Migrants’ Home Town Associations and Local Development in Mali*

Lisa Chauvet
IRD, UMR DIAL; PSL, Paris-Dauphine University, FR-75010 Paris, France
chauvet@dial.prd.fr

Flore Gubert
IRD, UMR DIAL; PSL, Paris-Dauphine University, FR-75010 Paris, France
gubert@dial.prd.fr

Marion Mercier
Paris School of Economics, FR-75014 Paris, France
mercier@dial.prd.fr

Sandrine Mesplé-Somps
IRD, UMR DIAL; PSL, Paris-Dauphine University, FR-75010 Paris, France
mesple@dial.prd.fr

Abstract
We explore the impact of migrants’ Home Town Associations (HTAs) on the provision of public goods in Mali. We combine an original dataset on all the HTAs created by Malian migrants in France from 1981 with census data on public goods in all Malian villages since 1976, and we run double-difference estimations to compare villages with and without an HTA, before and after the creation of the HTAs. We find robust evidence that the provision of schools, health centers, and, to a lesser extent, water amenities has increased significantly faster in villages targeted by an HTA between 1987 and 2009 than in control villages.

Keywords: Home Town Associations; Mali; migration; public goods
JEL classification: F22; H41; H75; O55

I. Introduction
Recent years have witnessed a growing interest from scholars, development practitioners, and international organizations in the relationship between migration and development. In particular, academic research has focused

*This research has been supported by “FSP Mali contemporain”, Paris municipality, the French National Research Agency, and the European FP7 (program NOPOOR). We thank Claire Bernard, Mahamadou Dangnoko, Anda David, and Nelly Rakoto-Tiana for their help during the data collection, and we are grateful to the Malian statistical office for providing census data. We also thank the editor and two anonymous referees for very helpful comments.
strongly on the impact of remittances on origin countries, notably on aggregate development outcomes, such as poverty and growth, and on the behavior of recipient households. External remittances have become an increasingly substantial source of financial flows for developing countries, and have outstripped private capital flows and official development aid in many of them. In 2011, remittances were the second largest source of external finance to developing countries as a whole (370 billion dollars) behind foreign direct investment (around 500 billion dollars). They were nearly three times larger than official development assistance (around 140 billion dollars) (Ratha and Silwal, 2012).

In addition to sending remittances to their family, migrants frequently contribute to the development of their village of origin by sending collective transfers through Home Town Associations (HTAs). HTAs are voluntary clubs located in immigrants’ host societies, gathering migrants from the same locality of origin. One of their goals is to fund local development projects, and as such they have received increased attention from the development community, which considers them to be potential participants in the process of leveraging funds for investment and development in the resource-poor communities of origin. There are good reasons to be optimistic about the role of HTAs in development. In the context of weak states with low fiscal capacity, HTAs and collective remittances can complement scarce public resources and relieve binding budget constraints. Thus, the population of the locality of origin where HTAs intervene might end up better off.

Yet, the question of the real impact of HTAs on local development is not straightforward from a theoretical perspective. First, instead of complementing public resources, collective remittances might actually substitute for them and crowd out public finance. Indeed, by relaxing important bottlenecks, they might create a disincentive for the state and local governments to intervene, which might result in lower public spending (Grabel, 2008). In other words, the activity of HTAs might allow local governments to extricate themselves from their responsibilities, leaving the targeted localities worse off in terms of public goods. Second, HTAs might not be as effective as public actors in terms of development objectives. Indeed, the impact of the activity of HTAs depends on how projects are conceived and selected, and on how transparent and inclusive the decision-making processes are. When projects are designed by HTA members from abroad, with little or no input from their potential beneficiaries, they might be ill-conceived, might not meet the needs of home communities, and thus might be quickly abandoned. Third, when the migration process is selective and mainly involves certain groups, the HTA projects might serve private agendas rather than addressing larger community needs. Thus, their benefits might be narrowly distributed and might aggravate social divides in the community.
In this scenario, HTAs might contribute to the erosion of social cohesion within local communities, thereby altering their capacity to agree upon and implement collective action, which ultimately has detrimental effects on sustained local development.

In the case of Mali, a few small-scale case studies focusing on the Kayes area, in the western part of the country, describe migrants’ HTAs as a substantial source of funding, and document the number and type of development projects they have financed.\(^1\) However, the contribution of HTAs at the national level has never been systematically investigated, and there is no quantitative evidence as to whether their activity makes the villages of origin better off in terms of local public goods than those villages with no HTA.

This lack of evidence on the net impact of HTAs on local development is not restricted to Mali, and the literature provides very little quantitative evidence on collective remittances. Two major exceptions are Beauchemin and Schoumaker (2009) on Burkina Faso and Kijima and Gonzalez-Ramirez (2012) on the Mexican *Tres por Uno* (3 \times 1) program. In the Burkina Faso case study, Beauchemin and Schoumaker exploit retrospective data covering the 1960–2002 period on a sample of 600 settlements, and use event-history models to test whether the existence of a migrant association\(^2\) has an influence on the provision of public services, on agricultural modernization, and on the availability of infrastructures. They find a positive and significant effect of HTAs on the provision of social services and roads, with some differences in magnitude from one decade to the other. Kijima and Gonzalez-Ramirez (2012) document the Mexican (3 \times 1) program, which supports HTA involvement in the development of origin communities by providing complementary funding through municipal, state, and federal contributions. Focusing on two states of Mexico (i.e., Jalisco and Zacatecas\(^3\)), the authors observe that recipient communities became better off between 2000 and 2005, as attested by decreasing scores of deprivation. In this particular case, it is argued that roads, water supply, and non-agricultural productive projects funded by the (3 \times 1) program have improved community welfare.

---

\(^1\) The pioneering research on this topic was carried out in the 1990s (e.g., Quiminal, 1991; Daum, 1998). Gauvrit and Le Bahers (2004) have provided an inventory of development projects financed by HTAs in 51 Malian localities in the Kayes region, whereas Charef and Gonin (2005) have undertaken several case studies at the locality level, all of them in the Kayes region.

\(^2\) Contrary to other West African countries such as Mali, most HTAs in Burkina Faso have been created by internal migrants.

\(^3\) Those two states have been chosen because they have received the higher amounts of the budget of the program.
Aside from these two studies, strong data limitations explain the lack of quantitative impact assessment of collective remittances and migrants’ associations. The first phase of this research thus started with an important data collection process. We computed an original dataset that provides an exhaustive list of HTAs created by Malian migrants in France. For each HTA, we were able to find its date of creation, as well as the name of the village where it intervenes in Mali. Because of the four waves of census (Recensement Général de la Population et de l’Habitat) conducted by the Malian office of statistics in 1976, 1987, 1998, and 2009, we were able to build a panel dataset of all Malian villages informing their stock of infrastructures at those four dates. Retrospective and exhaustive data on local public goods over such a long period are rare in Africa. Finally, we combined our two datasets in order to compare the provision of public goods before and after the intervention of HTAs in villages with and without an HTA, through a difference-in-differences approach. Overall, we find that villages targeted by an HTA are better off in terms of public good provision. The impact varies depending on the type of public good considered and on the timing of the treatment. We test the robustness of our results against the possibility of an endogenous selection into the treatment, and explore alternative potential interpretations of the observed relationship between HTAs and public good provision. Note that, in our empirical investigation, the considered treatment is defined as “being targeted by a French HTA”. This dummy variable is a proxy for collective remittances, in the absence of detailed information on the amount of collective transfers that are sent by HTAs.

The rest of the paper is organized as follows. In Section II, we document the emergence and development of Malian HTAs, notably in France. The data and descriptive statistics are introduced in Section III. In Section IV, we present our empirical strategy and provide benchmark results together with evidence that supports the parallel trend assumption underlying our difference-in-differences approach. In Section V, we present robustness checks to account for potential selection issues, which might bias our benchmark results, and to investigate the mechanisms at play. We conclude in Section VI.

II. Emergence and Development of Malian Migrants’ HTAs

Mali has a long-lasting history of migration, both within West Africa and with the rest of the world. Côte d’Ivoire is the main country of destination of Malian migrants, whereas France represents the most important destination of migrants who leave the African continent: in 2011, about 39 percent of Malian migrants were living in Côte d’Ivoire, 35 percent in...
other African countries, 16 percent in France, and 10 percent in the rest of the world.\(^4\)

While the tradition of migration among the Malian population goes back to the pre-colonial period, the presence of the first Malian migrants in France is generally attributed to the considerable growth in sea-borne trade between West Africa and Europe prior to World War I, which led some Malians employed in the French merchant marine to settle in French harbor cities, before moving to other places, including Paris (Manchuelle, 1997). However, the bulk of migration from Mali to France occurred during the 1960s and 1970s. At that period, migration flows were mainly composed of individuals coming from the region of Kayes, located in the western part of the country, and belonging to the Soninke ethnic group. While migration to France has evolved and now includes individuals from other regions and ethnic backgrounds, the Kayes area remains the main region of origin of Malian migrants: 25 percent of them, and more than half of those living in France, originate from this region.

The rapid growth of the Malian community in France since 1960 has translated into increasing flows of remittances directly sent by the migrants to their families. It has also resulted in the spontaneous emergence and development of HTAs, constituted of migrants originating from the same community in Mali. This phenomenon is not specific to Malian migrants in France. According to the 2011 EMOP survey, 61 percent of the HTAs recorded in the villages of the sample have been created by migrants living in countries other than France. In this paper, we restrict our analysis to Malian HTAs created in France, because France is the only destination country for which historical exhaustive data on HTAs exist. In addition, HTAs created in France have much larger resources and financial leverage than those hosted in other destination countries. This makes them more likely to influence the provision of local public goods.\(^5\)

As underlined by the anthropological literature (see, notably, Quiminal, 1991; Daum, 1998), the earlier HTAs in France, called *Caisses villageoises*, were created for the specific purpose of helping their fellow migrants with any financial problem they might encounter in the host country. Thus, they were primarily concerned with settlement and solidarity in France. It was only in the 1980s that HTAs started to expand their scope of operations to

---

\(^4\) These figures have been computed by the authors using data from the *Enquete Modulaire et permanente auprès des Ménages* (EMOP) representative survey, INSTAT Mali, 2011.

\(^5\) Nevertheless, focusing on HTAs in France potentially raises two issues. First, it implies that our results cannot be generalized to all Malian migrant HTAs. Second, given our empirical strategy, which relies on a difference-in-differences approach, the existence of HTAs from other destination countries could contaminate both our treated and control groups. However, existing evidence (see Bernard et al., 2013) shows that those HTAs mainly target villages belonging to our control group, so that, at worst, it would downward bias our estimates.

© The editors of *The Scandinavian Journal of Economics* 2014.
address concerns not only in the country of destination but also in Mali. While their actions were initially confined to prestigious projects, such as the construction of mosques, they gradually covered every aspect of daily life in the villages, with development projects ranging from hydraulics to healthcare and from basic education to cultural exchanges.

French public policies did play a role in this trajectory because foreigners, who were not allowed to gather in associations, gained this right when a left-wing government came to power in 1981. This allowed HTAs to be officially registered in France from that date onwards, a prerequisite to open a bank account, collect membership fees, and organize fund-raising. Collecting reliable data on associations is an exceedingly difficult task in most immigration countries, considering the small size and informality of most HTAs. In the case of France, however, the fact that most HTAs are officially registered has facilitated the data collection process (see Section III).

III. Data

We mobilize two sources of data to explore the link between migrants’ HTAs and the provision of local public goods in Malian villages over the 1987–2009 period. The first source is an original and exhaustive census of the Malian HTAs in France. The second is a panel dataset of Malian villages computed using the 1976, 1987, 1998, and 2009 waves of the Malian Population census (Recensement Général de la Population et de l’Habitat, INSTAT).

