

Do Rural Banks Matter That Much?

Burgess and Pande (2005) Reconsidered

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August, 2020

Summary

We replicate Burgess and Pande's (American Economic Review, 2005, 95 (3), 780–795) work where they analyze the effects of India's state-led bank expansion on poverty from 1961 to 1990. Using the structural shift in 1977 as an instrument, they find that the expansion in rural areas decreased poverty. However, Burgess and Pande do not consider other concurrent policies affecting the financial sector and poverty, undermining the instrument's validity. We show that structural shifts in the rural bank expansion and poverty can be identified for almost any other year. Therefore, our results imply that their experiment does not prove a superior impact of bank expansion on poverty reduction.

JEL Codes: G21, G28, O15, O16

Keywords: Rural Poverty, Bank Expansion, Finance and Development, Access to Finance

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Acknowledgment: This work is supported by the Grant Agency of the Czech Republic, Grant No. GACR no. 20-14990S and by the Charles University Research Centre program No. UNCE/HUM/035. Furthermore, Nino Buliskeria acknowledges the support of the Charles University Grant Agency, Grant No. 1034519. We are grateful to Robin Burgess, Rohini Pande, Victor Quintas-Martinez, Andreas Mittag, Stepan Jurajda, and Ali Elminejad for helpful comments and suggestions. The responsibility for all remaining errors and omissions rests solely on us. Conflict of interest: None.

1 Introduction

Over the years, easing access to financial services to reduce poverty and boost overall economic growth has become a widely accepted approach. Several alternative policies have already been carried out, including credit subsidies for the poor, microfinance, and bank expansion in previously unbanked areas. The importance of finance for growth has been confirmed by many; even the 2010 edition of the *Handbook of Development Economics* contains a separate chapter surveying that time evidence (Karlan & Morduch, 2010). Although A. V. Banerjee and Duflo (2011) have questioned the transformative power of microfinance, the focus on access to finance has been incorporated in development strategies.

One of the most influential papers supporting the view that easier access to credit and saving facilities helps decrease poverty is Burgess and Pande (2005). By the mid of 2020, this paper collected more than 1300 Google Scholar citations, with over 400 of them within the last three years, indicating an ongoing interest in their research. Their paper has been acknowledged in several policy publications (i.e., Claessens and Feijen, 2007; Honohan and Beck, 2007; Jahan and McDonald, 2011) and mentioned in the Handbook of Development Economics (Rodrik & Rosenzweig, 2010).

The identification of the effect of access to finance on poverty requires a careful treatment of potential endogeneity. Burgess and Pande (2005) employ bank expansion as a measure of access to finance. However, since banks prefer to expand in the areas with increasing business opportunities, the expansion is not necessarily exogenous to poverty. Burgess and Pande (2005) solve the problem of causal inference by instrumenting the bank expansion with the imposition and removal of the 1977 bank branch licensing policy. Therefore, they test for the presence of a structural break in a trend of bank expansion in rural areas, and whether the increase in the number of bank branches induces a decrease in rural poverty. In their exercise, the exogeneity of instruments requires the bank licensing policy of 1977 to be the only policy aimed at reducing poverty. While Burgess and Pande (2005) consider the 1977 policy new and one-time government intervention, Panagariya (2006) and Kochar (2011) present a somewhat different picture. They assert that the expansion policy started in the 1960s, and the 1977 intervention was just another amendment to the preexisting policy. Therefore, the authors claim that the 1977 revision was neither new nor significant.

This paper provides a replication of Burgess and Pande (2005). We successfully reiterate their empirical results; however, we find the significant trend reversals for almost every year between 1970 and 1984. These results, along with the historical evidence on policy changes, suggest that Burgess and Pande (2005) overestimate the effect of the bank expansion on poverty. Therefore, the doubts about the efficiency of the state-led bank expansion are even more considerable than in Burgess and Pande (2003). Thus the Indian bank expansion program might not be the first best option for development strategies.¹

The remaining part of the paper is organized as follows. The second section describes the policies that took place in India from 1960 to 1990. Section three presents the replication of Burgess and Pande (2005). First, we

¹Note that a decrease of rural poverty in India accelerated in the 1990s, after the bank expansion policy was abandoned, see Figure A1 in the appendix.

present the data and research design offered by the authors. Further, we discuss the results from reduced-form evidence and instrumental variables evidence, as shown in Burgess and Pande (2005). Finally, section four presents the empirical exercise to analyze the instrument's relevance and exogeneity and conclude with section five.

