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Financial inclusion through more rural banks? Evidence from Pakistan's Bank Branch Licensing Policy

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Abstract

Government interventions for expanding banking services into rural areas have played a prominent role in the development strategies of numerous low-income countries. Several studies have documented beneficial effects of such policies on financial access and poverty reduction, especially for India. In this paper we examine the effects of Pakistan's rural bank branch expansion policy, by which commercial banks had to open at least one fifth of their new branches in Rural and Underserved Areas (RUA). We show that although banks complied with the policy by labeling the requested share of new branches as RUA, the bulk of additional RUA branches has been located within urban boundaries or in already banked rural locations. As a result, the policy has failed to expand banking services to unbanked rural areas and the proportion of the rural population with access to a bank remained stagnant at around 26 percent during the ten years following the policy's introduction. Our study demonstrates the need for carefully designed government interventions when financial access of unbanked populations is to be improved.

1 Introduction

Access to finance has been seen as a key factor in economic growth as it provides facilities for mobilizing savings and accumulating capital stock, spurring investment and mitigating risk (Karlan and Morduch, 2010). A positive correlation between financial development and economic growth has been documented in both cross- and within-country studies (Jayaratne and Strahan 1996, Dehejia and Lleras-Muney 2007, Beck et al. 2007, Guiso et al. 2009, Fafchamps and Schündeln 2013). Rural households in developing countries have traditionally faced large impediments to access to formal finance. At least since the microfinance revolution, it has been broadly acknowledged that the financial inclusion of rural households has the potential to facilitate substantial efficiency as well as equity gains (Karlan and Morduch, 2010). The importance of financial inclusion is also echoed in the United Nations' 2030 Agenda, which positions financial inclusion as an “enabler” in eight of the 17 Sustainable Development Goals (United Nations, 2015).

These arguments have provided justifications for a host of financial inclusion interventions. While the last two decades have seen a rapid rise of microfinance, often provided by non-state actors, the majority of financial inclusion interventions remain state-led. Typical state-led interventions have been no-frills savings accounts, mobile banking, subsidized credit and rural bank branch expansions (Demirgüç-Kunt and Klapper 2013). Rural bank branch expansion is a type of policy that mandates banks to open branches in rural areas which are considered unprofitable by bank managements (Morgan et al. 2016, Brown et al. 2016, Qi et al. 2018). The rationale is that a closer spatial proximity to a bank branch will result in higher financial services take-up among rural populations (Petersen and Rajan 1994, Degryse and Ongena 2005, Agarwal and Hauswald 2010, Brevoort et al. 2012, Nguyen 2019, Brown et al. 2016, Carletti et al. 2018). Critical voices, on the other hand, have objected that rural banking policies can harm development because political rather than economic forces drive market outcomes, rendering the financial sector vulnerable to elite capture and corruption (La Porta et al. 2002, Sapienza 2004). Despite their popularity with governments in Asia and elsewhere — for example, in south Asia alone, Bangladesh, India, Nepal, Pakistan and Sri Lanka have adopted such policies during the last 50 years — rural bank

branch expansions have thus far largely escaped rigorous evaluations by researchers. A notable exception is India's 1977 rural banking initiative, which has received a positive, albeit recently disputed, evaluation (Burgess and Pande 2005a, Kochar 2011, Buliskeria and Baxa 2022).

Pakistan has a long history of rural financial policies, but, with only 16% of rural inhabitants owning a bank account in 2021 (as compared to 67 and 77% in South and in East Asia, respectively), the country has remained one of the least successful performers worldwide regarding access to finance (Demirgüç-Kunt et al. 2022). Against this backdrop, in 2004, the State Bank of Pakistan (SBP) implemented a reform of its branch licensing policy (BLP or 'Policy', for short) which mandated banks to open 20% of their new branches in "rural and underserved areas (RUA)", defined by the SBP as "villages, small towns or unbanked tehsil (sub-district) headquarters."¹

In this paper, we combine geospatial, administrative and household survey data to evaluate the effects of the BLP reform on access to finance among the country's rural population. We find that banks have complied with the Policy by increasing the share of new branches classified as RUA by the SBP, from less than five to around 20%. As a result, the number of branches classified as RUA increased by more than 50% between 2004 and 2014. On the other hand, household survey data reveals that bank use among rural households stagnated at very low levels over the same time period. We reconcile this seemingly contradictory patterns through a detailed geospatial analysis. By geo-coding bank branches' addresses and putting them on a map which identifies rural and urban areas, we demonstrate that 64.2% of new RUA branches have been positioned in urban areas. Moreover, the bulk of the remaining new RUA branches have been positioned in already banked rural locations, i.e. within five kilometers of an already existing bank branch. We show that, as a result, the share of the banked rural population, defined as living not further away from a bank branch than five kilometers, has increased by merely 1.6 percentage points, from 25.2 in 2003 to 26.8% in 2014. To provide a benchmark, we show that the banked rural population could have instead increased to almost 48% had banks located the same number of RUA branches in truly underserved rural locations.

¹Pakistan has four levels of administrative division. These are, in descending order, province, district, tehsil and union council. In 2005, there have been 307 tehsils with an average population of 375,000.

Taken together, our results suggest that Pakistan's rural branch licensing policy, whose provisions are still in place as of 2025, has only very partially met its stated objective, "to enhance the outreach of banking services to rural/underserved areas of the country" (State Bank of Pakistan, 2007). Our findings indicate the need for carefully designed branch network expansion rules, such as positive lists of priority locations or quantifiable definitions of target locations. Our insights can inform ongoing and future rural banking policies, which continue to be popular in Asia and elsewhere.

Our study contributes to two distinct literatures; first, a literature on the importance of financial access in the process of economic development and, more specifically, the effectiveness of rural branch expansion policies. While such policies are immensely popular in developing countries, to the best of our knowledge, only India's bank branch policies have thus far received rigorous evaluations. Under the social banking policy, which was in effect between 1977 and 1990, banks, which had been nationalized in 1969, were required to open four branches in "unbanked" locations for each branch opened in a "banked" location. Exploiting this rule, Burgess and Pande (2005a) identify the poverty reduction effect of the policy by estimating the reduction in poverty in unbanked states between 1977 and 1990 relative to other periods and compare this to the corresponding change in poverty in banked states. They conclude that the expansion in banks resulted in a significant reduction in poverty, which was accompanied by expanding credit provision and savings mobilization. Similarly, using a regression discontinuity design, Young (2018) evaluates a policy revision implemented in 2005 which required banks to open branches in districts with a "branch insufficiency" measure higher than the national average. He finds that the policy has significantly increased the number of bank branches, bank accounts and crop yields in districts with baseline branch insufficiency just above the threshold. On the other hand, India's social banking policy has also received criticism for its failure to reach out to the ultra poor. For the comparatively backward state Uttar Pradesh, Kochar (2011) finds that the expansion of the rural bank branch network during the 1980s has only marginally improved consumption among the poor and instead mostly benefited comparatively wealthy households, thus increasing consumption inequality.

We contribute to this strand of literature with an assessment of a rural bank branch

policy in south Asia's second largest country, Pakistan. While the policy shares some similarities with the one in India, our study differs from the just-cited ones in several important respects. First, our focus is on a more immediate outcome of rural bank branch policies, namely bank coverage, rather than the more intermediate and downstream outcomes bank accounts, credit disbursement, consumption and poverty. Methodologically, our innovation is to combine several sources of geographical and geo-referenced demographic data. More precisely, we map individual bank branches and calculate the rural population share living within a 5-kilometer radius of a bank branch for several years. Second, Pakistan's policy has been implemented in a largely privatized, commercial banking sector and is thus more representative of banking sectors in most low and middle-income countries today, where private sector banks play the dominant role.

Second, our study contributes to the literature on bank branching among commercial banks. Without regulation on branches' locations, commercial bank branches' openings and closures have been shown to depend highly on the economic development of a location. Morgan et al. (2016) shows that commercial banks were more likely to exit from low- than high-income locations in the USA in response to the 2008 financial crisis. Studying a microfinance bank's expansion in South-East Europe, Brown et al. (2016) documents that the bank tended to enter rural locations with larger economic demands. Using a bank-country panel, Qi et al. (2018) demonstrates that information sharing spurs banks to open branches in localities that are new to them, but that are already well served by other banks. We add to this strand of literature by showing that banks avoid rural, especially unbanked rural locations even in the presence of regulatory location restrictions. We also demonstrate the importance of the particular design of bank branch regulations if the goal is to improve financial outreach.