Home Town Associations

We collected an exhaustive original dataset on Malian migrants’ HTAs registered in France. Registration is done at the Préfecture or Sous-Préfecture of the district where the association is located. This simple procedure is followed by a declaration of creation of the association published in the French Official Journal (Journal Officiel), a daily paper edited by the French government containing legal information, official notifications, and announcements concerning new associations, in particular their name and object.

We used the archives of the French Journal Officiel to search for all the Malian HTAs declared in France. Specifically, we extracted from the journal all the associations containing, in their name or declared purpose, either the word “Mali” or any of its derivatives in French, or the name of one of the

According to Daum (1998), 95 percent of all Malian HTAs that existed in 1992 were officially registered.
10,000 villages of Mali. The methodology of this data collection is further detailed in Bernard et al. (2013). We ended up with 421 Malian HTAs registered between 1981 and 2009, whose declared aim is to channel funds for the development of small-scale areas (either villages or communes). For our empirical investigation, we excluded all the HTAs targeting entire regions (or even Mali as a whole), because we were not able to precisely locate their intervention.

Table 1 presents the distribution of the 421 HTAs created over the 1981–2009 period, by date of creation and region. As suggested by the table, it took a few years before the first Malian migrants’ HTAs started to declare themselves. Prior to 1987, which constitutes the “baseline” year in our empirical analysis, only 13 HTAs had registered, 10 of them operating in the Kayes region. Of course, it is possible that some HTAs were functioning before 1981 without being registered. If this were true, then this could bias our results, although this bias is likely to be negligible because HTAs created in the 1970s and early 1980s were not actively involved in the development of the villages of origin.

The spatial repartition of HTAs clearly confirms the role of the Kayes area as the main provider of Malian migrants to France: 73.5 percent of the Malian HTAs created in France before 2009 target Kayes. The remainder mainly concentrates on Koulikoro (10.5 percent) and Mopti (9.5 percent), and then Sikasso (2.5 percent) and Ségou (1.5 percent). Fewer than 1 percent of the HTAs target each of the three remaining regions: Gao (1 percent), and Tombouctou and Kidal (0.5 percent each).

Table 1. Number of Malian HTAs registered in France

|          | (1) Total | (2) Before 1987 | (3) 1987–1998 | (4) 1998–2009 |
|----------|-----------|-----------------|---------------|---------------|
| Mali     | 421       | 13              | 116           | 292           |
| Kayes    | 310       | 10              | 89            | 211           |
| Koulikoro| 44        | 1               | 11            | 32            |
| Sikasso  | 10        | 0               | 2             | 8             |
| Ségou    | 6         | 1               | 1             | 4             |
| Mopti    | 41        | 0               | 11            | 30            |
| Tombouctou| 3      | 0               | 1             | 2             |
| Gao      | 4         | 1               | 0             | 3             |
| Kidal    | 3         | 0               | 1             | 2             |

It is worth noting that the scope of these associations is not exclusively to target funds to the development of Malian localities. Most Malian HTAs have several activities, in both the origin and the destination countries.
As a last step, we associated each village of Mali with a dummy variable indicating whether it is targeted by (at least) one HTA. This dummy is our treatment variable. We consider a village as treated in two cases: (1) if it is directly targeted by a French HTA; (2) if the village is part of a commune, which is itself targeted by a French HTA.

This dataset allows us to distinguish between treated localities and their control counterparts, which have no HTA in France. In order to assess the differences between treated and control villages in terms of local public good provision, we focus on the sample of villages that we could track from 1987 to 2009. Indeed, the territorial composition of the country experienced changes over the period, in particular driven by the huge growth of the Malian population and by internal migration patterns, which led to the creation of new villages, or conversely to the aggregation of villages. Moreover, in 1998, the insecurity in the northern part of the Malian territory linked to the Touareg rebellion prevented the National Office of Statistics from collecting data in some parts of the Gao and Kidal regions.

These restrictions mean that we end up with a sample of 8,726 villages out of the 10,629 Malian villages recorded in the census of 2009. Among these 8,726 villages, 65 are further excluded from the analysis for being targeted by the 13 HTAs created between 1981 and 1987. Thus, 8,661 localities are included in the estimations; 7,472 of these belong to the control group and 1,189 to the treated group. In the latter group, 504 had their first HTA created before 1998, and 685 afterwards. The distribution of treated and control villages by region is given in Table 2.

One important drawback of these data comes from the fact that we do not have much information on the dissolution of HTAs. In theory, any change made in the association should be published in the Journal Officiel. Declaring a dissolution – be it voluntary, legal, or administrative – is a procedure as simple as notifying a creation, but in practice very few associations do this. When assessing the difference, in terms of local public good provision, between villages with and without HTAs, we thus estimate a lower bound, given that some associations observed in our data potentially no longer exist.

---

8 More precisely, the geographical unit of observation is the village in rural areas and the neighborhood in urban areas. In the rest of the paper, we use the terms “villages” or “localities” interchangeably to refer to rural villages and to urban neighborhoods.

9 Each commune gathers, on average, 15 villages. The communes were created in 1996, as part of the decentralization process that was initiated in 1992. This program led to the regroupment of the Malian villages into 703 communes, 49 cercles, and nine regions, which obtained the status of decentralized constituencies with elected leaders. Since then, all the administrative levels of the Malian territory have been managed by leaders elected by the population.
Table 2. Number of villages with and without HTAs

|                  | (1) All localities | (2) Localities with HTA created before 1987 | (3) Localities with HTA created between 1987 and 1998 | (4) Localities with HTA created after 1998 | (5) Localities without HTA |
|------------------|--------------------|--------------------------------------------|-------------------------------------------------|---------------------------------------|-------------------------|
| Mali             | 8,726              | 65                                         | 504                                             | 685                                   | 7,472                   |
| Kayes            | 1,332              | 57                                         | 225                                             | 304                                   | 746                     |
| Koulikoro        | 1,645              | 6                                          | 148                                             | 237                                   | 1,254                   |
| Sikasso          | 1,543              | 0                                          | 27                                              | 27                                    | 1,489                   |
| Ségou            | 1,826              | 1                                          | 1                                               | 4                                     | 1,820                   |
| Mopti            | 1,859              | 0                                          | 99                                              | 65                                    | 1,695                   |
| Tombouctou       | 401                | 0                                          | 4                                               | 31                                    | 366                     |
| Gao              | 120                | 1                                          | 0                                               | 17                                    | 102                     |
| Kidal            | 0                  | 0                                          | 0                                               | 0                                     | 0                       |

Local Public Goods

Data on Malian villages come from the four population censuses conducted by the Malian Office of Statistics (INSTAT) in 1976, 1987, 1998, and 2009. These censuses provide information on the number and type of public goods available in each village. With these data, we were able to compute three indicators of local infrastructures at the village level that are comparable between the years 1976, 1987, 1998, and 2009, as follows:

- **SCHOOL**, number of schools, including medersa, public and private primary schools including community schools and Centres d’éducation pour le développement (CEDs), and secondary schools;
- **HEALTH**, number of health centers, including hospitals, clinics, dispensaries, and any other health facility;
- **WATER**, number of public fountains.

Moreover, the 1998 and 2009 data provide disaggregated information on the type of available health equipment as well as information on the number of mosques, which allowed us to compute six additional indicators for these two years, as follows:

- **MOSQUE**, number of mosques;
- **HOSP**, number of hospitals;

---

10 See footnote 8 for a more precise definition of the geographical unit of observation.
11 Medersa are private Muslim schools where teaching is given in Arabic and is largely dedicated to the study of the Koran.
12 Both the CEDs and the community schools are private (their building and functional expenses are supported by the community), although their development was largely encouraged by the government. CEDs are specifically dedicated to out-of-school children living in rural areas and aged 9–15.
**CLINICS**, number of clinics;
**DISPENS**, number of dispensaries;
**MATER**, number of maternities;
**CSCOM**, number of community health centers.

The Malian censuses of 1987, 1998, and 2009 also provide household-level data on housing conditions, on which we relied to build three more variables informing the population access to different types of sources of water. All three measures relate to alternative water supply amenities, which differ from one another in terms of the initial investment they require, their accessibility, and the quality of the water they supply:

- **HH_TAP**, share of households in the village using a tap as primary source of water;
- **HH_WELL**, share of households in the village using a well or a drilling as primary source of water;
- **HH_FOUNTAIN**, share of households in the village using a public fountain as primary source of water.

Table 3 presents the means and standard deviations of the different public good measures within the treated and control groups, and the average differences between the two groups at each wave of the census (i.e., in 1976, 1987, 1998, and 2009).

The number of schools, water amenities, and health infrastructures, as well as the number of mosques, experienced a sustained increase from 1976 to 2009, the pace of this increase being stronger after 1987. This is the case for both the treated and control groups.

Between the years 1998 and 2009, for which we have disaggregated data on health infrastructures, the number of dispensaries and maternities decreased in both groups while the number of CSCOMs largely increased. This trend reflects the Malian government’s willingness to promote these types of health infrastructures from the beginning of the 1990s. As far as the other types of health infrastructures are concerned, the census data unfortunately do not allow us to distinguish between public and private facilities.

The rise in the number of schools accelerated with the democratic transition, from the beginning of the 1990s. According to Diarra and Lange

---

**The Centres de santé communautaires (CSCOMs)** are community health centers that developed from the beginning of the 1990s, and these centralize multiple health services in a single place. They are managed by community associations and usually gather a dispensary, a maternity, and a pharmacy. Comparably to CEDs and community schools, they are private not-for-profit structures managed by a users’ association, but they are bound by a public service agreement with the state. As private structures, they are required to be financially viable, but receive public subsidies.

© The editors of *The Scandinavian Journal of Economics* 2014.
Table 3. Local public goods in the treated and control groups, 1976–2009

