EUROPEAN CASH INDICATORS

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Three measurement instruments for the quarterly monitoring of cash in Europe, designed for use in public communications, media engagement, and institutional positioning.

INDEX OF INDICATORS

Introduction: why Denaria Europe needs its own indicators

The public debate on cash suffers from a systematic measurement deficit. Relevant data exist — from the ECB, Eurostat, national central banks — but no instrument integrates them, updates them regularly, and communicates them in a way that is accessible to media and citizens. That gap is both a problem and an opportunity.

A proprietary indicator transforms Denaria Europe from a commentator on other people's data into a producer of data in its own right. This has three practical consequences: media outlets turn to Denaria Europe when the indicator is published; policymakers cite it in legislative debates; and peer organizations across Europe have an incentive to collaborate in feeding it.

The three indicators proposed below are designed to function independently or as a complementary system. All are constructed from publicly available or estimable sources, with a quarterly update burden that is practically manageable.

A. Cash Health Index for Europe (CHIE)

What does it measure?

The overall vitality of cash in each European country, integrating five dimensions: use, infrastructure, transactional demand, acceptance, and inclusion. Expressed as a score from 0 to 100. Enables country rankings and quarterly trend tracking.

A.1 Index rationale

The CHIE rests on the premise that the health of cash cannot be reduced to a single data point. A country may have robust ATM infrastructure but very low cash use at the point of sale; another may have high cash use but a weak legal framework and declining acceptance. The index captures these tensions and converts them into a single comparable score.

The structure is a weighted composite index: five sub-indicators, each normalized on a 0–100 scale using the min-max method, and aggregated through a weighted average. Weights reflect the relative importance of each dimension in the current European policy debate.

A.2 Sub-indicators, definitions and sources

Sub-indicator	Operational definition	Primary source	Frequency / Lag
I1 — Cash use at POS (weight: 25 %)	Share of point-of-sale transactions conducted in cash (% of total by volume)	ECB SPACE 2024 — Study on Payment Attitudes of Consumers in the Euro Area https://www.ecb.europa.eu/stats/ecb_surveys/space/	Biennial (2022, 2024…). Quarterly interpolation between editions.
I2 — ATM infrastructure (weight: 20 %)	Number of ATMs per 100,000 adult inhabitants	World Bank Financial Access Survey (IMF FAS) via TheGlobalEconomy.com https://www.theglobaleconomy.com/rankings/ATM_machines/European-union/	Annual. Latest available: 2021–2023 by country.
I3 — Transactional	ATM cash withdrawal operations per inhabitant per year. Avoids the	ECB PSS Aggregate (H2 2024) https://www.ecb.europa.eu/press/	Quarterly aggregate (country series in

cash demand (weight: 20 %) ⚠ ESTIMATED	hoarding bias of aggregate banknote circulation figures. ⚠ Currently estimated from ECB PSS euro-area aggregate scaled by country I2 and I1. To be replaced by direct ECB SDW PSS country series in Q2 2025.	stats/paysec/html/ecb.pis2024h2~5ada0087d2.en.html	progress). ⚠ Q1 2025: estimated.
I4 — Cash acceptance proxy (weight: 20 %)	Inverse of % consumers reporting difficulty accessing cash (SPACE 2024, Section 4.1). Higher difficulty → lower acceptance score.	ECB SPACE 2024, Section 4.1 'Access to cash' https://www.ecb.europa.eu/stats/ecb_surveys/space/	Biennial (SPACE). Interpolated quarterly. Denaria network data will supplement.
I5 — Poverty / financial inclusion (weight: 15 %)	At-risk-of-poverty rate (% population below 60 % national median income after transfers). Proxy for vulnerability of low-income households to cashless transition.	Eurostat EU-SILC 2024, indicator ilc_li02 (2023 income reference year) https://ec.europa.eu/eurostat/databrowser/view/ILC_LI02/	Annual (~18-month lag). Interpolated quarterly.

A.3 Normalisation and calculation

Each sub-indicator is normalized using the standard min-max formula across the 20 countries in this edition:

Normalised value = (X − X_min) / (X_max − X_min) × 100

For I4 (acceptance proxy), the relationship is inverse — higher difficulty = lower score:

Normalised I4 = 100 − [(X − X_min) / (X_max − X_min) × 100]

The CHIE final score is the weighted sum: $CHIE = 0.25 \cdot I1 + 0.20 \cdot I2 + 0.20 \cdot I3 + 0.20 \cdot I4 + 0.15 \cdot I5$

A.4 Note on I3

ATM withdrawal operations measure cash demand for spending, but do not capture hoarding, peer-to-peer cash transfers made without a prior ATM visit, or over-the-counter bank withdrawals. It is a good proxy, not a perfect one. This limitation is documented in the public methodological note and is standard practice for composite indices. Direct ECB SDW PSS country-level series will replace the current estimate from Q2 2026.

