Can Public Postal Infrastructure Offset Private Bank Retrenchment? Causal Evidence on Cash Access in France*

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Abstract

The decline of bank branches has exacerbated spatial inequalities in financial access, but the causal role of alternative infrastructures remains unclear. We exploit legal rules governing France's postal network to show that a 1% increase in predicted postal coverage reduces cash access costs by 0.53–0.62%, with larger effects in areas abandoned by banks. These findings highlight the potential of universal service obligations to mitigate market failures in financial intermediation, with implications for the design of inclusive financial systems in the digital era.

Keywords: Cash access; Postal network; Financial inclusion; Banch bank closure.
JEL Codes: G2, L51, L87.

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1 Introduction

The withdrawal of bank branches and ATMs from rural and peripheral areas has accelerated dramatically in recent years.[1] This retrenchment has created "financial deserts", leaving households and firms with limited access to essential financial service. While digital banking has expanded access for many, it has not fully offset the welfare losses from reduced physical infrastructure. This raises a fundamental question: Can regulated postal infrastructures mitigate the adverse effects of bank retrenchment on financial access? Despite extensive research on the consequences of bank branch closures (Cull et al., 2021), the causal role of alternative infrastructures, such as postal networks, in addressing these gaps remains unexplored.

Postal infrastructures, bound by universal service obligations, offer a unique setting to study this question. Unlike banks, which locate branches based on profitability and close them in low-demand areas, postal operators in many countries are legally required to maintain geographically inclusive coverage, regardless of local economic conditions (Baradaran, 2013). In France, for instance, La Poste's network is governed by strict territorial mandates, including rules that at least 95% of each département's population must live within 10 km of a postal contact point. These regulations create exogenous variation in postal coverage, as they are determined by demographic and geographic criteria rather than market forces. By exploiting this variation, we can isolate the causal effect of postal infrastructure on financial access, a natural quasi-experiment to test whether universal service obligations can correct bank retrenchment.

Estimating the causal effect of postal infrastructure poses a significant challenge: postal presence may be correlated with unobserved local characteristics, such as demographic density or economic activity, that also affect cash demand. To address this endogeneity, we leverage a novel instrumental variable (IV) strategy based on France's legal constraints on La Poste's network. Specifically, French law mandates that (1) municipalities with over 10,000 residents must have at least one postal contact point per 20,000 inhabitants, and (2) at least 95% of a département's population must live within 10 km of a contact point. By translating these rules into a counterfactual postal network, we generate mechanically determined variation in coverage that is independent of local economic conditions. This

[1] According to the European Central Bank (ECB), the number of bank branches offering cash services in the euro area declined by 12.0% between the second half of 2016 and the first half of 2019, while the number of ATMs decreased by 4.3% over the same period. By 2020, the density of bank branches had fallen from 6,541 to 5,095 per million inhabitants, and the total number of ATMs dropped from 317,100 to 288,200 (European Central Bank, 2020). This trend has continued unabated, with the ECB's November 2025 Financial Stability Review highlighting persistent risks to financial inclusion due to the ongoing retrenchment of physical cash access points, particularly in rural and peripheral areas (European Central Bank, 2025).

approach provides a plausibly exogenous source of variation to identify the causal impact of postal infrastructure on cash access, a key innovation relative to prior correlational studies.

Our empirical analysis combines this identification strategy with a novel dataset covering all 35,000 French municipalities between 2018 and 2022. We construct high-resolution measures of cash accessibility based on actual distances and travel times to ATMs, bank branches, and postal points. The results reveal that postal infrastructure significantly improves cash access: a 1% increase in predicted postal coverage reduces the distance or travel time to the nearest cash point by 0.53–0.62%, an effect that is economically meaningful. For example, in a municipality where the average distance to cash is 5 km, this translates to a 26.5-meter reduction in travel distance. The effects are even larger in areas hit hardest by bank retrenchment, where the same increase in postal coverage reduces travel time by up to 0.8%. Further analysis distinguishes between extensive and intensive margins: postal coverage not only increases the likelihood of having any cash access (extensive margin) but also reduces travel costs for municipalities already served (intensive margin). Most importantly, we find that postal networks reduce inequality in access by decreasing the variability of distances and travel times within intercommunal areas.

Our study contributes to three distinct strands of literature, each addressing critical gaps in our understanding of financial access, the role of regulated infrastructure, and the methodological challenges of spatial analysis. First, our study provides the first causal evidence on the role of postal networks in mitigating the adverse effects of bank branch closures on financial access. While prior research has extensively documented the decline of physical banking infrastructure and its consequences for financial exclusion, such as the works of Fernandez (2023), Alonso et al. (2022), and van der Cruijsen and Reijerink (2023), no study has rigorously established whether alternative infrastructures, such as regulated postal networks, can offset these effects. By leveraging the exogenous variation created by France's universal service obligations, we demonstrate that a 1% increase in predicted postal coverage reduces the distance or travel time to the nearest cash point by 0.53–0.62%, with larger effects in areas most affected by bank retrenchment. This finding fills a critical gap in the literature by showing that regulated infrastructures can act as a substitute for banking services in underserved regions.

Second, we advance the debate on the complementary roles of postal and private financial infrastructures by demonstrating that legally mandated postal networks can serve as an option in thin markets. This contributes to a broader discussion on how governments can correct market failures in financial intermediation (Rochet and Vives, 2004; Rogowski et al., 2022). Recent economic analyses further underscore the necessity of public provision in ar-

eas where private markets fail to deliver equitable access. Fernandez (2023) examines how postal networks compete with private banks in rural India, while Alonso et al. (2022) show that partnerships between postal operators and local businesses in Spain have reduced travel distances for cash access in remote areas. Finally, Krishnamurthy and Cochenour (2024), in their examination of public consumer banking in the United States, argue that while price subsidies for financial services are often ineffective, public provision of basic financial services, such as check cashing and payment services—can be more efficiently delivered by institutions like the US Postal Service (USPS). Our results align with this literature by showing that postal networks not only expand access to cash in areas abandoned by private banks (extensive margin) but also reduce travel costs for those already served (intensive margin), thereby addressing both availability and convenience.

Third, we introduce a novel methodological approach based on regulatory density constraints, which can be applied to other contexts where spatial distribution is governed by legal mandates (e.g., telecommunications, healthcare, or public transportation). By constructing a counterfactual postal network from France's universal service obligations, we isolate exogenous variation in postal coverage, addressing endogeneity challenges that plague observational studies of financial infrastructure. This methodological innovation holds potential for future research on universal service obligations and their impact on economic outcomes. Our approach also complements existing empirical strategies, such as difference-in-differences or synthetic control methods, by providing a robust framework for causal inference in spatial settings.

The remainder of the paper is organized as follows: Section 2 reviews the literature on retail banking, financial access, and the role of postal operators, highlighting the unique institutional context of France. Section 3 describes the data and regulatory framework of La Poste, explaining how cash accessibility is measured using distances and travel times to ATMs, bank branches, and postal points. Section 4 outlines the empirical strategy, including the construction of the instrumental variable and the two-stage least squares (2SLS) estimation framework, and discusses robustness checks. Section 5 presents the results, focusing on the causal impact of postal coverage on cash accessibility and how the postal network reduces inequality in access. Finally, Section 6 concludes with policy implications and directions for future research, emphasizing the role of postal networks in ensuring equitable access to cash.

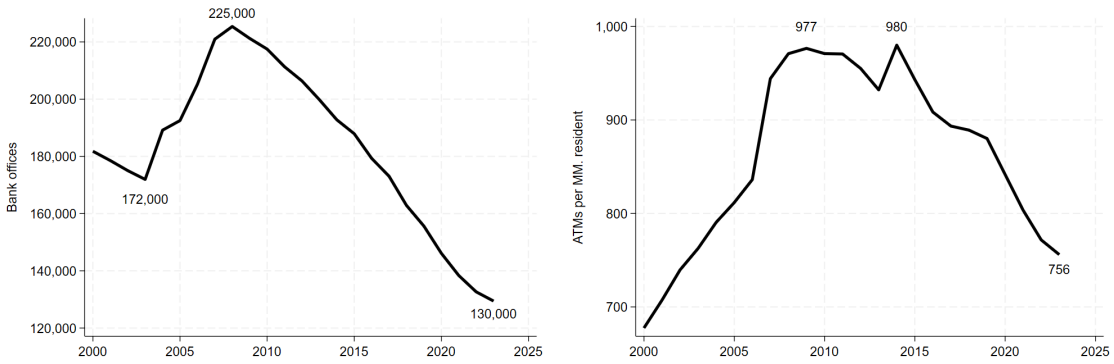
2 Global Trends in Financial Infrastructure and the French Institutional Setting

The organization of retail financial infrastructure is changing rapidly, as commercial banks worldwide reduce physical branches and ATMs while postal networks, often bound by universal service obligations, remain comparatively stable. This section situates our study within these global developments and explains why France offers a distinctive institutional context. We first summarize international patterns in bank and postal network evolution, then describe the French framework, where strong legal obligations imposed on La Poste create an unusually dense and geographically inclusive network for financial access.