The remainder of this paper is structured as follows. In Section 2, We provide background information on access to formal finance in Pakistan and the branch licensing policy reform. Section 3 describes the data sources. Section 4 sets out our research design and provides descriptive statistics. Section 5 contains the results and counterfactual analyses and Section 6 concludes.

2 Institutional background and the branch licensing policy

2.1 Banking and financial inclusion in Pakistan before 2004

2.1.1 Financial sector repression

Starting in the 1970s, Pakistan experienced financial sector repression characterized by significant government intervention and control over the banking system (Bonaccorsi di Patti and Hardy 2005). This began with the nationalization of banks in 1974, which led to state-owned banks dominating the banking landscape, holding 92% of banking assets by 1991. The government dictated the interest rates of deposit and lending instead of allowing banks to set their rates based on market forces. Additionally, the allocation of financial resources was highly regulated, with a preference for the government sector, resulting in a scarcity of credit for other sectors. The state further entrenched its control by effectively guaranteeing financial obligations, thus bearing all financial risk associated with these sectors. Moreover, the government controlled foreign exchange, adding another layer of restriction on financial activities.

However, a shift began in 1991 with de-nationalization aiming at reducing state control over the banking sector (State Bank of Pakistan 2000). By 2004, the share of banking assets held by public sector banks had reduced to 24% (State Bank of Pakistan 2004). This transition marked a significant move towards liberalization and aimed to foster a more competitive and dynamic banking environment in Pakistan.

2.1.2 Rural banking

Before 2004, the state of rural banking in Pakistan has faced significant challenges and limitations. During the 1990s, the rural branch network experienced no growth. By the year 2000, approximately 30% of branches (around 1500 branches) were located in rural areas. This was in stark contrast to India, where 60% of branches were in rural areas. This difference is unlikely to be driven by the slightly lower urbanization in India than Pakistan, i.e. 28% and 32% urban population share, respectively (United Nations, 2018). Consequently, Pakistan had only one rural branch for every 70,000 inhabitants,

compared to India's one branch per 22,000 people.

The early 2000s saw further setbacks with the closure of many rural branches as part of the de-nationalization and consolidation processes. This reduced the already limited banking access for rural populations. Additionally, the microfinance institution (MFI) sector in Pakistan remained negligibly small, operating mostly in peri-urban areas and failing to reach the more remote rural communities (State Bank of Pakistan 2000).

Agricultural credit in Pakistan was also plagued by severe scarcity and geographical concentration. By the early 2000s, only 30% of the agricultural credit target had been met, with a mere 15% of farmers having borrowed from banks. Moreover, 80% of agricultural credit was concentrated in just seven of the country's 132 districts, which were rather urbanized (State Bank of Pakistan 2001 and State Bank of Pakistan 2002).

The financial services available to rural populations were further hindered by a lack of proper savings and insurance products, which are essential for financial stability and risk management in agricultural activities (State Bank of Pakistan, 2001).

While a low demand might partly explain the low penetration of formal financial services in rural areas, one particular supply side factor, i.e. the banking culture, has been frequently raised by the SBP. The culture of banking in Pakistan has been highly urbanized and industry-oriented. The owners, senior managers and other bank officers were uncomfortable in rural settings (State Bank of Pakistan, 2002).

This combination of factors resulted in significant financial exclusion for rural residents in Pakistan, undermining rural economic development and growth.

2.2 The branch licensing policy

Against the backdrop of financial exclusion for rural residents, SBP rolled out its branch licensing policy in 2004, aiming to enhance the outreach of banking services to rural and underserved areas. The policy required banks to submit an annual branch expansion plan, which included locations for new branches proposed by the banks along with the economic characteristics of these locations. The SBP examined these plans in accordance with a specific quota rule to ensure that a portion of new branches were established in rural areas.

During its initial phase between 2004 and 2007, the policy required big banks—those with more than 100 branches—to allocate 20% of their new branches to RUA locations. These locations included villages, small towns, and unbanked tehsil (subdistrict) headquarters. An unbanked location was defined as one where no branch of any bank operated within a 5-kilometer radius. In its second phase starting from 2007, this quota rule was extended to include all banks, not just the big ones. The objective of this quota was explicitly to enhance the reach of banking services in rural and underserved areas, thereby promoting financial inclusion and supporting economic development in these regions (State Bank of Pakistan 2005 and State Bank of Pakistan 2007).

Although the quota rule is similar to that from the India's policy between 1977 and 1990 (Burgess and Pande, 2005a), important differences exist and need to be discussed. First, the quota in Pakistan's policy is less demanding in that Pakistan's rural quota was set at 20% while India's was at 80%. Second, the RUA locations under Pakistan's policy are financially less backward than India's. India's policy coerced banks to open branches in locations that were "unbanked", while in Pakistan, these locations only needed to be justified as "rural or underserved". More importantly, unlike the India's policy, where a positive list of unbanked locations was provided centrally by the central bank, Pakistan's policy only provided a rather vague definition of RUA. This definition was not directly linked to any banking statistics of the locations (except for the tehsil headquarter which would be qualified as RUA if there was no bank branch existing in the location). Therefore, it is less transparent to justify a location as RUA, especially when the SBP did not provide a clear quantifiable threshold. Therefore, the banks enjoyed a certain degree of freedom to exploit the vague definition of RUA.

3 Data

The primary source of data for the analyses is a list of branches ever existed by the year 2014. This dataset is collected from the SBP, including various details about each branch, such as the years of opening and closing, the physical address, and a flag indicating whether the branch is classified as a RUA branch. Branches located in Gilgit-Baltistan (GB) are excluded from the dataset because they were not subject to the BLP. After these exclusions, the dataset contains information on a total of

12732 branches. To facilitate the geospatial analysis, the physical addresses of these branches are geocoded using the Google Maps Platform, which provides longitude and latitude coordinates for each address.

To enable the geospatial analyses, we use the following data. First, we obtain the population raster data for the year 1995 at a resolution of 1-kilometer by 1-kilometer, estimated by the Global Rural-Urban Mapping Project (GRUMP) (Balk et al., 2006). This raster data is essential for characterizing the demographics of the areas surrounding the bank branches and for deriving our key measure of financial inclusion, i.e. the share of rural population living within 5-kilometer radius of a bank branch. Second, we obtain the boundaries of the union councils, the lowest divisions in Pakistan, from the Humanitarian Data Exchange (HDX), contributed by Al-Hasan Pvt Ltd². The dataset identifies 5981 union councils. For each union council, the centroid and its buffer of 5-kilometer radius are computed. By overlaying this buffer with the population raster data, the rural population count within each union council is derived. The centroids are used in the counterfactual analyses to assess potential alternative locations for RUA branches. Ideally, the counterfactual analyses would use the list of locations universally adopted by banks for branch selection, but such data is not available. As a sensitivity check, instead of the union council centroids, we use a list of 122,654 populated settlements identified by the United States National Geospatial-Intelligence Agency (see Appendices B). Third, we use the urban boundaries estimated by GRUMP (Balk et al., 2006). These boundaries are overlaid with the bank branch locations to determine the actual rural status of the branches. This classification is then compared to the RUA status as labeled by the SBP to quantify the discrepancy between the two classifications. Fourth, we obtain the boundaries of districts in Pakistan from the Humanitarian Data Exchange website, contributed by the World Food Programme Spatial Data Infrastructure³. This dataset enables us to group the branches and union councils by districts and assists in visualizing some examples at district level. Lastly, we use the Pakistan Social and Living Standards Measurement Survey (PSLM) from the waves 2004/05, 2006/07, 2008/09, and 2010/2012 to derive another financial inclusion mea-

²<https://data.humdata.org/dataset/pakistan-union-council-boundaries-along-with-other-admin-boundaries-dataset>, accessible on May 01, 2024

³<https://data.humdata.org/dataset/cod-ab-pak>, accessible on May 01, 2024

sure, namely, frequent bank use (whether individuals use bank services frequently)⁴. These household surveys cover the urban and rural areas of all districts in Pakistan.

