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# Access Without Usage: The Persistence of Cash in Morocco.

Auteur 1 : Hamid RAFIK.
Auteur 2 : Hicham LEMAALLEM,

**Hamid RAFIK,** Ph.D. ORCID: 0000-0002-0409-4679
1 Mohammed V University, Rabat, Morocco

**Hicham LEMAALLEM,** Ph.D. ORCID: 0009-0007-8103-522X
2 Mohammed V University, Rabat, Morocco

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**Abstract**

Morocco has built a modern retail-payment system—more than twenty-two million bank cards, an interoperable interbank switch in place since 2004, a regulated mobile-payment regime, and near-universal mobile access—yet the overwhelming majority of transactions are still settled in cash, and currency in circulation has climbed to roughly 29 percent of GDP, well above its pre-pandemic norm and among the highest ratios in the world. This paper documents the paradox and argues that it is best understood not as a transitional lag awaiting more infrastructure but as a rational equilibrium. The methodological approach combines a structured reading of the aggregate payment series with international benchmarking, and interprets the resulting regularities through four analytical lenses drawn from the economics of informality, two-sided markets, institutional trust, and financial-inclusion design. The sample consists of the aggregate retail-payment statistics published by Bank Al-Maghrib and the Centre Monétique Interbancaire for 2019–2024—card withdrawals, card payments to merchants and online, mobile-wallet accounts and transactions, and currency in circulation—together with World Bank Global Findex survey data for Morocco in 2017 and 2021 and a benchmark set of five comparator economies (Sweden, Türkiye, Brazil, India, and Kenya) alongside regional aggregates. Drawing on descriptive payment statistics and international benchmarking, we establish four stylized facts—cards used mainly to withdraw cash, adoption confined to small-value payments, a rising cash-to-GDP ratio, and access without usage—and show that several economies poorer than Morocco have moved far further toward digital payment, so income does not bind. We trace the persistence to four mutually reinforcing frictions: a large cash-based informal sector, the two-sided economics of merchant acceptance, weak recourse and trust that make digital payment a credence good, and an access-focused inclusion policy. Comparison with Brazil, India, and Kenya indicates that the equilibrium shifts only when digital rails become instant, free at the point of use, interoperable, and account-to-account, and a coordinating force resolves the chicken-and-egg of two-sided adoption. The goal, we conclude, is not a war on cash but lowering the relative cost of the digital option until the merchant side tips. More broadly, Morocco's experience points to a lesson about sequencing: building bank-based card rails first can entrench cash in ways that economies leapfrogging to instant, account-to-account rails avoided. The principal conclusion is that Morocco's binding constraint lies on the merchant side and in the institutions surrounding payment rather than in the quantity of infrastructure, so that the effective policy lever is the relative cost of the digital option—acceptance pricing, a unified point-of-sale standard, credible recourse, and a coordinating force capable of moving both sides of the market together.

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**Keywords:** cash; digital payments; financial inclusion; payment systems; two-sided markets; informal economy; mobile money; Morocco.

## 1 Introduction

By almost any measure of capacity, Morocco has built a modern retail-payment system. At the end of 2024 the country counted more than twenty-two million bank cards in circulation, over one hundred thousand card-accepting terminals, and close to fourteen million mobile-wallet accounts; mobile-phone subscriptions exceed the adult population and internet access reaches nearly nine in ten adults; and a dedicated regulatory framework for mobile payments, opening the market to non-bank payment institutions and formally recognizing electronic money, has been in force since 2018. The interbank switch operated by the Centre Monétique Interbancaire has rendered cards interoperable across every bank and terminal in the country for two decades. And yet the overwhelming majority of everyday transactions—by most estimates more than seventy percent—are still settled in cash. More striking still, cash is not quietly receding in the background of this digital build-out. Currency in circulation has climbed to roughly twenty-nine percent of GDP, well above its pre-pandemic average near twenty-two percent and among the highest ratios in the world, having grown over the past decade at close to twice the pace of nominal output. Morocco has, in short, laid the rails for a cashless economy and watched the demand for cash rise.

This combination is not unique to Morocco, and that is part of what makes it instructive. A now-substantial literature documents a "cash paradox" across rich and poor economies alike: despite the diffusion of cards, contactless technology, and mobile payments, the ratio of currency to output has been flat or rising across most advanced economies since the mid-2000s (Jobst and Stix 2017; Bech et al. 2018; Ashworth and Goodhart 2020), reopening a basic debate over whether cash is a vanishing technology or a stubbornly resilient one (Rogoff 2016; Khiaonarong and Humphrey 2019). What distinguishes Morocco is the sharpness of the contrast. The supply-side modernization has been unusually rapid and state-coordinated, the financial-inclusion gains have been real, and yet the gap between payment capacity and payment behavior is among the widest anywhere. The country is therefore close to a natural laboratory for a question the global literature poses but rarely isolates: once the infrastructure exists and accounts have been opened, what actually determines whether people pay electronically?

The tempting answer—and the one implicit in much policy—is that the gap is a lag. On this reading, adoption simply trails infrastructure with a delay; Morocco is early on a curve that richer and more digitally mature economies have already climbed, and the remedy is more of the same: more terminals, more accounts, more financial-literacy campaigns, more time. We think this interpretation is mistaken, and the evidence against it is by now familiar from the financial-

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inclusion literature. Opening accounts does not, by itself, generate use: randomized evaluations across several countries find that providing the unbanked with basic accounts yields dormant accounts and little change in financial behavior (Dupas et al. 2018), and the cross-country record shows that access and usage have decoupled, leaving hundreds of millions of account holders who still transact only in cash (Allen et al. 2016; Demirgüç-Kunt et al. 2022). Morocco fits this pattern almost exactly. Account ownership rose from twenty-nine percent of adults in 2017 to forty-four percent in 2021, yet card use remains overwhelmingly a means of withdrawing cash rather than of making payments. If two decades of interoperable infrastructure and a near-doubling of account ownership have not displaced cash, the binding constraint is unlikely to be the quantity of infrastructure.