|                | 1976     | 1977     | Diff.    | 1987     | 1988     | Diff.    | 1998     | 1999     | Diff.    | 2009     | 2010     | Diff.    |
|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                | Treated  | Control  |          | Treated  | Control  |          | Treated  | Control  |          | Treated  | Control  |          |
| SCHOOL         | 0.135    | 0.0871   | 0.0483***| (0.342)  | (0.285)  | (0.00917)| 0.198    | 0.126    | 0.0724***| (0.608)  | (0.417)  | (0.0140) |
|               |          |          |          | (0.0071) |          |          | (1.190)  | (0.794)  | (0.0268) | (1.748)  | (1.449)  | (0.0466) |
| WATER          | 0.0110   | 0.00335  | 0.00765  | (0.164)  | (0.156)  | (0.00492)| 0.0454   | 0.0186   | 0.0268***| (0.343)  | (0.214)  | (0.00737)| 0.278    | 0.108    | 0.171*** | (2.108)  | (1.263)  | (0.0440) |
|               |          |          |          | (0.0074) |          |          | (0.682)  | (0.545)  | (0.0177) | (0.076)  | (0.054)  | (0.0129) | 0.579    | 0.266    | 0.312*** | (2.198)  | (1.443)  | (0.0490) |
| HH_TAP         | 0.0105   | 0.00245  | 0.00805  | (0.325)  | (0.307)  | (0.00965)| 0.00755  | 0.00446  | 0.00309**| (0.0570) | (0.0429) | (0.00141)| 0.0106   | 0.00627  | 0.00434**| (0.0682) | (0.0545) | (0.00177)| 0.0484   | 0.0189   | 0.0295***|
|               |          |          |          | (0.0074) |          |          | (0.119)  | (0.090)  | (0.0023) | (0.159)  | (0.090)  | (0.00032)|          |          |          |          |          |          |          |
| HH_WELL        | 0.835    | 0.844    | −0.0099  | (0.325)  | (0.307)  | (0.00965)| 0.850    | 0.858    | −0.0083  | (0.271)  | (0.267)  | (0.00835)| 0.828    | 0.877    | −0.048** | (0.276)  | (0.224)  | (0.00723)|          |          |          |
| HH_FOUNTAIN    | 0.00854  | 0.0111   | −0.0056  | (0.0690) | (0.0791) | (0.00243)| 0.00515  | 0.00358  | 0.00157***| (0.167)  | (0.135)  | (0.00435)| 0.0438   | 0.0284   | 0.0154***| (0.146)  | (0.111)  | (0.00363)|          |          |          |
| MOSQUE         | 1.564    | 1.241    | 0.324*** | (1.554)  | (1.066)  | (0.358)  | 1.669    | 1.372    | 0.297*** | (1.750)  | (1.169)  | (0.395)  |          |          |          |          |          |          |          |          |          |
| HEALTH         | 0.0984   | 0.0632   | 0.0352***| (0.384)  | (0.323)  | (0.0104) | 0.117    | 0.0741   | 0.0428***| (0.351)  | (0.289)  | (0.0931)| 0.325    | 0.198    | 0.127*** | (0.793)  | (0.630)  | (0.0204) | 0.503    | 0.440    | 0.063*** |
|               |          |          |          | (0.0091) |          |          | (0.116)  | (0.098)  | (0.017)  | (0.206)  | (0.164)  | (0.0331)| 0.00252  | 0.00161  | 0.000917| (0.0502) | (0.0400) | (0.0130) | 0.00673  | 0.00268  | 0.00646***|
| HOSP           | 0.00336  | 0.00187  | 0.00149  | (0.0579) | (0.0517) | (0.00164)| 0.124    | 0.0815   | 0.0426** | (0.366)  | (0.280)  | (0.00917)| 0.146    | 0.0945   | 0.0510***| (0.393)  | (0.343)  | (0.0109) | 0.197    | 0.214    | 0.00660 |
| CLINICS        | 0.00336  | 0.00187  | 0.00149  | (0.0579) | (0.0517) | (0.00164)| 0.146    | 0.0945   | 0.0510***| (0.393)  | (0.343)  | (0.0109) | 0.146    | 0.0945   | 0.0510***| (0.393)  | (0.343)  | (0.0109) | 0.197    | 0.214    | 0.00660 |
| DISPENS        | 0.0142   | 0.0815   | 0.0606***| (0.117)  | (0.099)  | (0.00917)| 0.0437   | 0.0207   | 0.0230***| (0.205)  | (0.145)  | (0.00438)| 0.0437   | 0.0207   | 0.0230***| (0.205)  | (0.145)  | (0.00438)|          |          |          |
| MATER          | 0.0146   | 0.0945   | 0.0510***| (0.117)  | (0.099)  | (0.00917)| 0.0437   | 0.0207   | 0.0230***| (0.205)  | (0.145)  | (0.00438)| 0.0437   | 0.0207   | 0.0230***| (0.205)  | (0.145)  | (0.00438)|          |          |          |
| CSCOM          | 0.0330   | 0.0189   | 0.0141***| (0.176)  | (0.136)  | (0.00444)| 0.0330   | 0.0189   | 0.0141***| (0.176)  | (0.136)  | (0.00444)| 0.161    | 0.102    | 0.0584***| (0.383)  | (0.316)  | (0.0102) |          |          |          |

Observations 1,189 7,472 8,661 1,189 7,472 8,661 1,189 7,472 8,661 1,189 7,472 8,661

Notes: Standard deviations of the averages and standard errors of the differences are given in parentheses. *** p < 0.01; ** p < 0.05; * p < 0.1. The treated group gathers all villages that had at least one HTA registered in France between 1987 and 2009.
(1999) and Diarra et al. (2001), huge public investments, financed not only by the central government and international donors but also by initiatives from parents associations, increased the provision of (both public and private) schools. In the census of 2009, 42 percent of the schools are public, 34 percent are community schools or CEDs, 5 percent are private schools, and 19 percent are medersa. Unfortunately, again, the previous waves of the census do not provide similar information on the types of schools, which prevents us from testing whether HTAs are involved in different ways in the financing of private and public schools.

Turning to the alternative sources of water, the share of households using a tap substantially increased in both groups over the period. At the same time, the share of households using a well or a drilling remained roughly stable, while the share of households using a fountain first increased (between 1987 and 1998) and then decreased (between 1998 and 2009) in both groups.

Concerning the average differences between the treated and control groups, it appears that treated villages were better endowed in terms of schools, mosques, and health infrastructures from the very beginning of the period under study, and remained so over the whole period. By contrast, the number of available water amenities was not significantly different between the two groups in 1976, but became so from 1987 onwards. Regarding households’ access to the different water sources, we observe that the share of households using a tap increased between 1987 and 2009 in both groups, the treated localities exhibiting higher averages during the whole period. The share of households using a well or a drilling, which was not significantly different between the two groups in 1987 and 1998, became significantly smaller among the treated villages in 2009. The share of households using a public fountain was not significantly different between the two groups in 1987, but the treated group started to exhibit significantly higher averages from 1998 onwards.

Other Observable Characteristics

The Malian censuses also provide individual-level data, which allowed us to compute the following village-level variables:

Population, size of the population (in logarithm);
Ethno-linguistic fragmentation, one minus the Herfindahl index based on ethno-linguistic group shares;
Percent of labor force in the primary sector, share of the active population of the village working in the agricultural sector;
Returnees France, share of the population of the village who has ever lived in France for more than six months (available only in 1998 and 2009);
Emigration France, share of the population of the village currently living in France (only available in 2009\textsuperscript{14}).

We also rely on the data of the Climatic Research Unit of the University of East Anglia to compute the average annual rainfall and average rainfall shocks experienced by Malian villages over the previous decade. We derive the latter variable by regressing, for each village, the level of yearly observed rainfalls on their lagged values and on a time trend, and by calculating the standard deviation of the predicted residuals of these estimations over 10 years. In Table 4, we present the means and standard deviations of the different observed characteristics of the treated and control villages, and the average differences between these two groups at each wave of the census.

Table 4 shows that treated villages are, on average, larger than control villages, and have experienced a faster population growth since 1987. Treated villages are also more ethnically fragmented than control villages, even though the difference between the two groups has decreased since 1987. On average, annual rainfalls are significantly lower in the treated villages than in the control villages. The variability of rainfalls was not significantly higher in treated villages, but became so in 2009. Finally, treated and control villages significantly differ in terms of migration intensity, as reflected by the percentage of returnees and current migrants from/in France. Those descriptive statistics suggest that HTAs are observed in localities in which the number of migrants (and returnees) is high, and that they are concentrated in the northern part of the country where rainfalls are lower than in the south. Empirical tests aiming at identifying whether our results are driven by those differences are displayed at the end of the paper.

IV. Empirical Strategy and Benchmark Results

In what follows, we consider the presence of one or several HTA(s) in a given village as a treatment variable (note that we rely on this binary treatment in the absence of information concerning the amount of collective remittances channeling through HTAs). We implement a difference-in-differences strategy and proceed in three steps. First, we compare changes in local public good provision between the treated and control villages between 1987 and 2009. As suggested by Table 2, very few HTAs were created (and registered) before 1987. Thus, we exclude from our sample the 65 villages that had an HTA before 1987, and we consider the 1987 and

\textsuperscript{14} The questionnaire only identifies migrants who left Mali in the five years preceding the census (i.e., between 2004 and 2009).
Table 4. Observable characteristics of the treated and control groups, 1976–2009

|                  | 1976       |         | 1976       | 1987       |         | 1976       | 1987       |         | 1976       | 1987       |         | 1976       | 1987       |         | 1976       | 1987       |         |
|------------------|------------|---------|------------|------------|---------|------------|------------|---------|------------|------------|---------|------------|------------|---------|------------|------------|---------|
|                  | Treated    | Control | Diff.      | Treated    | Control  | Diff.      | Treated    | Control  | Diff.      | Treated    | Control  | Diff.      | Treated    | Control  | Diff.      | Treated    | Control  |
| Population       | 864.8      | 702.5   | 162.3***   | 1030.6     | 828.7    | 202.0***   | 1487.2     | 1179.7   | 307.7***   |           |          |            |           |          |            |           |          |
|                  | (1343.3)   | (956.1) | (31.8)     | (1727.3)   | (1138.0) | (38.6)     | (2703.3)   | (2071.9) | (67.7)     |           |          |            |           |          |            |           |          |
| Ethno-linguistic  | 0.215      | 0.177   | 0.0378***  | 0.180      | 0.162    | 0.0186***  | 0.184      | 0.164    | 0.0200***  |           |          |            |           |          |            |           |          |
| fragmentation    | (0.209)    | (0.192) | (0.00607)  | (0.179)    | (0.178)  | (0.00556)  | (0.183)    | (0.186)  | (0.00578)  |           |          |            |           |          |            |           |          |
| Percent of labor | 0.683      | 0.635   | 0.0480***  | 0.617      | 0.621    | −0.00480   | 0.528      | 0.560    | −0.0317*** |           |          |            |           |          |            |           |          |
| force in the    | (0.224)    | (0.224) | (0.00700)  | (0.233)    | (0.219)  | (0.00690)  | (0.212)    | (0.203)  | (0.00637)  |           |          |            |           |          |            |           |          |
| primary sector   |            |         |            |            |          |            |            |          |            |            |          |            |            |          |            |            |          |
| Annual rainfall  | 675.5      | 720.5   | −45.99***  | 581.9      | 635.0    | −53.15***  | 641.5      | 696.0    | −54.16***  |           |          |            |           |          |            |           |          |
| average over \([t - 10, t]\) | (243.1) | (290.2) | (8.874)    | (214.3)    | (250.5)  | (7.677)    | (238.1)    | (272.8)  | (8.381)    |           |          |            |           |          |            |           |          |
| Annual rainfall  | 105.2      | 106.0   | −0.745     | 97.74      | 97.02    | 0.726      | 114.9      | 115.3    | −0.323     |           |          |            |           |          |            |           |          |
| shocks over     | (34.81)    | (43.26) | (1.318)    | (22.70)    | (27.28)  | (0.834)    | (37.90)    | (36.36)  | (1.142)    |           |          |            |           |          |            |           |          |
| Returnees France| 0.00439    | 0.00492 | 0.00390*** | 0.00556    | 0.00412  | 0.00515*** | 0.00485    | 0.00364  | 0.00449*** |           |          |            |           |          |            |           |          |
| (percent)        | (0.0134)   | (0.00536) | (0.000220) | (0.0136)   | (0.00405) | (0.000196) | (0.0128)   | (0.00381) | (0.000184) |           |          |            |           |          |            |           |          |
| Emigration France|           |          |            |           |          |            |           |          |            |           |          |            |           |          |            |           |          |
| (percent)        |           |          |            |           |          |            |           |          |            |           |          |            |           |          |            |           |          |
| Observations     | 1,189      | 7,472   | 8,661      | 1,189      | 7,472    | 8,661      | 1,189      | 7,472    | 8,661      |           |          |            |           |          |            |           |          |

Notes: Standard deviations of the averages and standard errors of the differences are given in parentheses. ***  \( p < 0.01; \) **  \( p < 0.05; \) *  \( p < 0.1. \) The treated group gathers all villages that had at least one HTA registered in France between 1987 and 2009.
2009 population censuses as our baseline and endline surveys, respectively. Second, we investigate the potential heterogeneity of the treatment effect across subperiods of time. We observe the provision of public goods in Malian villages in 1976, 1987, 1998, and 2009. We can match these data emanating from the four waves of the census with the dates of the HTAs’ registration in France. We successively investigate the activity of earlier HTAs (registered before 1998), over both the first and second decades of treatment (1987–1998 and 1998–2009), and of late HTAs (registered after 1998) over the 1998–2009 period. Third, we question the identifying assumption of the difference-in-differences approach, which requires that localities with HTAs would have followed a trend in local public good provision similar to that observed in their non-treated counterparts, had they not had any HTA. We provide indirect evidence on this parallel trend assumption by testing whether treated and control villages were already experiencing different trends in terms of public good provision before the treatment occurrence (i.e., between 1976 and 1987).

