星电子 -> 红帽 CXL内存在RHEL环境完成互操作验证并共同开发启用指南	技术/产品验证 CXL memory interoperability validation in RHEL and joint enabling-guide work	2023-12-27	HIGH
E4	三星电子 -> 澜起科技 共同推进CXL 2.0控制器和内存生态	战略/技术合作 Partnership advancing CXL 2.0 controllers and the memory ecosystem	2023-05-12	HIGH

Every edge stores direct source URL, publication date, locator, confidence and direction semantics in supply_chain_graph.json.

07 ANCHOR CHAIN

SK海力士存储与HBM链

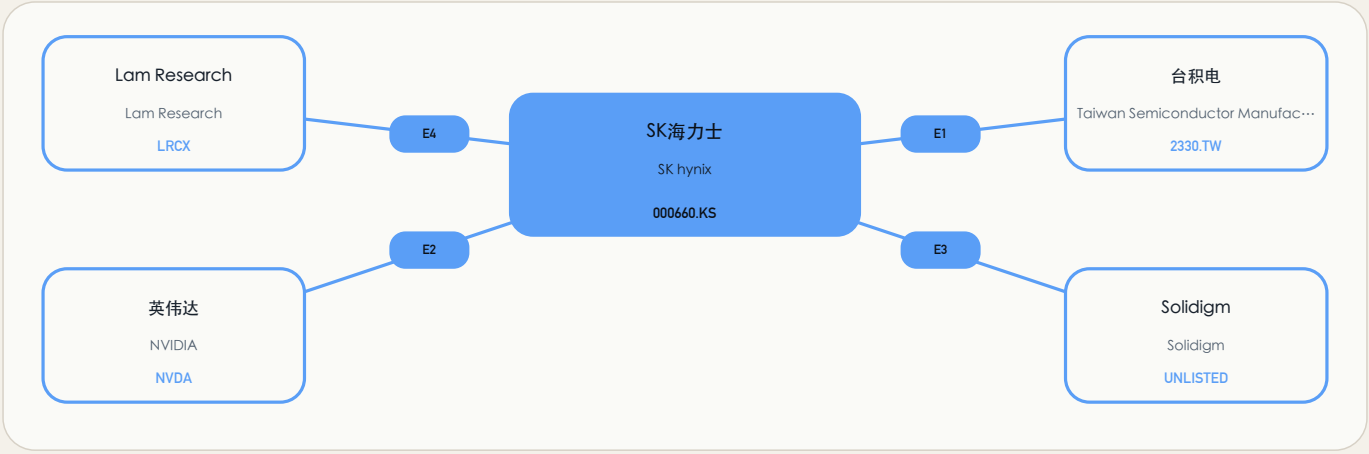
SK hynix Memory and HBM Chain

公开证据视图

PUBLIC-EVIDENCE VIEW

覆盖HBM4基础裸片/先进封装合作、HBM3下游系统供给、NAND到企业级SSD的子公司连接，以及一项设备/材料/学术共同参与的前沿存储研发。

Covers HBM4 base-die and advanced-packaging collaboration, disclosed HBM3 downstream system supply, the NAND-to-enterprise-SSD subsidiary link, and one forward-looking memory R&D collaboration spanning equipment, materials and academia.



证据边 / EVIDENCE EDGES

E1	SK海力士 -> 台积电 共同开发HBM4并优化逻辑基础裸片与CoWoS整合	共同研发 Joint HBM4 development and optimization of logic base-die and CoWoS integration	2024-04-19	HIGH
E2	SK海力士 -> 英伟达 HBM3样品通过英伟达验证并计划用于H100系统	直接供应/客户披露 HBM3 samples passed NVIDIA evaluation and were planned for H100 systems	2022-06-08	HIGH
E3	SK海力士 -> Solidigm SK海力士设立美国子公司承接收购的SSD业务，并开展NAND/SSD联合产品	已披露公司控制 SK hynix formed the U.S. subsidiary for the acquired SSD business and developed a joint NAND/SSD product	2022-04-05	HIGH
E4	Lam Research -> SK海力士 参加铁电人工神经网络器件共同研发	共同研发 Participation in joint R&D on ferroelectric artificial-neural-network devices	2016-10-13	HIGH

Every edge stores direct source URL, publication date, locator, confidence and direction semantics in supply_chain_graph.json.