We argue instead that cash persistence in Morocco is best understood as a rational equilibrium rather than a transitional lag—an outcome in which, given the structure of the economy and the institutions surrounding payment, cash remains the privately optimal medium of exchange for most agents most of the time. We use the word "equilibrium" descriptively, to denote a self-reinforcing and stable pattern rather than to assert that every agent fully optimizes; behavioral and informational barriers—limited financial literacy, habit, and the inertia of account use—plausibly reinforce it. Four mutually reinforcing forces sustain it. First, the structure of economic activity: a large informal sector and a retail landscape dominated by small, family-run merchants make cash the natural settlement medium for transactions that rationally avoid formal channels (Schneider and Enste 2000; La Porta and Shleifer 2014; Ulyssea 2020). Second, the two-sided economics of card acceptance: payment networks require simultaneous adoption by consumers and merchants, and where merchant fees are high relative to thin retail margins, acceptance stalls even when cards are widely held (Baxter 1983; Rochet and Tirole 2003, 2006; Rysman 2007). Third, trust and recourse: the reliability of an electronic payment—settlement finality, fraud liability, the ability to reverse an error—cannot be verified at the point of sale and depends on institutions that remain weak, so cash, whose acceptance is self-enforcing, retains an advantage no terminal can supply (North 1990; Guiso, Sapienza, and Zingales 2004). Fourth, the design of inclusion policy itself, which has prioritized access over the everyday usability of accounts (Demirgüç-Kunt et al. 2022). None of these is a technological deficiency; each is a feature of the environment into which the technology has been introduced. We draw from this a more general lesson, developed in Sections 4 and 6: an economy that builds bank-based, card-centric rails first can become locked into cash in a way that economies leapfrogging directly to instant, account-to-account rails did not—a problem of sequencing rather than of insufficient infrastructure.

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Our approach is descriptive and comparative. The Moroccan aggregate payment series document the shape of the pattern—its direction, magnitude, and persistence—and establish a set of stylized facts; the international record supplies the discipline, placing Morocco against economies that began from similar positions and diverged. The comparison is revealing precisely because the cash equilibrium has been broken elsewhere, and not by infrastructure alone. In Kenya, mobile money substituted for absent banks and reorganized household risk-sharing (Jack and Suri 2014; Suri and Jack 2016; Suri 2017); in Mexico, debit-card rollouts laid bare the two-sided network externalities that aggregate adoption figures conceal (Bachas et al. 2021; Higgins 2024); in India and Brazil, instant, low-cost, account-to-account rails—catalyzed in India's case by a demonetization shock—shifted behavior at scale (Chodorow-Reich et al. 2020; Crouzet, Gupta, and Mezzanotti 2023). Read against these cases, what Morocco lacks is not capacity but the configuration of pricing, acceptance, and trust that makes the electronic option dominant at the till (Alvarez and Argente 2022; Brown et al. 2022).

The approach carries an epistemological position worth making explicit. We treat the published payment aggregates as measurable traces of behaviour, and we take the object of enquiry to be a mechanism: what makes cash the choice agents keep making when an alternative is at hand. The mode of reasoning is abductive. We begin from a regularity that calls for explanation—payment capacity and the demand for cash have risen together for two decades—ask what state of the world would render that regularity intelligible, and retain the account that explains it while holding up against the comparative record. The four frictions of Section 5 accordingly work as candidate mechanisms: each carries observable implications, which we confront with the Moroccan descriptive evidence and with the experience of economies that have left the same equilibrium behind. What this design establishes is what must hold for the Moroccan pattern to make sense; measuring how much each mechanism contributes calls for transaction-level or survey microdata, and we mark that as the next step.

Two natural objections frame the analysis that follows, and we take them up directly rather than assume them away. The first is that cash reliance is simply a matter of income: Morocco is a middle-income country, and electronic payment will arrive with prosperity. We return to this in the international comparison, where economies poorer than Morocco—India and Kenya among them—exhibit far higher digital-payment use, suggesting that income conditions the equilibrium without determining it. The second is that the COVID-19 pandemic already broke the pattern, as contactless payments surged once mobility was restricted. Examining the post-pandemic data, we find a level shift rather than a regime change: contactless rose as a share of card payments, but cash in circulation continued to climb and the currency-to-GDP ratio remained near its pandemic

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peak—consistent with a temporary push against a stable underlying equilibrium rather than a durable break from it.

The paper proceeds by documenting the build-out of Morocco's payment infrastructure, establishing the stylized facts of cash persistence, benchmarking Morocco internationally, and then explaining the persistence through the four frictions above before asking what, on the evidence of countries that have tipped, would actually shift the equilibrium.

## 2 The Build-Out: How Morocco Modernized the Rails

Morocco did not drift into a modern payment system; it engineered one. The foundational decision came early and was deliberately collective: rather than let each bank operate a proprietary card network, the major banks pooled their card-acquiring activity in 2001 into a single interbank processor, the Centre Monétique Interbancaire (CMI), which from 2004 made every Moroccan card usable at any bank's automated teller machine and at every affiliated merchant terminal in the country. Interoperability—the property that two-sided payment platforms struggle hardest to secure, because it requires competitors to cooperate (Rochet and Tirole 2003, 2006)—was thus established by design at the outset rather than left to emerge from competition. On the supply side, Morocco solved at a stroke the coordination problem that elsewhere takes decades.

The regulatory architecture that followed was equally purposive. Law 103-12 on credit institutions, in force from 2015, created a new category of non-bank "payment institutions" authorized to hold payment accounts and issue electronic money, opening the field to telecom operators and money-transfer firms; with implementing regulations issued in 2017 and a Bank Al-Maghrib decision of November 2018 (No. 392/W/2018) that set the rules for mobile payments and mandated interoperability across mobile wallets from the start, the entry of new providers was actively engineered rather than merely permitted (World Bank 2021). These instruments were folded into an explicit policy agenda. The National Financial Inclusion Strategy, launched jointly by the central bank and the Ministry of Economy and Finance in 2018, set targets of fifty percent of adults financially included by 2023 and seventy-five percent by 2030, with the digitization of payments as a central lever. The state did not simply allow a cashless transition; it set quantitative goals for one and built the rails to reach them.