As a first step, we estimate the following econometric model,

\[ LPG_{i,t} = \alpha_0 + \delta_t + \nu_i + \alpha_1 D_{i,t} + \theta_j \times \delta_t + \epsilon_{i,t}, \]  

where \( LPG_{i,t} \) is the level of public goods in locality \( i \) at time \( t \), \( \delta_t \) is a time fixed effect, \( \nu_i \) is a village fixed effect, and \( D_{i,t} \) is a dummy equal to 1 if village \( i \) has at least one HTA during the considered period. The village fixed effects \( \nu_i \) capture all the time-invariant characteristics of the villages affecting the level of public goods. Here, \( \theta_j \times \delta_t \) are commune dummies interacted with time dummies (each commune gathers 15 villages or urban neighborhoods, on average). These variables account for time-variant characteristics at the level of the communes, either observable or unobservable. By introducing them, we control for other confounding factors, at the commune level, that might explain the contrasted evolutions observed between treated and control villages over the 1987–2009 period. The allocation of central resources to communes could be, for instance, systematically biased in favor of (or against) migrant-prone areas and could lead us to overestimate (or underestimate) the impact of the treatment. Finally, \( \epsilon_{i,t} \) is an idiosyncratic error term.

Tables 5 and 6 provide regression results of equation (1) using as dependent variables the provision of various types of local public goods, on different time spans. In Panel B of each table, we question the parallel trend assumption by investigating the pre-treatment periods. In Column 1a, we compare changes in local public good provision between the treated and the control villages between 1987 and 2009, without including the commune \( \times \) time dummies. Column 1b presents our preferred specification, where these variables are introduced.

© The editors of The Scandinavian Journal of Economics 2014.
Table 5. Benchmark results: part 1

| Treatment | HTA | Early HTA | Late HTA |
|-----------|-----|-----------|----------|
|           | (1a) | (1b) | (2) | (3) | (4) |
| **Panel A: difference-in-differences after the treatment occurred** | | | | | |
| Outcome period | 1987–2009 | 1987–1998 | 1998–2009 | 1998–2009 |
| **SCHOOL** | 0.113** | 0.863** | 0.712*** | −0.128 | 0.565* |
| | (0.049) | (0.342) | (0.238) | (0.158) | (0.314) |
| **WATER** | 0.285*** | 1.026*** | 0.426 | 2.174** | 0.322 |
| | (0.066) | (0.372) | (0.300) | (1.040) | (0.227) |
| **HH_TAP** | 0.026*** | 0.046*** | −0.003 | 0.046* | 0.036* |
| | (0.005) | (0.016) | (0.005) | (0.027) | (0.020) |
| **HH_WELL** | −0.039*** | −0.078* | 0.017 | −0.120*** | −0.125*** |
| | (0.011) | (0.043) | (0.065) | (0.058) | (0.044) |
| **HH_FOUNTAIN** | 0.018*** | 0.091*** | 0.034 | 0.093** | 0.086*** |
| | (0.005) | (0.022) | (0.029) | (0.042) | (0.033) |
| **MOSQUE** | 0.422*** | 0.205 | | | |
| | (0.144) | (0.188) | | | |
| Village fixed effects | Yes | Yes | Yes | Yes | Yes |
| Commune-level trends | No | Yes | Yes | Yes | Yes |
| Observations | 17,322 | 17,322 | 15,952 | 15,952 | 16,314 |
| No. of treated | 1,189 | 1,189 | 504 | 504 | 685 |
| No. of controls | 7,472 | 7,472 | 7,472 | 7,472 | 7,472 |

| **Panel B: testing the assumption of parallel trend before treatment** | | | | | |
| Outcome period | 1976–1987 | 1976–1987 | 1976–1987 | 1987–1998 |
| **SCHOOL** | 0.024 | 0.040 | −0.057 | 0.089 | 0.365** |
| | (0.015) | (0.049) | (0.067) | (0.060) | (0.186) |
| **WATER** | 0.020** | 0.079** | −0.005 | 0.116** | −0.012 |
| | (0.010) | (0.033) | (0.005) | (0.047) | (0.082) |
| **HH_TAP** | 0.011 | | | | |
| | (0.007) | | | | |
| **HH_WELL** | 0.055 | | | | |
| | (0.039) | | | | |
| **HH_FOUNTAIN** | −0.013 | | | | |
| | (0.021) | | | | |
| Village fixed effects | Yes | Yes | Yes | Yes | Yes |
| Commune-level trends | No | Yes | Yes | Yes | Yes |
| Observations | 17,322 | 17,322 | 15,952 | 16,314 | 16,314 |
| No. of treated | 1,189 | 1,189 | 504 | 685 | 685 |
| No. of controls | 7,472 | 7,472 | 7,472 | 7,472 | 7,472 |

**Notes:** Robust standard errors are given in parentheses, clustered at the village level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. Column 1a presents standard difference-in-differences, while Columns 1b, 2, 3, and 4 introduce commune-level time trends. In all columns, the control group gathers the villages without HTA. In Columns 1a and 1b, the treated villages are those with an HTA (whatever its date of creation). In Columns 2 and 3, the treated group is composed of the villages with an HTA created between 1987 and 1998, while in Column 4 the treated villages are those with an HTA created after 1998.

© The editors of The Scandinavian Journal of Economics 2014.
**Table 6. Benchmark results: part 2**

|                                   | HTA 1a | HTA 1b | Early HTA 2 | Late HTA 3 | Late HTA 4 |
|-----------------------------------|--------|--------|-------------|------------|------------|
| **Panel A: difference-in-differences after the treatment occurred** |        |        |             |            |            |
| Outcome period                    | 1987–2009 | 1987–1998 | 1998–2009 | 1998–2009 |            |
| HEALTH                            | 0.037*** | 0.265*** | 0.783***    | −0.470***  | 0.020      |
|                                   | (0.014)  | (0.060)  | (0.146)     | (0.145)    | (0.083)    |
| HOSP                              | 0.035    | 0.022   |             |            |            |
|                                   | (0.033)  | (0.015)  |             |            |            |
| CLINICS                           | −0.032   | −0.001  |             |            |            |
|                                   | (0.020)  | (0.018)  |             |            |            |
| DISPENS                           | −0.279** | −0.115** |            |            |            |
|                                   | (0.110)  | (0.049)  |             |            |            |
| MATER                             | −0.321***| −0.157***|            |            |            |
|                                   | (0.099)  | (0.059)  |             |            |            |
| CSCOM                             | 0.160**  | 0.250*** |            |            |            |
|                                   | (0.081)  | (0.067)  |             |            |            |
| Village fixed effects             | Yes      | Yes     | Yes         | Yes        | Yes        |
| Commune-level trends              | No       | Yes     | Yes         | Yes        | Yes        |
| Observations                      | 17,322   | 17,322  | 15,952      | 15,952     | 16,314     |
| No. of treated                    | 1,189    | 1,189   | 504         | 504        | 685        |
| No. of controls                   | 7,472    | 7,472   | 7,472       | 7,472      | 7,472      |

**Panel B: testing the assumption of parallel trend before treatment**

|                                   | 1976–1987 | 1976–1987 | 1976–1987 | 1987–1998 |
|-----------------------------------|-----------|-----------|-----------|-----------|
| HEALTH                            | 0.008     | −0.061*   | −0.138*   | −0.019    |
|                                   | (0.009)   | (0.037)   | (0.081)   | (0.032)   |
| Village fixed effects             | Yes       | Yes       | Yes       | Yes       |
| Commune-level trends              | No        | Yes       | Yes       | Yes       |
| Observations                      | 17,322    | 17,322    | 15,952    | 16,314    |
| No. of treated                    | 1,189     | 1,189     | 504       | 685       |
| No. of controls                   | 7,472     | 7,472     | 7,472     | 7,472     |

Notes: Robust standard errors are given in parentheses, clustered at the village level. *** p < 0.01; ** p < 0.05; * p < 0.1. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. Column 1a presents standard difference-in-differences, while Columns 1b, 2, 3, and 4 introduce commune-level time trends. In all columns, the control group gathers the villages without HTAs. In Columns 1a and 1b, the treated villages are those with an HTA (whatever its date of creation). In Columns 2 and 3, the treated group is composed of the villages with an HTA created between 1987 and 1998, while in Column 4 the treated villages are those with an HTA created after 1998.

The evolution of local public good provision over the 1987–2009 period is found to be significantly different between villages with and without an HTA. The estimated difference is overall stronger when commune × time dummies are controlled for. Thus, when the effect is identified both on HTAs targeting a whole commune and on HTAs targeting a village (Column 1a), the correlation between HTAs and local public good provision
is smaller than when the effect is identified only on HTAs targeting a village (Column 1b). Interestingly, and as expected, this suggests that HTAs have a more diluted impact when they target a larger geographical area. Using Column 1b of Tables 5 and 6 as a benchmark, we find that, on average, villages that benefit from the support of at least one HTA tend to have more schools, more public fountains, and more health amenities than control villages. The size of the coefficients suggests that the number of public fountains has increased by one more unit on average, and the number of schools by slightly fewer than one more unit on average, in villages targeted by at least one HTA between 1987 and 2009. Note that these results could be lower bound estimates because some of the villages taken as treated might be targeted by an HTA that was dissolved before 2009. In addition, both treated and control villages might be targeted by an HTA created by internal migrants or migrants living in other countries than France.

The contribution of HTAs to local public good provision also seems to translate into an increased household access to safe water through public fountains. Moreover, the share of households using a tap as their main source of water is found to have increased faster in the treated group, while the share of households using a well or a drilling has conversely decreased faster, suggesting an upgrade in water supply amenities.

One of the most common problems with the difference-in-differences approach is the impossibility to directly test the parallel trend assumption on which it relies. In our case, a rejection of this assumption would mean that our variables of interest (i.e., local public good provision and household access to local public goods) would have followed different trends in the treated and control localities, had there been no exposure to the treatment. To investigate the parallel trend assumption, we rely on the period preceding the treatment in order to test whether estimated changes in public good provision across treated and control localities were significantly different during the pre-treatment period. Because of a lack of data on household access to water in the 1976 census, we are only able to implement this test for the three first measures of local public goods: the numbers of schools, public fountains, and health centers. The results are shown in Panel B of Tables 5 and 6.