2 The Indian policies of the late 20th century

The All India Rural Credit Survey (Reserve Bank of India, 1947) shows that more than 90 percent of rural credit needs were satisfied by informal lenders, and the share of bank lending in rural household credit was only 1 percent. Until the 1990s, the share of bank lending in total rural credit increased to 29 percent, mainly due to the increasing number of co-operatives (Basu & Srivastava, 2005; Burgess & Pande, 2005). According to Madan (2007), the Government of India promoted the increase of cooperatives from the mid-1960s. Simultaneously, following the Nationalization Act of 1969, the Reserve Bank of India (RBI) took over the 14 largest commercial banks under its administration and launched a massive bank expansion program aiming at equal access to financial services across India (A. Banerjee et al., 2004; Burgess & Pande, 2005; Kochar, 2011). However, commercial banks needed a license from the RBI to open a new branch starting from 1949.

Burgess and Pande (2005) focus on the bank branch licensing policy (the 1:4 rule hereinafter) introduced in 1977, which required banks for each newly opened branch in a banked location to open four additional branches in locations from the RBI's preselected list. The list contained all unbanked locations, predominantly in rural areas with no preexisting financial institutions, and a ratio of the population size per bank over a certain threshold. Therefore, the offered list contained states with lower initial financial development measured by the number of branches per capita. Every three years, the list was updated with a lower population threshold.

However, Panagariya (2006) accentuates that the rules linking rural and urban financial development were first introduced in the 1960s and amended multiple times, including in 1977. We present the sequence of events in Figure 1. In July 1962, the RBI adopted a 2:1 rule that obliged banks to open one branch in unbanked locations for every two branches opened in banked. The rule was first updated to a 1:1 ratio in 1967, and later to 1:2 for the banks with rural branches over 60% and a 1:3 for others. In 1971 the ratio was (1+1):3 and (1+1):2; the banks could open a branch in each - urban and metropolitan locations for three branches opened in rural area (two branches for banks with over 60% of rural branches). Later in 1977, according to Panagariya (2006), the RBI updated previous rules to the (1+1):4 ratio, rather than to 1:4 ratio. The banks were allowed to open a branch in urban and metropolitan areas, one in each, for every four branches opened in rural areas. Therefore, Panagariya (2006) argues that the 1977 amendment was neither new nor that much different from the past rules.

Furthermore, Kochar (2011) and Panagariya (2006) state that the bank expansion rules before 1979 were considered inefficient in reducing poverty. As a solution, the Government of India introduced the Integrated Rural Development Program (IRDP) and a new Bank Licensing Policy (BLP) in 1979, just two years after the

1:4 rule stressed by Burgess and Pande (2005) was implemented. With the new policy, the government directly assigned the new locations for the bank openings. New BLP was implemented in three consecutive stages – 1979 - 1981; 1982 - 1985; 1985 - 1990 (Figure 1). The first stage targeted 20 000 individuals per bank in each district; then, the target decreased to 17 000 (calculated with the 1981 base population). Figure 2 shows that the population-to-rural bank ratio significantly decreased and converged to around 20 000 people per bank before 1990.

By October 1980, the IRDP was a prominent program in fighting poverty (Kochar, 2011). Copestake (1996) asserts that the primary purpose of the IRDP was to increase the share of productive assets in rural locations by subsidizing credit. However, the efficiency of the IRDP has been questioned frequently. Pulley (1989) recommended substantial adjustments to the credit subsidizing rules. Nonetheless, after reviewing dozens of studies on the effectiveness of the IRDP, Paul (1998) finds that although the number of families that crossed the poverty line was not significant, the poverty level declined amongst three-fourths of the IRDP families. The author asserts that the IRDP caused higher penetration of banks in rural areas.

Panagariya (2006) further notes that since the late 1970s, the rural branch openings exceeded the required ratios. The author gives two possible explanations. First, opening branches in rural locations could have been profitable. However, this hypothesis is unconvincing as the ratio of new branches in rural areas decreased immediately after 1990, when the licensing policy ended. The second reason could have been the existence of another simultaneous policy forcing the financial sector towards rural locations, i.e., the IRDP. Kochar (2011) further points to a close correlation between the IRDP and BLP, specifically to the development of the rural banking infrastructure and IRDP expenditure, thus indicating the possible IV endogeneity problem in Burgess and Pande (2005).

The series of massive and costly policies resulted in a balance-of-payments crisis in 1990. Kochar (2011) states that this meant an end to the era of supply-driven policies for India. Licensing policy ended in 1990, as the RBI stopped interfering in the banks' expansion decisions. Even though closing the rural branch, if it was the only bank in the area, was not allowed, the number of rural banks sharply decreased in the following decade (Shah et al., 2007).

3 Replication of the work

3.1 Data

We use the same dataset² as Burgess and Pande (2005), provided by the Reserve Bank of India. It contains information on bank branch opening dates, locations, and state characteristics (poverty, wages, expenditure, land reform, and population) from 1961 to 2000 in 16 Indian states. The authors categorize the branch openings into two classes - openings in rural unbanked and banked locations. The first classification refers to branches

²The data were downloaded from the American Economic Association website: <https://www.aeaweb.org/articles?id=10.1257/0002828054201242>

that opened in a previously unbanked rural location; the latter refers to the openings in a location with one or more banks. The initial financial development is proxied by the number of bank branches per capita for each state in 1961; and the branch expansion by a sum of branches per capita in each state over time. Lastly, Burgess and Pande (2005) use a poverty headcount ratio from the national household expenditure surveys to measure poverty. This ratio measures the share of the population below the official poverty line.