A.5 First-edition results (Q1 2026 — 20 countries)

Rank	Country	CHIE Score	I1: Cash POS %	I2: ATMs / 100k	I4: Access ease %	I5: Poverty %
1	Austria	88.7	62 %	168.6	89 %	14.7 %
2	Slovenia	78.4	64 %	79.8	93 %	13.0 %
3	Portugal	76	52 %	162.8	90 %	16.5 %
4	Croatia	70.6	57 %	140.9	91 %	19.9 %
5	Slovakia	65.1	57 %	63.1	92 %	14.2 %
6	Malta	64.5	67 %	44.6	92 %	17.1 %
7	Italy	62.9	61 %	88.2	90 %	18.9 %
8	Germany	62.1	57 %	77.0	85 %	15.5 %
9	Spain	57.3	57 %	96.2	88 %	19.7 %
10	France	54.1	45 %	89.3	88 %	15.9 %
11	Luxembourg	53.8	44 %	99.4	90 %	18.8 %
12	Cyprus	52.2	55 %	38.2	88 %	15.0 %
13	Ireland	52.2	46 %	44.6	89 %	13.1 %
14	Greece	51.8	54 %	63.1	89 %	18.1 %
15	Estonia	43.6	47 %	62.5	91 %	21.3 %
16	Latvia	40.3	46 %	57.0	90 %	21.6 %
17	Lithuania	39.2	45 %	42.7	91 %	21.5 %
18	Finland	33.1	27 %	36.7	88 %	12.8 %
19	Belgium	29.7	38 %	58.7	78 %	15.4 %
20	Netherlands	27.4	22 %	33.2	90 %	14.9 %

Key finding: Austria leads by a wide margin, driven by the highest ATM density in Europe (168.6/100k), high cash use (62 %) and strong acceptance. Netherlands and Belgium score lowest — the Netherlands due to minimal cash use (22 %) and declining ATM infrastructure; Belgium due to the highest cash access difficulty rate in the euro area (22 % of consumers, per SPACE 2024).

A.6 Communication and visualisation

- Colour-coded map of Europe by quartile (dark green → red) as the main image for each quarterly release
- Country ranking with change versus previous quarter (+/− points)
- Sub-indicator breakdown for the five most media-relevant countries
- Sample headline: "Austria leads Europe's cash health ranking; Belgium and Netherlands in the red zone"
- Update frequency: quarterly. Coverage at launch: 20 countries (full euro area). Target year 2: 25+.

B. Cash Acceptance Thermometer (CAT)

What does it measure?

The real willingness of retail trade to accept cash in each European country. Expressed as a three-level traffic light (GREEN / AMBER / RED) and a score from 0 to 100. The most directly actionable indicator for policy advocacy and urgent communications.

B.1 Indicator rationale

The CAT answers the question any citizen or journalist understands: can I pay in cash in my country's shops? This simplicity is its communicative strength. Unlike the CHIE, which aggregates multiple dimensions of cash vitality, the CAT focuses exclusively on the most visible friction point: the moment of payment and whether cash is accepted.

B.2 Variables, definitions and sources

Variable	Definition	Source	Weight / Frequency
V1 — Cash POS share (proxy for merchant acceptance)	Share of POS transactions in cash. Used as proxy for merchant willingness to accept cash: higher cash use implies wider acceptance. To be replaced by direct refusal data as Denaria's European network develops.	ECB SPACE 2024 https://www.ecb.europa.eu/stats/ecb_surveys/space/	35 %. Biennial, interpolated.

V2 — Consumer access ease (proxy for acceptance)	Inverse of % consumers reporting difficulty accessing cash (SPACE 2024, Section 4.1). Captures real-world acceptance friction experienced by users.	ECB SPACE 2024, Section 4.1 https://www.ecb.europa.eu/stats/ecb_surveys/space/	40 %. Biennial, interpolated. Key variable.
V3 — Legal framework score (0–4)	Own scored assessment: 1 point each for (1) explicit obligation to accept cash, (2) sanctioning mechanism in force, (3) narrow permitted exceptions, (4) designated enforcement body. Reflects the regulatory protection of cash as legal tender.	ECB Legal Tender Expert Group; EU Legal Tender Regulation COM/2023/364 https://eur-lex.europa.eu/legal-content/EN/HIS/?uri=COM:2023:364:FIN	25 %. Updated on legislative events.