Whatever the specification (without commune-level trends in Column 1a or controlling for commune-level trends in Column 1b), the changes in the number of schools are not statistically different between treated and control villages over the 1976–1987 pre-treatment period. In other words, school provision in the treated and control localities followed a virtually identical trend prior to the creation of the first HTAs, which increases the confidence in the identification assumption. The same is not true for water amenities. The results suggest diverging pre-treatment
trends in the provision of public fountains between treated and control villages, with treated villages recording a larger increase in the number of public fountains between 1976 and 1987. However, the size of the coefficient (0.079) is much smaller than in the benchmark model (1.026) and significantly so because the confidence intervals of the two coefficients do not overlap. This suggests that HTAs have contributed to exacerbate a pre-existing diverging trend. Finally, the test of parallel trend assumption for health centers, displayed in Columns 1a and 1b of Panel B of Table 6 suggests that the pre-treatment trend difference, if any, was playing against the treated villages. Taking this result into account, the significantly positive coefficient of 0.265 obtained in Panel A of Table 6 suggests that, not only villages with an HTA are better off in terms of health amenities than the control villages, but that they compensated for pre-treatment adverse trends. Columns 2–4 of Tables 5 and 6 explore the timing of the treatment. Using the panel dimension of the data, we estimate separately the impact of earlier HTAs (registered before 1998), and the impact of late HTAs (registered after 1998).

First, we focus on HTAs registered in France between 1987 and 1998, and look at the provision of local public goods over the same period (Column 2), and over the following period, 1998–2009 (Column 3), in the Malian villages that they target. In this setting, the treated group is composed of the 504 villages that were targeted by an HTA created between 1987 and 1998 and the control group of all the villages with no HTA over the whole period. Thus, the 685 villages that will be targeted by an HTA during the following decade (1998–2009) are excluded from both the treated and control groups, along with the 65 villages with an HTA created before 1987. In both columns, we control for the commune-level trends. Overall, the results suggest that early HTAs have concentrated their interventions on building schools and health facilities in the first decade (Column 2). Then, between 1998 and 2009, their intervention seems to have focused also on access to water. This is reflected by the large positive coefficient found in the \textit{WATER} equation, but also by the positive (respectively, negative) coefficients found in the \textit{HH\_TAP} and \textit{HH\_FOUNTAIN} (respectively, \textit{HH\_WELL}) equations. During the second decade (1998–2009), the correlation between early HTAs and the supply of schools is no longer significant. It even becomes negative (−0.470) for health amenities. However, this negative overall coefficient hides contrasted trends, which become apparent when health infrastructures are further disaggregated. Indeed, during the 1998–2009 period, the development of CSCOMs has substituted the development of dispensaries and maternities. This shift has been even

\footnote{In Panel A, the confidence interval for the coefficient associated with HTAs in the \textit{WATER} equation is [0.298, 1.755], while it is [0.013, 0.144] in Panel B.}
more pronounced in the treated villages, as illustrated by the coefficients associated with the numbers of dispensaries, maternities, and CSCOMs in Column 3 of Table 6. Finally, the number of mosques has increased significantly more in the villages targeted by an early HTA over the 1998–2009 period. Note that the data at hand do not allow us to test for any diverging trend in the provision of mosques before 1998.

Finally, the results shown in Panels B of Tables 5 and 6 support the assumption that pre-treatment trends were similar across treated and control villages regarding schools and public fountains. For health centers, the divergence in pre-treatment trends was, again, playing against the treated villages (negative coefficient).

Symmetrically, we focus in Column 4 on HTAs registered during the following decade, 1998–2009. In this setting, the treated group is composed of 685 villages with an HTA created after 1998, which we compare to the 7,472 villages with no HTA over the whole period (the control group). The 504 villages with an HTA created between 1987 and 1998 are excluded from the sample. The double-difference is implemented over the 1998–2009 period, while we investigate the parallel trend assumption over both the 1976–1987 and 1987–1998 periods.

The results of the double-difference suggest a weaker impact of late HTAs on the provision of public goods. First, we observe a significant difference regarding the number of schools, in favor of the treated villages. However, as shown in Panel B of the table, the pre-treatment trends of the two groups were already diverging, at least between 1987 and 1998. The coefficient associated with late HTAs is no longer significant in the equation for the aggregate number of public fountains. Still, villages with a late HTA exhibit a significantly higher (respectively, lower) proportion of households using a fountain and a tap (respectively, a well or a drilling) as their primary source of water, while no pre-treatment difference appears regarding these outcomes in Panel B of Table 5. No difference is found between treated and control villages regarding the number of mosques. Finally, regarding health facilities, the coefficient associated with late HTAs is not significant when the total number of health infrastructures is used as the outcome variable. When this outcome is disaggregated, we observe that villages with a late HTA have also experienced a more rapid expansion of CSCOMs (at the expense of maternities and dispensaries) than control villages.

Overall, these results suggest that over the 1998–2009 period, the intervention of both early and late HTAs has been associated with an upgrade in the supply of water amenities (and a concomitant increase in the share of households using a public fountain as source of water, against the use of a well or drilling), and with a focus shifting from dispensaries and maternities to CSCOMs. This shift results in a non-significant (or even negative)
difference between treated and control villages when we consider the aggregate number of health infrastructures. However, as far as late HTAs are concerned, the placebo test presented in Panel B of the table does not support the parallel trend assumption for the aggregate number of health facilities, casting some doubts on the results for the different subcategories of health infrastructures presented in Column 4 of Table 6.

Finally, the investigation of the provision of local public goods in villages targeted by HTAs over two different subperiods suggests that the activity of HTAs has changed over time. Initially focusing on schools and health infrastructures, they then seem also to have turned toward water amenities in the second decade. They also contributed to an acceleration of the substitution of maternities and dispensaries by CSCOMs, a process that started at the end of the 1990s.

A comparison of our results with those provided by the literature in the contexts of Burkina Faso and Mexico is hardly feasible because the methodology and the outcome variables used differ between papers. For example, Kijima and Gonzalez-Ramirez (2012) rely on a synthetic indicator of welfare at the village level, rather than on quantitative indicators of public good, preventing any comparison of effect sizes. The paper by Beauchemin and Schoumaker (2009) on Burkina Faso is closer to ours, because it analyzes the impact of a sample of HTAs on the availability of different public goods, but they consider HTAs created by both internal and international migrants. Their results are consistent with ours: even though they do not find any impact on water amenities (measured only by the presence of boreholes), they put forward a significant effect of HTAs on the provision of schools and health centers, the impact of international HTAs being stronger than that of HTAs created by internal migrants.

V. Robustness Checks

In the difference-in-differences approach presented above, we control both for time-invariant village fixed effects and for time-varying unobservable characteristics at the commune-level. However, it might well be the case that time-varying village characteristics explain both the propensity to have an HTA and the supply of public goods in Malian villages. At this stage, it is still an open question whether the stronger increase in the number of public goods observed in the treated villages reflects a causal effect of HTAs, or simply results from a correlation between HTAs and the true causal factor.

As shown in Table 4, treated and control villages differ in levels and trends in terms of population size, ethno-linguistic fragmentation, share of labor force working in the agricultural sector, and climatic conditions. They are also very different in terms of migration intensity, measured
both through past migration (as suggested by the share of the population with a past migration experience in France) and through current migration (as suggested by the share of the population having migrated to France over the last five years). The diverging trends in public good provision between treated and control villages could thus simply capture the different evolutions of their observable characteristics.

The main alternative mechanism that challenges our interpretation of a causal impact of HTAs is related to migration. Indeed, our treatment variable could plausibly capture a more global effect of migration on the provision of local public goods, because the presence of an HTA is undoubtedly linked to the prevalence of migration. Migration can affect public good provision through various channels. First, the estimated coefficient associated with HTAs could capture a remittances-driven demand effect. Indeed, by relaxing the budget constraint of recipient households, private remittances might increase their demand for schooling, health, and water amenities. The observed increased in the provision of infrastructures could then be explained by private contributions of migrants’ households, rather than by HTAs. Households receiving remittances might also be more prone to pay public service fees, and thus provide local governments with more incentives to invest in public goods. The positive impact of remittances on local income could also increase households’ demand for local public goods, and could potentially lead them to directly finance local public goods, which would explain the observed increase in infrastructure. Migrants are also senders of social remittances and norm transfers. As emphasized by Batista and Vicente (2011) in the case of Cape Verde, such transfers could affect natives’ demand for local political accountability and could reduce local governments’ capacity to extract public funds from popular screening. This mechanism could well be at play in our case because Chauvet and Mercier (2014) find a significant impact of return migration on electoral outcomes in Mali.

In what follows, we implement three different empirical tests in order to better identify the underlying mechanisms behind the observed relationship between HTAs and local public good provision.

Comparing More Comparable Groups

First, we exploit the panel dimension of the data and the fact that, within the treated group, some villages started being exposed to the treatment in the first decade, while other villages started being exposed in the second decade. This time gap makes it possible to restrict our comparison to treated villages only (i.e., to compare the trends of early-treated and late-treated villages), with the advantage that these two groups are likely to be...
much more similar to each other, in both their observable and unobservable characteristics, than to villages with no HTA.

As shown by the top part of Table 7, there are less significant differences between early- and late-treated villages than between all the treated villages and the control villages. In particular, early- and late-treated villages are found to be similar in terms of the level and trend of their population size and return migration intensity. This last finding is crucial given our suspicion that (return) migration intensity could be driving our results.

However, our two groups still exhibit a significant difference in terms of their current migration intensity, as measured by the share of their population residing in France in 2009. Again, this persistent difference casts some doubts about a causal effect of our treatment variable because it could well capture the intensity of migration. To obtain groups that are as comparable as possible, we further restrict our sample and only keep early- and late-treated villages belonging to the five most migration-intensive districts of the Kayes region (as far as migration to France is concerned). The descriptive statistics on this restricted sample of villages are presented in the bottom part of Table 7, and show that there is now no significant difference in terms of migration intensity between the two groups of villages.

In Table 8, we run difference-in-differences estimations over the 1987–1998 period, using both the full and restricted samples of early- and late-treated villages. Relying on early-treated villages as the treated group and late-treated villages as the control group should mitigate the potential selection-into-treatment issue. Column 1 presents the differences in terms of local public good provision estimated over the whole sample of early- and late-treated villages. The list of public goods is restricted to those for which the data are available in years 1987 and 1998.\footnote{Data on HOSP, CLINICS, DISPENS, MATER, CSCOM, and MOSQUE are only available for the 1998–2009 period} The number of schools and health facilities is found to have increased significantly more, on average, in treated villages than in control villages. This suggests that even when the comparison is restricted to treated and soon-to-be treated villages, the treatment is associated with a significantly larger local public good endowment.

In Column 2, we re-iterate the same double-difference estimation over the pre-treatment period, 1976–1987, as a placebo test. In the case of health facilities, the estimated coefficient associated with the treatment dummy is not significant, which suggests that the parallel trend assumption is not rejected. This is not the case for the number of schools.