3.2 Bank expansion and initial financial development

Burgess and Pande (2005) begin by evaluating the impact of the 1:4 rule on bank expansion. Without any constraints, banks are willing to expand and open new branches in wealthier states. In contrast, using the 1:4 rule, the RBI forced banks into opening bank branches in poorer states. They test the hypothesis that the banks would mainly expand in less financially developed locations from 1977 to 1990, contrary to the other years without the 1:4 rule.

Therefore, they start by estimating bank expansion as a function of the initial financial development:

$$B_{it}^R = \alpha_i + \beta_t + \sum_{t=1961}^{2000} (B_{i1961} * D_k) \gamma_t + \sum_{t=1961}^{2000} (X_{i1961} * D_k) \delta_t + \varepsilon_{it}, \quad (1)$$

where B_{i1961} is the measure of the 1961 financial development level in the state i ; this variable enters the regression interacted with year dummies D_k ; thus, γ_t is the coefficient estimate for the year-specific effect of the initial financial development on bank branch openings.³ X_{i1961} represents a vector of initial state conditions – log real state income per capita, population density, and the number of rural locations per capita, all measured in 1961. They enter the regression interacted with year dummies as well, and δ_t is the year-specific coefficient.⁴

The coefficient γ_t is depicted as the solid line in Figure 3a. Burgess and Pande (2005) explain that without constraining the 1:4 rule, the new branches were increasingly opened in already banked locations from 1961 to 1977. On the other hand, the rule reversed the trend, the coefficient γ_t decreased, and bank branches were opened with a higher rate in financially less developed locations.

The trend reversals are summarized by a linear trend break model:⁵

$$B_{it}^R = \alpha_i + \beta_t + \gamma_1(B_{i1961}^R[t - 1961]) + \gamma_2(B_{i1961}^R[t - 1976]P_{1977}) + \gamma_3(B_{i1961}^R[t - 1990]P_{1990}) + \gamma_4(B_{i1961}^R P_{1977}) + \gamma_5(B_{i1961}^R P_{1990}) + F(X_{i1961}) + \varepsilon_{it} \quad (2)$$

Burgess and Pande (2005) point out that state and year fixed effects can account for differences in state and time-specific characteristics that affect bank expansion. The linear time trends $[t - 1961]$, $[t - 1977]$, and

³Note that the difference $\gamma_{t+1} - \gamma_t$ indicates the change in rural branch growth between $t+1$ and t attributed to state i 's initial financial development.

⁴In this section, we opted for the methodology in line with the Stata code accompanying Burgess and Pande (2005). Hence, the equations are closer to the working paper version (Burgess & Pande, 2003) rather than the journal version.

⁵The corresponding equation (3) in the journal version does not contain the pulse dummies P_{1977} and P_{1990} in the interaction terms with the trends, although they are included in the authors' code. These dummies assure that the trends affect only the respective time periods - without them, the trends would be negative for preceding periods. Hence, we decided to include them in equation (2).

$[t - 1990]$ that switch on in 1961, 1977, and 1990 enter the regression interacted with the measure of the state's initial financial development, B_i1961 . $P1977$ and $P1990$ are dummy variables that equal one from 1977 and 1990 until 2000, respectively. The inclusion of the set of additional controls, X_i1961 , ensures that any observed trend reversal in B_i1961 does not reflect trend breaks in a state's economic and demographic characteristics. The standard errors are clustered by states to account for possible serial correlation.

We have successfully replicated these and all the subsequent estimations of Burgess and Pande (2005). We provide all the replicated tables in the online appendix A. To summarize, the trend reversals in 1977 and 1990 are statistically significant, as confirmed by the F-tests on restriction $\gamma_1 + \gamma_2 = 0$ and $\gamma_1 + \gamma_2 + \gamma_3 = 0$ (see Table A1). Additionally there is a significant downward sloping trend in the effect of initial financial expansion on poverty, as more banks opened in previously unbanked locations after 1977. Along with Burgess and Pande (2005), we find similar trend reversals in credit and saving shares (Figure 3b). Initially, credit shares are higher in financially more developed states; however, from 1977 to 1990, the pattern is reversed, and rural credit shares become higher in states with lower initial financial development. Thus, the rural bank expansion, influenced by the 1:4 rule, positively affected savings mobilization and credit disbursement in rural India. Furthermore, we also confirm the absence of significant trend reversals in the flows of credits to the small scale industries, services, and agriculture (that time priority sectors) and primary agricultural co-operatives (columns 5 and 6 in Table A1). Analogously, significant economic, political, and policy variables of the states that influence rural poverty do not exhibit a trend reversal similar to those seen in Figures 3a and 3b.