07 ANCHOR CHAIN

长鑫存储链

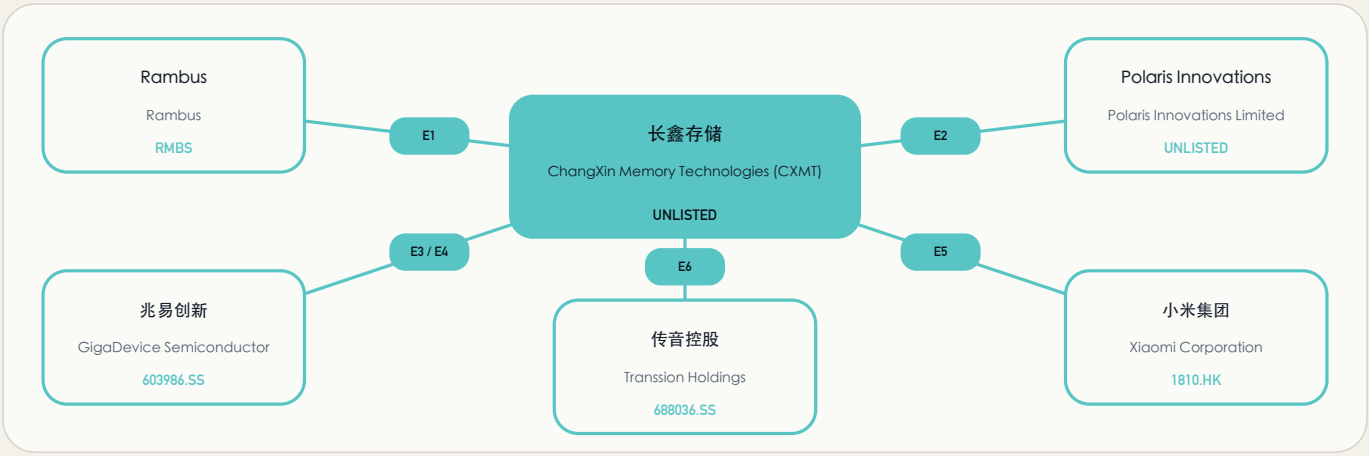
CXMT / ChangXin Memory Chain

公开证据视图

PUBLIC-EVIDENCE VIEW

以长鑫存储为未上市锚点，连接公开披露的DRAM专利许可、与兆易创新的代工/产品采购及共同开发关系，以及LPDDR5客户验证。该链不包含未经第一方证实的HBM客户或设备供应商。

Uses unlisted CXMT as the anchor and connects disclosed DRAM patent licences, foundry/product procurement and joint development with GigaDevice, plus LPDDR5 customer validation. It excludes unconfirmed HBM customers and equipment suppliers.



证据边 / EVIDENCE EDGES

E1	Rambus -> 长鑫存储 向长鑫许可广泛的DRAM专利	知识产权许可	Licence of a broad range of DRAM patents to CXMT	2020-04	HIGH
E2	Polaris Innovations -> 长鑫存储 奇梦达DRAM专利许可及独立专利收购协议	知识产权许可	DRAM patent licence and separate patent-acquisition agreements covering Qimonda patents	2019-12-05	HIGH
E3	长鑫存储 -> 兆易创新 向兆易创新提供DRAM产品与晶圆代工服务	直接供应/客户披露	Provision of DRAM products and wafer-foundry services to GigaDevice	2026-04-02	HIGH
E4	兆易创新 -> 长鑫存储 共同产品开发平台及兆易向长鑫许可相关IP	共同研发	Joint product-development platform and related GigaDevice IP licensing to CXMT	2026-01-13	MEDIUM
E5	长鑫存储 -> 小米集团 12GB LPDDR5产品获得小米客户验证	技术/产品验证	12GB LPDDR5 product received Xiaomi customer validation	2023-11-28	HIGH
E6	长鑫存储 -> 传音控股 12GB LPDDR5产品获得传音客户验证	技术/产品验证	12GB LPDDR5 product received Transsion customer validation	2023-11-28	HIGH

Every edge stores direct source URL, publication date, locator, confidence and direction semantics in supply_chain_graph.json.

08 GOVERNANCE

三层数据，各自带截止日、权限与失败条件

Three data layers with separate dates, authority and failure conditions

INDEX

正式指数

2026-07-16

影响点位 · Affects levels

PULSE

运行脉冲

2026-02-12

仅研究 · Research only

GRAPH

供应链图

2026-07-16

仅证据 · Evidence only

G1	输入完整	Price, FX, shares, FF, PF and primary listing must be computable.
G2	范围不变量	Each eligible security is counted once and assigned to its applicable scope.
G3	权重与连续性	Cap-event reference weights <= 8%; fixed CF permits between-event price drift; continuity error must be zero.
G4	技术证据	Specific tags require written evidence; unmapped does not mean zero exposure.
G5	衍生数据保守	No midpoint, interpolation, order inference or physical-price fabrication.
G6	关系边可追溯	Every public edge retains first-party or authoritative evidence.

发布原则

PUBLICATION PRINCIPLE

失败关闭：任何必须字段、市场日历、分区、封顶、除数连续性或发布文件不满足时，停止生成，而不是发布半成品。

Fail closed: if required fields, market calendar, partition, cap, divisor continuity or publication files fail, generation stops instead of releasing a partial artifact.