2.1 International Trends in Banking and Postal Networks

Decline of Bank Branches and ATMs. The global banking landscape is undergoing a profound transformation, marked by the rapid closure of physical bank branches and ATMs. The rise of digital banking and changing consumer habits have led commercial banks to significantly reduce their physical presence, seeking operational efficiency and cost savings. In the Euro Area, for example, the number of bank offices has declined from over 225,000 in the mid-2000s to 130,000 in 2025, while ATM density per million inhabitants fell from a peak of 980 in 2015 to 756 in 2025 (Figure 1). Similar patterns are observed worldwide, as banks prioritize digital channels over in-person services.

Figure 1: Evolution of the number of bank offices and ATMs in the Euro Area



(a) Bank offices

(b) ATMs (per million inhabitants)

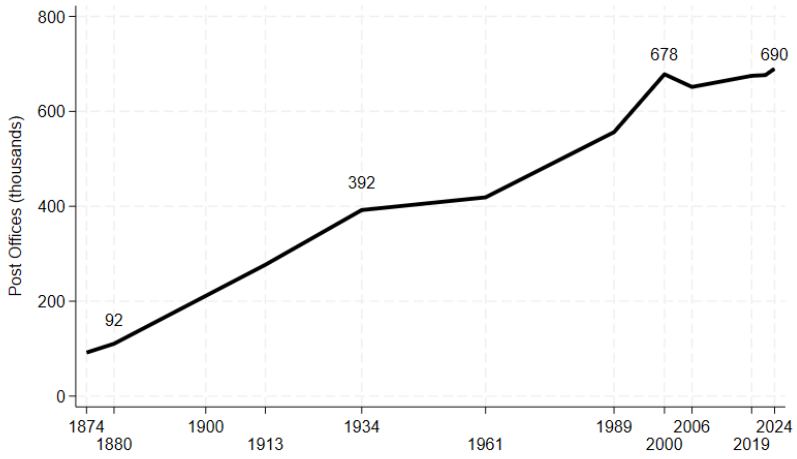
Sources: European Central Bank.

The consequences of these closures are far-reaching. Vulnerable populations, such as the elderly, low-income households, and small businesses, are disproportionately affected, as they rely on physical access to cash and basic financial services. Reduced access exacer-

bates financial exclusion, limits economic opportunities, and deepens regional inequalities (Bansal, 2014; Chu, 2018; Cull et al., 2021; van der Cruijsen and van der Horst, 2019; van der Cruijsen and Reijerink, 2023). Additionally, the contraction of local banking presence can hinder economic development by reducing credit availability and increasing information asymmetries between lenders and borrowers (Conroy et al., 2017; Nguyen, 2019; Ho and Berggren, 2020).

Postal Contact Points Remain Stable. In contrast to commercial banks, postal operators have maintained a remarkably stable network of physical contact points. According to the International Post Corporation, the number of postal points of contact has decreased by less than 1% in France and the UK since 2013, and by less than 5% in Latvia, Belgium, Croatia, and Italy. Even in larger economies like the USA, Germany, and Canada, reductions have remained below 10% (Figure 2). As we will explain below for the French context, this stability is largely driven by legal constraints that mandate universal access to postal services, ensuring dense and geographically inclusive networks.

Figure 2: Worldwide number of Post Offices



Sources: Universal Postal Union.

Postal Operators Provide Financial Services. Postal operators are increasingly active in financial services. Globally, they manage 2.48 billion checking and savings accounts, providing basic financial access for 1.2 billion people (Universal Postal Union, 2024). Through their own operations or partnerships with banks, postal operators offer services including cash withdrawals and deposits, bill payments, and money transfers.

The potential for postal networks to enhance financial inclusion is particularly relevant where commercial banks have withdrawn. In Australia, post offices offering Bank@Post ser-

vices serve as the closest cash access point for 61% of people in very remote areas (Caddy and Zhang, 2021). In Spain, partnerships with local pharmacies and businesses have reduced travel distances for residents in rural areas (Alonso et al., 2022). Despite these observations, the causal impact of postal networks on cash accessibility remains an open empirical question due to potential endogeneity between postal presence and local economic characteristics.

2.2 The French Banking and Postal Context

The French banking landscape is characterized by a diverse institutional framework comprising commercial banks, mutualist banks, and the public postal bank, each operating under distinct governance models and territorial strategies. The commercial banking sector is dominated by two major profit-oriented groups: BNP Paribas and Société Générale. As shareholder-owned institutions following the universal banking model, these commercial banks offer comprehensive financial services ranging from retail to investment and corporate banking. Their strategic focus tends toward urban centers and economically dense areas where transaction volumes justify substantial physical infrastructure investments.

The mutualist banking sector represents a cooperative alternative through three major groups: *Crédit Agricole*, BPCE Group (including *Banque Populaire* and *Caisse d'Epargne*), and *Crédit Mutuel-CIC*. As customer-owned cooperatives, these institutions historically developed to serve specific professional or regional communities, maintaining stronger territorial presence in rural and semi-urban areas. Their governance model prioritizes member service over shareholder returns, often resulting in more geographically inclusive network strategies compared to commercial banks.

Distinct from both commercial and mutualist models, La Banque Postale occupies a unique position within the French banking landscape. As a wholly-owned subsidiary of La Poste, the French public postal operator, it constitutes a hybrid financial institution that uniquely combines banking services with mandatory public service obligations. This dual mandate positions La Banque Postale as a critical component of France's financial infrastructure, operating at the intersection of market-based financial services and state-guaranteed universal access provisions.

The institution's distinctive character derives from its legal foundation in two complementary regulatory frameworks that collectively establish what may be considered Europe's most comprehensive universal service obligations for financial access. The institution's public service mission is codified in two fundamental legal frameworks that collectively establish one of the most extensive universal service obligations in Europe. First,

Article R.1-1 of the French Postal and Electronic Communications Code stipulates that La Poste must ensure physical proximity to postal services for virtually the entire population, mandating that at least 99% of French residents and 95% of each department's population live within 10 kilometers of a postal outlet. This requirement establishes a remarkably dense network standard that far exceeds typical commercial banking coverage metrics. Second, the institution operates under Article 6 of Law No. 90-568 of 2 July 1990, as amended in 2005, which imposes additional territorial coverage obligations. This legislation requires La Poste to maintain a minimum of 17,000 contact points nationwide while ensuring that no more than 10% of any department's residents live beyond 5 kilometers or 20 minutes travel time from the nearest postal facility. The combination of these legal requirements creates a multi-layered coverage mandate that guarantees both widespread availability and reasonable proximity to postal services across all French territories, including rural and peripheral areas.

All commercial, mutualist and postal groups participate in the Groupement des Cartes Bancaires CB, France's national payment card network that ensures interoperability of bank cards across institutions. This unified system provides secure payment and withdrawal solutions throughout France. Notably, while the CB network facilitates widespread ATM access, French banks, regardless of their institutional model, typically restrict over-the-counter cash services to their own customers, maintaining distinct operational policies despite their shared payment infrastructure.

3 Measuring Cash Access: Data and Methodology

Quantifying access to cash is essential for understanding financial inclusion. This section outlines our approach to measuring cash access in France, combining multiple data sources to produce a comprehensive spatial analysis of financial service accessibility.

3.1 Data

Administrative divisions. Our empirical analysis leverages three levels of French administrative divisions, each serving a distinct role in measuring financial access and applying legal instruments. The smallest administrative units in France, *municipalities* are analogous to LAU (Local Administrative Units) in the Eurostat NUTS classification. With approximately 35,000 municipalities nationwide, they provide the finest geographic granularity for our analysis, capturing local variation in financial infrastructure (e.g., distances to ATMs, bank branches, and postal points).

Intermediate administrative divisions, *départements* correspond to NUTS 3 regions in the Eurostat classification. France comprises 96 metropolitan départements, each governed by a prefecture and subject to universal service obligations. These legal mandates, such as the requirement that 95% of a département's population must live within 10 km of a postal contact point, provide the exogenous variation for our instrumental variable.

Finally, EPCIs (*Établissements Publics de Coopération Intercommunale*), are intermunicipal cooperation bodies that group neighboring municipalities to coordinate local public utilities. EPCIs allow us to account for spillover effects across municipal borders and to assess how postal networks reduce inequality in access within interconnected areas. By aggregating municipal-level data to the EPCI level, we capture both local heterogeneity and broader regional patterns in financial infrastructure. Furthermore, there is significant variation in the size of municipalities in France, both in terms of land area and population size. This means that the geographic and administrative area defined by a municipality does not necessarily correspond to where the population lives. Except in the largest cities, it is rare for people to work where they live. EPCIs organised with a central, larger municipality and smaller surrounding ones appear to correspond more to the living areas of the population.