B.3 Traffic-light thresholds

CAT Score	Level	Meaning
75 – 100	🟢 GREEN — Acceptance guaranteed	Cash is widely accepted. Refusals are exceptional and sanctionable under existing law.
45 – 74	🟡 AMBER — Acceptance at risk	Systematic refusals exist in certain sectors or regions. Legal framework is weak or poorly enforced.
0 – 44	🔴 RED — Active exclusion	Cash refusal is frequent and normalised. Real monetary exclusion risk for vulnerable groups.

B.4 The Legal-Real Gap (LRG)

A particularly powerful data point for media and advocacy is the gap between the legal framework (what should happen) and real acceptance (what actually happens). A country with a strong legal tender law but a low V1/V2 score is the story: the law exists but is not being enforced.

LRG = Normalised legal framework score (nV3) − Normalised real acceptance score (nV1)

A high positive LRG indicates systematic non-compliance with legal tender obligations. This is the most actionable data point for legislative advocacy and public denunciation.

B.5 First-edition results (Q1 2026 — 20 countries)

Rank	Country	CAT Score	Signal	Legal score (0–4)	Access ease %	Cash POS %
1	Slovenia	91.4	GREEN	3	93 %	64 %
2	Malta	91.1	GREEN	3	92 %	67 %
3	Austria	85.4	GREEN	3.5	89 %	62 %
4	Italy	81.1	GREEN	3	90 %	61 %
5	Slovakia	77.1	GREEN	2.5	92 %	57 %
6	Croatia	74.4	AMBER	2.5	91 %	57 %
7	Portugal	74.1	AMBER	3	90 %	52 %
8	Germany	70.9	AMBER	3.5	85 %	57 %
9	Greece	66.7	AMBER	2.5	89 %	54 %
10	Spain	66.4	AMBER	2.5	88 %	57 %
11	Cyprus	64.8	AMBER	2.5	88 %	55 %
12	Luxembourg	61.6	AMBER	2.5	90 %	44 %
13	Estonia	60.4	AMBER	2	91 %	47 %
14	Lithuania	58.8	AMBER	2	91 %	45 %
15	France	57.1	AMBER	2.5	88 %	45 %
16	Latvia	56.9	AMBER	2	90 %	46 %
17	Ireland	54.3	AMBER	2	89 %	46 %
18	Netherlands	32	RED	1.5	90 %	22 %
19	Finland	30.6	RED	1.5	88 %	27 %
20	Belgium	24.9	RED	2.5	78 %	38 %

Key finding: Five countries reach GREEN — Slovenia, Malta, Austria, Italy and Slovakia — driven by high cash use and relatively easy access. Germany, despite its strong legal framework (score 3.5, highest alongside Austria), falls to AMBER because consumer-reported access ease has deteriorated by 9 percentage points since 2022 (SPACE 2024). Belgium is the most notable anomaly: it sits in RED despite a legal score of 2.5, entirely due to the highest access difficulty rate in the euro area (22 % of consumers).

B.6 Strategic advantage of the CAT for Denaria Europe

The CAT has a structural advantage: Denaria Europe controls a key input — consumer-reported access difficulty — through its own platform and the allied European network. This means Denaria Europe is not merely publishing the indicator; it is co-producing the underlying data. That is difficult to rebut and substantially reinforces the organisation's institutional authority in the European debate.

C. Monetary Exclusion Risk Index (MERI)

What does it measure?

The risk that specific population groups will be excluded from economic and social life if cash disappears or is restricted de facto. It does not measure current cash use, but vulnerability to its disappearance. It is the indicator with the greatest political potency in the rights and social cohesion argument.

⚠ IMPORTANT: A HIGH MERI score means HIGH RISK — the opposite directionality to CHIE and CAT. Always state this explicitly in public communications.

C.1 Index rationale

The practical disappearance of cash does not affect everyone equally. It disproportionately affects older people, those on low incomes, those in rural areas with limited access to digital financial services, and those who — for cultural, cognitive, or privacy reasons — prefer not to depend exclusively on electronic payment systems.

The MERI quantifies this differential risk by country, combining the size of vulnerable groups with the degree of pressure that cash is experiencing in each context. The result answers the question: who loses most if cash disappears here?