Lastly, Columns 3 and 4 of Table 8 re-iterate the same specifications as Columns 1 and 2 over the subsample of (early- and late-treated) villages
Table 7. Observable characteristics of the treated villages disaggregated by timing of treatment, 1976–2009

| Village  | 1976 | 1987 | Diff. | 1998 | 2009 | Diff. | 1998 | 2009 | Diff. | 2009 | 2009 | Diff. |
|----------|------|------|-------|------|------|-------|------|------|-------|------|------|-------|
| Mali     |      |      |       |      |      |       |      |      |       |      |      |       |
|          | Early HTA | Late HTA | Diff. | Early HTA | Late HTA | Diff. | Early HTA | Late HTA | Diff. | Early HTA | Late HTA | Diff. |
| Population | 927.0 (1494.9) | 818.9 (1218.9) | 108.1 (78.80) | 1086.3 (1741.0) | 989.7 (1717.3) | 96.66 (101.4) | 1601.2 (2724.1) | 1403.4 (2686.8) | 197.8 (158.6) |      |      |       |
| Ethno-linguistic fragmentation | 0.235 (0.219) | 0.199 (0.200) | 0.0357*** (0.0122) | 0.184 (0.189) | 0.178 (0.172) | 0.00627 (0.0105) | 0.207 (0.197) | 0.168 (0.170) | 0.0389*** (0.0107) |      |      |       |
| Percent of labor force in the primary sector | 0.701 (0.207) | 0.670 (0.234) | 0.0313*** (0.0131) | 0.623 (0.229) | 0.612 (0.236) | 0.0119 (0.0137) | 0.536 (0.208) | 0.522 (0.214) | 0.0132 (0.0124) |      |      |       |
| Annual rainfall average over \([t - 10, t]\) | 639.0 (219.2) | 702.3 (256.1) | −63.29*** (14.15) | 551.1 (195.2) | 604.6 (224.8) | −53.47*** (12.49) | 610.2 (224.8) | 664.4 (245.1) | −54.22*** (13.89) | 653.7 (193.5) | 705.0 (227.7) | −51.33*** (12.55) |
| Annual rainfall shocks over \([t - 10, t]\) | 101.2 (32.15) | 108.2 (36.38) | −7.030*** (2.0333) | 98.96 (22.83) | 96.85 (22.58) | 2.114 (1.332) | 111.5 (39.87) | 117.4 (36.22) | −5.847*** (2.219) | 127.2 (40.69) | 130.9 (35.98) | −3.657 (2.233) |
| Returnees France (percent) | 0.00512 (0.0144) | 0.00386 (0.0127) | 0.00126 (0.000787) | 0.00597 (0.0135) | 0.00526 (0.0137) | 0.000706 (0.000797) |      |      |       |      |      |       |
| Emigration France (percent) | 0.0114 (0.0199) | 0.00973 (0.0193) | 0.00164 (0.00181) | 0.0134 (0.0177) | 0.0139 (0.0198) | 0.000500 (0.00174) |      |      |       |      |      |       |
| Observations | 504 | 685 | 1,189 | 504 | 685 | 1,189 | 504 | 685 | 1,189 | 504 | 685 | 1,189 |

Mali: Returnees France (percent), Emigration France (percent), Observations.

Mali: Returnees France (percent), Emigration France (percent), Observations.

Notes: Standard deviations of the averages and standard errors of the differences are given in parentheses. *** \(p < 0.01\); ** \(p < 0.05\); * \(p < 0.1\). Early-treated villages are the villages that had an HTA during the 1987–1998 period, and late-treated villages are those that had an HTA registered after 1998.
Table 8. Early versus late HTAs

| Outcome period       | Mali                      | Migration-intensive districts of Kayes |
|----------------------|---------------------------|---------------------------------------|
|                      | 1987–1998 (1)             | 1987–1998 (3)                         |
|                      | 1976–1987 (2)             | 1976–1987 (4)                         |
| SCHOOL               | 0.508*** (0.160)          | 0.512*** (0.161)                      |
|                      | 0.213* (0.111)            | 0.237* (0.134)                        |
| WATER                | 0.642 (0.587)             | 0.733 (0.750)                         |
|                      | −0.068 (0.053)            |                                       |
| HH_TAP               | 0.029 (0.020)             | 0.037 (0.026)                         |
| HH_WELL              | −0.039 (0.041)            | −0.071* (0.043)                       |
| HH_FOUNTAIN          | −0.001 (0.010)            | −0.004 (0.010)                        |
| HEALTH               | 0.644*** (0.181)          | 0.598*** (0.219)                      |
|                      | −0.040 (0.103)            | −0.132 (0.108)                        |
| Village fixed effects| Yes                       | Yes                                   |
| Commune-level trends | Yes                       | Yes                                   |
| Observations         | 2,378                     | 942                                   |
| No. of treated       | 504                       | 221                                   |
| No. of controls      | 685                       | 250                                   |

Notes: Robust standard errors are given in parentheses, clustered at the village level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. The treated group gathers the villages with an HTA created between 1987 and 1998, while villages with an HTA created after 1998 compose the control group. Investigating the parallel trend assumption over the 1976–1987 period on the subsample of migration-intensive districts of Kayes is not possible for the WATER equation in Column 4 because none of the villages was equipped with water amenities in 1976 and 1987.

belonging to the five most migration-intensive districts of the region of Kayes. Note that focusing on this restricted sample allows us to compare villages with very similar levels of emigration to France in 2009 and of return migration from France in both 1998 and 2009. The results are found to be very consistent with Columns 1 and 2, suggesting here again that the number of health facilities has increased significantly more in the treated villages than in the control villages over the 1987–1998 period, with no such diverging trend in the pre-treatment period.\footnote{We display the results of the benchmark difference-in-differences run on all the villages of the five districts of Kayes (and not only the treated villages) in Tables A1 and A2 in the Appendix. These two tables are very much in line with the benchmark estimations performed over the whole sample in Tables 5 and 6.}

Over the 1987–1998 period, comparing early- and late-treated villages (both over the whole sample and over the Kayes subsample) yields quite similar results to those presented in Column 2 of Tables 5 and 6, as far as
health facilities and water amenities are concerned. This is less clear for schools because the pre-treatment parallel trend assumption is rejected.

**Adding Time-Varying Covariates**

A comparison of closer groups yields results that are consistent with our benchmark estimates and that do not invalidate our interpretation of a causal effect of HTAs. To push our analysis slightly further, we re-iterate the benchmark estimations after introducing a set of observed time-varying village characteristics as additional control variables (i.e., the size of the population in logarithm, the ethno-linguistic fragmentation, the share of the labor force working in the primary sector, the average rainfall level and shocks over the 10 preceding years, and, when available, the share of returnees from France). The results are shown in Table 9. Overall, they are found to be very similar to those of Tables 5 and 6.

In Column 1, we estimate the difference-in-differences in the provision of public good provision over the 1987–2009 period. We cannot introduce here the measure of return migration intensity because it is not available in the census data before 1998. The results are virtually the same as those of Column 1b in Tables 5 and 6. The second column explores the impact of early HTAs on the change in public good provision over the 1987–1998 period. Migration intensity cannot be included here either. However, controlling for the size of the population, ethno-linguistic fragmentation, size of the primary sector, and rainfall average and shocks leads to results that are similar to those of Column 2 of Tables 5 and 6. In Table A3 in the Appendix, we present the complete results of the six estimations presented in Column 1 of Table 9.18

Columns 3a–4b explore the correlation of early and late HTAs with the provision of public goods during the recent decade, 1998–2009, controlling for a set of time-varying variables including the share of return migrants. For the sake of comparison, this last variable is excluded from the regressions displayed in Columns 3a and 4a, whereas those displayed in Columns 3b and 4b control for it. Again, introducing all those covariates does not alter our conclusions.19

---

18 The coefficients associated with the different covariates are consistent with the literature on the determinants of local public good provision. In particular, the availability of infrastructures is generally correlated positively with the size of the population and negatively with ethno-linguistic fragmentation.

19 When performing the estimations over the recent period (1998–2009) as in Columns 3b and 4b, we can also observe that the coefficient associated with return migration from France is not systematically significant. When it is, its value is positive (results not reproduced here but available upon request).
Table 9. Adding time-varying covariates

| Outcome period | HTA 1987–2009 | Early HTA 1987–1998 | Treatment Early HTA 1998–2009 | Late HTA 1998–2009 |
|----------------|---------------|---------------------|-------------------------------|-------------------|
|                | (1)           | (2)                 | (3a)                          | (3b)              |
| SCHOOL         | 0.863**       | 0.717***            | −0.111                        | −0.107            |
|                | (0.341)       | (0.239)             | (0.158)                       | (0.160)           |
| WATER          | 1.022***      | 0.431               | 2.171**                       | 2.179**           |
|                | (0.372)       | (0.300)             | (1.040)                       | (1.039)           |
| HH_TAP         | 0.046***      | −0.002              | 0.046*                        | 0.045*            |
|                | (0.016)       | (0.005)             | (0.027)                       | (0.027)           |
| HH_WELL        | −0.080*       | 0.018               | −0.124**                      | −0.125**          |
|                | (0.043)       | (0.065)             | (0.058)                       | (0.058)           |
| HH_FOUNTAIN    | 0.091***      | 0.034               | 0.094**                       | 0.095**           |
|                | (0.022)       | (0.029)             | (0.042)                       | (0.042)           |
| MOSQUE         | 0.432***      | 0.440***            | 0.197                         | 0.194             |
|                | (0.145)       | (0.145)             | (0.187)                       | (0.187)           |
| HEALTH         | 0.265***      | 0.785***            | −0.464***                     | −0.460***         |
|                | (0.059)       | (0.147)             | (0.146)                       | (0.145)           |
| HOSP           | 0.035         | 0.035               | 0.022                         | 0.021             |
|                | (0.033)       | (0.033)             | (0.015)                       | (0.015)           |
| CLINICS        | −0.031        | −0.031              | −0.001                        | −0.002            |
|                | (0.019)       | (0.019)             | (0.018)                       | (0.019)           |
| DISPENS        | −0.279**      | −0.277**            | −0.115**                      | −0.117**          |
|                | (0.110)       | (0.110)             | (0.049)                       | (0.050)           |
| MATER          | −0.318***     | −0.316***           | −0.158**                      | −0.159***         |
|                | (0.100)       | (0.099)             | (0.059)                       | (0.059)           |
| CSCOM          | 0.163**       | 0.162**             | 0.250**                       | 0.251***          |
|                | (0.081)       | (0.082)             | (0.066)                       | (0.066)           |

**Time-varying covariates**

- Yes: Returned from France (percent)
- No: Returned from France (percent)
- Yes: Village fixed effects
- Yes: Commune-level trends

**Notes**: Robust standard errors are given in parentheses, clustered at the village level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. In all columns, the control group gathers villages with no HTA. In Column 1, the treated villages are those with an HTA (whatever its date of creation). In Columns 2, 3a, and 3b, the treated group gathers the villages with an HTA created between 1987 and 1998, while in Columns 4a and 4b the treated villages are those with an HTA created after 1998. The list of time-varying covariates includes: population (in logarithm), index of ethno-linguistic fragmentation, annual rainfall average over $[t–10, t]$, annual rainfall shocks over $[t–10, t]$, and share of the active population in the primary sector. The number of return migrants coming back from France over the total population of the village is also controlled for in Columns 3b and 4b.
The results of the difference-in-differences estimations controlling for observable characteristics are perfectly consistent with our benchmark estimates, which suggests that the effect we found for HTAs is not driven by trends in other observable characteristics. Note also that running these controlled estimations on the subsample of migration-intensive villages from the region of Kayes yields virtually similar coefficients to those displayed in Tables A1 and A2 in the Appendix.20 Finally, introducing the vector of time-varying control variables does not affect the results when comparing villages targeted by an early or a late HTA, whether we consider Mali as a whole or only the migration-intensive districts of Kayes, as shown in Table A4 in the Appendix.

Unfortunately, the data at hand do not allow us to introduce current emigration in these controlled difference-in-differences, because we only have information on current emigration in the census of 2009. However, giving up the double-difference framework, we can rely on this information to investigate the correlation of HTAs with local public goods controlling at the same time for return and current migration in 2009.

Cross-Sectional Analysis

In this section, we present cross-sectional estimations relying on the 2009 data only. This restriction allows us to simultaneously introduce a dummy for the presence of an HTA, the proportion of return migrants from France in the population, and the emigration rate at the village level in the set of explanatory variables. We also control for the same time-varying covariates as in the previous subsection, and introduce commune-level dummies.