Banking and Postal infrastructure. For banking infrastructure data, we use information from *Groupement des Cartes Bancaires CB*, the national payment card scheme, which provides detailed records of ATMs and bank branches operated by financial institutions.[2] Complementing this, we obtain data on post offices offering cash withdrawal services directly from *La Poste*, the French postal operator.

Table 1 illustrates the divergent trends in financial service infrastructure in metropolitan France between 2018 and 2022.[3] Automated teller machines (ATMs) declined by 6.5% (from 51,791 to 50,817 units), while bank branches experienced an even more pronounced reduction of 11.0% (from 32,557 to 29,006 establishments). These reductions reflect commercial banks' strategic network rationalization. In stark contrast, the postal network demonstrated remarkable stability, maintaining its contact points with less than 0.2% variation throughout the period (ranging narrowly between 16,701 and 16,769). This consistency stems from La Poste's regulatory framework, which mandates universal service obligations ensuring

[2]Only active ATMs during the reference year are considered in the analysis, ensuring that temporary installations do not bias the results. For example, devices activated only for short events (such as those placed temporarily during the Roland-Garros tennis tournament in Paris) are excluded. This guarantees that accessibility measures reflect stable infrastructure available to the population throughout the year. This dataset excludes ATMs managed by non-bank entities, focusing solely on traditional banking infrastructure.

[3]We exclude overseas territories due to their distinct characteristics and data availability constraints.

minimum territorial coverage. This contrasting dynamic underscores the growing importance of postal networks in ensuring basic financial access, particularly in areas affected by commercial bank retrenchment.

Table 1: Evolution of Financial Service Infrastructure in Metropolitan France (2018-2022)

Year	Administrative Units		Financial Service Points		
	EPCIs	Municipalities	ATMs	Bank Branches	Postal Contacts
2018	1,231	34,806	51,791	32,557	16,742
2019	1,231	34,806	54,309	31,254	16,755
2020	1,231	34,806	52,954	30,740	16,701
2021	1,231	34,806	52,047	30,310	16,769
2022	1,231	34,806	50,817	29,006	16,748

Notes: This table presents the evolution of financial service infrastructure in metropolitan France from 2018 to 2022. All data are standardized to 2024 geographical boundaries for temporal consistency.

To analyze the differential contributions of various financial service providers to cash accessibility, Table 2 presents a comparative breakdown of our metrics by network type. This disaggregated analysis reveals significant structural differences in the geographic distribution of financial infrastructure across France's banking landscape, highlighting the complementary roles played by different types of institutions in ensuring nationwide financial access.

Commercial banks dominate the quantitative metrics, maintaining the most extensive network with an average of 10.6 ATMs and 12.8 branches per municipality. These figures reflect their historical market position and strategic focus on densely populated urban areas where economic activity is concentrated. The substantial standard deviations of 52.8 for ATMs and 58.3 for branches indicate a highly concentrated distribution pattern, with most infrastructure clustered in major economic centers. This concentration strategy aligns with commercial banks' market-driven approach, prioritizing areas with high customer density and transaction volumes.

Mutual banks present an intermediate profile between commercial banks and the postal operator. With slightly lower averages of 6.6 ATMs and 8.0 branches per municipality, mutual banks maintain a presence that is somewhat more distributed than commercial banks but still shows significant concentration. Their cooperative model traditionally emphasizes regional presence and member service, though with varying intensity across territories. The standard deviations for mutual banks, while lower than those of commercial banks, still indicate a pattern of concentration that reflects their historical development in specific regional markets.

The postal operator demonstrates a fundamentally different distribution pattern that serves as a crucial complement to the commercial banking sector. While its branch network is quantitatively smaller with an average of only 4.4 branches per municipality, two distinctive characteristics define its role in the financial landscape. First, the geographic uniformity of its network is evident in the remarkably low standard deviation of 1.9 for branches, compared to 58.3 for private banks, indicating a much more even distribution across all territories. Second, this uniform presence is particularly critical in rural and peripheral areas where commercial banks have limited operations due to lower profitability.

The comparative analysis of standard deviations reveals a fundamental structural difference in network distribution strategies. Commercial banks show concentration ratios nearly thirty times higher than the postal operator (58.3 vs. 1.9 for branches), a statistical disparity that underscores La Poste's unique function as a provider of baseline financial access. While commercial banks optimize their networks, the postal operator fulfills a crucial social function by maintaining universal service obligations across the national territory. This complementary relationship between profit-oriented commercial banks and service-oriented postal operator creates a balanced financial geography.

Table 2: Descriptive Statistics of Financial Service Infrastructure by Bank Network Type (2022)

Statistic	ATMs				Bank Branches			
	All	Commercial	Mutualist	Postal	All	Commercial	Mutualist	Postal
Mean	5.9	10.6	6.6	10.1	3.9	12.8	8.0	4.4
Standard Dev.	52.8	52.8	56.3	57.9	1.7	58.3	58.1	1.9
Minimum	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
25th Percentile	3.0	5.8	3.2	5.4	2.8	6.0	3.5	3.3
Median	4.3	8.1	4.5	7.5	4.0	8.6	4.9	4.4
75th Percentile	5.3	11.5	5.6	9.9	5.0	12.8	6.2	5.5
Maximum	1724.5	1725.0	1724.7	1725.0	10.0	1725.3	1724.8	14.6

Notes: Comparative statistics for 1,231 French EPCIs (2022). This table presents key distribution metrics for financial service infrastructure across different banking network types. Commercial banks (*BNP Paribas*, *Société Générale*) demonstrate the highest concentration of services with means of 10.6 ATMs and 12.8 branches per municipality, but also exhibit the greatest variability (SD=52.8-58.3), indicating a strong urban focus. Mutualist banks (*Crédit Agricole*, *BPCE*, *Crédit Mutuel*) show intermediate values with slightly more distributed networks. The postal operator maintains a quantitatively smaller but more uniformly distributed network (SD=1.9 for branches vs. 58.3 for commercial banks), particularly critical in rural areas. Maximum values reflect extreme concentration in major urban centers (e.g., 1,725 ATMs in Paris).

To summarize, despite the ongoing reduction in traditional banking infrastructure, overall access to cash has remained relatively stable, suggesting that alternative service points, particularly those provided by the postal network, are playing an increasingly important role. Second, there exists significant spatial heterogeneity in cash access, with rural and peripheral regions facing greater challenges than urban areas. Finally, our disaggregated

analysis shows that different types of financial service providers contribute differently to overall accessibility, with *La Banque Postale* playing a particularly crucial role in maintaining baseline access in underserved areas.

3.2 Measuring Cash Access

Central to our methodological approach is the precise calculation of both physical distances and estimated travel times by car to the nearest cash access points, utilizing OpenStreetMap's (OSM) comprehensive road network database and advanced routing algorithms. This methodology enables us to compute accurate travel metrics from each municipal centroid to the closest financial service facility, whether an ATM, bank branch, or postal contact point, based on the actual road infrastructure rather than theoretical straight-line distances. By incorporating real-world transportation characteristics including road classifications, speed limits, and network topologies, our approach generates empirically grounded estimates of actual travel requirements that residents would experience.

The calculated accessibility metrics are then aggregated at the EPCI level through a population-weighted averaging procedure that preserves the spatial heterogeneity of municipal-level data while providing a functionally integrated perspective at the intercommunal scale. This two-tiered analytical framework effectively bridges the micro-macro divide in spatial analysis, capturing both the localized variations in financial service accessibility that affect individual communities and the broader regional patterns that emerge when considering functionally connected territories. Such a multi-scale approach proves particularly insightful for identifying spatial disparities in financial service provision, revealing how market-driven consolidation in the banking sector creates differential access patterns that may be mitigated by alternative service providers like postal networks operating under universal service obligations.

The data presented in Table 3 offers a comprehensive overview of the current state of financial service accessibility in 2022 in the 6,155 EPCIs. The population distribution shows considerable variation, with the mean population of 53,002 contrasting sharply with the maximum of over 7 million (Paris), reflecting France's diverse urban-rural landscape. The distribution of financial service points reveals that, on average, each EPCI has 42.5 ATMs, 13.6 postal contact points (PC), and 25 bank branches. However, the standard deviations indicate substantial variability across regions. The average travel time of 7.7 minutes and distance of 5.5 km to the nearest financial service point mask significant disparities, with some areas requiring up to 25.3 minutes or 17.1 km of travel.