3.3 Impact of bank branch expansion on poverty

Following Burgess and Pande (2005), we further analyze the effect of bank expansion on India's rural poverty. First, we study the impact of the initial financial development on poverty outcomes using OLS regression, and then we address the endogeneity between rural branch expansion and poverty. The OLS regression (column 1 of Table 1) reveals a positive correlation between bank branches opened in rural unbanked locations and poverty. However, due to the nonrandom nature of branch openings, the correlation does not indicate the causal effect. It rather merely reflects that more branches were opened in poorer and previously less financially developed area.⁶ After including the interaction terms of a state's initial financial development and a time trend, and additional initial conditions as regressors, the relation between the number of branches and poverty becomes insignificant (column 2).

Hence, the authors account for endogenous branch placement by considering trend reversals between 1977 and 1990, and between 1990 and 2000 (relative to 1961 – 1977 trend), estimated in equation (2), as instruments for rural branch openings. This idea resembles the difference in difference estimation, where only the interactions between initial financial development and treatment or control periods are considered. There is one treatment period (1977-1989), and two control periods (1961-1976 and 1990-2000). Moreover, the imposition and removal

⁶Note that after including the interaction terms of a state's initial financial development and a time trend, and additional initial conditions as regressors, the relation between the number of branches and poverty becomes insignificant (column 2).

Table 1. Bank branch expansion and poverty: instrumental variables evidence

	Headcount ratio										Wage							
	Rural		Urban		Aggregate		Rural		Survey years		Agricultural	Factory						
	OLS	(2)	IV	(3)	IV	(4)	IV	(5)	IV	(6)	IV	(7)	IV	(8)	IV	(9)	IV	(10)
Number branches opened in rural unbanked locations per capita	2.09** (0.785)	1.16 (1.024)	-4.74** (1.790)	-0.66 (1.066)	-4.10** (1.464)	-4.70** (1.821)	-6.84** (2.805)	-4.21* (2.263)	0.08* (0.042)	0.05 (0.083)								
Number of bank branches per capita in 1961*(1961–2000) trend		-0.43** (0.165)	-0.48* (0.269)	-0.26* (0.134)	-0.46* (0.226)	-0.43 (0.264)	-0.80* (0.447)	-0.46 (0.281)	-0.01 (0.004)	0.01 (0.013)								
Number of bank branches per capita in 1961*Post-1976 dummy [†]		-0.31 (1.229)	-1.42 (2.297)	-2.06 (1.654)	-1.39 (2.034)	-2.13 (2.587)		-1.31 (3.322)	0.04 (0.059)	0.03 (0.065)								
Number of bank branches per capita in 1961*Post-1989 dummy [†]		5.38** (2.468)	-1.08 (2.334)	-0.47 (1.015)	-1.55 (1.759)		-0.45 (2.903)	-0.79 (2.614)	0.11 (0.068)	-0.05 (0.047)								
State and year dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Other controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Overidentification test			[0.99]	[0.99]	[0.99]	[0.99]		[1]	[0.98]	[0.99]								
Adjusted R-squared	0.807	0.834	0.760	0.915	0.818	0.804	0.807	0.734	0.868	0.699								
Observations	627	627	627	627	627	460	375	375	545	554								

Source: This table is a replication of Table 3 in Burgess and Pande (2005), page 789. For replication I used data and methodology provided by the authors. [†] Original paper contains Post-1976 dummy*(1977–2000) trend and Post-1989 dummy*(1990–2000) trend instead, which is not consistent with the text and the stata code. Therefore, we have changed the variable names accordingly. Note: The IV estimates correspond to equation 4 for different dependent variables. For the definition of other controls see Table 1. The over-identification is tested using the conventional Sargan test. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

of the 1:4 rule in 1977 are assumed as an exogenous instrument since the authors do not observe the structural breaks in other political and policy variables. The first stage regression coincides with equation (2), and the second stage of the IV estimation is as follows:

$$y_{it} = \alpha_i + \beta_t + \phi B_{it}^R + \mu_1([t - 1961]B_{i1961}) + \mu_2(P_{1977}B_{i1961}) + \mu_3(P_{1990}B_{i1961}) + u_{it} \quad (3)$$

Table 1 (columns 3 to 5) presents IV estimates for poverty outcomes, and our results are exactly the same as in Burgess and Pande (2005). A one-point increase in per capita branch opening in the rural unbanked locations explains a 4.74-percent reduction in rural poverty (column 3). The authors state that this result evaluated at the sample average implies a 17-percent decrease in the poverty headcount ratio. Moreover, this process had no impact on urban poverty (column 4). Aggregate poverty in rural locations decreases by 4.10 percentage points, with every additional branch opening in a rural location per 100,000 persons (column 5). Columns 6 to 8 exhibit the results of robustness checks using a single instrument. Notably, in columns 6 and 7, the authors consecutively exclude the pre-1977 and post-1990 period; while in column 8, the sample is restricted to the National Sample Survey years. Finally, similarly to Burgess and Pande (2005), we find that additional bank branches increase the wages of agricultural workers.