The build-out delivered scale (Figure 1). The stock of bank cards grew from 14.1 million in 2017 to 22.6 million in 2024, the network of card-accepting terminals passed one hundred thousand, and contactless functionality spread to roughly three-quarters of card payments by 2024. Mobile money expanded from a standing start: the number of mobile-wallet accounts, which Bank Al-Maghrib had hoped would reach twenty thousand by 2020, instead climbed to 1.4 million by the end of that year, 3.9 million by mid-2021, and 13.7 million by 2024, alongside some 13.8 million

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regulated payment accounts. These rails sit atop near-universal connectivity—mobile subscriptions exceed the adult population and internet access approaches nine in ten adults—so the constraints that hold digital payment back elsewhere (no device, no signal, no nearby terminal, no interoperable network) are, in the Moroccan case, largely absent. By the metrics that national payment strategies typically target, the country looks like one that should already be substantially cashless.

It is not, and the supply-side success is precisely what sharpens the puzzle. The same modernization that produced these stocks left usage strikingly low: as late as 2018, after a decade of bancarization drives and two decades of interoperable infrastructure, Moroccans made on average only about eleven cashless transactions per person per year—some twenty-three below the contemporaneous Middle East and North Africa average (World Bank 2021). Account ownership has since risen impressively, from twenty-nine to forty-four percent of adults between 2017 and 2021, yet only about six percent of adults report a mobile-money account despite the wallet push, and, as the next section documents, the cards that do circulate are used overwhelmingly to obtain cash rather than to spend it. This is the signature of a now-familiar disjuncture in the financial-inclusion literature, in which access and usage move on separate tracks and the provision of instruments does not by itself create transactions (Allen et al. 2016; Dupas et al. 2018; Demirgüç-Kunt et al. 2022). The “no access” explanation for Morocco’s cash reliance thus fails on its own terms: the access has, for the most part, already been built. Having established that the rails exist, the remainder of the paper turns to why they are so lightly used.

## 3 The Persistence of Cash: Four Stylized Facts

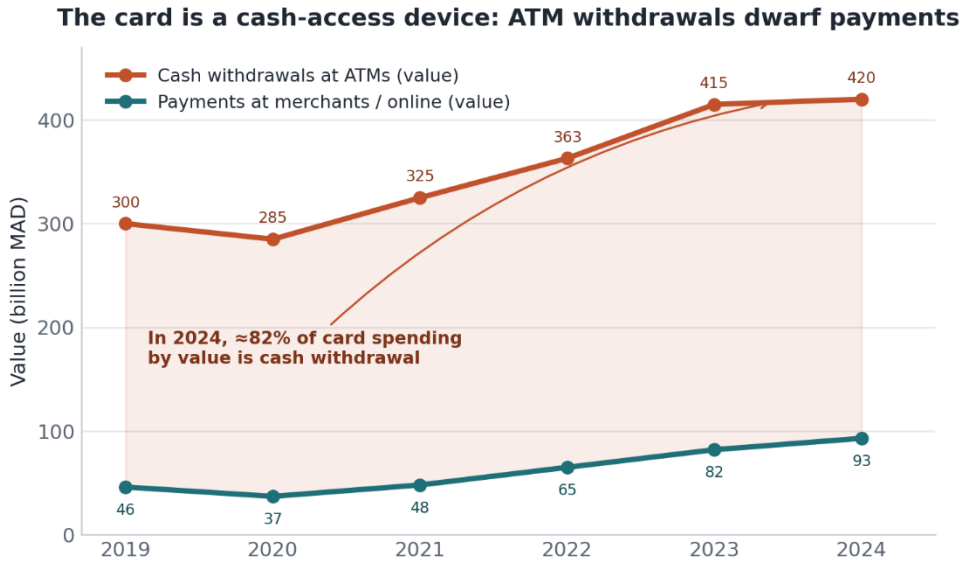
If the previous section showed that the rails exist, this one asks what runs on them. Four stylized facts, drawn from the payment statistics of Bank Al-Maghrib and the Centre Monétique Interbancaire, together describe an economy whose payment behavior has barely followed its payment capacity. We begin with the single most telling pattern in the data and work outward to its counterpart in the financial-inclusion statistics. Each is a fact about usage rather than access; together they motivate the explanation developed in the rest of the paper.

### Fact 1. The card is a cash-access device.

The starkest pattern in the Moroccan payment data is also the simplest: of all the value that moves through Moroccan bank cards, the overwhelming share is withdrawn as cash rather than spent at a merchant. In 2024, card withdrawals at automated teller machines totaled 420 billion dirhams against just 93 billion in card payments to merchants and online—so roughly eighty-two percent of card value, and nearly two of every three card transactions by count, consisted of pulling banknotes out of a machine (Figure 2). Nor is the gap closing in any economically meaningful

way: across 2019–2024 withdrawals grew from 300 to 420 billion dirhams while payments rose from 46 to 93 billion, the two series climbing in near-parallel, and the share of card value withdrawn as cash edged down only slightly, from about 87 percent to 82 percent. The Moroccan card is thus used principally to convert deposits into banknotes; it is an instrument of cash access, not a substitute for cash. This single fact reframes the headline inclusion numbers, for a card in a wallet is not evidence of cashless behavior when its dominant function is to feed the cash economy.

**Figure N°2 : The card is a cash-access device — ATM withdrawals dwarf payments.**

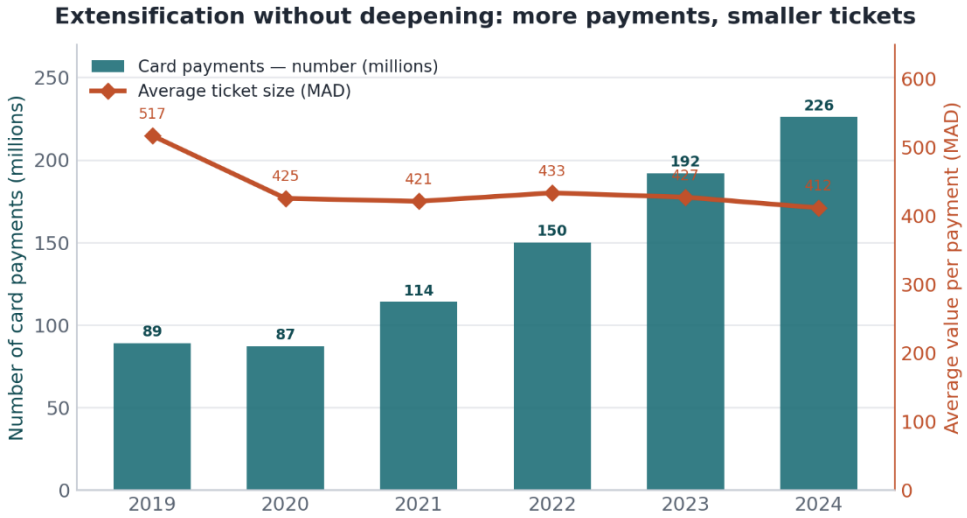



*Source: Bank Al-Maghrib (2024), value of card withdrawals vs. card payments to merchants and online.*