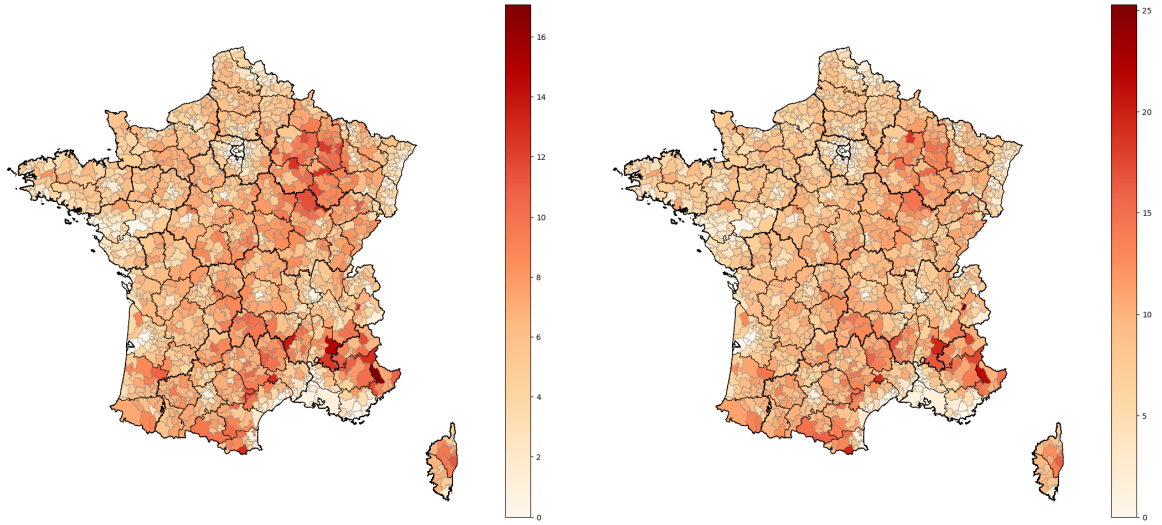
Table 3: Descriptive Statistics of Financial Access Metrics (2022)

Statistic	Population	ATMs	Postal Contacts	Bank Branches	Travel Time (min)	Distance (km)	SL Distance (km)
Mean	53,002	42.5	13.6	25.0	7.7	5.5	3.6
Standard Dev.	225,344	201.6	20.1	88.2	3.4	2.6	1.7
Minimum	3,909	0.0	1.0	0.0	0.0	0.0	0.0
25th Percentile	13,008	8.0	6.0	7.0	5.7	3.9	2.5
Median	22,923	16.0	10.0	12.0	8.0	5.7	3.7
75th Percentile	43,659	33.5	15.0	22.0	9.8	7.2	4.8
Maximum	7,115,576	6,863.0	565.0	2,893.0	25.3	17.1	9.9

Notes: This table presents descriptive statistics for financial access metrics across 1,231 French EPCIs in 2022. "Postal Contacts" refers to La Poste outlets offering financial services. "SL Distance" indicates straight-line distance to the nearest financial service point.

The spatial distribution of cash access is further illustrated in Figure 3, which maps the average distance and duration to the nearest financial service point across France. The visual representation clearly shows the urban-rural divide, with central and northern regions generally enjoying better access than peripheral areas. This geographic pattern reflects both population density and the historical development of financial infrastructure in France.

Figure 3: Spatial Distribution of Cash Access in France (2022)



(a) Distance (km)

(b) Travel time (minutes)

Notes: These maps illustrate the geographic disparities in access to financial services across French EPCIs in 2022. Light beige means good access (shorter distances/times) while dark red means poor access.

Table 4 examines the temporal stability of cash access metrics over our five-year study period. The data reveals remarkable consistency, with average travel times increasing only slightly from 7.5 minutes in 2018 to 7.8 minutes in 2022. This stability is particularly notable given the significant reductions in bank branch networks during the same period, suggesting that alternative access points (particularly postal services) may be compensating for the

loss of traditional banking infrastructure.

Table 4: Temporal Evolution of Cash Access Metrics (2018-2022)

Year	Travel Time (minutes)		Distance (km)	
	Mean	Median	Mean	Median
2018	7.5	7.9	5.4	5.6
2019	7.6	7.9	5.5	5.7
2020	7.7	8.0	5.5	5.7
2021	7.8	8.0	5.6	5.7
2022	7.8	8.1	5.6	5.8

Notes: This table presents the annual evolution of cash access metrics across 1,231 French EPCIs from 2018 to 2022.

In the following section, we present our empirical strategy, which uses legal constraints on postal networks as an instrumental variable to estimate the causal impact of postal points of contact on cash accessibility. This approach will allow us to move beyond descriptive analysis to quantify the specific contribution of postal services to financial inclusion in France.

4 Empirical Strategy and Estimation

To quantify the causal impact of postal contact points on cash accessibility, we implement an empirical strategy that carefully addresses potential endogeneity. Our approach leverages the legal framework governing La Poste's network, which imposes universal service obligations mandating minimum territorial coverage. These rules generate exogenous variation in postal coverage that is largely independent of local economic factors. By constructing a counterfactual network of postal points based on these regulations, we obtain a valid instrument suitable for two-stage least squares (2SLS) estimation. This section presents the identification strategy, describes the instrument construction, and reports both baseline and margin-specific estimation results.

4.1 Instrument construction and validity

Estimating the causal impact of postal points of contact on cash accessibility presents substantial endogeneity concerns. Postal presence is not randomly assigned and correlates with local characteristics such as demographic density, economic activity, and commuting patterns. These characteristics also influence demand for cash and the likelihood of commercial bank withdrawals, creating potential omitted-variable bias and reverse causality. Consequently, simple cross-sectional associations or ordinary least squares (OLS) estimates

cannot be interpreted causally, as they conflate the effect of postal coverage with unobserved local factors.

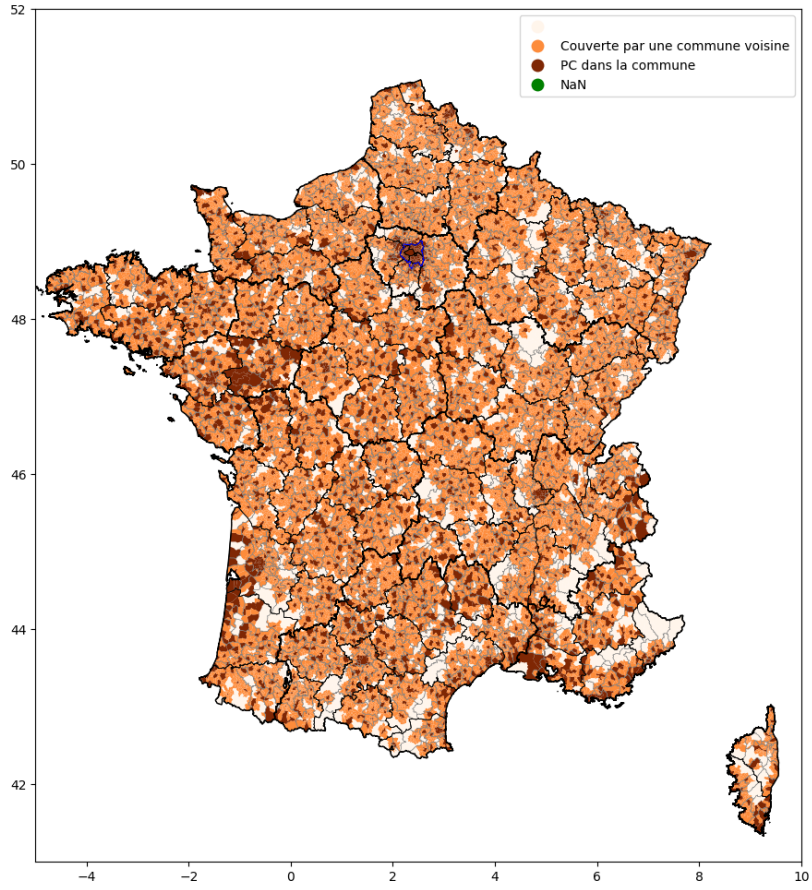
To address this challenge, we exploit the legal framework governing La Poste's network. French law imposes universal service obligations that require a minimum territorial coverage, including a rule that mandates one postal contact point for every 20,000 inhabitants in municipalities with populations exceeding 10,000, and a requirement that at least 95% of the population in a *département* reside within 10 km of a contact point. These rules generate exogenous, mechanically determined variation in postal coverage that is independent of local economic conditions or cash demand. By translating these legal constraints into a theoretical, counterfactual network of postal points, we isolate the exogenous component of postal coverage suitable for instrumental variable (IV) estimation.

The construction of the instrument proceeds as follows. For each municipality, we first apply the 20,000-inhabitant rule to determine baseline coverage. A municipality is considered covered if it already hosts a postal contact point or is within 10 km of one. If coverage at the *département* level falls below 95%, we iteratively add contact points in the largest uncovered municipalities until the legal threshold is satisfied. This algorithm is applied conservatively, focusing on the most restrictive elements of the regulation, and recalculated for each year to account for demographic and spatial changes. The resulting variable, denoted $Leg_{e,t}$, captures the exogenous variation in postal presence induced by the law rather than local economic factors.