Furthermore, we replicate the original results indicating that increases in rural credit and saving shares reduce rural poverty (Table A3 in the online appendix A). Finally, we verify that the main results from Table 1 (column 3) are indeed robust even after controlling for time-varying political and policy variables (Table A4). Thus the negative and significant relationship between rural branch expansion and rural poverty persists even after controlling for events such as an increase in land reform and development spending, known to reduce rural poverty (Besley & Burgess, 2000).

4 Sensitivity check: Different cut-years

In section three, we successfully replicate Burgess and Pande's (2005) results and confirm the positive impact of the state-led bank branch expansion on poverty. However, the results and their policy implications are conditional on the assumption that the imposition and removal of the 1977 bank licensing policy provides a credible source of exogenous variation in rural bank expansion. Thus, the trend reversal in bank expansion should have been driven solely by the 1:4 policy, and not by any other simultaneous policy interventions targeting rural poverty.⁷

Nevertheless, Panagariya (2006) and Kochar (2011) assert that the effect of the state-led bank expansion on poverty reduction cannot be evaluated without consideration of coexisting policies of credit subsidies and all the other amendments of the bank licensing policy. These policies affected poverty and enhanced access to

⁷Burgess and Pande (2005) use the 1977 bank branch licensing policy's imposition and removal as an instrument for the cumulative branch expansions in the rural area. The requirements for IV validity are "no direct effect on poverty outcomes" and the significance of the trend reversal. These assumptions are carefully acknowledged by Burgess and Pande (2005) in the introduction of their paper. Note that we have analyzed trend reversals for different cut-years on credit flows to the priority and co-operative sectors, and we have not identified significant trend reversals either. These results are available upon request.

credit, making the exogeneity of the trend reversal in 1977 questionable. Thus, the imposition and removal of the 1:4 rule might not serve as a valid instrument for estimating the effect of bank branch expansion on poverty reduction.

We address the problem of instrument validity by testing whether the trend reversal in bank expansion is a unique characteristic of 1977 or similar trend breaks appear in other years, thus reflecting the importance of other policies for bank expansion. Therefore, we repeat Burgess and Pande's (2005) estimation with different cut-years, and test for which years the F-statistics of these trend breaks is significant, and for which year it is maximized. We find that the trend reversals are significant for virtually all cut-years in the sample (Figure 4 and Table A1.1). Their significance serves as evidence of other policies' success, such as the IRDP. Thus, the exogeneity of the trend reversal in 1977, and its utilization as a valid instrument for bank branch expansion, appears problematic. The quantitative results for different cut-years can be seen in Tables A1.1 to A5.2, while the trend reversals are presented in Figure A3, online appendix A.

Furthermore, Figure 4 reveals that the F-statistics of no-trend reversal tests are often maximized for cut-years different from 1977. Interestingly, the F-test 1 is maximized for 1980 when the IRDP was implemented (Figure 4.a, trend reversals in rural branch openings).⁸ The significance of trend reversals implies that almost any cut-year from 1970 to 1984 gives a relevant instrument, which is a necessary but not sufficient condition for instrumental validity. The second condition for instrument validity is its exogeneity. However, the other cut-years indicate the importance of different poverty targeting policies for the dynamics of banking network expansion. Thus, these trend reversals are not exogenous to the poverty rate. Still, they lead to virtually the same implications as the estimates based on the cut-year in 1977. Therefore, we conclude that the identification of the effect of bank expansion on poverty reduction, exploiting the trend reversal in 1977, is debatable due to the instrument's potential endogeneity with respect to other policies affecting both bank branch expansion and poverty.

We report the results for the rural bank credit and saving shares repeated for various cut-years in Tables B1.2 and B1.3 in online appendix B. For Rural credit share (Table B1.2), we can see similar results to Burgess and Pande (2005) from 1971 up until 1979. For Rural saving share (Table B1.3), the results are similar to the original paper for almost all cut-years. Finally, we investigate the impact of different trend reversals for the size of the coefficient ϕ , from equation (3) measuring the impact of additional bank openings on poverty. The results for the different cut-years are presented in Table 2 and Figure 5, along with the effect of branch openings on urban and aggregate poverty. The estimates of all regressions for all cut years appear in online appendix B.