4 Analysis

4.1 Descriptive analysis

4.1.1 Definitions of branch rural status by SBP and geographical locations

For each bank, we obtain the rural status as labeled by the SBP, which corresponds to the RUA definition. Additionally, we derived an alternative rural status based on whether a branch is located outside the urban boundaries. We will refer to this alternative definition as “truly rural” status hereafter. This alternative classification of rural status is more closely aligned with the criteria used by Pakistan’s population census, and we consider it to be more precise in capturing the socioeconomic characteristics of the population served by the banks.

As a way to validate the data quality of the urban boundaries, we show that the urban population share identified by the boundaries (33.9%) closely matches the urban population share reported by the 1998 population census, (32.5%). This close match indicates that our boundaries are reliable proxies for the census-defined urban areas. Detailed calculation is provided in the appendix.

We further classify the branches into two categories: those that are the only branch within a 5-kilometer radius at the time of opening (hereafter referred to as “single branch”) and those that are not (referred to as “non-single branch”). To precisely define a single branch b newly opened in year t , we use the following dummy variable:

$$SINGLE_t^b = D\left\{\left(\sum_{r \neq b}^R IN5KMBUFFER_{rt}^b * OLDBRANCHE_{rt}\right) = 0\right\}$$

where $IN5KMBUFFER_{rt}^b$ is a dummy variable indicating another branch r in year t is located within the 5-kilometer radius of the branch b . $OLDBRANCHE_{rt}$ is a dummy variable flagging the branch r being an operating old branch, i.e. it has opened before

⁴<https://www.pbs.gov.pk/content/pakistan-social-and-living-standards-measurement>, accessible on May 01, 2024

the year t and remained open as of year t . R indicates the total number of branches. $D\{\cdot\}$ converts the result into a dummy variable. We summarize the number of branches by statuses in Table 1.

Table 1: Count of Branches by Branch Status

Year	Branches						Share of new RUA branches (%)		
	Total		New				Bank group		
	All	RUA	All	RUA	Truly rural	Single	All banks	Big banks	Small banks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2000	6,475	1,827	27	0	0	0	0.00	0.00	0.00
2001	6,385	1,803	219	5	3	0	2.28	3.01	0.00
2002	6,393	1,791	140	0	0	0	0.00	0.00	0.00
2003	6,281	1,778	174	4	2	1	2.30	4.23	0.97
2004	6,418	1,799	221	24	11	2	10.86	24.14	2.24
2005	6,679	1,833	291	35	13	1	12.03	27.03	6.91
2006	7,020	1,874	350	41	13	3	11.71	27.27	6.49
2007	7,510	1,950	500	76	20	3	15.20	22.48	12.67
2008	8,214	2,065	718	115	29	7	16.02	13.89	16.73
2009	8,657	2,157	507	95	38	8	18.74	31.18	15.94
2010	8,999	2,246	473	89	26	2	18.82	21.62	17.96
2011	9,477	2,335	512	89	36	10	17.38	21.43	14.87
2012	10,097	2,451	712	117	41	6	16.43	23.12	14.07
2013	10,755	2,608	722	157	68	9	21.75	25.48	20.23
2014	11,445	2,748	716	140	55	3	19.55	17.71	20.15

Note: "Total" captures the total number of branches that remain operational. "New" counts the number of branches that were newly opened in the respective year. "RUA" is the "rural and underserved areas" status assigned to the branches by the State Bank of Pakistan. "Truly rural" is the rural status identified by whether a branch is located outside the urban boundaries. "Single" refers to the branches that are the only branch within its 5-kilometer radius. "Bank group" categorizes banks into big (number of branches ≥ 100 in 2003) and small banks (otherwise). The 20% quota rule applied to big and all banks from 2004 and 2007 onward, respectively.

4.1.2 Share of new RUA branches

To assist in assessing the banks' compliance with the BLP, we calculate the share of new RUA branches in each year. This is defined as follow.

$$NEWRUASHARE_t = \frac{\sum_{r=1}^R RUA_{rt} * NEW_{rt}}{\sum_{r=1}^R NEW_{rt}}$$

where $t = 2000, 2001, \dots, 2014$, referring to the calendar years. R denotes the total number of branches operating in year t . NEW_{rt} is a dummy variable indicating branch r

being newly opened in year t , and RUA_{rt} is a dummy variable indicating branch r operating in year t is labeled as RUA by SBP.

In Table 1, we report this measure separately for two groups of banks, i.e. big and small banks (as classified by a total number of branches in 2003 larger than or equal to 100) and for all banks as a whole.

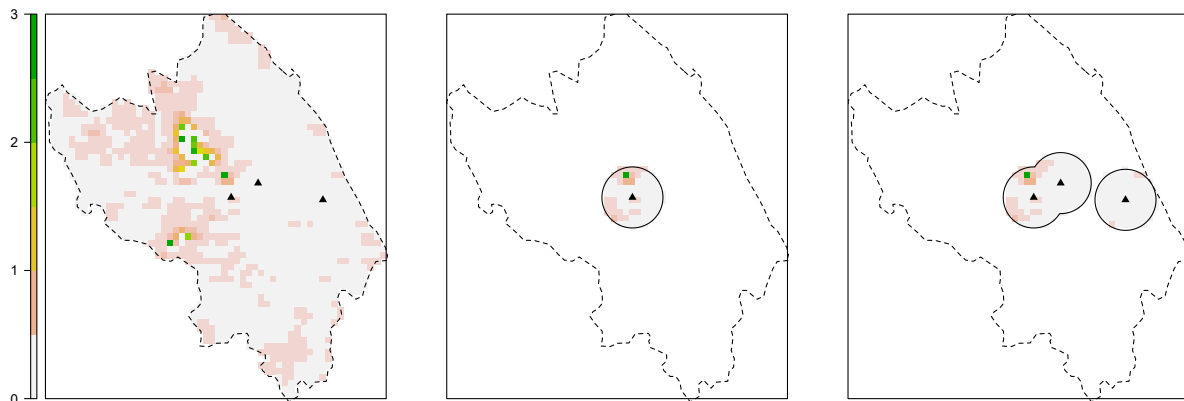
4.1.3 Definition of branch network's rural population coverage

To evaluate the effect of the BLP on financial inclusion, we choose our primary measure as the share of rural population living within 5-kilometer of a bank branch by year. We label this measure as "Branch Network's Rural Population Coverage (BNRC)". It's noteworthy that the 5-kilometer threshold is officially used by the SBP to classify banked and unbanked location (State Bank of Pakistan 2007). Furthermore, this indicator is recommended by the World Bank for measuring financial inclusion, and is adopted as a core target in the financial inclusion strategies of both Pakistan and India (State Bank of Pakistan 2015 and Department of Financial Services 2014).

Precisely, $BNRC_t$ is defined as follow,

$$BNRC_t = \frac{\bigcup_{b=1}^{B_t} RPOP5KM_{bt}}{RPOP}$$

where $RPOP5KM_{bt}$ refers to the set of rural population residing within 5 kilometers radius of the branch b of year t (banked rural population). $RPOP$ is the total rural population, which is a constant. B_t denotes to the branch stock in year t . $BNRC_t$ is calculated by taking the union of $RPOP5KM_{bt}$ over all B_t branches that are operating in year t and it is normalized by the size of total rural population. This operation avoids double counting the set of population that are covered by multiple branches. Notice that this measure assumes zero population migration across years. The definition of $BNRC$ is visualized in Figure 1.



Panel A: RPOP

Panel B: $RPOP5KM_{bt}$

Panel C: $\bigcup_{b=1}^{B_t} RPOP5KM_{bt}$

Note: Panel A shows the rural population count at 1km by 1km resolution. Darker color represents larger population count. The sum of the grids' values gives the size of rural population. The triangles represent the locations of branches. Panel B represents the set of rural population residing within 5km radius of a branch. Panel C displays the union of the rural population sets associated with both branches. $BNRO$ is obtained by dividing the size of rural population included in Panel C by the size of the total rural population circled out in Panel A. The population counts and branches shown in this demonstration are purely hypothetical.