Descriptive statistics support the instrument's relevance and exclusion. $Leg_{e,t}$ is strongly correlated with observed postal coverage ($r \approx 0.90$), confirming relevance. Its correlation with cash access measures is small ($r \approx -0.17$), consistent with the exclusion restriction. Spatial patterns further indicate that rural and peripheral *département* require more contact points due to population dispersion rather than pre-existing cash demand, providing additional plausibility for exogeneity.

Figure 4 maps the spatial distribution of our instrumental variable, $Leg_{e,t}$, across French municipalities, illustrating the postal bank placement that underpin our identification strategy. The shading reflects the intensity of $Leg_{e,t}$, with darker areas indicating municipalities where the instrument's influence on postal bank presence is strongest. This geographic repartition is critical for two reasons. First, it demonstrates that the variation in $Leg_{e,t}$, is uncorrelated with modern economic or demographic factors, satisfying the exclusion restriction for our IV approach. Second, the map reveals a distinct spatial pattern: municipalities in rural and peripheral regions (e.g., Massif Central, Alps) exhibit higher values of $Leg_{e,t}$, suggesting that our instrument disproportionately affects areas where cash access challenges are most acute.

Figure 4: Repartition of our instrument (the legal constraints) at municipal level, 2018



Notes: The map displays the theoretical coverage of the French municipalities by Postal service if we strictly apply the regulation constraints on Post location. See the text for more details.

4.2 Estimation Framework: Two-Stage Least Squares (2SLS)

Given the established validity of $Leg_{e,t}$, we proceed to estimate the causal effect of postal coverage on cash accessibility using a two-stage least squares (2SLS) framework. This approach is particularly well-suited to our context, as it allows us to isolate the exogenous

component of postal coverage while accounting for potential endogeneity.

In the first stage, we regress the observed number of postal contact points on the instrument and a set of fixed effects:

$$PostO_{e,t} = \alpha Leg_{e,t} + \gamma_e + \varepsilon_{e,t}, \tag{1}$$

where γ_e captures EPCI fixed effects, controlling for time-invariant unobserved heterogeneity across local administrative units. The first-stage regression serves to purge the observed postal coverage of its endogenous component, yielding a predicted value, $\widehat{PostO}_{e,t}$, that reflects only the exogenous variation induced by the postal regulations.

In the second stage, we estimate the effect of the predicted postal coverage on cash accessibility:

$$Access_{e,t} = \beta \widehat{PostO}_{e,t} + \gamma_e + \mu_{e,t}. \tag{2}$$

Here, β represents the causal parameter of interest, measuring the impact of a unit change in exogenous postal coverage on cash accessibility. By using $\widehat{PostO}_{e,t}$, rather than the observed $PostO_{e,t}$,— we ensure that our estimates are consistent and free from the biases that plague OLS regressions in this context.

The robustness of the 2SLS estimates depends critically on the strength and validity of the instrument. We conduct a series of diagnostic tests to verify these properties (see Table 5). First, the coefficient on $Leg_{e,t}$ in the first-stage regression is statistically significant at the 1% level, indicating that the instrument is a strong predictor of postal coverage. Second, the Cragg-Donald F-statistic (12.3) exceeds the conventional threshold of 10, suggesting that the instrument is not weak. Third, under-identification and Anderson-Rubin tests further confirm that $Leg_{e,t}$ provides sufficient independent variation to reliably identify the causal effect in the 2SLS framework.

4.3 Estimation Results

Baseline IV and OLS estimates. Table 5 presents the main IV and OLS results. The IV estimates indicate that a 1% increase in predicted postal coverage reduces average distance to the nearest cash point by 0.53% and travel time by 0.62%. These effects are larger than the corresponding OLS estimates, highlighting that simple regressions understate the true causal effect due to endogeneity. The instrument performs strongly in the first stage, with high F-statistics and confirmation from under-identification tests.

Table 5: Baseline estimates

	IV		OLS	
	Distance (km)	Time (mn)	Distance (km)	Time (mn)
	Coef (se)	Coef (se)	Coef (se)	Coef (se)
Number of Post Bank (Log)	-1.37*	-2.05**	-1.03***	-1.31***
	(0.73)	(0.97)	(0.036)	(0.047)
Constant			7.09***	9.69***
			(0.053)	(0.069)
	First stage: $PostO_{e,t}$ (Log)			
$Leg_{e,t}$	-0.028***			
	0.008			
Year fixed effects	no	no	no	no
EPCI fixed effects	yes	yes	yes	yes
Under-id. test: LM Stat	12.28***	12.276***		
Weak-id. test: Cragg-Donald Wald F	12.30	12.304		
Weak inst.: Anderson-Rubin Wald	3.02*	4.03**		
Obs: N / EPCIs / years	6,160 / 1,232 / 5			

Notes. The dependent variable is either the average distance (km) within the EPCI to the nearest cash point of access or the average time needed (mn). We carry out two models, an IV (two first columns) and a standard OLS (two last columns). ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Intensive vs Extensive Margins. To further unpack the mechanisms underlying the causal effect, Table 6 decomposes the causal effect of postal coverage on cash accessibility into two analytically distinct dimensions: the extensive margin and the intensive margin. The extensive margin examines how postal coverage influences the probability of any cash access within a municipality, effectively measuring whether postal infrastructure expands access to areas previously without it. The intensive margin, by contrast, assesses how postal coverage affects distance and travel time to the nearest cash point for municipalities that already have at least one point of access. This distinction is essential for understanding both the breadth and depth of the impact of postal infrastructure on financial inclusion.

Table 6 presents results for the extensive and intensive margins of access to financial services, organized into four columns. Columns [1] and [2] analyze the extensive margin using IV Probit models, where the dependent variable is the probability that the average distance or travel time to the nearest cash point is non-zero. This reflects the likelihood that a municipality has any access to cash withdrawal services. Columns [3 and [4], on the other hand, focus on the intensive margin using IV regressions on a subsample of municipalities that already have access. Here, the dependent variables are the average distance (in km) and travel time (in minutes), conditional on access being available. Across all models, the key independent variable is the logarithm of the number of postal banks, instrumented by $Leg_{e,t}$. The inclusion of EPCI fixed effects in some specifications controls for unobserved heterogeneity across local administrative units, ensuring that the estimates capture the causal effect of postal coverage rather than confounding factors.

Table 6: Extensive and Intensive Margins in Cash Access

	Extensive Margin		**Intensive Margin**	
	[1]	[2]	[3]	[4]
	Distance (km)	Time (mn)	Distance (km)	Time (mn)
	Coef (se)	Coef (se)	Coef (se)	Coef (se)
Number of Post Bank (Log)	-0.27**	-0.27**	-1.56*	-2.34**
	(0.11)	(0.11)	(0.82)	(1.09)
Constant	2.51***	2.51***		
	(0.18)	(0.18)		
First stage: $PostO_{e,t}$ (Log)				
$Leg_{e,t}$	0.021***	0.021***	-0.025***	-0.025***
	(0.00064)	(0.00064)	(0.008)	(0.008)
Year fixed effects	no	no	no	no
EPCI fixed effects	no	no	yes	yes
Obs: EPCIs×years	6160	6160	6031	6031

Notes: Columns [1] and [2] report IV Probit estimates for the extensive margin, where the dependent variable is the probability that the distance/time to the nearest cash point is non-zero. Columns [3] and [4] report IV regression estimates for the intensive margin, where the dependent variables are the average distance and travel time, conditional on access being available. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

The coefficients in columns [1] and [2] indicate that an increase in the number of postal banks significantly raises the probability of cash access. Specifically, the negative and statistically significant coefficient for the number of postal banks (log) in column [1] suggests that a higher density of postal infrastructure reduces the likelihood that a municipality lacks any cash access. This effect is economically meaningful, as it implies that postal coverage plays a critical role in extending financial access to underserved areas.

Columns [3] and [4] reveal that, even among municipalities with existing access, additional postal coverage further reduces both the distance and travel time to the nearest cash point. The negative coefficients for the number of postal banks (log) in these columns indicate that increasing postal infrastructure improves the quality of access by making cash points more convenient for residents. This is particularly important for rural or peripheral areas, where travel times and distances can be prohibitive.

The statistical significance of the coefficients across all columns reinforces the robustness of the findings. The coefficients for the number of postal banks (log) are significant at conventional levels, with the extensive margin results showing higher precision, as evidenced by smaller standard errors. The first-stage results, reported at the bottom of each column, confirm the strength of the instrument, with highly significant coefficients on $Leg_{e,t}$ and consistent F-statistics.