**Fact 2. Extensification without deepening.**

Where cards are used to pay rather than to withdraw, a second pattern emerges: adoption has advanced almost entirely at the extensive margin. The number of card payments more than doubled between 2019 and 2024, from 89 to 226 million, and the payment share of card operations rose steadily, from about 22 to 35 percent (Figure 3). Yet the average value of a card payment did not rise with this expansion; it fell, from roughly 517 dirhams per transaction in 2019 to about 412 in 2024. Cards have penetrated the small, routine, low-value end of the payment distribution—the contactless tap at a supermarket, the online top-up—while cash continues to hold the high-value tier, where the stakes of traceability, recourse, and tax visibility are greatest. The technology is being adopted, but for the marginal small purchase rather than as the default medium of exchange: the extensive margin grows while the intensive margin stays flat. We return in Section 5 to why the high-value tier resists; the descriptive fact is unambiguous—more payments, not larger ones.

**Figure N°3 : Extensification without deepening — more payments, smaller tickets.**

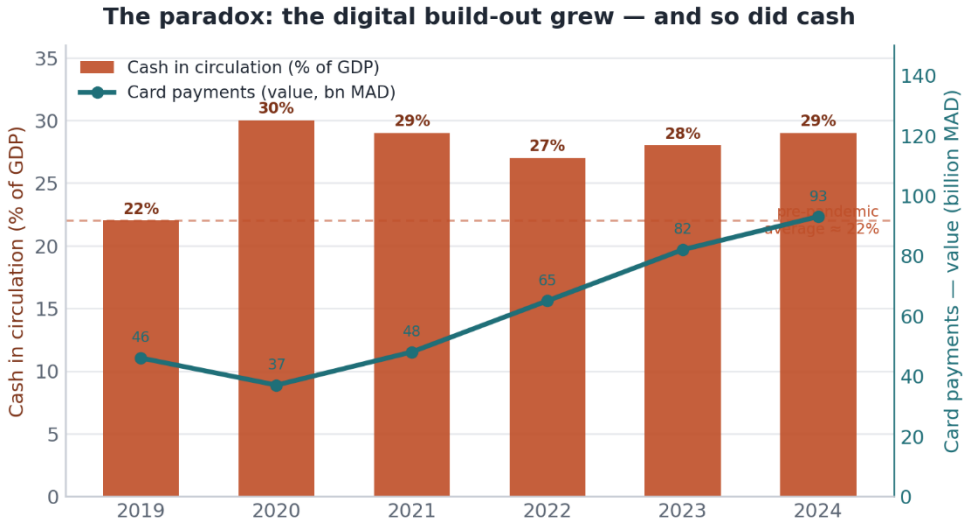



*Source: Bank Al-Maghrib (2024); average ticket = value ÷ number of card payments.*

**Fact 3. The scissors that do not cross.**

Step back from cards to the monetary aggregate, and the paradox becomes macroeconomic. In the textbook account of payment modernization, the spread of electronic instruments is mirrored by a fall in the demand for cash—the two lines cross. In Morocco they do not. Even as card and mobile infrastructure expanded through 2019–2024, currency in circulation climbed to roughly 29 percent of GDP, well above its pre-pandemic average near 22 percent and among the highest ratios in the world; over the past decade the stock of cash has grown at close to twice the rate of nominal output (Figure 4). Digital capacity and the demand for banknotes are not substitutes moving in opposite directions but two series rising together. This is the same “cash paradox” documented across many advanced economies, where currency-to-GDP ratios have been flat or rising despite the diffusion of cards and contactless (Jobst and Stix 2017; Bech et al. 2018; Ashworth and Goodhart 2020); what distinguishes Morocco is the unusual width of the gap between capacity and cash.

**Figure N°4 : The scissors that do not cross — the digital build-out grew, and so did cash.**




*Source: cash in circulation (% of GDP) from Bank Al-Maghrib annual reports (2020–2024; pre-pandemic average ≈ 22%); card-payment value from Bank Al-Maghrib (2024).*

**Fact 4. Access without usage.**

The fourth fact connects the payment data to the financial-inclusion statistics and shows that the disjuncture runs through the household. Account ownership rose markedly, from 29 percent of adults in 2017 to 44 percent in 2021—one of the fastest increases anywhere over that period—yet the gains were partial and uneven: a 23-percentage-point gender gap (56 percent of men against 33 percent of women) that has barely moved since 2017, and, despite a determined mobile-wallet push, only about 6 percent of adults reporting a mobile-money account (Figure 5). More to the point, the accounts that were opened are not heavily transacted. As Facts 1 and 2 establish, the cards attached to them serve mainly to withdraw cash, and merchant payments remain small and occasional. Morocco thus exhibits, in sharp form, the decoupling of access from usage that the financial-inclusion literature has documented across many countries, in which opening accounts is necessary but far from sufficient to change payment behavior (Allen et al. 2016; Dupas et al. 2018; Demirgüç-Kunt et al. 2022).