08 GLOSSARY

一页读懂核心术语

Core terms at a glance

CWW	非中国 CWW 指数 Non-China CWW Index
CWWCN	中国 CWW 指数 China CWW Index
Base date	设为 1,000 的数学锚点: 2024-12-31 Mathematical 1,000 anchor: 2024-12-31
Family origin	原始家族首次计算日: 2025-01-02 Original family first calculation: 2025-01-02
Backcast	以后来采用的方法重算历史 History recalculated under a later-adopted methodology
PF	存储业务纯度因子 Storage-purity factor
FF	自由流通因子 Free-float factor
CF	事件日计算、事件间固定的单票封顶因子 Event-date single-name cap factor, fixed between events
Divisor	保持非市场变化前后点位连续的尺度 Scale preserving continuity across non-market changes
S1-S7	每家公司一个主要价值链角色 One primary value-chain role per company
Technology tag	可重叠且不可加总的技术暴露 Overlapping, non-additive technology exposure
Operating pulse	公开公司披露构成的研究信号层 Research signal layer built from public issuer disclosures
Acceleration	对数增长率的变化，单位为百分点 Change in log growth, measured in percentage points
Evidence edge	带方向、来源、日期、类型和置信度的关系 Relationship with direction, source, date, type and confidence

09 ANALYTICS

从公开数据到可复核的衍生分析

From published inputs to auditable derived analytics

分析边界

ANALYTICAL BOUNDARY

新增分析层把点位、成分权重、当日涨跌、PF、FF、CF、地域、价值链和技术标签交叉计算为集中度、广度、贡献、风险与相对结构。它只解释已发布数据，不改变正式指数点位。

The analytics layer combines levels, constituent weights, daily returns, PF, FF, CF, geography, value-chain roles and technology tags into concentration, breadth, contribution, risk and relative-structure measures. It explains published data and never changes official index levels.

CWW EFFECTIVE N	CWW BREADTH	CWWCN EFFECTIVE N	CWWCN BREADTH
17.5 (1 / HHI)	10/98 (up / down)	26.7 (1 / HHI)	13/79 (up / down)

INPUT	认证输入 Certified inputs	latest.json levels CSV constituents CSV
DERIVE	确定性计算 Deterministic calculation	weights × returns HHI vol drawdown
CHECK	口径校验 Contract checks	as-of counts weight sum finite values
PUBLISH	人机双读 Human + machine output	PDF JSON CSV

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · research layer; no level override. Values may differ by rounding.

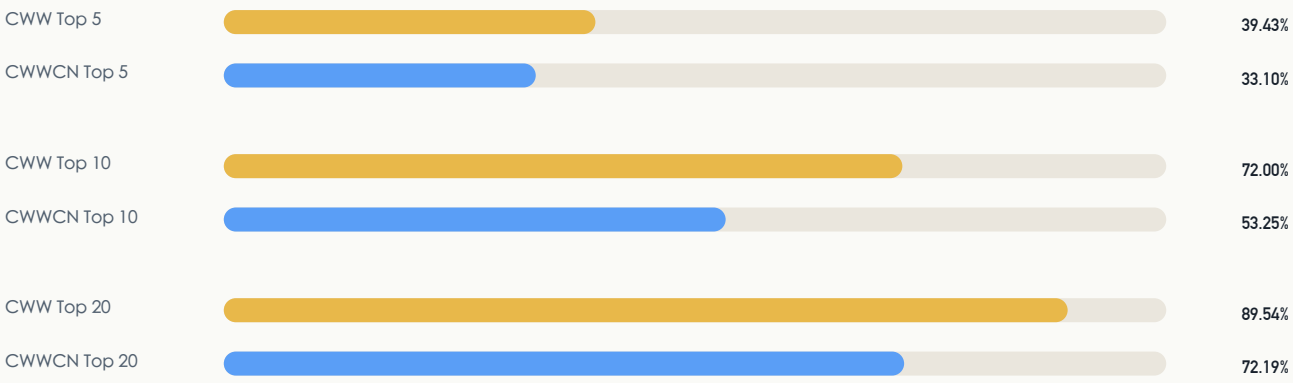
09 CONCENTRATION

权重有多少真正独立的承载点

How many independent weight-bearing positions

CWW HHI	CWW EFFECTIVE N	CWWCN HHI	CWWCN EFFECTIVE N
571.4 0-10,000	17.5 of 113	374.1 0-10,000	26.7 of 92

累计权重 / CUMULATIVE WEIGHT



如何解读

HHI = sum(weightPct^2)，权重以百分数表示时范围为 0 至 10,000；有效成分数 = 10,000 / HHI。它不是实际成分数量，而是把当前集中度折算为等权组合的等效数量。

HOW TO READ

HHI = sum of squared percentage weights, on a 0-10,000 scale. Effective N = 10,000 / HHI. It is not the legal constituent count; it translates current concentration into an equal-weight equivalent.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · weights use the certified closing snapshot. Values may differ by rounding.