Figure 1: Conceptualization of Branch Network's Rural Population Coverage (BNRC)

4.2 Counterfactual analysis

To quantify the economic significance of the actual RUA branches positioning, we compare the BNRC between actual RUA branches positioning and a counterfactual scenario where banks instead chose rural unbanked locations for their RUA branches by prioritizing the locations with highest number of unbanked rural population.

The counterfactual rural branch network is constructed by reallocating the 978 new RUA branches that have been opened between 2004 and 2014 (i.e. after the reform). The pool of alternative locations contains 5981 union councils. The reallocation is done dynamically on an annual basis. To reallocate J new RUA branches opened in year t, we rank the locations by a score of year t in descending order, and choose the top J locations based on this ranking. The locations' rankings are then updated and

form the basis for the reallocation of year $t+1$. This counterfactual thus tells us where and when new RUA branches would have been opened had the banks maximize the coverage of rural population.

The score of a location r in year t is defined as follow:

$$SCORE_{r,t} = RPOP5KM_r * RURAL_r * UNBANKED5KM_{r,t-1}$$

where $RPOP5KM_r$ refers to the set of rural population residing within 5 kilometers radius of the location r of year t . $RURAL_r$ is a binary variable indicating location r is outside of the urban boundaries. $UNBANKED5KM_{r,t-1}$ is a binary variable that equals 1 if there is no branch operating within 5 kilometers radius of the location r in year $t-1$. $t = 2004, 2005, \dots, 2014$.

We further investigate three channels through which banks may deviate from selecting the most unbanked rural locations by conducting a series of counterfactual analyses with progressively added restrictions. Specifically, channel 1 restricts the reallocation to new branches that are truly rural. Channel 2 adds a further restriction, reallocating new truly rural branches within predominantly urbanized and predominantly rural districts, separately. Lastly, channel 3 imposes an additional restriction, focusing on reallocating only single branches. By comparing the BNRC of each channel to that of the preceding one, we can quantify the impact of each added restriction on the financial accessibility of the rural population.

5 Results

High compliance with the quota rule and substantial increase in RUA branches

Banks complied with the BLP by ensuring that 20% of new branches were opened in RUA. This compliance is illustrated in Panel A of Figure 2 (also in Table 1), which shows the share of new branches labeled as RUA (i.e. NEWRUASHARE) by year. As demonstrated, the big banks have consistently opened more RUA branches than required since 2004, when they first became subject to the BLP. A similar pattern, although less pronounced, can be observed for the small banks starting in 2007, when they also began to follow the policy. This almost full compliance has led to a substantial

increase in RUA branches among both big and small banks, as well as the aggregate of all banks, as depicted in Panel B of Figure 2. To be precise, the total number of RUA branches in Pakistan has increased by 54.6%, from 1778 branches in 2003 to 2748 branches in 2014.

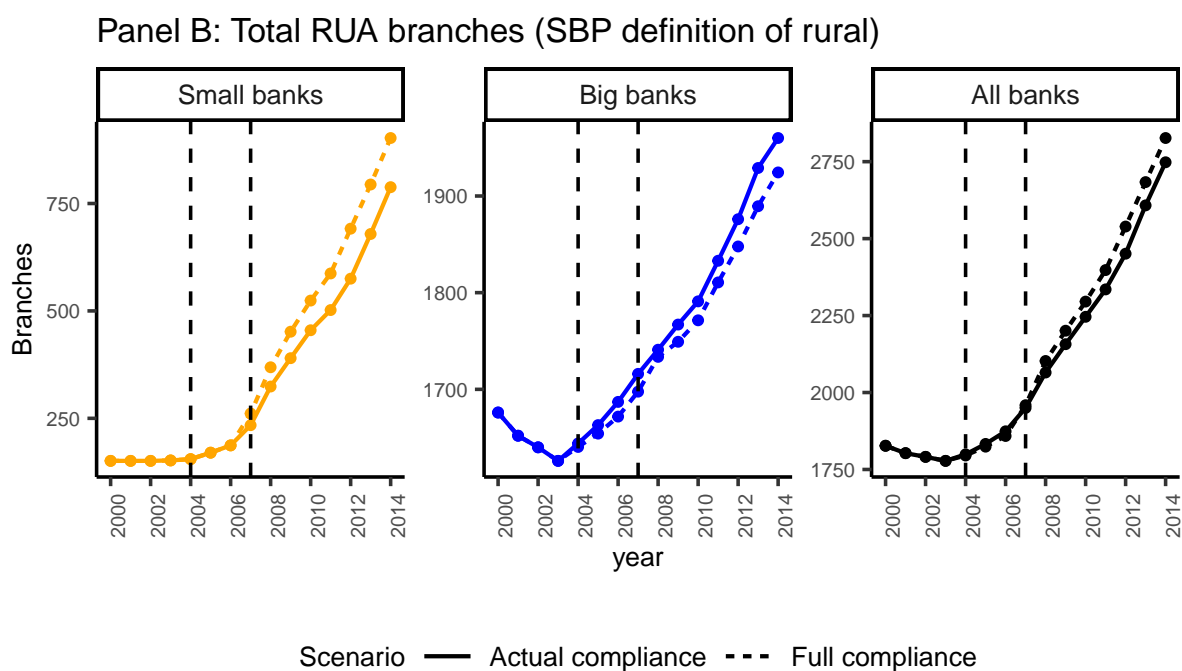
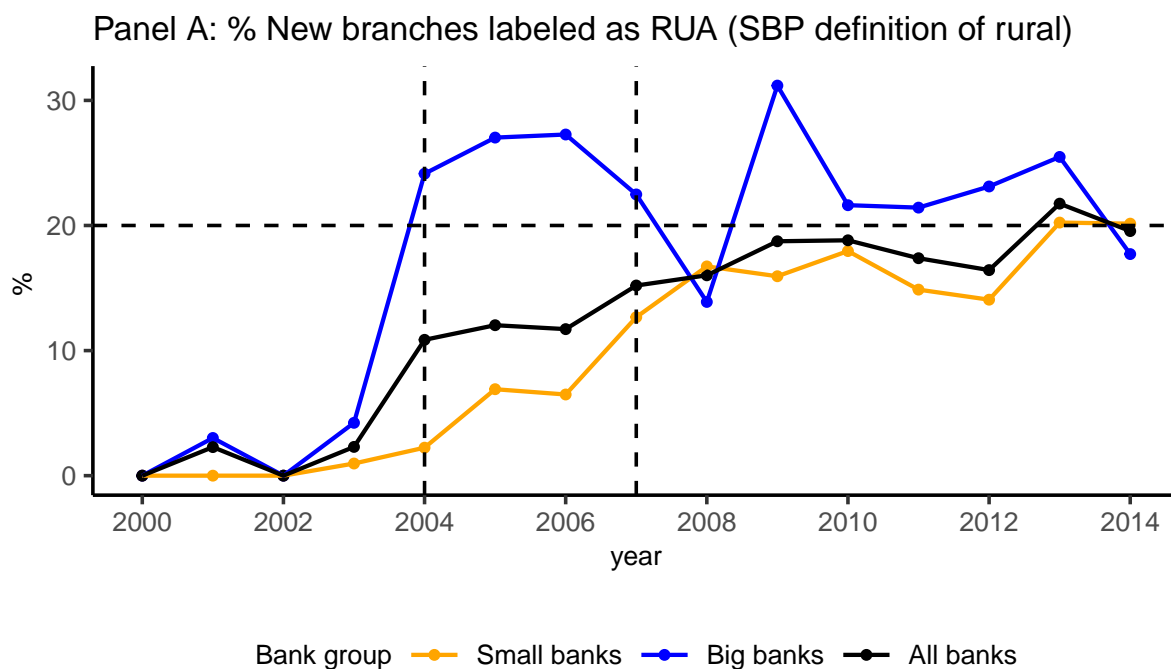


Figure 2: Compliance with the 20% Quota Rule and Number of RUA Branches

Note: “SBP”: State Bank of Pakistan. “Big banks” and “small banks” refer to the banks with a number of branches ≥ 100 and < 100 in 2003, respectively. The 20% quota rule applied to big and all banks from 2004 and 2007 onward, respectively.