Overall, the results demonstrate that infrastructure investments not only increase the availability of financial services but also enhance their quality, a distinction often over-

looked in aggregate analyses. This dual impact suggests that policies aimed at expanding financial inclusion should consider both the coverage and convenience of access points.

4.4 Robustness Checks

The robustness checks presented in this subsection serve as a critical validation of the causal estimates derived from the two-stage least squares (2SLS) framework discussed earlier. While the baseline results in Tables 5 and 6 established a statistically significant and economically meaningful relationship between postal coverage and cash accessibility, robustness analyses are essential to ensure that these findings are not sensitive to alternative model specifications, variable definitions, or potential outliers.

Table 7 evaluates the sensitivity of the results to changes in the empirical model, addressing concerns about unobserved heterogeneity and temporal dynamics. The four specifications, first differences, *département* fixed effects, year fixed effects, and their interaction, provide a comprehensive assessment of how the estimates respond to different ways of controlling for confounding factors.

The first-difference specification removes time-invariant unobserved heterogeneity by focusing on within-unit changes over time. While the coefficients for the number of postal banks (log) in these columns are not statistically significant, this is not unexpected given the reduced sample size (4,928 observations) and the potential for increased noise in differenced data. The first-stage results for $Leg_{e,t}$ remain consistent with the baseline, suggesting that the instrument's relevance is preserved even in this more restrictive specification.

The inclusion of *département* fixed effects accounts for unobserved time-invariant heterogeneity at the *département* level, such as regional economic conditions or policy environments. The coefficients for the number of postal banks (log) in these columns align closely with the baseline estimates, particularly for distance and for travel time, where the results remain statistically significant. This consistency reinforces the robustness of the baseline findings to regional-level confounding factors.

The specifications with year fixed effects and their interaction with *département* fixed effects further control for time-varying shocks and regional trends. While the coefficients for the number of postal banks (log) lose statistical significance in these columns, the first-stage results for $Leg_{e,t}$ remain stable, indicating that the instrument continues to predict postal coverage effectively. The loss of significance in the second stage may reflect the stringent controls rather than a substantive change in the underlying relationship.

The stability of the first-stage results across all specifications confirms the relevance and

strength of the instrument $Leg_{e,t}$. The variation in the second-stage coefficients, particularly their statistical significance, underscores the importance of model choice but does not fundamentally challenge the baseline conclusion that postal coverage improves cash accessibility. The consistency of the point estimates, even when significance wanes, suggests that the core relationship is robust to alternative empirical strategies.

Table 8 assesses the sensitivity of the results to different operationalizations of the key variables: postal coverage and cash access measures. By testing linear and logarithmic transformations, as well as alternative normalizations (e.g., per inhabitant), the analysis ensures that the findings are not an artifact of a specific functional form or measurement choice.

The first two columns for each outcome (distance and time) compare logarithmic and linear specifications of the dependent variable. The coefficients for the number of postal banks (log) are statistically significant and closely aligned with the baseline results, confirming that the relationship holds regardless of the functional form. The linear specifications also yield significant coefficients, though the magnitudes differ due to the differing scales of measurement. This consistency suggests that the results are not driven by the choice of transformation.

Table 7: Robustness: changes in empirical model

	Distance (km)				Time (mn)			
	First diff.	Dep. FE	Year FE	Dep. & Year FE	First diff.	Dep. FE	Year FE	Dep. & Year FE
Nb Post Bank (Log)	-1.86	-1.37*	-0.44	-0.44	2.58	-2.05**	-1.48	-1.48
	(10.7)	(0.73)	(2.23)	(2.23)	(18.3)	(0.97)	(2.88)	(2.88)
$Leg_{e,t}$	-0.002	-0.028***	-0.009	-0.009	-0.002	-0.028***	-0.009	-0.009
	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)
Year fixed effects	no	no	yes	yes	no	no	yes	yes
EPCI fixed effects	no	yes	yes	yes	yes	yes	yes	yes
Dep. fixed effects	no	yes	no	yes	no	yes	no	yes
Obs. (EPCIs×years)	4928	6160	6160	6160	4928	6160	6160	6160

Table 8: Robustness: changes in variables definition

	Distance (km)					Time (mn)				
	Log distance	Lin distance	Lin distance	Lin distance	Log distance	Log time	Lin time	Lin time	Lin time	Log time
Log Nb Post bank	-0.52***					-0.61***				
	(0.17)					(0.20)				
Nb Post bank		-0.056*					-0.084**			
		(0.031)					(0.040)			
Nb Post bank per inhab.			-12108.9*					-18165.3*		
			(6838.1)					(9627.6)		
Log Nb Post bank per inhab.				-123.1*	-46.9**				-184.7*	-55.4*
				(69.2)	(23.9)				(97.3)	(28.8)
$Leg_{e,t}$	-0.028***	-0.675***	$-3.12e^{-06}$ *	-0.0003*	-46.91**	-0.028***	-0.675***	$-3.12e^{-06}$*	-0.0003*	-46.91**
	(0.008)	(0.045)	($1.71e^{-06}$)	(0.0002)	(23.93)	(0.008)	(0.045)	($1.71e^{-06}$)	(0.0002)	(23.93)
EPCI fixed effects					yes					
Obs. (EPCIs×years)	6160	6160	6160	6160	6160	6160	6160	6160	6160	6160

We explore alternative definitions of postal coverage, including the number of postal banks per inhabitant and its logarithmic transformation. The coefficients for these specifications remain statistically significant, albeit with varying magnitudes. For instance, the negative and significant coefficients indicate that higher postal bank density reduces distance and travel time, consistent with the baseline interpretation. The further tests that normalize the number of postal contacts by population size reinforce the results.

The robustness checks presented in this subsection play a pivotal role in strengthening the causal interpretation of the baseline results. By demonstrating that the estimates are stable across alternative model specifications, variable definitions, and sample restrictions, the analysis mitigates concerns about omitted variable bias, functional form dependence, and outlier influence. The consistency of the first-stage results, in particular, underscores the validity of the instrument $Leg_{e,t}$, while the second-stage results, though varying in significance, remain directionally consistent with the baseline findings.

4.5 Understanding the Heterogeneity in Postal Network Impact

We examine in this section how the effect of postal contact points on cash access varies across EPCIs of different sizes. The results illustrated in Table 9 reveal a striking pattern: postal coverage significantly improves access to cash in large EPCIs, but its impact is negligible or even absent in small and intermediate EPCIs. This finding is both intuitive and surprising, and it warrants careful interpretation to extract meaningful policy insights.

In large EPCIs, those with populations exceeding 32,463 inhabitants, each 1% increase in postal contact points reduces the distance to the nearest cash point by 1.51% and travel time by 2.22%. These effects are not only statistically significant but also economically meaningful. For example, in a densely populated suburban area where the average distance to a cash point is 3 kilometers, a 1.51% reduction translates to a 45-meter decrease in travel distance. While this may seem modest, it can make a tangible difference for vulnerable populations, such as the elderly or those without access to private transportation, who rely on proximity to cash access points.

For intermediate EPCIs, those with populations between 16,304 and 32,463, the coefficients for postal coverage are negative, suggesting a potential reduction in distance and travel time, but they lack statistical significance. This ambiguity reflects the heterogeneous nature of the EPCIs. Some may resemble large EPCIs, with a mix of urban and rural characteristics, while others may be more akin to small EPCIs, where the challenges of sparse population density and limited infrastructure dominate. The lack of significance here does

not imply that postal networks are irrelevant; rather, it suggests that their impact is context-dependent and may vary based on local conditions, such as the presence of alternative financial service providers or the geographic dispersion of the population.

The most surprising result emerges for the smallest EPCIs, those with fewer than 16,304 inhabitants, where postal coverage appears to have no measurable effect on cash access. At first glance, this finding seems counterintuitive. One might expect postal networks to play a critical role in rural areas, where commercial banks have largely withdrawn, leaving residents with few alternatives for accessing cash. However, several factors may explain this lack of effect.

First, in very small EPCIs, the baseline level of access to cash is often so poor that adding a single postal contact point does little to improve the situation. For example, if the nearest cash point is 20 kilometers away, the addition of a postal contact point at 15 kilometers may not meaningfully reduce the burden of access. The "last mile" problem is particularly acute in these areas, where even a modest increase in postal coverage may not cross the threshold required to create a perceptible improvement in access.

Second, the demand for cash services in small EPCIs may be inherently limited. These areas often have older populations or fewer small businesses, reducing the overall reliance on physical cash transactions. As a result, the measurable impact of postal coverage on access metrics may be diluted. Additionally, the non-linear costs of accessing cash in rural areas, such as the time and effort required to travel long distances over difficult terrain, may not be fully captured by linear distance or travel time metrics. A 10-kilometer trip in the Alps, for instance, is far more burdensome than a 10-kilometer trip on flat terrain, yet this nuance is lost in the data.