09 CAP

事件日设定 CF，事件间保留市场漂移

Event-date CF with between-event market drift

CWW CF ACTIVE	CWW CURRENT MAX	CWWCN CF ACTIVE	CWWCN CURRENT MAX
8 CF < 1	8.41% +0.41 pp	2 CF < 1	9.16% +1.16 pp

PreCapAMV = P × FX × Shares × FF × PF

CF set at the 2026-06-22 cap event · fixed between events · current weight may drift above 8%

INDEX	TICKER	公司	NO-CF EQ.	CURRENT	CF
CWW	MU	美光科技	27.69%	7.56%	0.1450
CWWCN	2330.TW	台积电	21.28%	9.16%	0.3608
CWW	000660.KS	SK海力士	15.79%	6.98%	0.2348
CWWCN	2408.TW	南亚科技	9.41%	8.12%	0.7232
CWW	005930.KS	三星电子	8.12%	7.98%	0.5220
CWW	SNDK	闪迪	6.28%	6.66%	0.5635
CWW	285A.T	铠侠控股	4.63%	6.11%	0.7004
CWW	WDC	西部数据	5.12%	6.84%	0.7094
CWW	STX	希捷科技	4.84%	7.32%	0.8034
CWW	LRCX	Lam Research	5.15%	8.41%	0.8680

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · no-CF equivalent vs current fixed-CF weights; not an event-date reconstruction. Values may differ by rounding.

09 BREADTH

同一个指数涨跌背后的横截面

The cross-section behind one index move

CWW	113 constituents
ADVANCERS / 上涨	10
DECLINERS / 下跌	98
UNCHANGED / 持平	5
MEDIAN RETURN	-5.54%
IQR	-8.02% to -1.87%
DISPERSION (σ)	3.81%

CWWCN	92 constituents
ADVANCERS / 上涨	13
DECLINERS / 下跌	79
UNCHANGED / 持平	0
MEDIAN RETURN	-6.71%
IQR	-8.68% to -3.35%
DISPERSION (σ)	4.72%

口径

广度回答上涨和下跌由多少家公司共同参与；离散度回答个股收益分布有多分散。两者均来自当日成分 CSV，不等于成交量广度，也不构成趋势预测。

DEFINITION

Breadth counts how many constituents participate in the move; dispersion describes the spread of constituent returns. Both use the current constituent CSV, are not volume breadth , and do not forecast trend direction.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · returns are local-market close-to-close percentage changes. Values may differ by rounding.

09 CONTRIBUTION

谁推动了当日点位变化

Who drove the daily move

CWW

approx -6.90 pp

IBM	IBM	+0.021 pp · w 0.56% · r +3.72%
CVLT	Commvault	+0.007 pp · w 0.29% · r +2.49%
BOX	Box	+0.007 pp · w 0.23% · r +3.09%

DETRACTORS /

000660.KS	SK海力士	-0.805 pp · w 6.98% · r -11.53%
SNDK	闪迪	-0.841 pp · w 6.66% · r -12.63%
285A.T	铠侠控股	-0.918 pp · w 6.11% · r -15.03%

Top 3 positive and bottom 3 negative arithmetic estimates

CWWCN

approx -5.30 pp

301666.SZ	大普微	+0.228 pp · w 5.13% · r +4.44%
2330.TW	台积电	+0.113 pp · w 9.16% · r +1.23%
000938.SZ	紫光股份	+0.058 pp · w 0.67% · r +8.61%

DETRACTORS /

603986.SS	兆易创新	-0.544 pp · w 5.44% · r -10.00%
2408.TW	南亚科技	-0.709 pp · w 8.12% · r -8.73%
688008.SS	澜起科技	-0.830 pp · w 5.05% · r -16.44%

Top 3 positive and bottom 3 negative arithmetic estimates

重要限制

IMPORTANT LIMITATION

单票近似贡献 = 当前发布权重 × 当日涨跌幅。由于正式日收益使用上一计算点的有效权重、除数与公司行动处理，本页加总仅用于解释，不能替代正式指数日涨跌。

Approximate contribution = current published weight x daily return. Because the official daily move uses prior effective weights, divisor continuity and corporate-action handling, this arithmetic sum is explanatory and does not replace the official index return.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · contribution is explicitly approximate. Values may differ by rounding.