Interestingly, the impact of bank expansion on rural poverty is strongest with trend breaks in 1982 and 1983, rather than in 1977, which confirms our suspicions that other policies could have been even more effective in poverty reduction than the policy driven bank expansion. These results challenge both the qualitative and quantitative implications of Burgess and Pande (2005). The other policies, such as the IRDP, were not

⁸Note that the F-test 1 tests the restriction of no-trend reversal in the dynamics of bank branch openings in initially less financially developed rural areas.

affecting the bank branch openings directly but by influencing the poverty levels. Moreover, the credit share's contribution to rural poverty decrease is the highest for trend breaks in 1982 and 1983 rather than in 1977, and the same results appear when other policy variables are explicitly included within the IV estimation (see Tables B4.1, B5.1 and B5.2 in the online appendix B). Finally, let us note that urban poverty stays unaffected for all hypothetical cut-years starting from 1974.

Table 2 - Rural Headcount Ratio (IV)

	1975	1977	1979	1981	1983
	Rural Headcount ratio				
	(1)	(2)	(3)	(4)	(5)
Number of branches opened in rural unbanked locations per capita	-4.32** (1.952)	-4.74** (1.790)	-5.42*** (1.605)	-6.92*** (1.589)	-7.63*** (2.110)
Number of Bank Branches per capita in 1961 * (1961 - 2000) trend	-0.44 (0.261)	-0.48* (0.269)	-0.44 (0.267)	-0.38 (0.285)	-0.47 (0.299)
Number of Bank Branches per capita in 1961 * Post-T dummy	-2.03 (2.894)	-1.42 (2.297)	-2.64 (2.448)	-4.92 (4.277)	-3.61 (5.025)
Number of Bank Branches per capita in 1961 * Post-1989 dummy	-1.07 (2.338)	-1.08 (2.334)	-1.98 (1.886)	-3.44** (1.287)	-3.27*** (0.955)
State and year dummies	YES	YES	YES	YES	YES
Other controls	YES	YES	YES	YES	YES
Adjusted R-squared	0.774	0.76	0.739	0.692	0.704
Observations	627	627	627	627	627

This table is a replication of Table 3, column 3 in Burgess and Pande, 2005, page 789, for different cut-years. The 8th column presents the results from the original regression and is the benchmark for the comparison. For replication, we used data and methodology provided by the authors. Note: Coefficient estimates are from IV regression in the form of equation (4). Robust standard errors are in parentheses. The over-identification is tested using the conventional Sargan test. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5 Conclusion

The discussion of the bank licensing policy, provided by Burgess and Pande (2005), Kochar (2011), and Panagariya (2006), gives two different perspectives. Burgess and Pande (2005) consider the BLP as a new policy introduced in 1977. Conversely, Kochar (2011) and Panagariya (2006) claim that the rules linking rural and urban bank openings were first introduced at the beginning of the 1960s and amended multiple times, including 1977, while the BLP was introduced in 1979 and targeted specific population to bank ratio, instead of rural to urban branch opening ratio. Burgess and Pande (2005) conclude that the bank branch expansion, instrumented by the imposition and removal of the 1:4 rule of 1977, significantly decreased rural poverty. However, Kochar (2011) and Panagariya (2006) point to the positive impacts of other simultaneous policies and raise doubts about the validity of the identification used by Burgess and Pande (2005). This paper aimed to sort out these

disputes.

First, we successfully replicated the results obtained by Burgess and Pande (2005). We identified significant trend reversals in bank branch expansion and the effect of new branches openings on poverty using the trend reversals generated from the 1977 cut-year as the instrument. Second, we repeated Burgess and Pande's (2005) exercise with other hypothetical policy introduction years (i.e., cut-years) from 1970 - 1984. If the policy implementation of 1977 caused the trend reversal, this should have been the unique characteristic of the mentioned year. Conversely, suppose other simultaneous poverty-reducing policies affected trend reversals. In that case, the results of the analysis with the 1977 cut-year should not be significantly different from the cut-year from the surrounding years. Our results suggest that a study with any cut-year from 1974 to 1981 yields very similar results to the 1977 cut-year. Therefore the trend reversal in rural bank expansion could be caused by the other policies rather than by the 1977 bank licensing itself, doubting the IV validity.

Burgess and Pande's (2005) central challenge is disentangling the effect of the BLP and the IRDP policies as well as other policies that encouraged the use of financial services in rural locations. The significance of the 1980 threshold, identified in our analysis using the same approach as Burgess and Pande (2005), implies the prominence of the IRDP over the BLP in decreasing rural poverty. Consequently, it can be doubtful that putting banks physically in unbanked locations without further subsidizing credit would yield the results similar to Burgess and Pande (2005). In conclusion, the 1977 trend reversal's validity as the instrumental variable for the bank expansion is highly debatable due to its potential correlation with the poverty outcomes.