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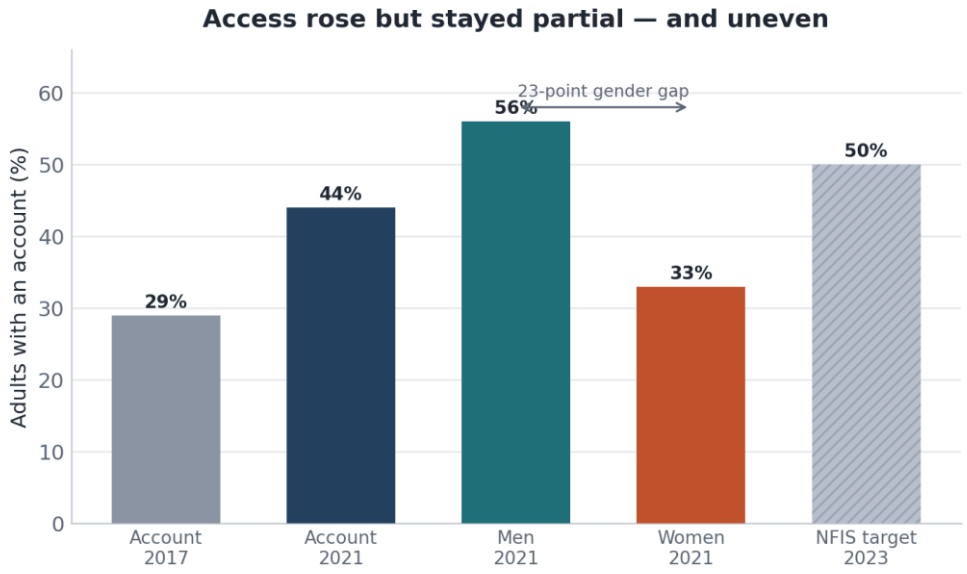
**Figure N°5 : Access rose but stayed partial — and uneven.**




*Source: World Bank Global Findex (2017, 2021); National Financial Inclusion Strategy target for 2023.*

**A note on measurement.**

Two of these facts rest on data of very different quality, and the asymmetry matters. The electronic side of the ledger is metered precisely: every card transaction, withdrawal, and mobile payment passes through the switch and is reported by Bank Al-Maghrib and the CMI, so the figures on cards, payments, and withdrawals are counts, not estimates. The cash side is not. Currency in circulation is a stock issued by the central bank, not a tally of transactions; it records how many banknotes are outstanding, not how often they change hands, and a substantial and rising share is held for hoarding rather than spending—the 200-dirham note alone accounts for roughly three-quarters of the value in circulation, and central-bank research estimates a large non-transactional component (Jobst and Stix 2017; Bank Al-Maghrib, working paper on non-transactional cash). The "share of transactions in cash," correspondingly, is an inference rather than a meter, since cash payments leave no central record and the informal sector in which many of them occur is itself estimated (Schneider and Enste 2000; La Porta and Shleifer 2014). We therefore treat the cash-share figures as orders of magnitude and rest the argument on the directly observed series—the dominance of withdrawals over payments, the falling ticket size, the rising currency stock—which point the same way regardless of the precise cash-transaction share.

**The pandemic: a level nudge, not a regime change.**

A natural question is whether COVID-19 already broke this pattern, and the data return a clear answer: it shifted the level without changing the regime. The pandemic year is visible in every series. Currency in circulation jumped about twenty percent in 2020, lifting the cash-to-GDP ratio

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to a record 30 percent as households withdrew precautionary cash, lockdowns disrupted retail, and the government disbursed emergency support partly in cash (Figure 4); card payments dipped and then rebounded; and contactless payment, encouraged by health concerns and temporarily eased account-opening rules, surged to roughly three-quarters of card payments by number. Had the shock reset the equilibrium, the post-pandemic data would show cash receding toward its old path or digital payment displacing it. Neither occurred. By 2024 the cash-to-GDP ratio had settled near 29 percent—below the 2020 peak but still well above the pre-pandemic norm—withdrawals had resumed their climb to a fresh high, and the payment share of card use continued its slow, pre-existing rise rather than jumping to a new trajectory (Figures 2–4). The pandemic, consistent with evidence that convenience shifts cash demand only at the margin (Brown et al. 2022), delivered a one-time push that the equilibrium absorbed, re-forming at a permanently higher level: by 2024 cash was more entrenched than before 2020, not less.

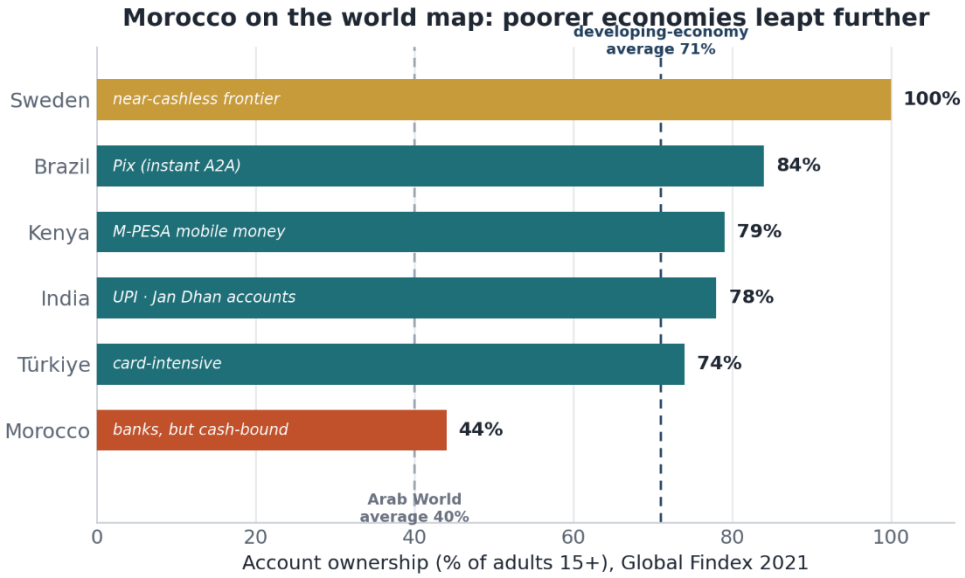
## 4 Morocco in the Mirror: International Benchmarks

A country can look anomalous in isolation and ordinary in company, so before explaining Morocco's cash reliance it is worth asking how unusual it really is. Placing Morocco on the world map does two things at once: it disciplines the easy explanation that cash persistence is simply a stage of development, and it isolates what is genuinely distinctive about the Moroccan case. The comparison is what turns a country study into a general lesson.