09 PURITY

公司规模如何折算为存储相关规模

How company scale becomes storage-relevant scale

CWW WEIGHTED PF	CWW PF=1 WEIGHT	CWWCN WEIGHTED PF	CWWCN PF=1 WEIGHT
0.648 weight-avg	44.07% pure-play	0.625 weight-avg	33.55% pure-play

PF BAND	CWW N	CWW WEIGHT	CWWCN N	CWWCN WEIGHT
1.00	16	44.07%	13	33.55%
0.85	6	2.71%	12	16.86%
0.65	11	1.53%	5	8.45%
0.45	24	24.80%	10	7.76%
0.25	36	24.13%	26	18.10%
0.10	16	1.77%	25	6.09%
0.05	4	0.94%	1	9.16%

读表说明

READING THE TABLE

PF 是离散研究判断，不是证券价格，也不是未来收入预测。档位来自最近财年可核验的存储相关收入占比，并按治理节奏复核。较低 PF 仍可因总市值、自由流通和分散化获得权重。

PF is a discrete research judgment, not a market price or revenue forecast. Bands use auditable storage-related revenue share from the latest fiscal year and follow a governed review cadence. A lower-PF company can still carry weight through size, float and diversification.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · PF bands are published constituent fields. Values may differ by rounding.

09 FACTORS

三类因子各自压缩什么

What each factor compresses

CWW

CWW WEIGHTED FF	CWW WEIGHTED PF	CWW WEIGHTED CF
0.851 investable float	0.648 storage purity	0.751 cap adjustment

CWWCN

CWWCN WEIGHTED FF	CWWCN WEIGHTED PF	CWWCN WEIGHTED CF
0.556 investable float	0.625 storage purity	0.919 cap adjustment

Adjusted exposure = Price × FX × Shares × FF × PF × CF

FF: investability · PF: business relevance · CF: portfolio concentration

三个因子相乘，不相加。加权平均只描述当前组合，不是选择门槛，也不能反推出某家公司未取整的原始收入比例或实际自由流通比例。

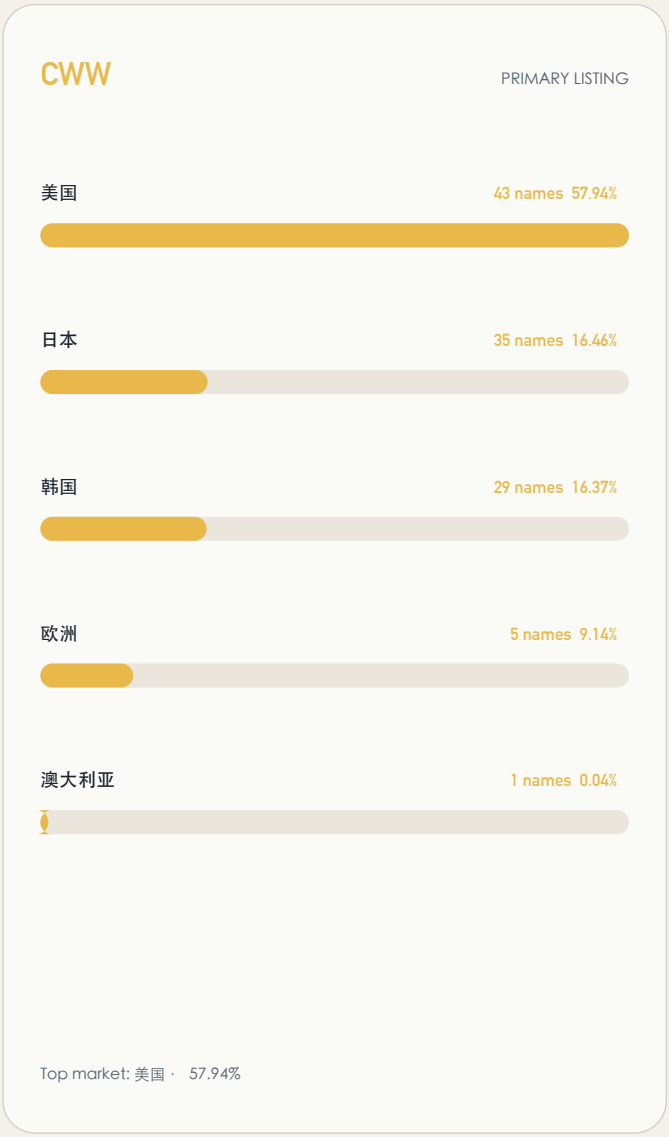
The three factors multiply; they do not add. Weighted averages describe the current portfolio, are not selection thresholds, and cannot recover a company's unrounded revenue share or actual float ratio.