C.2 Dimensions, variables and sources

Dimension	Variable	Source	Weight / Frequency
D1 — Demographic vulnerability	Share of population aged 65 and over. Proxy for elderly vulnerability to a cashless transition.	Eurostat demo_pjan, 2023 https://ec.europa.eu/eurostat/databrowser/view/demo_pjan/	30 %. Annual.
D2 — Economic vulnerability	At-risk-of-poverty rate (% below 60 % national median income after transfers). Proxy for exposure of low-income households.	Eurostat EU-SILC 2024, ilc_li02 (2023 income) https://ec.europa.eu/eurostat/databrowser/view/ILC_LI02/	30 %. Annual (~18-month lag).
D3 — Territorial vulnerability	Inverse of ATM density per 100,000 inhabitants. Higher inverse = fewer ATMs = greater territorial exclusion risk.	World Bank / IMF FAS via TheGlobalEconomy.com https://www.theglobaleconomy.com/rankings/ATM_machines/European-union/	20 %. Annual.
D4 — Pressure on cash (composite proxy)	Composite: (100 − cash POS share) + (4 − legal score) × 5. Higher = greater systemic pressure on the cash ecosystem.	Derived from I1 (ECB SPACE 2024) and V3 (own legal assessment). See those sources.	20 %. Quarterly (driven by I1).

MERI = 0.30·D1 + 0.30·D2 + 0.20·D3 + 0.20·D4

Scale 0–100. HIGH score = HIGH exclusion risk. Opposite to CHIE and CAT.

C.3 First-edition results (Q1 2026 — 20 countries)

Rank	Country	MERI Score	Risk level	D1: Pop. 65+ %	D2: Poverty %
1	Latvia	76	Very high	20.8 %	21.6 %
2	Lithuania	75.1	Very high	19.9 %	21.5 %
3	Estonia	72.1	Very high	20.3 %	21.3 %
4	Italy	65	Very high	23.8 %	18.9 %
5	Greece	64.4	High	22.3 %	18.1 %

6	Finland	63.8	High	22.7 %	12.8 %
7	Netherlands	62.3	High	19.5 %	14.9 %
8	Spain	57.3	High	20.4 %	19.7 %
9	Croatia	57.2	High	22.1 %	19.9 %
10	Malta	56.1	High	21.8 %	17.1 %
11	France	53	High	21.3 %	15.9 %
12	Belgium	51.9	High	19.4 %	15.4 %
13	Germany	50.8	High	22.4 %	15.5 %
14	Portugal	44.4	Medium	22.4 %	16.5 %
15	Luxembourg	42.5	Medium	15.7 %	18.8 %
16	Cyprus	38.5	Medium	16.9 %	15.0 %
17	Slovenia	36	Medium	21.2 %	13.0 %
18	Slovakia	31.7	Low	17.0 %	14.2 %
19	Ireland	29.2	Low	15.1 %	13.1 %
20	Austria	23.6	Low	19.8 %	14.7 %

Key finding: The Baltic states (Latvia, Lithuania, Estonia) lead the risk ranking — a combination of high poverty rates (above 21 %), significant elderly populations, and strong downward pressure on cash. Finland and the Netherlands — habitually presented as models of digital progress — appear in positions 6 and 7, driven by the fastest-declining cash ecosystems in Europe. Austria, which leads the CHIE, has the lowest MERI score: strong cash health and low exclusion risk are mutually reinforcing.

C.4 Strategic communication note

The MERI connects the cash debate to the social rights and territorial cohesion framework that dominates the European legislative agenda. It does not speak of banknotes: it speaks of people who may be left behind. That makes it harder to ignore for legislators, more citable for academics, and more impactful for media than use or circulation metrics.

The counter-narrative potential is significant: the countries advancing fastest in cashless payments are also those where vulnerable groups face the greatest exclusion risk. Flagship headline: "Europe's most cashless countries carry the highest risk for low-income and elderly citizens."

D. Integrated Summary — All Three Indicators

The three indicators are more powerful together than separately. The table below shows the full Q1 2026 picture across all 20 countries.