From a policy perspective, our results indicate that Burgess and Pande (2005) overestimate the effects of bank expansion on rural poverty decline. These findings further amplify the doubts expressed by Burgess and Pande (2003) about the efficiency of the mentioned policy given its costs, compared to potential alternatives. In sum, the positive effects of state-led bank expansion on rural poverty, without additional credit subsidies and other policies, are not apparent. The critical lessons from the Indian experience should not be overlooked, no matter how tempting the reliance on bank expansion might be. Therefore the development strategies should consider more efficient policies to mitigate poverty and not rely solely on easier access to finance.

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Figure 1: Chronology of the Bank Licensing Policies

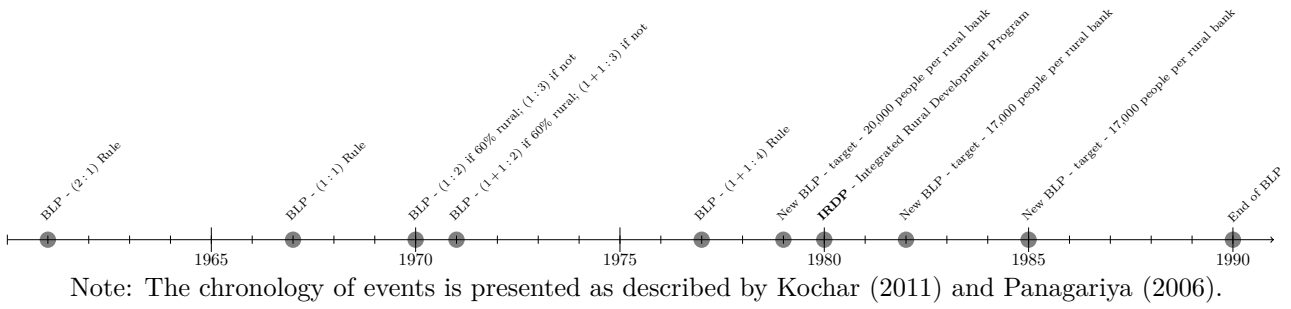
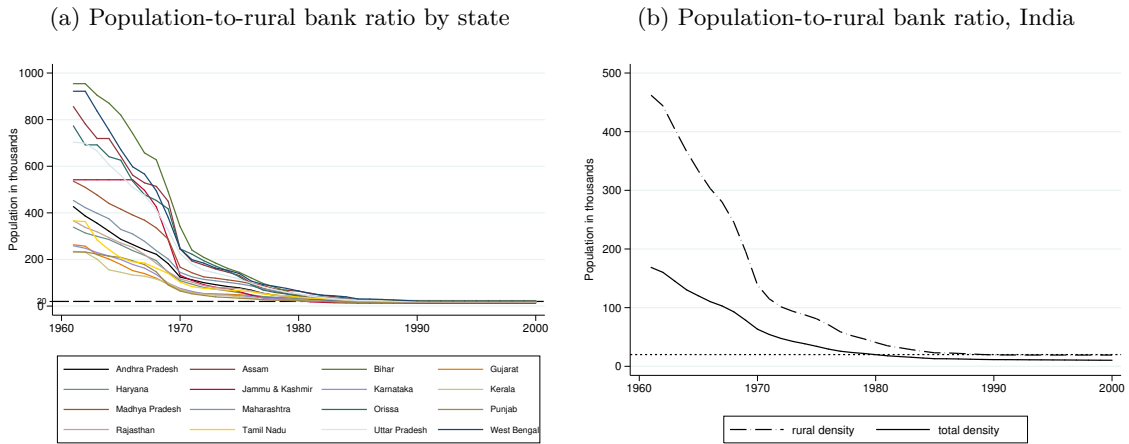
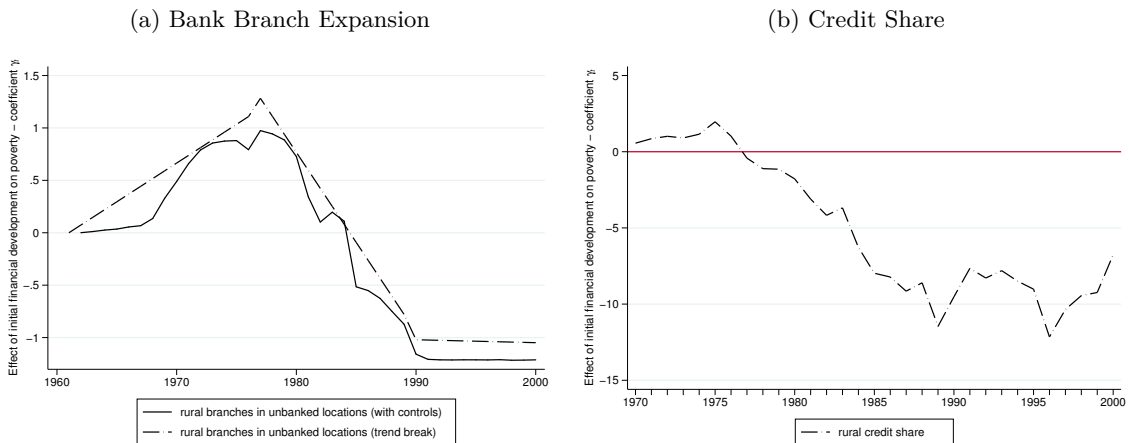