Minimal improvement in financial inclusion indicators

In contrast to the substantial increase in the number of RUA branches, our primary

measure of financial inclusion, BNRC, does not show a corresponding rise (Figure 3 and column 1 of Table 2). Precisely, the share of rural population living within 5-kilometer radius of a bank branch has seen a mere increase of 1.6 percentage points, from 25.2 in 2003 to 26.8% in 2014. This pattern is echoed in another financial inclusion indicator derived from the household survey, which reveals a stagnant proportion of households that reported using bank services either “often” or “always”. The proportion of rural households with frequent use of bank has changed from 30.7% in 2004 to 25.5% in 2006, and stagnate at 26.7% by 2012 (Figure 4). Similar stagnation is observed also among the urban households. The disparity between a substantial increase in the number of RUA branches and a minimal improvement in bank access highlights a persistent gap in effective financial inclusion.

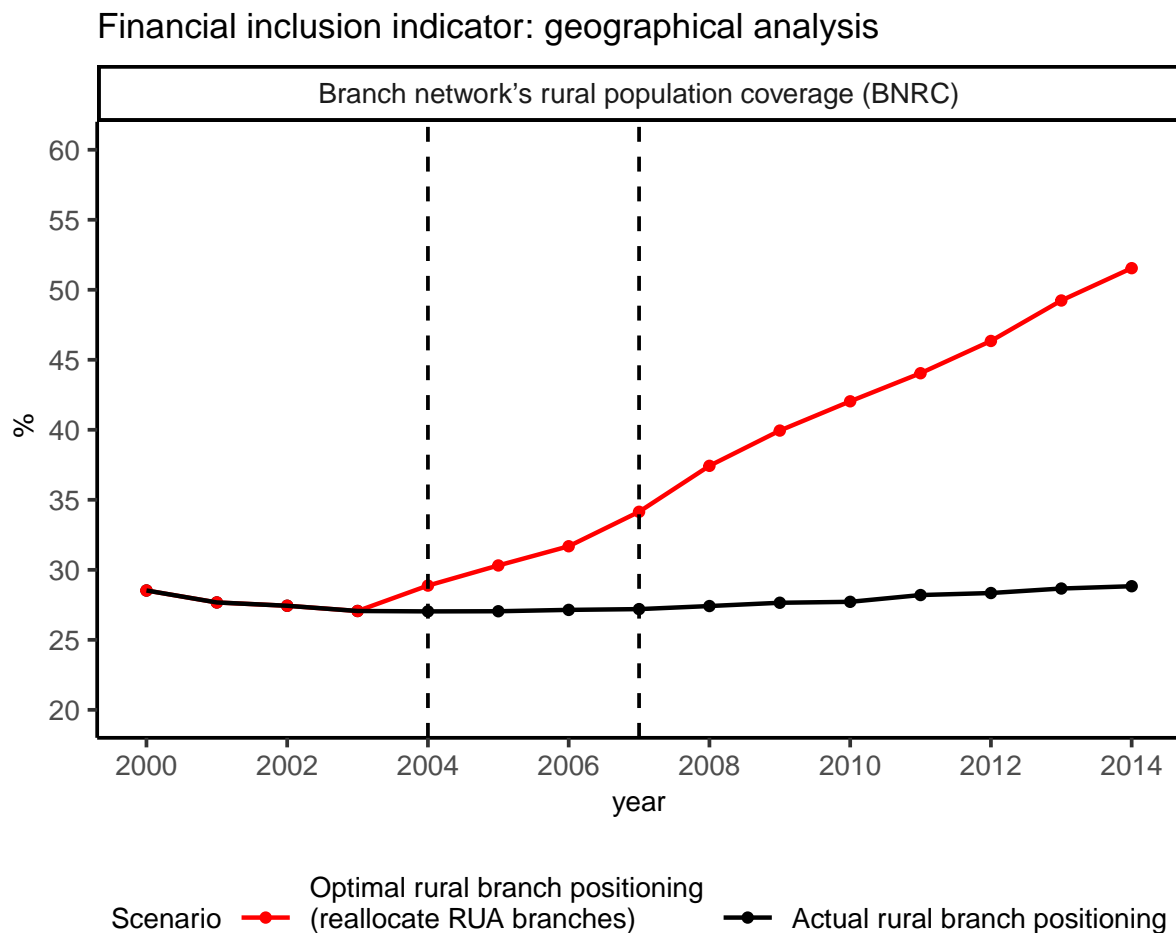


Figure 3: Proportion of Rural Population within 5KM of a Bank Branch

Note: “RUA”: rural and underserved areas as defined by the State Bank of Pakistan.

Financial inclusion indicator: PLSM household survey

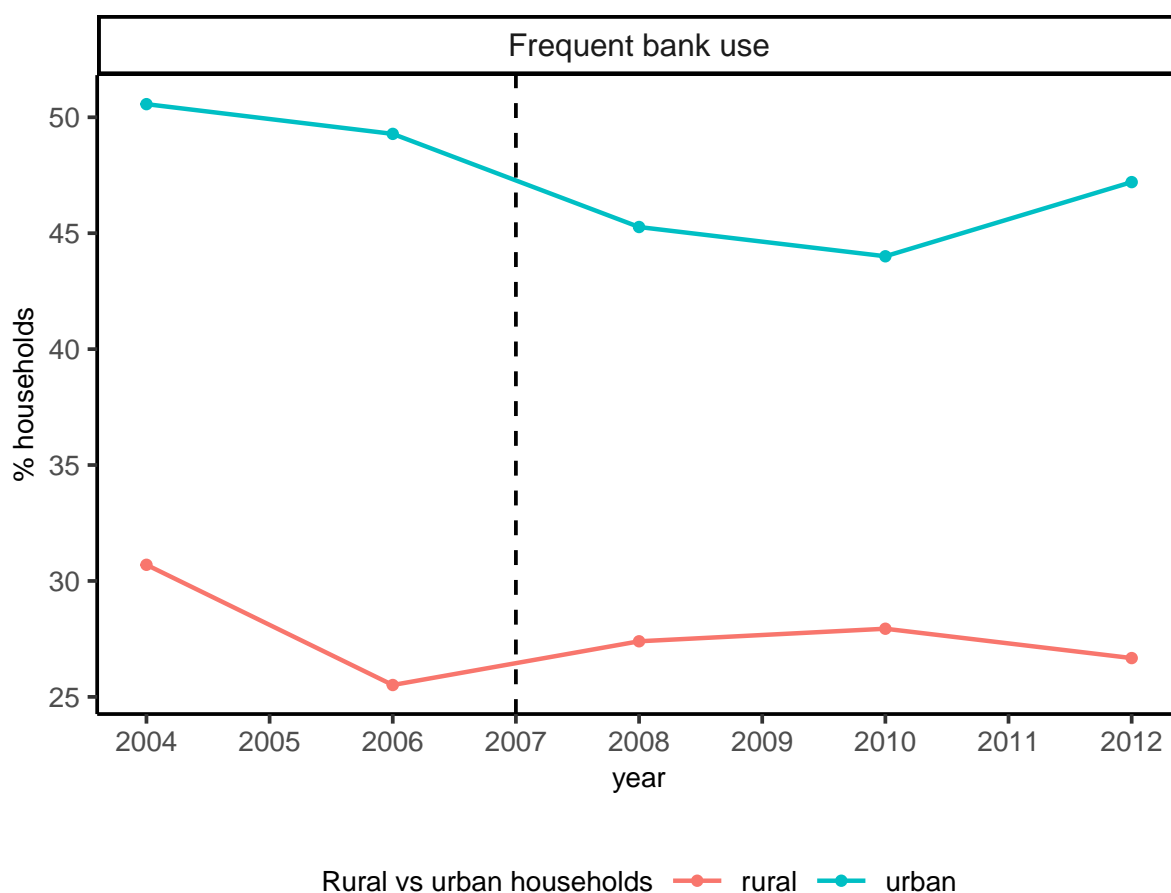


Figure 4: Proportion of Households Reporting Always/often Use Bank Services by Regions

Reconcile the puzzle

To investigate the puzzle of a proliferation of RUA branches with minimal improvement in financial inclusion, we consider several potential channels.