Country	CHIE	CAT	Signal	MERI	Risk level	Overall reading
Austria	88.7	85.4	GREEN	23.6	Low	Strong position
Slovenia	78.4	91.4	GREEN	36	Medium	Strong position
Portugal	76	74.1	AMBER	44.4	Medium	Solid — monitor acceptance
Croatia	70.6	74.4	AMBER	57.2	High	Monitor exclusion risk
Slovakia	65.1	77.1	GREEN	31.7	Low	Strong position
Malta	64.5	91.1	GREEN	56.1	High	Good health, rising risk
Italy	62.9	81.1	GREEN	65	Very high	Acceptance strong, exclusion critical
Germany	62.1	70.9	AMBER	50.8	High	Concern — acceptance eroding
Spain	57.3	66.4	AMBER	57.3	High	Concern — dual pressure
France	54.1	57.1	AMBER	53	High	Concern — action needed
Luxembourg	53.8	61.6	AMBER	42.5	Medium	Monitor — mixed picture
Cyprus	52.2	64.8	AMBER	38.5	Medium	Monitor
Ireland	52.2	54.3	AMBER	29.2	Low	Monitor acceptance
Greece	51.8	66.7	AMBER	64.4	High	Concern — exclusion risk high
Estonia	43.6	60.4	AMBER	72.1	Very high	Concern — action needed
Latvia	40.3	56.9	AMBER	76	Very high	Concern — action needed
Lithuania	39.2	58.8	AMBER	75.1	Very high	Concern — action needed
Finland	33.1	30.6	RED	63.8	High	Critical — cash ecosystem at risk
Belgium	29.7	24.9	RED	51.9	High	Critical — access failure
Netherlands	27.4	32	RED	62.3	High	Critical — cash ecosystem at risk

Key cross-indicator findings

Austria is the only country achieving simultaneously high cash health (CHIE 88.7), GREEN acceptance (CAT 85.4), and low exclusion risk (MERI 23.6). It is the European benchmark.

The CHIE-MERI paradox is most visible in Northern Europe: Netherlands, Finland and Belgium score lowest on cash health but carry high exclusion risk — precisely because their vulnerable populations are most exposed to systems moving fastest away from cash.

Italy presents an important asymmetry: strong acceptance (CAT 81.1, GREEN) but the highest Very-high MERI among cash-positive countries (65.0), driven by the oldest population in the sample (23.8 % aged 65+) and high poverty exposure.

Spain occupies a strategically significant middle position: cash use above the euro area average (57 %), good ATM infrastructure (96.2/100k), but both CAT (66.4) and MERI (57.3) in concern territory, making it a priority country for Denaria Europe's advocacy agenda.

Note on indicator ownership

The CHIE, CAT and MERI are original creations with no equivalent in the existing literature or institutional publications. Denaria Europe may register the methodology, the names, and the Observatory brand, thereby consolidating its position as the technical reference for the European cash debate. Once the public methodological note is published, the indices are citable in academic and policy documents.

F. Master Sources Reference Table

All data sources used across the three indicators are consolidated below for ease of access and audit.

Source	Indicator(s)	Access URL	Update cycle
ECB SPACE 2024 — Study on Payment Attitudes of Consumers in the Euro Area	CHIE I1, I4; CAT V1, V2	https://www.ecb.europa.eu/stats/ecb_surveys/space/	Biennial (2022, 2024…)
ECB PSS — Payment and Settlement Statistics (aggregate)	CHIE I3 (estimated)	https://www.ecb.europa.eu/press/stats/paysec/	Semi-annual press release
ECB Statistical Data Warehouse (SDW) — PSS country series	CHIE I3 (target: Q2 2025)	https://sdw.ecb.europa.eu (dataset: PSS)	Quarterly (6–10 week lag)
ECB Household Finance and Consumption Survey (HFCS)	MERI D2 (supplementary)	https://www.ecb.europa.eu/stats/ecb_surveys/hfcs/	Triennial
Eurostat EU-SILC (Statistics on Income and Living Conditions)	CHIE I5; MERI D2	https://ec.europa.eu/eurostat/databrowser/view/ILC_LI02/	Annual (~18-month lag)
Eurostat demographic statistics (demo_pjan)	MERI D1	https://ec.europa.eu/eurostat/databrowser/view/demo_pjan/	Annual
Eurostat Structural Business Statistics (SBS)	CAT V1 (supplementary); MERI D4	https://ec.europa.eu/eurostat/databrowser/view/sbs_na_ind_r2/	Annual (~18-month lag)
Eurostat ICT usage by individuals	MERI D1 (non-SPACE countries)	https://ec.europa.eu/eurostat/databrowser/view/isoc_ci_ifp_fu/	Annual
World Bank Financial Access Survey (IMF FAS)	CHIE I2; MERI D3	https://www.theglobaleconomy.com/rankings/ATM_machines/European-union/	Annual (2021–2023 latest)
ECB Legal Tender Expert Group reports	CAT V3	https://www.ecb.europa.eu/paym/integration/retail/legal_tender/	Ad hoc / annual
EU Legal Tender Regulation COM/2023/364 — legislative tracker	CAT V3	https://eur-lex.europa.eu/legal-content/EN/HIS/?uri=COM:2023:364:FIN	On legislative events
Denaria Europe complaint channel + allied network	CAT V2 (future primary)	Internal data — Denaria Europe network	Quarterly (continuous)