Figure 2: Population-to-rural bank ratio total for India and by state



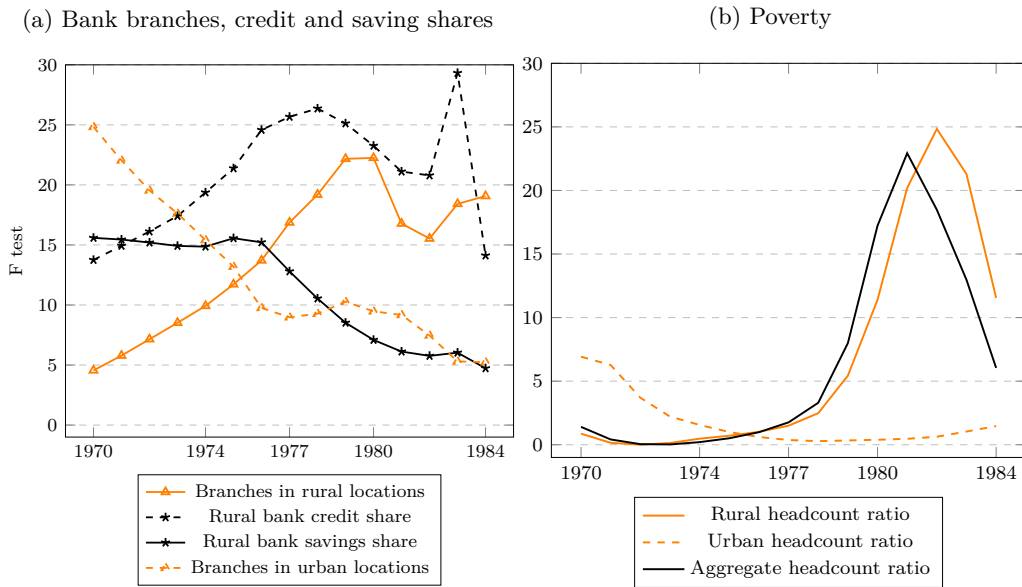
Note: The population-to-rural bank ratio (by state and country average) significantly decreases after the 1960s and converges to around 20000 people per bank, even in rural areas before 1990. The figure was generated based on data provided by Burgess and Pande (2005).

Figure 3: Initial Financial Development and Rural Bank Branch Expansion and Credit Share



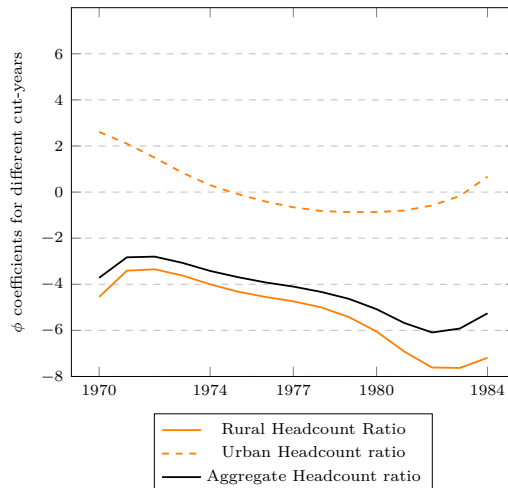
Note: **Figure 3a.** The series "rural branches in unbanked locations (with controls)" shows the annual coefficients of the effect of initial financial development on branch expansion from the equation (1). The series "rural branches in unbanked locations (trend break)" graphs the trends obtained from equation (2), and correspond to the results reported in Table A1, column 1 in Appendix. Burgess and Pande (2005) disregard the impact of pulse dummies in their Figure 1. **Figure 3b.** The series "rural credit share" reports the annual coefficients on initial financial development from a regression based on equation (2), with rural bank credit share as the dependent variable. The results correspond to Table A1, column 2. The reference year is 1961. These figures correspond to Figures 1 and 2 in Burgess and Pande (2005), p.784, 786.

Figure 4: Significance of trend reversals for different cut-years



Note: The figures show F-statistics of a linear restriction test of no trend reversal (F-test 1) in any of the sample years. F-statistics shown in figures 4a and 4b are presented in the tables B1.1 - B1.4 and B2.1 - B2.3, online appendix B.

Figure 5: Impact of bank branch expansion on headcount poverty (IV regression)



Note: The figure shows the coefficient, ϕ , from equation (5) for different cut-years. The coefficients shown in figure 5 are presented in the tables B3.1 - B3.3, online appendix B.