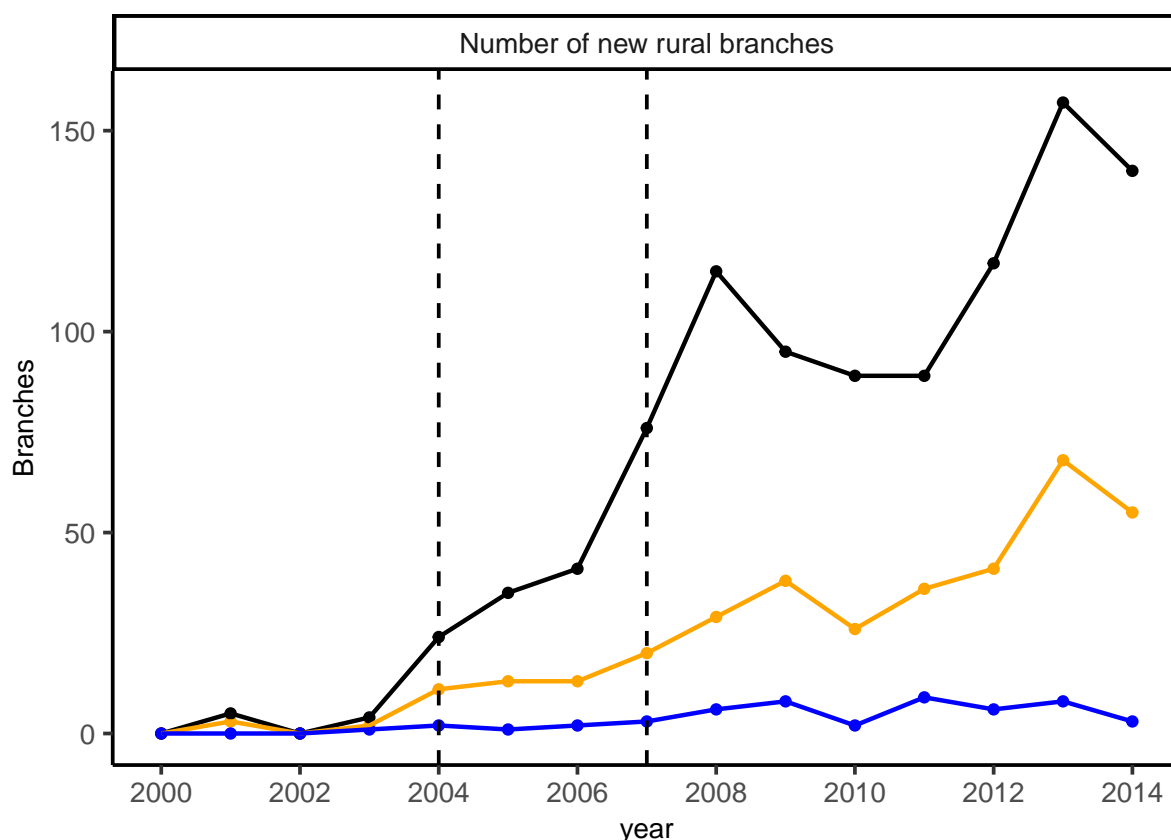
As a first step, we assess the economic significance of the actual RUA branch locations by comparing them to a counterfactual scenario. In this scenario, we reallocate the new RUA branches each year from 2004 to 2014 to unbanked rural areas with the highest rural populations. We consider this the optimal scenario for RUA branch positioning according to the stated objective of the BLP, which would provide the upper bound of BNRC caused by the BLP. The resulting BNRC under the optimal scenario is presented in Figure 3 as a solid red line (detailed values in column 2 of Table 2). It suggests that rural population coverage would have increased by 22.7 percentage points, from 25.2% in 2003 to 47.9% in 2014, had the banks reallocated their new RUA branches

to maximize the impact on financial inclusion.

Next, we investigate three potential channels via which the bank branches failed to achieve this optimal coverage of rural population.

Channel 1: Placement of RUA branches (SBP's definition of rurality) in urban areas

We find the State Bank of Pakistan's (SBP) definition of Rural Unbanked Areas (RUA) to be vague, allowing banks to potentially manipulate the policy. To explore this channel, we compared the number of branches labeled as RUA by the SBP to those truly located in rural areas, defined in the Analysis section as locations outside urban boundaries. Our findings reveal a significant discrepancy: over the years, only about a third of the new RUA branches were actually situated in truly rural areas. Specifically, from 2004 to 2014, there was an increase of 350 truly rural branches compared to an increase of 978 RUA branches (see Figure 5 and Table 1 for the discrepancy by year). This substantial difference indicates a misclassification issue concerning the rural status of branches, suggesting that the intended impact of the Branch Licensing Policy (BLP) in promoting financial inclusion in rural areas may have been undermined by this mislabeling.



Definition of rural branch — RUA — Truly rural — Single branch

Figure 5: Number of New Rural Branches by Definitions of Rurality

Note: “RUA” is the “rual and underserved areas” status assigned to the branches by the State Bank of Pakistan. “Truly rural” is the rural status identified by whether a branch is located outside the urban boundaries. “Single” refers to the branches that are the only branch within its 5-kilometer radius.

To further quantify the impact of this channel on the financial inclusion measure, BNRC, we conduct a counterfactual analysis similar to the one specified in the Analysis section except that we only reallocate the new truly rural branches in each year. The resulting BNRC under this scenario is depicted as blue line in Figure 6. By comparing the optimal to channel 1 scenario, the rural population coverage drops by 11.4 percentage points in 2014 (from 47.9 to 36.5%). This is the distortion caused by the banks’ placement of two thirds of the new RUA branches in urban areas. In addition, by comparing channel 1 to the actual scenario, one can also see that reallocating just the truly rural branches (a third of the RUA branches) would already increase the BNRC in 2014 by 9.7 percentage points, accounting for 46% of the improvement from the actual

to the optimal scenario. The existence of the gap between channel 1 and the actual scenario suggests that there are other channels via which the banks are deviating from the goal of maximizing financial inclusion when positioning their truly rural branches.

Channel 2: Placement of truly rural branches in largely urbanized districts

Inspired by the line of literature that shows more urbanized areas benefit firms by better agglomeration economics and amenities (Puga 2010, Combes et al. 2012), we investigate whether banks favor more urbanized districts when positioning their truly rural branches, a channel that can potentially explain the gap in the BNRC between the actual and channel 1 scenario. To uncover this channel, we conduct a counterfactual analysis similar to channel 1, but we do so separately for two distinct groups of districts: largely urban and largely rural districts. First, we split the districts into those with an urban population share above the median, which we classify as largely urbanized, and those with an urban population share below the median, which we classify as largely rural. These two groups consist of roughly equal number of districts. Second, we separately count the numbers of new truly rural branches that were actually located in these two groups of districts by year. Lastly, we respectively reallocate the numbers of truly rural branches to the unbanked locations in the two groups of districts.

As shown in Figure 6, the resulting BNRC is almost indistinct from the one of channel 1, suggesting that the banks did not actually favor largely urbanized districts over largely rural ones when locating their truly rural branches.

Channel 3: Placement of rural branches in already banked locations

We further classify the truly rural branches into single and non-single branches as defined in the Analysis section. We find that single branches are relatively scarce. In fact, only 54 among the 350 truly rural branches opened between 2004 and 2014 are single branches (blue line of Figure 5). This suggests that the gap in BNRC between channel 2 and the actual scenario could be explained by banks resisting opening single branches. We confirm this by running a counterfactual analysis similar to channel 2, except that we only reallocate the singles branches in each of the two districts groups. Shown as yellow line in Figure 6, the BNRC of channel 3 differs from channel 2 by a large gap that makes up almost entirely the difference between channel 2 and the

actual scenario. Detailed values can be found in Table 2. This quantifies the loss due to the banks avoiding locating a bulk (85.6%) of truly rural branches in unbanked locations, a practice that is not consistent with the objective of the BLP, although such practice does not necessarily violate the letters of the policy.