The results are displayed in Table 10. Note that the form of this table is different from the previous tables, because we now have one estimation per column (instead of one estimation per coefficient). The estimates reveal a positive correlation between HTAs and the number of health infrastructures, water amenities, CSCOMs, and mosques in 2009. They reveal a significantly positive (respectively, negative) correlation between HTAs and the share of households in the village using a tap or a fountain (respectively, a well) as primary source of water.

Finally, while return migration does not appear to be significantly associated with any of the outcomes available in our data, we find a positive (respectively, negative) correlation between the rate of emigration to France and the number of CSCOMs (respectively, dispensaries), and a positive correlation between emigration to France and the share of households using a tap as well as the number of mosques. These last results suggest that,

---

20 The results are available upon request.
| Dependent measured in 2009 | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| SCHM | HEALTH | WATER | HH_TAP | HH_WELL | HH_FOUNTAIN | HOSP | CLINICS | DISPENS | MATER | CSCOM | MOSQUE |
| HTA (1987–2009) | 0.529 | 0.206*** | 0.673* | 0.0301* | −0.106*** | 0.0798*** | 0.0202 | −0.0111 | 0.0404 | 0.00944 | 0.144*** | 0.661*** |
| (0.389) | (0.0584) | (0.366) | (0.0163) | (0.0314) | (0.0251) | (0.0159) | (0.0171) | (0.0294) | (0.0237) | (0.0480) | (0.253) |
| Returnees | 2.889 | −0.0933 | −0.407 | 0.369 | 0.0876 | 0.0450 | −0.185 | 0.482 | 1.025 | −0.179 | −1.391 | 1.385 |
| France, 2009 (percent) | (2.027) | (1.068) | (6.445) | (0.507) | (0.671) | (0.333) | (0.183) | (0.389) | (0.774) | (0.212) | (0.903) | (4.015) |
| Emigration | 2.196 | 1.401 | 7.829 | 1.518 | −2.86e−05 | −0.0964 | 0.0115 | 0.00646 | 0.00247 | −0.0631 | −0.0323** | 0.0465* | −0.0567 |
| France, 2009 (percent) | (1.973) | (1.097) | (5.897) | (0.769) | (0.990) | (0.365) | (0.133) | (0.464) | (0.565) | (0.604) | (1.035) | (3.354) |
| Population (in logarithm) | 0.729*** | 0.255*** | 0.521*** | 0.0125*** | −0.0215*** | 0.0098*** | 0.00288** | 0.0131*** | 0.0249*** | 0.0333*** | 0.180*** | 0.664*** |
| (0.0597) | (0.0100) | (0.0574) | (0.00203) | (0.00362) | (0.00196) | (0.00120) | (0.00394) | (0.00278) | (0.00401) | (0.00652) | (0.0326) |
| Ethno-linguistic fragmentation | −0.00505 | 0.0151 | 0.128 | 2.86e−05 | −0.0964*** | 0.0115 | 0.00646 | 0.00247 | −0.0631 | −0.0323** | 0.0465* | −0.0567 |
| (0.0575) | (0.0257) | (0.109) | (0.00658) | (0.0206) | (0.00925) | (0.00417) | (0.00542) | (0.0109) | (0.0109) | (0.0205) | (0.0808) |
| Percent of the labor force in the primary sector | −0.515*** | −0.219*** | −0.610*** | −0.0275*** | −0.00289 | −0.0142 | −0.00939*** | −0.0149** | −0.0260*** | −0.00380 | −0.171*** | −0.498*** |
| (0.694) | (0.0228) | (0.109) | (0.00644) | (0.0170) | (0.00888) | (0.00398) | (0.00601) | (0.00880) | (0.00124) | (0.0171) | (0.0600) |
| Annual rainfall average over $[t − 10, t]$ | −0.000663 | −0.000224 | −0.000812 | −1.32e−05 | −0.000110 | −2.03e−05 | −2.17e−05 | −4.19e−05 | −9.41e−06 | −3.79e−05 | −0.000155 | −8.72e−05 |
| (0.000560) | (0.000164) | (0.000678) | (3.93e−05) | (9.81e−05) | (5.17e−05) | (5.15e−05) | (5.71e−05) | (8.32e−05) | (0.000109) | (0.000483) | |
| Annual rainfall shocks over $[t − 10, t]$ | 0.00643 | 0.000604 | 0.00214 | −0.000107 | 0.000938** | −0.000282* | 9.15e−06 | 0.000140 | −2.26e−05 | −0.000314 | 0.000725 | 0.00297 |
| (0.00427) | (0.000773) | (0.00248) | (0.000188) | (0.000378) | (0.000167) | (3.62e−05) | (0.000304) | (0.000260) | (0.000330) | (0.000469) | (0.00210) |

| Commune dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.383 | 0.389 | 0.220 | 0.308 | 0.305 | 0.160 | 0.089 | 0.137 | 0.145 | 0.226 | 0.302 | 0.447 |
| Observations | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 | 8,660 |
| No. of treated | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 | 1,189 |
| No. of controls | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 | 7,471 |

Notes: Robust standard errors are given in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. 

© The editors of The Scandinavian Journal of Economics 2014.
simultaneously to the action of HTAs, emigration is directly correlated with the provision of local public goods.

Controlling for return and current migration to France in a cross-sectional framework for the year 2009 yields results that are very consistent with the double-difference results, thus providing suggestive evidence that our benchmark estimates of the coefficients associated with the treatment are not capturing migration intensity.

VI. Conclusion

In this paper, we empirically assess the impact of migrants’ HTAs registered in France on the provision of public goods in Mali. Malian migrants in France gather in HTAs to send collective transfers to their locality of origin and to contribute to local development. Almost one-fifth of the Malian villages is targeted by an HTA whose declared aim is to improve the provision of public goods, such as schools or health facilities. However, the impact of these HTAs on the local development of Malian villages is not straightforward because HTA activity might crowd out public finance, be less effective than local intervention, and affect local governance.

We rely on a difference-in-differences approach to assess the differences, in terms of local public good provision, between villages targeted by an HTA over the 1987–2009 period and villages with no HTA. We find that targeted villages exhibit a significantly steeper upward trend in public goods over the 1987–2009 period than villages with no HTA. This significant difference is observed for schools and health centers as well as for water amenities, the difference between treated and control localities in terms of water infrastructures being mainly observed for the second period of analysis (1998–2009). These results are robust when the comparison is done on groups that are closer with respect to their observed characteristics. They are also robust to the introduction of time-varying variables in the estimations. Finally, we present cross-sectional evidence of a correlation between HTAs and local public good provision, which again remains significant and stable when we additionally control for current and return migration.

Overall, the empirical evidence presented in this paper suggests that Malian villages targeted by an HTA registered in France are significantly better endowed in terms of local public goods than other villages. Despite large-scale public investments in social services implemented since the 1990s, villages with no HTA did not manage to catch up with those benefiting from these collective transfers. Our findings on Malian HTAs pave the way for further research to understand the channels through which collective transfers affect local public good provision, and in particular to
identify the political economy mechanisms at play, because HTAs are non-state agents interfering in the process of public good provision.

The impact of HTAs can first be explained by the capacity of migrants to collect funds (either because their private incomes are high enough to finance collective projects, or because they are able to obtain access to French public funds through the so-called co-development initiatives that expanded in the 1990s, HTAs being one of the main actors of these decentralized official development assistance projects). Second, the positive impact of HTAs on public good provision might stem from greater effectiveness and better choices in terms of local development. HTAs might notably contribute to improve local governance by asking for more accountability of the local elite and for transparency of public affairs, thus reducing the capture of public funds.

Finally, this paper leaves open the question of the impact of HTAs on intra-locality inequality. The presence of HTAs and their involvement in the provision of public goods might exacerbate existing diverging interests, especially if the intended beneficiaries do not have much voice in the selection or oversight of the funded development projects. Inversely, HTAs might reduce the unequal access of public goods by financing investment in areas lagging behind. All these research questions are beyond the scope of this paper and call for further work.
## Appendix

Table A1. *Benchmark results on the subsample of migration-intensive districts of Kayes: part 1*

|                      | HTA (1a) | HTA (1b) | Treatment Early HTA (2) | Treatment Late HTA (3) | Treatment Late HTA (4) |
|----------------------|----------|----------|-------------------------|------------------------|------------------------|
| **Outcome period**   | 1987–2009 | 1987–1998 | 1998–2009               | 1998–2009              |                        |
| **SCHOOL**           | 0.298***  | 0.557**  | 0.910**                 | −0.129                 | 0.213                  |
|                      | (0.065)   | (0.256)  | (0.384)                 | (0.222)                | (0.151)                |
| **WATER**            | 0.499***  | 2.100*** | 0.685                   | 2.420                  | 1.130**                |
|                      | (0.158)   | (0.741)  | (0.517)                 | (1.556)                | (0.520)                |
| **HH_TAP**           | 0.035***  | 0.073**  | −0.006                  | 0.061                  | 0.071                  |
|                      | (0.012)   | (0.033)  | (0.008)                 | (0.041)                | (0.045)                |
| **HH_WELL**          | −0.019    | −0.070   | 0.001                   | −0.153**               | −0.112                 |
|                      | (0.026)   | (0.075)  | (0.069)                 | (0.074)                | (0.084)                |
| **HH_FOUNTAIN**      | 0.023**   | 0.110*** | 0.011                   | 0.126**                | 0.121**                |
|                      | (0.011)   | (0.037)  | (0.020)                 | (0.054)                | (0.061)                |
| **MOSQUE**           |           |          |                         | 0.609***               | −0.452                 |
|                      |           |          |                         | (0.220)                | (0.295)                |

Village fixed effects: Yes, Yes, Yes, Yes, Yes
Commune-level trends: No, Yes, Yes, Yes, Yes
Observations: 1,628, 1,628, 1,128, 1,128, 1,186
No. of treated: 471, 471, 221, 221, 250
No. of controls: 343, 343, 343, 343, 343

(Continued)
### Table A1. Continued

| HTA | Treatment | Early HTA | Late HTA |
|-----|-----------|-----------|----------|
|     |           | (2)       | (3)      | (4)      |
| Panel B: testing the assumption of parallel trend before treatment |
| Outcome period | 1976–1987 | 1976–1987 | 1976–1987 | 1987–1998 |
| **SCHOOL** | 0.044 | 0.016 | −0.090 | 0.120* |
|            | (0.027) | (0.070) | (0.115) | (0.064) | (0.145) |
| **WATER** | 0.119 | 0.011 | 0.098 | (0.074) |
|            | (0.094) | (0.014) | (0.014) |         |
| **HH_TAP** | 0.011 | 0.098 | (0.074) |         |
|            | (0.014) | (0.014) | (0.014) |         |
| **HH_WELL** | 0.098 | (0.074) |         |         |
|            | (0.014) | (0.014) | (0.014) |         |
| **HH_FOUNTAIN** | −0.030 | 0.011 | 0.098 | 0.011 |
|            | (0.035) | (0.014) | (0.014) | (0.014) |
| Village fixed effects | Yes | Yes | Yes | Yes |
| Commune-level trends | No | Yes | Yes | Yes |
| Observations | 1,628 | 1,628 | 1,128 | 1,186 |
| No. of treated | 471 | 471 | 221 | 250 |
| No. of controls | 343 | 343 | 343 | 343 |