Third, the statistical power of your analysis may be limited for small EPCIs. With fewer observations in these areas, detecting a significant effect becomes more challenging, even if one exists. This is particularly true if the variability in access metrics is high, as is often the case in rural and remote regions.

Table 9: Impact of Postal Contact Points Coverage Across EPCI Sizes

	Smallest ($<$ 16,304 inh.)		Intermediate (16,304–32,463 inh.)		Largest ($>$ 32,463 inh.)	
	Dist. (km)	Time (min)	Dist. (km)	Time (min)	Dist. (km)	Time (min)
Log Nb Post Banks	0.34	-1.64	-1.09	-1.03	-1.51***	-2.22***
	(7.03)	(7.75)	(1.46)	(1.91)	(0.52)	(0.77)
Obs. (EPCIs$\times$years)	2,049		2,045		2,048	

Notes: Dependent variable: distance or time to the nearest cash point. The three subsamples are defined by the EPCI's population in 2018. Significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

The next section delves deeper into the mechanisms and distributional impacts of the relationship between postal network coverage and cash accessibility.

5 The Distributional Impact of Postal Networks on Cash Access

This section explores the spatial heterogeneity of cash access, focusing on the role of postal networks in reducing inequality and enhancing equity across municipalities. The analysis focuses on three dimensions of cash access: the minimum, maximum, and variability of distances and travel times to cash points within each EPCI. This approach allows us to determine whether the postal network primarily reduces the worst-case access gaps, enhances the best-case access, or diminishes inequality in access across municipalities. Such insights are crucial for designing policies that prioritize not only average improvements but also the equity and reliability of financial access.

In 2022, the postal network was the closest financial service provider in 1,245 out of 6,155 EPCIs, representing 20.2% of all intercommunal areas. This prevalence underscores its pivotal role in regions where commercial banks have withdrawn, particularly in rural and peripheral municipalities. To better understand how the postal network influences cash access, we turn to the empirical findings presented in Table 10. The results reveal distinct patterns: the coefficients for the number of postal contact points on the minimum distance and time to cash points are both 0.00, with standard errors of 0.20, indicating no significant improvement in areas where cash points are already highly accessible. This aligns with the role of the postal network as a complementary, rather than substitutive, infrastructure, focusing on areas where commercial banks are absent or insufficient. In other words, the postal network does not enhance access where it is already optimal but instead addresses gaps left by the retrenchment of commercial banking services.

Table 10: Heterogeneous Effects of the Postal Network on Cash Access

	Distance (km)	Time (min)
Best Access (Minimum)		
Log Postal Contact Points	0.00 (0.20)	0.00 (0.20)
Worst Access (Maximum)		
Log Postal Contact Points	0.49 (1.77)	-0.19 (2.04)
Access Inequality (Std. Dev.)		
Log Postal Contact Points	-1.09** (0.53)	-1.59** (0.78)
EPCI Fixed Effects	Yes	
Obs. (EPCIs×years)	6,160	

Notes. The dependent variables are: *Best Access* minimum distance/time to the nearest cash point, *Worst Access* maximum distance/time to the nearest cash point, and *Access Inequality* standard deviation of distances/times to the nearest cash point. Coefficients and standard errors (in parentheses) are from IV regressions. Statistical significance: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

For the maximum distance and time to cash points, the coefficients are 0.49 and -0.19, respectively, but neither is statistically significant, with standard errors of 1.77 and 2.04. While the point estimates suggest a potential reduction in the worst-case travel time, the lack of statistical significance implies that the postal network does not systematically reduce the maximum distance or time to cash points. This finding reflects the persistent challenges of serving remote or geographically isolated areas, where even the legally mandated presence of postal contact points cannot fully compensate for the lack of commercial banking infrastructure. It underscores the limitations of the postal network in addressing the most extreme cases of financial exclusion, particularly in areas with very low population density or difficult terrain.

The most policy-relevant finding emerges from the analysis of access inequality. The coefficients for the standard deviation of distance and time are -1.09 and -1.59, respectively, both statistically significant at the 5% level. These results indicate that increased postal contact point coverage reduces the variability in access to cash points within EPCIs. In other words, the postal network contributes to greater equity in access by making cash points more evenly distributed across municipalities. This aligns with the broader objectives of universal service obligations, which prioritize equitable access over merely improving average outcomes. By reducing the standard deviation of distances and travel times, the postal network helps create a more balanced and inclusive financial geography, particularly in regions where commercial banks have retrenched.

These results have significant implications for both policy design and theoretical understanding of financial inclusion. They highlight that the postal network is most effective in reducing disparities in access rather than simply improving average access. Its primary value lies in promoting equity, ensuring that even the most underserved areas retain a baseline level of financial access. Policymakers should therefore prioritize targeted expansions of the postal network in regions with high variability in access, as these are the areas where postal contact points can have the greatest marginal impact.

The lack of significant effects on minimum or maximum access metrics reinforces the idea that the postal network complements rather than replaces commercial banking infrastructure. While commercial banks optimize their networks for profitability, often concentrating in urban centers, the postal network fills critical gaps by providing baseline access in underserved areas. This complementary relationship is essential for maintaining a balanced financial geography, where both efficiency and equity are prioritized.

The findings also underscore the importance of publicly regulated infrastructure in en-

suring equitable access to financial services. As commercial banks continue to withdraw from rural and peripheral areas, the postal network emerges as a vital policy tool for mitigating financial exclusion. Future policies could explore cost-sharing mechanisms between governments and postal operators to sustain and expand this network, particularly in low-density regions where market-driven solutions are unlikely to suffice.

In conclusion, this analysis deepens our understanding of how the postal network improves cash access by shifting the focus from average effects to distributional impacts. The key finding, that the postal network reduces inequality in access, highlights its unique role in promoting equitable financial inclusion. As commercial banks continue to retrench from rural and peripheral areas, the postal network emerges as a critical policy tool for ensuring that all communities retain access to essential financial services. Future research should build on these findings by exploring the long-term effects of the postal network on financial behavior and economic outcomes, as well as the potential for integrating the postal network with digital financial services to further enhance inclusion in the digital age.

6 Conclusion

This study examines the causal role of publicly regulated postal networks in mitigating spatial inequalities in cash access, a growing concern as commercial banks increasingly retrench from rural and peripheral areas. By leveraging France's unique legal framework for La Poste, which mandates minimum territorial coverage through universal service obligations, we construct a counterfactual postal network to isolate the exogenous variation in postal coverage. Using a two-stage least squares (2SLS) framework, we demonstrate that a 1% increase in predicted postal coverage reduces the distance and travel time to the nearest cash point by 0.53–0.62%, with particularly strong effects in areas most affected by bank branch closures.

The robustness of our results across alternative model specifications, variable definitions, and heterogeneity analyses underscores the reliability of our causal estimates. Notably, the decomposition into extensive and intensive margins reveals that postal coverage not only expands access to previously unserved areas but also improves the convenience of access for those already connected. This dual impact highlights the importance of considering both the breadth and quality of financial infrastructure in policy design.

Our results carry significant implications for policymakers and financial regulators. As digital banking expands, the physical withdrawal of commercial banks risks deepening financial exclusion in rural areas. Postal networks, with their legally mandated territorial

coverage, emerge as a natural policy lever to ensure equitable access to cash and basic financial services. However, maintaining such networks requires public support, whether through direct subsidies, cost-sharing mechanisms, or regulatory incentives. Our estimates provide a benchmark for evaluating the social value of these investments, suggesting that targeted policies to sustain postal infrastructure could yield substantial returns in terms of financial inclusion.

Looking ahead, several avenues for future research emerge. First, while this study focuses on France, the analytical framework could be extended to other countries with universal service obligations for postal or financial services. Cross-country comparisons would help identify best practices for balancing market efficiency with equitable access. Second, as digital and physical financial infrastructures evolve, further research could explore their complementarities and trade-offs, particularly in hybrid models where postal networks facilitate digital onboarding or cash-to-digital transitions. Finally, micro-level analyses, such as individual-level data on financial behavior, could deepen our understanding of how improved cash access translates into broader economic opportunities, credit availability, and local development.

References

S. L. Nanez Alonso, J. Jorge-Vazquez, R. F. Reier Forradellas, and E. Ahijado Dochado. Solutions to financial exclusion in rural and depopulated areas: Evidence based in castilla y león (spain). *Land*, 11:74, 2022.

S. Bansal. Perspective of technology in achieving financial inclusion in rural india. *Procedia Economics and Finance*, 11:472–480, 2014.

Mehrsa Baradaran. It's time for postal banking. *Harvard Law Review*, 127:165–215, 2013.

James Caddy and Zhan Zhang. How far do australians need to travel to access cash? Technical report, Reserve Bank of Australia, 2021. Working Paper.