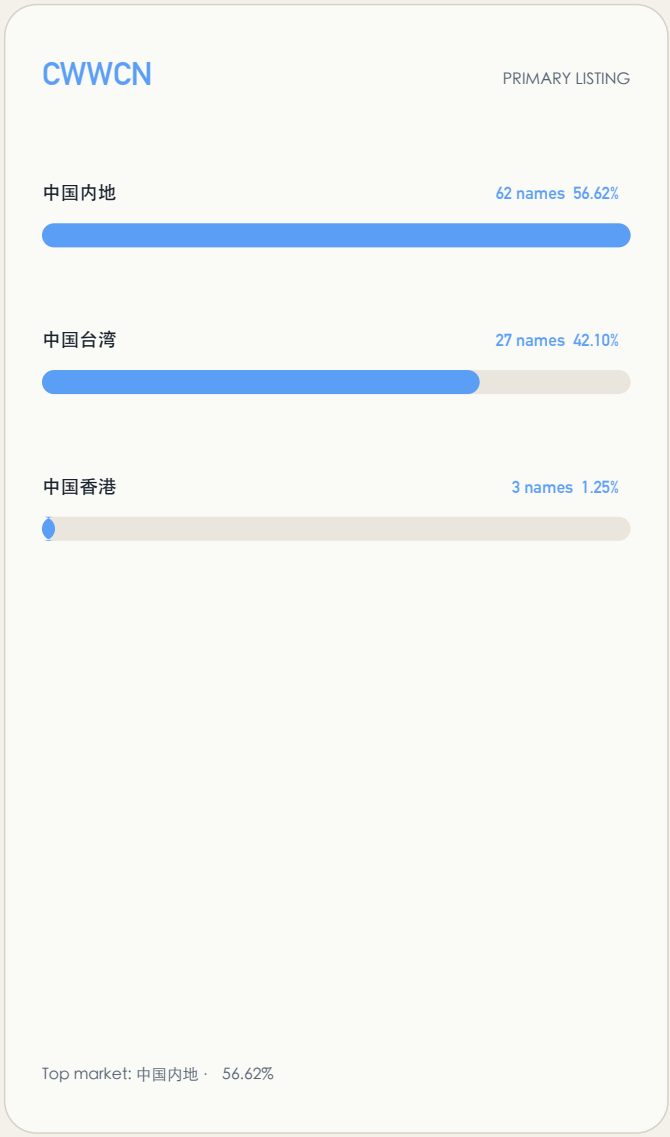
As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · factor averages use final published weights. Values may differ by rounding.

09 GEOGRAPHY

地域分区之后，权重落在哪里

Where weight lands after the geography partition





地域口径

地域以证券主上市市场划分，不代表收入来源、资产所在地、客户所在地或国家风险的完整分解。中国台湾统一写作“中国台湾”。

GEOGRAPHY BASIS

Geography follows the security's primary listing market. It is not a full decomposition of revenue source, asset location, customer location or country risk. China Taiwan is consistently labeled as such.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · geography counts are mutually exclusive by construction. Values may differ by rounding.

09 SEGMENTS

数量、权重与当日贡献同时看

Count, weight and daily contribution together

SEGMENT	CWW N	CWW W	CWW PP*	CN N	CN W	CN PP*
S1 存储芯片	8	35.41%	-3.70	14	27.89%	-2.08
S2 介质· 硬盘· 模组	9	14.57%	-1.38	10	20.02%	-0.48
S3 主控· 接口· IP	5	4.08%	-0.31	5	9.93%	-1.17
S4 企业级存储系统	7	7.50%	-0.23	5	2.95%	+0.00
S5 云存储与数据管理	5	1.50%	+0.01	1	0.06%	+0.00
S6 设备与材料	68	36.15%	-1.23	35	17.54%	-1.20
S7 封测· 基板· 分销	11	0.74%	-0.06	22	21.58%	-0.39

CWW LARGEST SEGMENT

S6 36.15%

68 constituents · approx contribution -1.23 pp

CWWCN LARGEST SEGMENT

S1 27.89%

14 constituents · approx contribution -2.08 pp

双密度读法

TWO DENSITIES

数量密度和权重密度可能完全不同。S6 成分数量多，不代表其权重必然最高；单票封顶和 PF/FF 会改变每个环节的组合承载力。PP* 为当日算术近似贡献。

Count density and weight density can diverge. A large S6 constituent count does not guarantee the largest weight; single-name caps and PF/FF change each segment's portfolio load. PP* is approximate daily arithmetic contribution.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · one primary S1-S7 role per constituent. Values may differ by rounding.

09 TECHNOLOGY

DRAM、NAND、HBM 可以同时成立

DRAM, NAND and HBM can coexist

CWW AVG TAGS	CWW MULTI-TAG	CWWCN AVG TAGS	CWWCN MULTI-TAG
1.36 per name	33 of 113	1.42 per name	29 of 92

TECHNOLOGY	CWW N	CWW WEIGHT	CN N	CN WEIGHT
HBM	9	24.46%	2	9.64%
DRAM ex-HBM	7	30.96%	10	25.72%
NAND	7	43.90%	6	16.49%
NOR / EEPROM	0	0.00%	10	17.65%
HDD	6	14.76%	0	0.00%
SSD / Modules	7	2.97%	11	20.62%
Equipment / Materials	68	36.15%	35	17.54%
Packaging / Substrates	11	0.74%	22	21.58%

不可加总 NON-ADDITIVE

技术标签按证据赋值，同一公司可以同时覆盖 HBM、传统 DRAM 与 NAND。所有技术权重和数量都不可跨行相加；未映射具体标签也不能解释为零暴露。

Technology tags are evidence-based and one company may span HBM, conventional DRAM and NAND. Technology weights and counts are non-additive across rows; an unmapped specific tag is not proof of zero exposure.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · specific tags require written evidence; broad S roles remain complete. Values may differ by rounding.