Begin with the broadest measure of financial inclusion. In 2021, 44 percent of Moroccan adults held an account—barely above the 40 percent average for the Arab World, the least financially included region on earth, and far below the developing-economy average of 71 percent (Demirgüç-Kunt et al. 2022). The contrast with the economies usually invoked as success stories is stark: account ownership stood at 84 percent in Brazil, 79 percent in Kenya, 78 percent in India, and 74 percent in Türkiye, against near-universal ownership in a frontier economy such as Sweden (Figure 6). Morocco is not near the leading edge of payment modernization; on the demand side it sits closer to the rear. Account ownership is, to be sure, an access measure, and this paper's argument is precisely that access is not usage; we report it here because it is the indicator available on a comparable basis across all these economies, while noting that the usage gap—the variable of real interest—is wider still. On the eve of its mobile-payment launch Morocco recorded only about five to six electronic payments per adult per year, against roughly forty-six in Türkiye and seventy-nine in Brazil (a Bank Al-Maghrib series; the broader World Bank cashless-transactions measure noted above tells the same story). A fifth Findex round, surveyed in 2024 and published in 2025, has since appeared; it places global account ownership at 79 percent of adults, up from 74 percent in 2021 (World Bank 2025). We retain the 2021 round throughout the comparisons that follow

because it is the edition that pairs with the 2017 baseline used in Figures 5 and 6 and in Table 1, and we flag the 2025 update as the natural basis for extending the exercise.

**Figure N°6 : Morocco on the world map — account ownership, 2021.**




*Source: World Bank Global Findex 2021 (account ownership, % of adults 15+); regional averages from the same database. In-bar labels denote each economy's payment-system marker.*

This pattern immediately undercuts the income explanation. The tempting story is that Morocco is simply a middle-income country that will become cashless as it grows richer—adoption will arrive with prosperity. But the cross-section refuses to align with income. Kenya and India, with income per head of roughly 2,100 and 2,500 dollars against Morocco's 3,700, are markedly more financially included and far more reliant on digital payment than Morocco is; within its own region, Morocco's usage is strikingly thin, averaging only about eleven cashless transactions per person in 2018, some twenty-three below the Middle East and North Africa norm (World Bank 2021). Income clearly conditions the equilibrium—the frontier economies are rich—but it does not determine it: economies poorer than Morocco have leapt well ahead, and the gap between Morocco and its peers far exceeds anything differences in income alone would predict (Table 1).

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**Table N°1 : Morocco against benchmark economies**

| Economy | GDP per capita, 2023 (approx., US$) | Account ownership, 2021 (%) | Payment-system marker |
|---|---|---|---|
| Sweden | 56,000 | ~100 | Near-cashless frontier |
| Türkiye | 13,000 | 74 | Card-intensive economy |
| Brazil | 10,000 | 84 | Pix instant payments (2020) |
| **Morocco** | **3,700** | **44** | **Interoperable cards since 2004; cash ≈ 29% of GDP** |
| India | 2,500 | 78 | UPI instant payments; Jan Dhan accounts |
| Kenya | 2,100 | 79 | M-PESA mobile money |
| *Arab World (avg.)* | — | *40* | *World's least financially included region* |
| *Developing economies (avg.)* | — | *71* | — |

***Note.*** *Account ownership: World Bank Global Findex 2021 (% of adults 15+). GDP per capita: World Bank, current US$, 2023, rounded. Cash-to-GDP for Morocco: Bank Al-Maghrib. Rows are ordered by income per head to make the comparison with account ownership transparent.*

What separates the leapfroggers from Morocco is not their wealth but a discrete change in the rails themselves. Kenya's M-PESA, Brazil's Pix, and India's UPI each flipped the cash equilibrium by making the digital option instant, nearly free at the point of use, interoperable, and—in the Pix and UPI cases—account-to-account rather than card-based, and each was pushed over the coordination threshold by a catalyzing force, whether a regulatory mandate or, in India's case, a demonetization shock (Suri and Jack 2016; Crouzet, Gupta, and Mezzanotti 2023). The equilibrium can be broken; the question is why it has not been broken in Morocco.

Here the Kenyan case, the one most often offered as a template, turns out to be precisely the wrong one. M-PESA succeeded because it substituted for absent banks. Kenya in the late 2000s had thin branch penetration and no interoperable retail rails, so mobile money filled a vacuum, reorganizing household payments and risk-sharing in a way that ordinary banking had never reached (Jack and

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Suri 2014; Suri and Jack 2016; Suri 2017). Morocco's situation is the inverse. It already possesses a dense, interoperable, bank-based card network—the rails are built (Section 2)—so there is no vacuum for a mobile-money leapfrog to fill. That is why, despite an eight-year regulatory push, only about six percent of Moroccan adults hold a mobile-money account: the bank account and card already in their pocket do everything the wallet would, and they use both mainly to obtain cash. Morocco's binding constraint is not absent infrastructure but unused infrastructure, and the Kenyan remedy—build a parallel system where none exists—does not address it. The margin that binds lies elsewhere: in acceptance, pricing, and trust on the merchant side rather than access on the consumer side. To that mechanism we now turn.

## 5 Why Cash Persists: Four Frictions

The preceding sections rule out the easy explanations. Cash persistence in Morocco is not a low-income condition that growth will dissolve (the comparison economies that have tipped include several poorer than Morocco), nor a shortage of infrastructure (the rails are built and interoperable), nor a transitional lag (two decades of capacity have not moved behavior). What remains is an explanation in terms of the environment into which the technology was introduced. Four frictions, each a lens drawn from the economics literature and applied to Moroccan and comparative evidence, jointly make cash the rational equilibrium. None is technological; together they explain why building the rails did not change the choice. Of the four, the structural pair—informality and the acceptance economics of the merchant side—are, in our reading, first-order, while trust and policy design amplify rather than originate the pattern; we flag the ranking because the policy implications of Section 6 turn on it.