A. B. Chu. Mobile technology and financial inclusion. In Elsevier, editor, *Handbook of Blockchain, Digital Finance, and Inclusion*, volume 1, pages 131–144. Elsevier, Amsterdam, The Netherlands, 2018.

Tessa Conroy, Sarah A. Low, and Stephan Weiler. Fueling job engines: Impacts of small business loans on establishment births in metropolitan and nonmetro counties. *Contemporary Economic Policy*, 35(3):578–595, 2017.

R. Cull, A. Demirguc-Kunt, and J. Morduch. *Banking the World: Empirical Foundations of Financial Inclusion*. MIT Press, Cambridge, MA, USA, 2021.

European Central Bank. Report from the ERPB working group on access to and acceptance of cash. Technical report, European Central Bank, 2020. URL https://www.ecb.europa.eu/paym/groups/erpb/shared/pdf/16th-ERPB-meeting/Report_from_the_ERPB_working_group_on_access_to_and_acceptance_of_cash.pdf. Accessed: 2025-11-30.

European Central Bank. Financial stability review. Technical report, European Central Bank, November 2025. URL https://www.ecb.europa.eu/press/financial-stability-publications/fsr/html/ecb.fsr202511~263b5810d4.en.html. Accessed: 2025-11-30.

Cledwyn Fernandez. Competition between postal and bank branches for household savings: Empirical evidence from india. *Managerial and Decision Economics*, 2023. URL https://onlinelibrary.wiley.com/doi/10.1002/mde.3954.

C. S. T. Ho and B. Berggren. *The Effect of Bank Branch Closures on New Firm Formation: The Swedish Case*, volume 65. Springer, Berlin/Heidelberg, Germany, 2020.

Prasad Krishnamurthy and Tucker Cochenour. An economic case against public banking, and a case for it. *Journal of Financial Regulation*, 10(1):28–64, 01 2024. ISSN 2053-4841. doi: 10.1093/jfr/fjad012. URL https://doi.org/10.1093/jfr/fjad012.

H.-L. Q. Nguyen. Are credit markets still local? evidence from bank branch closings. *American Economic Journal: Applied Economics*, 11(1):1–32, 2019.

Jean-Charles Rochet and Xavier Vives. *Microeconomics of Banking*. MIT Press, Cambridge, MA, 2004. ISBN 9780262182434.

Jon C. Rogowski, John Gerring, Matthew Maguire, and Lee Cojocaru. Public infrastructure and economic development: Evidence from postal systems. *American Journal of Political Science*, 66(4):885–901, 2022. doi: https://doi.org/10.1111/ajps.12594. URL https://onlinelibrary.wiley.com/doi/abs/10.1111/ajps.12594.

Universal Postal Union. State of the postal sector, 2024.

Carin van der Cruijsen and Jelmer Reijerink. Uncovering the digital payment divide: understanding the importance of cash for groups at risk. Technical Report 781, De Nederlandsche Bank, June 2023.

Carin van der Cruijsen and Frank van der Horst. Cash or card? unravelling the role of socio-psychological factors. *De Economist*, 167(2):145–175, 2019.

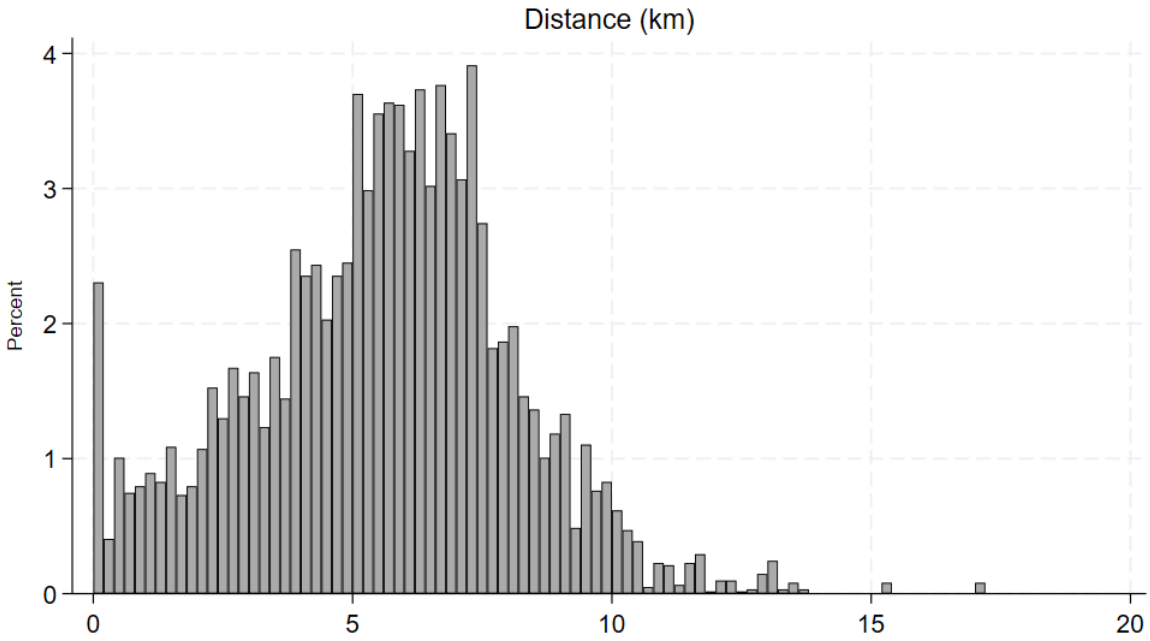
A Appendix

A.1 Additional figures

A.1.1 Access to cash measures

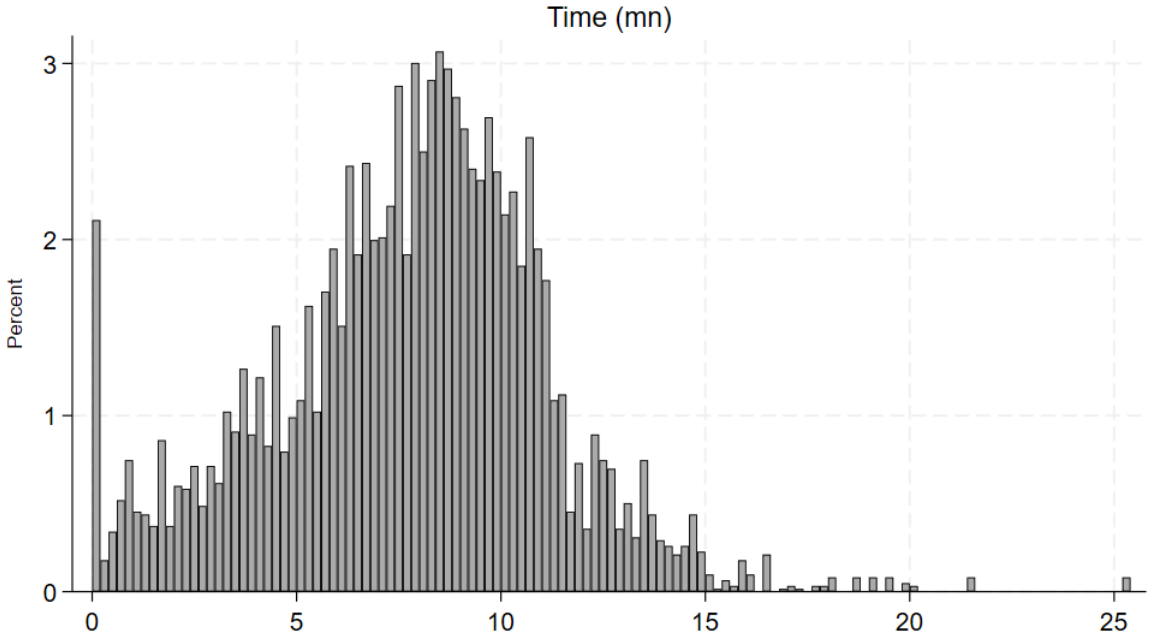
Figures 5 and 6 provide a visual representation of the distribution of municipalities according to their access to cash, measured in both distance and travel time. These distributions reveal critical insights into the nature of financial inclusion challenges in France.

Figure 5: Distribution of Municipalities by Distance (in kilometers) to Nearest Cash Point



Notes: This figure shows the distribution of municipalities according to the distance (in kilometers) to the nearest cash access point. The zero-kilometer bin represents municipalities with no access, reflecting the extensive margin gap. The right-skewed distribution highlights disparities in the intensive margin, where access exists but is inconvenient for municipalities in the long tail.

Figure 6: Distribution of Municipalities by Travel Time (in minutes) to Nearest Cash Point



Notes: This figure displays the distribution of municipalities by travel time (in minutes) to the nearest cash access point. The zero-minute bin quantifies municipalities without any access, corresponding to the extensive margin. The pronounced right skew, with a thicker tail than the distance distribution, suggests that infrastructure quality (e.g., road conditions) exacerbates access barriers.