09 PERFORMANCE

同一点位，在不同观察窗下

One level across different observation windows

CWW

20 SESSIONS	60 SESSIONS	126 SESSIONS	252 SESSIONS
-17.94% price return	+43.31% price return	+108.27% price return	+293.62% price return

CWWCN

20 SESSIONS	60 SESSIONS	126 SESSIONS	252 SESSIONS
-3.31% price return	+44.88% price return	+71.32% price return	+271.88% price return

观察窗对比 / WINDOW COMPARISON

20D	-17.94%	-3.31%	spread -14.63 pp
60D	+43.31%	+44.88%	spread -1.57 pp
126D	+108.27%	+71.32%	spread +36.95 pp
252D	+293.62%	+271.88%	spread +21.74 pp

收益口径

RETURN BASIS

本页是历史价格收益，不含股息、费用、税务或可交易产品跟踪误差。交易日窗口不是自然日窗口；历史表现不代表未来结果。

These are historical price returns excluding dividends, fees, taxes and any investable-product tracking error. Trading-session windows are not calendar-day windows; past performance does not indicate future results.

- As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · session returns use certified closing levels. Values may differ by rounding.

09 RISK

线性纵轴下，回调有多深

How deep the pullback is on a linear scale

CWW

60D ANN. VOL	60D MAX DD	FULL MAX DD
65.85% sqrt(252)	-25.45% peak-to-trough	-31.89% since history start

CWWCN

60D ANN. VOL	60D MAX DD	FULL MAX DD
53.41% sqrt(252)	-20.36% peak-to-trough	-22.57% since history start

定义 / DEFINITIONS

Annualized volatility	sample std(daily returns) x sqrt(252)
Maximum drawdown	minimum(level / running peak - 1)
Linear-scale reading	absolute index-point movement remains visible; no log compression

限制 LIMITATION

波动率依赖观察窗与年化假设；最大回撤依赖窗口起点。两者是历史路径统计，不是压力测试、损失上限或概率预测。

Volatility depends on the window and annualization assumption; maximum drawdown depends on the window start. Both are historical path statistics, not stress tests, loss limits or probability forecasts.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · levels are unlogged price-return index points. Values may differ by rounding.

09 RELATIVE

一起波动，不等于同样领先

Co-movement is not the same as leadership

20D CORRELATION	60D CORRELATION	FULL CORRELATION
0.859 daily returns	0.686 daily returns	0.536 daily returns

相对收益差 / CWW RETURN MINUS CWWCN RETURN

20 sessions	-14.63%
60 sessions	-1.57%
126 sessions	+36.95%
252 sessions	+21.74%

CURRENT LEVEL-RATIO LEADER / 当前点位比值领先

CWW

level spread +16.75% 12 crossovers in 60D

两个不同问题

TWO DIFFERENT QUESTIONS

相关性衡量日收益共同变化，相对领先衡量窗口累计收益差。高相关仍可能存在显著收益差；任何领先关系都可能快速反转。

Correlation measures daily co-movement; relative leadership measures the cumulative-return difference over a window. Highly correlated indices can still diverge materially, and leadership can reverse quickly.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · paired closing observations only. Values may differ by rounding.

09 SENSITIVITY

哪些参数会改变结果，哪些不会

Which parameters change results and which do not

CWW PF FLOOR	CWW NEAR CAP	CWW EFFECTIVE N
4 PF = 0.05	4 weight >= 7.5%	17.5 current weights

CWWCN PF FLOOR	CWWCN NEAR CAP	CWWCN EFFECTIVE N
1 PF = 0.05	2 weight >= 7.5%	26.7 current weights

敏感性矩阵 / SENSITIVITY MATRIX

PF evidence	改变 PreCapAMV 与排序	Changes pre-cap value and ranking
FF refresh	改变可投资规模	Changes investable scale
8% event cap	改变事件日参考集中度，不改变合格池	Changes event-date concentration, not eligibility
Primary listing	可能改变 CWW/CWWCN 归属	May change CWW/CWWCN assignment
Technology tags	只改解释层，不改点位	Changes interpretation only, not levels

情景纪律

SCENARIO DISCIPLINE

本页报告当前快照的观测敏感点，不进行假设性调参或收益预测。若要比较替代参数，必须冻结输入、完整回放历史、重算除数并单独发布情景标签。

This page reports observed sensitivity points in the current snapshot; it does not tune hypothetical parameters or forecast returns. Alternative parameters require frozen inputs, full historical replay, divisor recalculation and separately labeled scenarios.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · observed snapshot only; no hypothetical optimization. Values may differ by rounding.