### 5a. Economic structure and informality

Morocco's productive structure is built for cash. The informal economy accounts for roughly 30 percent of GDP—above the regional (about 25 percent) and OECD (about 17 percent) averages—and on the most recent national survey some two million informal production units employ about a third of the non-agricultural workforce, 85 percent of them one-person operations, with barely one in seven registered even for the professional tax (Lahlou, Doghmi, and Schneider 2020; HCP 2024). For such units cash is not a backward habit but the equilibrium medium of exchange: it leaves no record that could trigger tax, social-contribution, or regulatory liabilities whose expected cost exceeds the thin margins on which these businesses operate (Schneider and Enste 2000; La Porta and Shleifer 2014; Ulyssea 2020). The retail landscape compounds the effect, since nearly half of informal employment is in commerce—the corner shop, the souk stall, the itinerant vendor—precisely the settings in which accepting a traceable electronic payment would convert an invisible transaction into a visible one—the mechanism at the heart of the literature on

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electronic payments as an instrument of tax enforcement (Naritomi 2019). Bank Al-Maghrib's own researchers make the mechanism explicit, observing that the heavy use of cash to stay beyond the reach of the tax authorities considerably slows the development of payment systems (Lahlou, Doghmi, and Schneider 2020). On this reading cash persistence is bound up with informality—with causation plausibly running in both directions, since ubiquitous cash also lowers the cost of operating informally—and informality is itself a rational response to the costs of formalization rather than a failure of payment technology.

### 5b. Two-sided coordination and the economics of acceptance

Even where activity is formal, a card network functions only if consumers and merchants adopt together, and the economics of two-sided platforms predicts that the side facing the higher relative price will lag (Baxter 1983; Rochet and Tirole 2003, 2006). In Morocco that side is the merchant. Card acceptance carries a layered cost—an interchange fee, the acquirer's acquisition fee, and a switching fee—borne by retailers whose margins are slim, and for years a single processor held a near-monopoly on merchant acquiring, a structure the competition authority later found had held the electronic share of payments far below its potential (Rysman 2007; Rysman and Wright 2014). The outcome is the classic stall: more than twenty million cards sit in consumers' pockets, but acceptance is concentrated among a minority of larger, formal merchants, so the marginal small purchase has nowhere to go but cash. That the binding constraint lies on the merchant side is confirmed by where policy has had to intervene. In 2024, acting on a referral from the Competition Council, Bank Al-Maghrib capped domestic card interchange at 0.65 percent of transaction value expressly to lower the cost of acceptance, and the central bank has separately stood up a fund to subsidize the deployment of acceptance infrastructure. The contrast with the equilibrium-flippers is exactly here: Brazil's Pix and India's UPI bypassed the fee-laden, coordination-hungry card model with instant, account-to-account rails that are free or nearly free to merchants, dissolving the price wedge on the side that had been refusing (Higgins 2024; Crouzet, Gupta, and Mezzanotti 2023). Morocco built a card network and is now, belatedly, trying to make its merchant side worth joining.

### 5c. Trust, recourse, and traceability: cash as a credence good

A third friction operates at the instant of payment. The qualities that would make an electronic payment worth choosing—that it will settle, that a fraudulent or mistaken charge can be reversed, that a dispute will be resolved fairly—cannot be observed at the moment of the transaction; they are realized, if at all, only later and only contingently. Payment reliability is in this sense a credence good (Darby and Karni 1973), and its value rests on institutions of recourse and enforcement that in Morocco remain weak. Where consumer protection and dispute resolution are slow or uncertain,

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the rational agent discounts the entire category, and cash—whose acceptance is self-enforcing and whose settlement is immediate and final—dominates precisely because it requires no trust in an intermediary or an institution (North 1990; Guiso, Sapienza, and Zingales 2004). Layered on top is traceability running in reverse: for the large informal share of the economy, the very visibility that makes electronic payment attractive to a tax authority makes it costly to the payer, so the credence problem is compounded by an active preference for the untraceable. Trust, on this account, is not a soft cultural residue but a substitute for absent verification and enforcement—which is why no quantity of terminals can supply it. We present this channel as a conjecture rather than a measured fact: unlike the informality and acceptance frictions, it rests on the general weakness of recourse institutions rather than on Morocco-specific evidence, and it is partly the consumer-side counterpart of the tax-visibility logic of 5a.

**5d. The design of inclusion policy**

The final friction is self-inflicted. Morocco's financial-inclusion drive, like many, was organized around access targets—accounts opened, cards issued, the National Financial Inclusion Strategy's goal of banking half the adult population—on the implicit theory that usage would follow access. It did not. The result is shallow inclusion: accounts opened and then left dormant, cards used mainly to withdraw the cash they were meant to replace, and a mobile-wallet program that, eight years on, reaches only about six percent of adults (Allen et al. 2016; Demirgüç-Kunt et al. 2022). The financial-inclusion literature has converged on the distinction between access, usage, and impact, and on the finding that supplying instruments accomplishes little on its own (Dupas et al. 2018); even the World Bank's own leadership has argued that the right objective is billions of low-cost transactions rather than accounts as such. A policy that counts cards and accounts will meet its targets while the equilibrium it was meant to change holds firm—which is, in compressed form, the Moroccan experience.

**Is the persistence of cash even a problem?**

It is worth pausing on whether any of this is a problem, because the answer is less obvious than payment-modernization rhetoric assumes. The costs of heavy cash reliance are real. Cash is the circulatory system of the informal economy, and a third-of-GDP informal sector implies a narrow tax base, thin social-contribution coverage, and a documented drag on productivity (Lahlou, Doghmi, and Schneider 2020); large untraceable flows complicate anti-money-laundering efforts and weaken the transmission of monetary policy; and handling, securing, and replacing banknotes is itself expensive. But cash also delivers genuine benefits that a forced transition would destroy. It is private in a way no digital rail can match; it is resilient, working through power cuts, network outages, and disasters when electronic systems fail; it is inclusive, requiring no account,

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smartphone, literacy, or fee, and so reaching the very people that inclusion policy targets; and it is central-bank money with immediate finality and no intermediary credit risk (Rogoff 2016; Jobst and Stix 2017). The honest conclusion is not that Morocco should wage a war on cash but that it faces a genuine welfare trade-off. The case for shifting the equilibrium rests on lowering the relative cost of the digital option—in acceptance, recourse, and price—so that households and merchants choose it freely, not on penalizing the cash that, for now, rationally serves them.