Interestingly, reallocating single branches to the most rural unbanked locations (channel 3) shows a minimal change in the BNRC, rising only slightly from 25.2% in 2003 to 28.4% in 2014. This stagnation is likely due to the limited number of single branches available for redistribution. Additionally, the small residual between the BNRC of channel 3 and the actual scenario represents the impacts of other factors that affect banks' decisions on the placement of their single branches.

As a sensitivity check, we conduct all the counterfactual exercises by choosing locations from a list of populated settlements instead of union councils. Presented in Figure A1 and Table A1, the resulting rural population coverage under different scenarios remain similar to the ones using union councils.

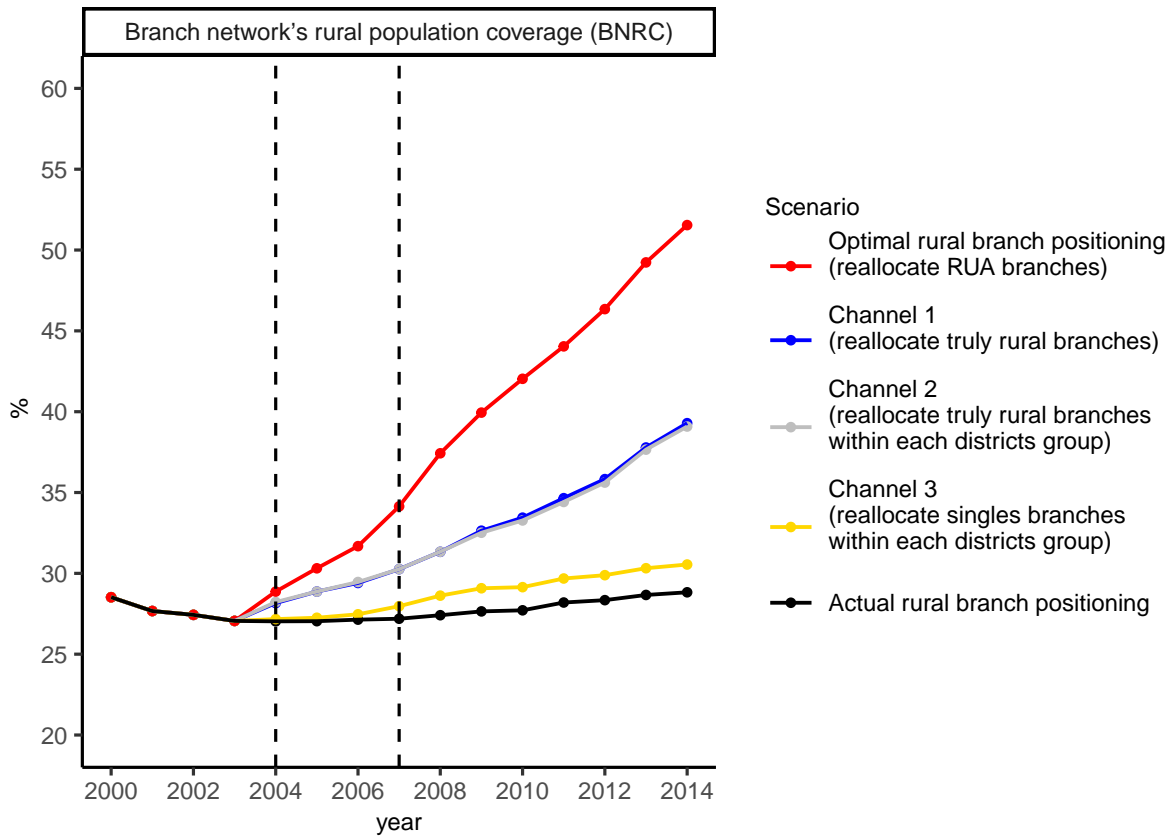


Figure 6: Proportion of Rural Population within 5KM of a Bank Branch by Scenarios

Note: "RUA" is the "rual and underserved areas" status assigned to the branches by the State Bank of Pakistan. "Truly rural" is the rural status identified by whether a branch is located outside the urban boundaries. "Single" refers to the branches that are the only branch within its 5-kilometer radius.

Table 2: Branch Network’s Rural Population Coverage by scenarios

Year	Actual				
	Scenario	Counterfactual scenarios			
		Optimal	Channel 1	Channel 2	Channel 3
	(1)	(2)	(3)	(4)	(5)
2000	26.51	26.51	26.51	26.51	26.51
2001	25.72	25.72	25.72	25.72	25.72
2002	25.50	25.50	25.50	25.50	25.50
2003	25.15	25.15	25.15	25.15	25.15
2004	25.12	26.84	26.17	26.23	25.25
2005	25.13	28.17	26.84	26.84	25.33
2006	25.22	29.45	27.33	27.39	25.53
2007	25.27	31.74	28.13	28.13	26.00
2008	25.48	34.79	29.12	29.13	26.60
2009	25.70	37.13	30.34	30.22	27.03
2010	25.76	39.07	31.09	30.93	27.09
2011	26.21	40.93	32.21	31.99	27.59
2012	26.34	43.08	33.30	33.11	27.78
2013	26.64	45.76	35.12	35.00	28.18
2014	26.79	47.91	36.52	36.33	28.39

Note: This table provides the precise "Branch Network’s Rural Population Coverage" (BNRC) by year under the actual and various counterfactual scenarios. Notice that the counterfactual scenarios only reallocate new branches that were opened since 2004. Therefore, the BNRC before 2004 from the counterfactual scenario remain unchanged as in the actual scenario.

6 Discussion

After the liberalization of Pakistan’s banking sector in the early 2000s, the country saw a rapid expansion of its rural branch network, with more than a 50% increase within a decade. This growth was expected to significantly benefit rural areas, where about two thirds of the population resides. According to policy, one-fifth of the 5,722 new branches (opened between 2004 and 2014) were intended to be established in these rural regions to enhance financial accessibility.

However, our findings reveal a significant shortfall in achieving this goal. Several factors contributed to the banks’ resistance to the most rural locations. Firstly, the formulation of the rural expansion rule, which included “villages, small towns, and unbanked tehsil headquarters”, allowed for branch openings in already banked villages and small towns. Consequently, 924 of the 978 new branches categorized as RUA were placed in locations that already had banking services (94.5%), undermining the objective of

expanding financial access to genuinely unbanked areas.

Additionally, the RUA status labeled by banks often did not align with the actual geographical location. This discrepancy suggests that banks avoided the rural locations by exploiting the vague definition of RUA, where no quantifiable thresholds were provided for urban-rural categorization of small towns and tehsil headquarters. Specifically, only 350 of the 978 new RUA branches (35.8%) were located in the intended rural areas. This misallocation further diluted the policy's effectiveness in addressing the banking needs of the rural population. These factors highlight the shortcomings in the implementation and oversight of the rural branch expansion policy, resulting in a missed opportunity to improve financial inclusion in Pakistan's rural regions.

The expansion of bank branches in rural areas requires well-designed rules to ensure successful implementation. The experience in Pakistan highlights the need for a more structured approach to the designation of new branch locations. Instead of allowing banks to choose locations and relying on bureaucrats to assess compliance, a more effective strategy might be to establish a positive list of priority locations, similar to the reform implemented in India (Burgess and Pande, 2005b). This list would clearly outline specific areas that need banking services, reducing ambiguity and ensuring that new branches are opened where they are most needed.