09 REPLAY

从下载文件复算到同一个答案

Replay the same answer from published files

01	锁定版本	Freeze methodologyVersion, indexDate and file hashes.
02	读取 BOM-safe 数据	Read latest.json plus level and constituent CSV files with UTF-8-SIG.
03	校验主键	Require unique index/date/ticker and exact certified constituent counts.
04	重算权重	Use the published event-date CF, keep it fixed between events, and normalize current AMV to 100%.
05	重算衍生指标	Compute HHI, breadth, contribution, return, volatility and drawdown.
06	交叉核验	Match cap-event reference, current drift, dates, levels, finite values and disclosure units.
07	发布双轨输出	Write machine-readable JSON/CSV and this human-readable PDF.

MINIMUM RELEASE GATES / 最低发布门槛

weight sum = 100% | event cap <= 8% | cap ref <= index date | no NaN/Inf | page count = 47

- As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · the generated artifact is reproducible without network access. Values may differ by rounding.

09 DICTIONARY

每个衍生值从哪里来

Where every derived value comes from

METRIC	MACHINE FIELD	FORMULA / RULE	UNIT
Weight	weightPct	AMV / ΣAMV	%
HHI	hhiPoints	Σ(weightPct²)	points
Effective N	effectiveConstituentCount	10,000 / HHI	names
Breadth	advancers / decliners	count(dayPct > 0 / < 0)	count
Dispersion	crossSectionalStdDevPct	population σ(dayPct)	%
Contribution*	approxContributionPctPoints	weightPct × dayPct / 100	pp
Weighted PF	weightedAveragePf	Σ(weightPct × PF) / 100	0-1
Window return	returnPct	(endLevel / startLevel - 1) × 100	%
Ann. volatility	annualizedVolatilityPct	sample std(daily return) x sqrt(252)	%
Max drawdown	maxDrawdownPct	min(level / running peak - 1) × 100	%
Correlation	correlation60D	Pearson(daily CWW, daily CWWCN)	-1 to 1
Relative spread	relativeSpreadChange60D	change[(CWW / CWWCN - 1) x 100]	pp

单位纪律

UNIT DISCIPLINE

* 贡献为解释性近似值。所有百分比字段必须携带单位；权重、收益和百分点不可混用。JSON 的 schemaVersion、indexDate 与 methodologyVersion 是复算入口。

* Contribution is an explanatory approximation. Every percentage field must retain its unit; weights, returns and percentage points are not interchangeable. JSON schemaVersion, indexDate and methodologyVersion are the replay entry points.

As of 2026-07-16 · generated derivative_analytics.json + deterministic PDF replay · schema 1 · machine names follow derived_analytics.json when available. Values may differ by rounding.

10 FINAL

方法论 v4.0 最终双语白皮书

Final bilingual Methodology 4.0 whitepaper

文件状态

DOCUMENT STATUS

本文件是 CWW/CWWCN 指数家族的最终 v4.0 方法论与数据说明。它提供认证点位、成分数量、分类暴露、运行脉冲范围与供应链证据图，但不构成投资建议、交易邀约或收益承诺。

This 47-page document is the final Methodology 4.0 and data explanation for the CWW/CWWCN Index Family. It provides certified levels, constituent counts, taxonomy exposure, auditable derivative analytics, operating-pulse scope and an evidence graph, but is not investment advice, a trading solicitation or a return promise.

01	基准日	2024-12-31 = 1,000
02	原始家族起源	2025-01-02; 2025 年第一个美国交易日
03	v4 历史状态	后来采用的新地域分区回溯至基准日
04	CWWCN 历史	2025-01-02 当时未作为独立指数发布
05	认证点位	2026-07-16: CWW 4,852.51; CWWCN 4,156.50
06	认证成分	CWW 113; CWWCN 92; 合格池 205

CERTIFIED SOURCE SET / 认证来源

- docs/CWW_METHODOLOGY_v4.md · final rules and historical statement
- certified v4 latest.json and CWW/CWWCN level and constituent CSV files
- site/data/memory_operating_pulse.json · 15 sources and 53 observations
- site/data/supply_chain_graph.json · 3 chains, 16 nodes and 14 edges
- site/data/derived_analytics.json · generated analytics layer when present

CWW / CWWCN · FINAL v4.0 · 47 PAGES

编制与维护 KZG · Published 2026-07-17 · Index data as of 2026-07-16

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