**Notes:** Robust standard errors are given in parentheses, clustered at the village level. *** p < 0.01; ** p < 0.05; * p < 0.1. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. Column 1a presents standard difference-in-differences, while Columns 1b, 2, 3, and 4 introduce commune-level time trends. In all columns, the control group gathers the villages without HTA. In Columns 1a and 1b, the treated villages are those with an HTA (whatever its date of creation). In Columns 2 and 3, the treated group is composed of the villages with an HTA created between 1987 and 1998, while in Column 4 the treated villages are those with an HTA created after 1998. No coefficient is estimated for the WATER equation over the 1976–1987 period because the number of public fountains was equal to zero in all the villages of the sample, both in 1976 and in 1987.
Table A2. Benchmark results on the subsample of migration-intensive districts of Kayes: part 2

| Panel A: difference-in-differences after the treatment occurred |
|---------------------------------------------------------------|
| Outcome period                                               |
| 1987–2009                                                    |
| 1987–1998                                                    |
| 1998–2009                                                    |
| 1998–2009                                                    |
| **HEALTH**                                                   |
| 0.096***                                                     |
| (0.031)                                                      |
| 0.255***                                                     |
| (0.084)                                                      |
| 0.861***                                                     |
| (0.213)                                                      |
| −0.477**                                                     |
| (0.202)                                                      |
| 0.035                                                        |
| (0.151)                                                      |
| **HOSP**                                                     |
| 0.060                                                        |
| (0.057)                                                      |
| −0.000                                                       |
| (0.000)                                                      |
| **CLINICS**                                                  |
| −0.036                                                       |
| (0.028)                                                      |
| −0.040                                                       |
| (0.030)                                                      |
| **DISPENS**                                                  |
| −0.360**                                                     |
| (0.146)                                                      |
| −0.031                                                       |
| (0.080)                                                      |
| **MATER**                                                    |
| −0.418***                                                    |
| (0.126)                                                      |
| −0.062                                                       |
| (0.068)                                                      |
| **CSCOM**                                                    |
| 0.337***                                                     |
| (0.102)                                                      |
| 0.168                                                        |
| (0.109)                                                      |

Village fixed effects: Yes, Yes, Yes, Yes, Yes
Commune-level trends: No, Yes, Yes, Yes, Yes
Observations: 1,628, 1,628, 1,128, 1,186
No. of treated: 471, 471, 221, 250
No. of controls: 343, 343, 343, 343

Panel B: testing the assumption of parallel trend before treatment

| Outcome period | 1976–1987 | 1976–1987 | 1976–1987 | 1987–1998 |
|----------------|-----------|-----------|-----------|-----------|
| **HEALTH**     | −0.000    | −0.090    | −0.176    | 0.000     |
|                | (0.018)   | (0.078)   | (0.131)   | (0.065)   |
| Village fixed effects: Yes, Yes, Yes, Yes
Commune-level trends: No, Yes, Yes, Yes
Observations: 1,628, 1,628, 1,128, 1,186
No. of treated: 471, 471, 221, 250
No. of controls: 343, 343, 343, 343

Notes: Robust standard errors are given in parentheses, clustered at the village level. *** p < 0.01; ** p < 0.05; * p < 0.1. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. Column 1a presents standard difference-in-differences, while Columns 1b, 2, 3, and 4 introduce commune-level time trends. In all columns, the control group gathers the villages without HTA. In Columns 1a and 1b, the treated villages are those with an HTA (whatever its date of creation). In Columns 2 and 3, the treated group is composed of the villages with an HTA created between 1987 and 1998, while in Column 4 the treated villages are those with an HTA created after 1998.
Table A3. Adding time-varying covariates: detailed results

| Variables                        | SCHOOL (1) | WATER (2) | HH_TAP (3) | HH_WELL (4) | HH_FOUNTAIN (5) | HEALTH (6) |
|----------------------------------|------------|-----------|------------|-------------|-----------------|------------|
| HTA                              | 0.863**    | 1.022***  | 0.0458***  | −0.0801*    | 0.0906***       | 0.265***   |
|                                  | (0.341)    | (0.372)   | (0.0163)   | (0.0433)    | (0.0221)        | (0.0594)   |
| Population (in logarithm)        | 0.198***   | 0.0561    | 0.000683   | 0.00172     | −0.00204        | 0.0398***  |
|                                  | (0.0504)   | (0.0453)  | (0.00228)  | (0.00689)   | (0.00270)       | (0.00892)  |
| Ethno-linguistic fragmentation   | −0.257**   | −0.0786   | 0.00285    | −0.106***   | 0.00859         | 0.00488    |
|                                  | (0.100)    | (0.0909)  | (0.00595)  | (0.0225)    | (0.00965)       | (0.0246)   |
| Percent of the labor force in the primary sector | −0.107    | −0.178*** | −0.0149*** | 0.0274*     | −0.0110         | −0.0596*** |
|                                  | (0.0717)   | (0.0599)  | (0.00497)  | (0.0141)    | (0.00675)       | (0.0175)   |
| Annual rainfall average over $[t−10, t]$ | −0.00163  | −0.000393 | 0.000137   | 0.000103    | −0.000514***    | 0.000813** |
|                                  | (0.000979) | (0.00124) | (0.000135) | (0.000300)  | (0.000167)      | (0.000400) |
| Annual rainfall shocks over $[t−10, t]$ | 0.00206  | 0.000772  | −1.00e−04  | −0.000244   | 0.000133         | −0.000307  |
|                                  | (0.00199)  | (0.00121) | (9.54e−05) | (0.000268)  | (0.000126)      | (0.000415) |
| Village fixed effects            | Yes        | Yes       | Yes        | Yes         | Yes             | Yes        |
| Commune-level trends             | Yes        | Yes       | Yes        | Yes         | Yes             | Yes        |
| Observations                     | 17,321     | 17,321    | 17,321     | 17,321      | 17,321          | 17,321     |
| No. of treated                   | 1,189      | 1,189     | 1,189      | 1,189       | 1,189           | 1,189      |
| No. of controls                  | 7,472      | 7,472     | 7,472      | 7,472       | 7,472           | 7,472      |
| $R^2$                            | 0.412      | 0.179     | 0.212      | 0.266       | 0.162           | 0.237      |

Notes: Robust standard errors are given in parentheses, clustered at the village level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. In all columns, the control group gathers the villages without HTA and the treated villages are those with an HTA (whatever its date of creation).
Table A4. *Adding time-varying covariates: early versus late HTAs*

| Outcome period | Mali 1987–1998 | Migration-intensive districts of Kayes 1987–1998 |
|----------------|----------------|---------------------------------------------|
|                | (1)            | (2)                          | (3)            | (4)                  |
| **SCHOOL**     | 0.508***       | 0.516***                     | 0.512***       | 0.523***             |
|                | (0.160)        | (0.157)                      | (0.161)        | (0.160)              |
| **WATER**      | 0.642          | 0.645                        | 0.733          | 0.728                |
|                | (0.587)        | (0.583)                      | (0.750)        | (0.740)              |
| **HH_TAP**     | 0.029          | 0.029                        | 0.037          | 0.037                |
|                | (0.020)        | (0.020)                      | (0.026)        | (0.026)              |
| **HH_WELL**    | −0.039         | −0.037                       | −0.071*        | −0.077*              |
|                | (0.041)        | (0.041)                      | (0.043)        | (0.045)              |
| **HH_FOUNTAIN**| −0.001         | 0.000                        | −0.004         | −0.004               |
|                | (0.010)        | (0.010)                      | (0.010)        | (0.011)              |
| **HEALTH**     | 0.644***       | 0.649***                     | 0.598**        | 0.601***             |
|                | (0.181)        | (0.180)                      | (0.219)        | (0.217)              |

Village fixed effects | Yes | Yes | Yes | Yes
Commune-level trends | Yes | Yes | Yes | Yes
Time-varying covariates | No | Yes | No | Yes
Observations | 2,378 | 2,378 | 942 | 942
No. of treated | 504 | 504 | 221 | 221
No. of controls | 685 | 685 | 250 | 250

Notes: Robust standard errors are given in parentheses, clustered at the village level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Each coefficient corresponds to a different estimation, the dependent variable appearing in rows. The treated group gathers the villages with an HTA created between 1987 and 1998, while villages with an HTA created after 1998 compose the control group. Columns 1 and 3 reproduce Columns 1 and 3 of Table 8 while time-varying covariates are introduced in Columns 2 and 4.
References

Batista, C. and Vicente, P. C. (2011), Do Migrants Improve Governance at Home? Evidence from a Voting Experiment, *World Bank Economic Review* 25, 77–104.

Beauchemin, C. and Schoumaker, B. (2009), Are Migrant Associations Actors in Local Development? A National Event-History Analysis in Rural Burkina Faso, *World Development* 37, 1897–1913.

Bernard, C., Chauvet, L., Gubert, F., Mercier, M., and Mesplé-Somps, S. (2013), Malian Migrants’ Home Town Associations: Insights from Two Original Surveys, DIAL mimeo (forthcoming in French in *Revue Européenne des Migrations Internationales*).

Charef, M. and Gonin, P. (2005), *Emigrés – immigrés dans le développement local (Emigrants – immigrants in local development)*, Editions Sud-Contact, Agadir.

Chauvet, L. and Mercier, M. (2014), Do Return Migrants Transfer Political Norms to their Origin Country? Evidence from Mali, *Journal of Comparative Economics* 42, 630–651.

Daum, C. (1995), Les migrants, partenaires de la coopération internationale: le cas des Maliens de France (Migrants, partners of the international cooperation: the case of Malians in France), OECD Technical Document No. 107.

Daum, C. (1998), *Les Associations de Maliens en France: Migrations, Développement et Citoyenneté (Mali’s Associations in France: Migration, Development and Citizenship)*, Karthala, Paris.

Diarra, S. O., Diakite, Y., Konate, M. K., and Lange, M.-F. (2001), *Politiques Éducatives et Système Éducatif Actuel au Mali (Educational Policies and Current Education System in Mali)*, in M. Pilon and Y. Yaro, eds, *La Demande d’Éducation en Afrique: État des Connaissances et Perspectives de Recherche (The Demand for Education in Africa: State of Knowledge and Research Perspectives)*, Union for African Population Studies, Accra, 151–170.

Diarra, S. O. and Lange, M.-F. (1999), *Ecole et Démocratie: “L’explosion” Scolaire sous la IIIe République au Mali (School and Democracy: The School “Explosion” under the 3rd Republic in Mali)*, *Politique Africaine* 76, 164–172.

Gauvrit, L. and Le Bahers, G. (2004), *Pratiques Associatives des Migrants pour le Développement de leur Pays d’Origine: Le Cas des Migrants Maliens de France Originaires de la Région de Kayes (Migrants’ Associative Practices for the Development of their Home Countries: The Case of Malian Migrants from the Region of Kayes in France)*, Rapport du FSP codéveloppement Mali, Ministère des Affaires Etrangères.

Grabel, I. (2008), The Political Economy of Remittances: What Do We Know? What Do We Need to Know?, PERI Working Paper No. 184.

Kijima, Y. and Gonzalez-Ramirez, H. (2012), Has the Program 3 × 1 for Migrants Contributed to Community Development in Mexico? Evidence from Panel Data of 2000 and 2005, *Review of Development Economics* 16, 291–304.

Manchuelle, F. (1997), *Willing Migrants: Soninke Labor Diasporas, 1848–1960*, Ohio University Press, Athens, OH.

Quiminal, C. (1991), *Gens d’Ici et d’Ailleurs, Migrations Soninkes et Transformations Villageoises (People from Here and Elsewhere, Soninke Migrations and Village Transformations)*, Christian Bourgeois, Paris.

Ratha, D. and Silwal, A. (2012), Remittance flows in 2011: An Update, Migration and Development Brief No. 18, *Migration and Remittances Unit*, World Bank, Washington, DC.

© The editors of *The Scandinavian Journal of Economics* 2014.