Our study has several limitations. First, our definition of urban boundaries differs from that used by the Pakistan Population Census, which could introduce systematic measurement errors in classifying the truly rural status of a branch. However, we believe the impact of this error is minimal, as the urban population share derived from our urban boundary closely matches the census-reported figures. Second, we assume that urban boundaries remain at their 1995 levels throughout the years of our counterfactual analyses. If urban boundaries have expanded, this assumption could lead to an overestimation of the number of truly rural branches reallocated in channels 1 to 3. Consequently, this might result in an overestimation of the BNRC associated with these channels. However, since the impact of a channel is quantified by comparing its BNRC to the optimal scenario, an overestimation in the channels' BNRC would imply an underestimation of the distortion. Therefore, our estimates represent a lower bound of the distortions. The impact of this assumption is further mitigated by the fact

that the urban population share has remained relatively stable over time, with 32.5% in the 1998 census and 36.4% in the 2017 census. This stability suggests that the expansion of urban boundaries would have a limited effect on our analysis. Third, our counterfactual analyses do not consider factors other than the number of rural population living within the 5-kilometer radius of a location. Although valuable, the lack of geospatial measurements of other factors hinders our ability to model their distortion individually in the choice of branch locations. However, the aggregate distortions from other factors could be quantified as the gap between the channel 3 and actual scenario in figure 6, which shows a 6% reduction in relative term by the year of 2014 (i.e. $1 - \frac{26.79}{28.39}$ implied by table 2). If we assume that these factors distort the location choices of single branches and RUA branches in a similar fashion, we could expect the coverage under optimal scenario to reduce by about 6% in relative term to the level of 45.2% by the year of 2014. This adjusted coverage still shows a substantial improvement compared to the actual scenario. We believe our analyses still provides insight into the puzzle of a substantial increase in rural branches alongside stagnant rural bank accessibility, as documented by household surveys.

To better understand the shortcomings of the rural expansion policy, it is valuable to explore the types of violations that occurred. Specifically, distinguishing between violations of the letter of the policy (explicit non-compliance with the stated rules) and violations of the spirit of the policy (actions that technically comply but undermine the policy's intended goals) will provide further insights. To achieve this, researchers will need a more detailed classification of the new branches into villages, small towns, and unbanked tehsil headquarters than the simple rural-urban classification to compare to the RUA status assigned by the SBP. We leave this for future research.

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Appendices

A Deriving the urban population share from geospatial data

To evaluate the quality of the geospatial data used in this study, we compare the urban population share derived from our geospatial data (estimated by GRUMP for 1995) with the share reported in the 1998 population census, which is the closest census to the GRUMP estimation. The population raster data provides population counts at a 1-kilometer by 1-kilometer grid resolution. By overlaying the population raster data with the urban boundary, we classify all grids as urban if any part of a grid falls within the urban boundary. The urban population share using geospatial data is defined as follows.

$$URBANPOPSHARE = \frac{\sum_g (POP_g * URBAN_g)}{\sum_G (POP_g)}$$

where POP_g is the population count of the grid g . $URBAN_g$ is a dummy variable indicating a grid falling within urban boundary. G is the total number of grid within Pakistan.

B Using settlements as candidate locations for the counterfactual analyses

For the counterfactual analyses, ideally we would like to use the universal list of locations identified by the banks. Unfortunately, such data is not available. Therefore, we resorted to using the union councils as the candidates for locating the rural branches. In this section, we examined the sensitivity of using the union councils by conducting the counterfactual analyses using another list of candidate locations, i.e. the 122,654 populated settlements identified by the United States National Geospatial-Intelligence Agency (NGA)⁵. Compared to the union councils, the number of settlements is much larger and more densely distributed across the country. The resulting rural population coverage by scenarios are presented in figure A1 and table A1, which are similar to the results using union councils in the main text.

⁵<https://data.humdata.org/dataset/pakistan-settlement>, accessible on August 01, 2024

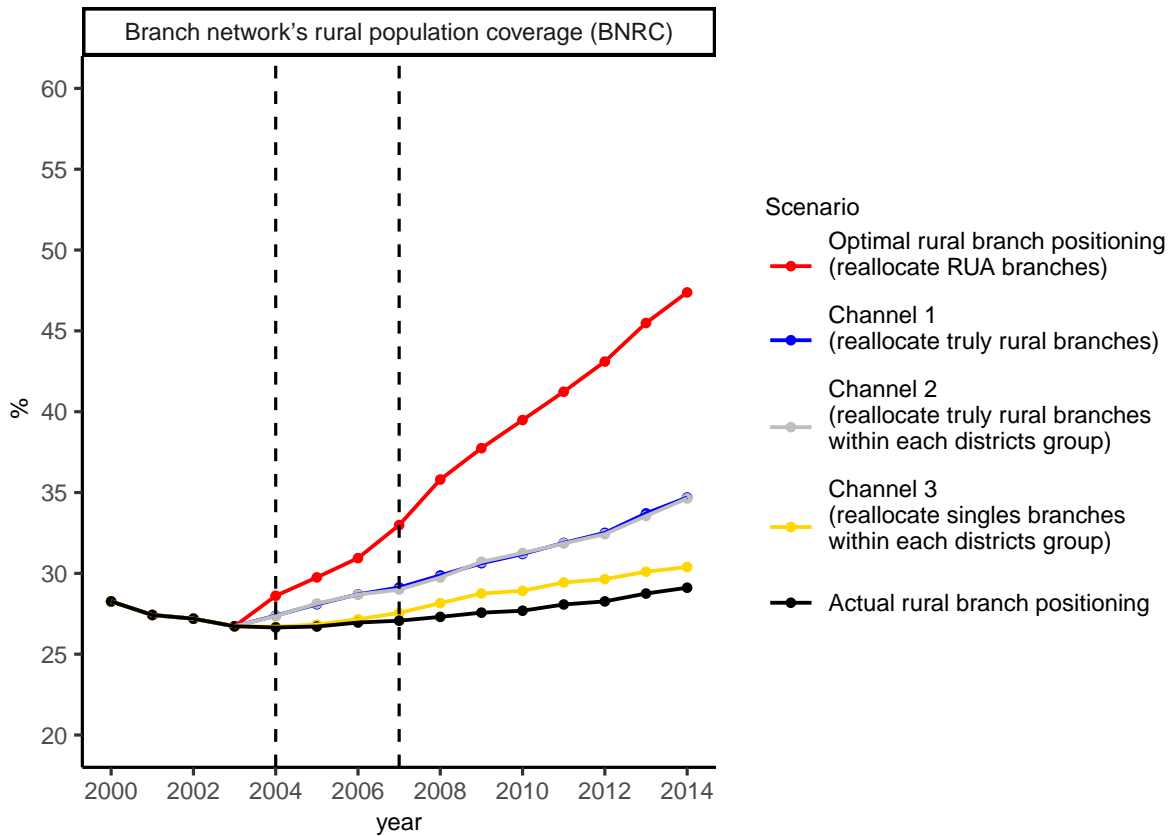


Figure A1: Proportion of Rural Population within 5KM of a Bank Branch Using Populated Settlements as Counterfactual Locations

Note: "RUA" is the "rual and underserved areas" status assigned to the branches by the State Bank of Pakistan. "Truly rural" is the rural status identified by whether a branch is located outside the urban boundaries. "Single" refers to the branches that are the only branch within its 5-kilometer radius.

**Table A1: Branch Network’s Rural Population Coverage Using Populated Settlements
as Counterfactual Locations (%)**

Year	Actual	Counterfactual scenarios			
	Scenario (1)	Optimal (2)	Channel 1 (3)	Channel 2 (4)	Channel 3 (5)
2000	28.26	28.26	28.26	28.26	28.26
2001	27.43	27.43	27.43	27.43	27.43
2002	27.20	27.20	27.20	27.20	27.20
2003	26.72	26.72	26.72	26.72	26.72
2004	26.65	28.61	27.39	27.36	26.70
2005	26.71	29.75	28.09	28.13	26.84
2006	26.96	30.94	28.70	28.68	27.16
2007	27.07	32.99	29.12	28.99	27.55
2008	27.31	35.80	29.87	29.74	28.16
2009	27.57	37.74	30.63	30.71	28.75
2010	27.69	39.49	31.20	31.26	28.92
2011	28.07	41.23	31.88	31.85	29.44
2012	28.27	43.10	32.50	32.42	29.64
2013	28.75	45.49	33.71	33.55	30.10
2014	29.11	47.38	34.69	34.64	30.39

Note: This table provides the precise "Branch Network’s Rural Population Coverage" (BNRC) by year under the actual and various counterfactual scenarios.