Each friction points to the same diagnosis: cash persists because, for households and merchants alike, it remains the better choice given the structure, prices, and institutions they face. That diagnosis also implies what would change the choice—the question of the final section.

## 6 Concluding Remarks: What Would Shift the Equilibrium?

What, then, would move Morocco off its cash equilibrium? The comparative cases of Section 4 are instructive precisely because they share a recipe. In Brazil, India, and Kenya the equilibrium flipped not when more cards were issued but when the digital rail itself acquired a particular set of properties: it became instant, free or nearly free at the point of use, interoperable across all providers, and account-to-account—bypassing the layered fees of the card model—and, crucially, it was pushed past the chicken-and-egg of two-sided adoption by a coordinating force, whether a regulatory mandate, a public-utility design, or an exogenous shock (Suri and Jack 2016; Chodorow-Reich et al. 2020; Crouzet, Gupta, and Mezzanotti 2023). Pix was standardized and effectively mandated by Brazil's central bank (Duarte et al. 2022); India's UPI was built as a public utility and catalyzed by a demonetization shock; M-PESA filled a vacuum where banks were absent. In each case the digital option became, at the margin, the obvious choice for both sides of the transaction at once. Cross-country evidence on fast payment systems supports the same reading: adoption is higher where the central bank owns the system, where non-bank providers may participate, and where the number of use cases is larger, which is to say where the coordinating force is institutional rather than left to the market (Frost et al. 2024; Bank for International Settlements 2024), and the launch of such a system is itself associated with the wider diffusion of digital financial services in lower-income economies (Cornelli et al. 2025).

Judged against this recipe, Morocco is further along than its cash dominance suggests—and revealingly short. It already possesses instant, interoperable, account-to-account rails. An interbank instant transfer, launched by Bank Al-Maghrib and the interbank clearing group in June 2023, settles funds between any two bank accounts in under twenty seconds, around the clock; and an interoperable mobile-wallet scheme, live since 2018, routes every licensed provider through a single national switch, with person-to-person transfers and several core services free of charge.

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Three of the five conditions—instant, interoperable, account-to-account—are therefore substantially in place. The rails the leapfroggers built, Morocco has largely built too.

But the two conditions that actually did the flipping are the ones still unmet, and both concern the merchant side. First, the digital option is not yet free and frictionless at the till. The instant transfer is identified by bank-account number, capped, and priced at each bank's discretion once an introductory period lapses—designed for paying a person, not a merchant—while the wallet ecosystem was fragmented, obliging merchants to juggle several incompatible applications with no unified QR standard. Second, and decisively, there has been no coordinating force. The take-up numbers make the failure concrete: the central bank projected six million wallet users and 1.3 billion transactions by 2024; wallet accounts in fact surpassed the user target, reaching 13.7 million, yet mobile payments numbered only about twenty million for all of 2024—wallets opened en masse and then left idle, the access-without-usage pattern of Section 3 reproduced once more. Bank Al-Maghrib has itself acknowledged the relative failure of the mobile-payment push, attributing it to fragmentation and to persistent distrust. The rails were laid; the merchant side did not tip.

The distance still to travel is plain in the cross-section. At the launch of the mobile scheme Moroccans made on the order of five to six scriptural payments per person each year, against roughly forty-six in Türkiye and seventy-nine in Brazil—and, as Section 3 documented, four-fifths of all card value is still withdrawn as cash rather than spent. The encouraging development is that the most recent policy turn finally aims at the right margin. Since 2024 Bank Al-Maghrib has capped domestic card interchange to lower the cost of acceptance, announced a fund to subsidize merchant acceptance, and committed to building a national instant-payment platform and a unified QR-code standard, alongside a national e-commerce and e-payment road map for 2025–2027 and early exploration of a central-bank digital currency. For the first time these are interventions trained on the merchant side and on interoperability—the binding frictions of Section 5—rather than on pressing yet more instruments into consumers' hands.

A caveat tempers this optimism, and it follows from the diagnosis itself. Acceptance reforms can move only the segment of the cash economy whose reluctance is about cost—formal or formalizing merchants for whom fees, fragmentation, and weak recourse are the obstacle. They do little for the informal majority of Section 5, whose reliance on cash is not a response to the price of acceptance but to the value of invisibility: for a vendor whose purpose is to leave no record, a cheaper, faster, better-standardized digital rail is not an attraction but a threat. Lowering the relative cost of digital payment is therefore necessary to tip the formal margin, but the informal margin will move only as formalization and enforcement change the payoff to remaining unseen—

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a different lever, and a slower one. The equilibrium has two layers, and only one of them is, strictly, a payments problem.

What remains uncertain is whether the turn will supply the coordinating force on which the other economies relied. Pix advanced because a central bank mandated participation and standardized the rails; UPI because the state built a public-utility network and a shock cleared the field; M-PESA because one network filled an institutional vacuum. Morocco's effort remains largely voluntary and supply-led, and the four frictions diagnosed above—a cash-based informal economy, the acceptance economics that stall the merchant side, the weakness of recourse and trust, and a policy design that counts access rather than use—will not yield to instruments alone. Lower the merchant's cost of accepting, make the digital payment as final and as trustworthy as a banknote, give it a single frictionless standard at the point of sale, and supply a credible push to move both sides together: absent that combination, the equilibrium will hold, as it has held through two decades of building.

None of this is an argument for forcing the issue. Cash in Morocco is not an irrational attachment to be broken but a rational response to the structure, prices, and institutions that households and merchants face, and it carries genuine benefits—privacy, resilience, fee-free inclusion of those the formal system has not reached—that a coercive transition would sacrifice. The lesson of the economies that tipped is not that they waged war on cash, but that they made the digital alternative so cheap, so immediate, and so trustworthy that, at the margin, people chose it of their own accord. The task in Morocco is the same: to lower the relative cost of the digital option—in fees, in recourse, in friction at the point of sale—until the merchant side tips and cash recedes, when it recedes, not because it was outlawed but because it was, at last, outcompeted.

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