En Route: The French Colonial Army, Emigration, and Development in Morocco *

Ariane Salem† and Awa Ambra Seck‡

Preliminary - Please Do Not Circulate

Abstract

Between 1830 and 1962, six million Africans living under colonial rule served in the French army. Most were deployed internationally to maintain order or fight French wars. After independence, all were repatriated and granted the right to move to France. We estimate the effect of military deployment on the soldiers' long-term outcomes, as well as on their communities of origin, using historical data on Moroccan soldiers, and exploiting the arbitrary assignment of troops to international locations. We show that, within a municipality, cohorts with a higher share of soldiers deployed to France were more likely to relocate there after independence. In contrast, deployment to other locations did not affect emigration. Consistent with the establishment of emigration networks, we find that the effects persist for decades after independence. Furthermore, communities with a higher share of soldiers deployed to France have experienced better economic outcomes and a shift from the agricultural to the service sector today. These results highlight the role that colonial rule played in shaping emigration networks from the colonies and in contributing to persistent changes in their patterns of economic development.

*We thank Emily Breza, Mathieu Couttenier, Melissa Dell, Eliana La Ferrara, Rema Hanna, Elise Huillery, Claudia Goldin, Edward Glaeser, Pauline Grosjean, Gabriel Kreindler, Sara Lowes, Elisa Macchi, Benjamin Marx, Nathan Nunn, Gautam Rao, Oliver Vanden Eynde for advice and comments. We are grateful to Gabriel Koehler-Derrick for his feedback and for generously sharing archival sources and his knowledge with us. We are also grateful to the Harvard Kennedy School, the Lab for Economy Applications and Policy at Harvard, the STEG fund, the Max Schmidheiny Foundation, the Weiss Fund, and the National Science Foundation for providing the funding resources that made this project possible. We also thank seminar participants at Harvard, Junior PEPES (SciencesPo Paris & Paris School of Economics), the STEG Workshop, the Center for African Studies at Harvard, the Princeton Department of Economics, the Political Economy group at Stanford Graduate School of Business, the Northwestern Economics Department, the 2023 REStud tour. Andrea Minelli, Diletta Savoldi Bellavitis, Lucas Leonardo Wandera Bwise, Philibert Nkurunziza, Carlos Leonardo Serrano Pineda provided excellent research assistance.

†Conseil d'Analyse Économique, e-mail: ariane.salem@cae-eco.fr

‡Harvard University, e-mail: aseck@hbs.edu

1 Introduction

Between 1830 and 1962, six million Africans were recruited into the French colonial army. More than 60% of them were deployed to Europe, Asia, or another African country to maintain order and fight French wars, constituting the first large-scale movement from the colonies to Europe (Natter, 2014). At the end of military service, soldiers were repatriated to their countries of origin but, as the colonies became independent and moving to France a possibility, ex-combatants qualified to receive a French permit of stay[1]. Following the end of colonial rule, international emigration became a valuable mean to smooth risk and consumption for families in the ex-colonies, whose movements laid the foundations for the African diasporas in Europe [2]. Although historians and sociologists have highlighted the important connections between emigration and colonial policies (Ginio (2017); Echenberg (1991); de Haas (2008)), this topic remains unexplored in economics and the role of international deployment, undetermined. Furthermore, the effects of permanent out-migration on the economic development of the communities of origin remain unclear[3].

In this paper, we exploit key features of the French colonial army to estimate whether temporary international deployment[4] contributed to shaping the formation and persistence of emigration patterns from the ex-colonies to France. In addition, we exploit this historical setting to estimate the long-run economic consequences of this movement on the community of origin.

We study these questions in the context of the last ten years of French domination in Morocco[5] which, during colonial rule, contributed more than 400,000 soldiers to the army and 50,000 only in the years considered[6]. During this period — from 1946 to 1956 — soldiers who were deployed internationally would mainly be sent to five locations: Indochina, Madagascar, France, Germany, and Algeria. The majority of the soldiers were deployed to Indochina and Madagascar, two French colonies that were strenuously fighting for their independence. Moroccans, as well as Algerians and West Africans, were recruited into the army to fight for France in these two deadly conflicts. During the Indochina war, the fatality rate for Moroccan soldiers was estimated to be around 10%, while the share of soldiers who were imprisoned or injured remains uncertain. In contrast, a relatively fortunate minority, approximately 30% of the soldiers in Morocco, was sent to a country without an active conflict (Algeria, Germany, and France) where they would be employed in policing and peace-keeping jobs.

To estimate the causal effects of deployment on our outcomes of interest, we rely on the fact

[1] Code de l'entrée et du séjour des étrangers et du droit d'asile: Section 2: Délivrance de la carte de résident (Articles L314-8 à L314-13)

[2] At the beginning of the 21st century, it was estimated that 2.6 million Moroccans, 1.2 million Algerians, and 700,000 Tunisians were living in Europe (de Haas, 2008).

[3] If on the one hand, emigration might imply the loss of a productive member of the community, and negative effects in the short run; on the other hand, international emigration might help smooth household consumption via remittances (Mishra, 2007) in the longer run.

[4] By international deployment, we mean the process through which soldiers, enlisted in the French military, were stationed in a country different from their own during their career.

[5] Due to data limitations, we decided to focus our digitization on the years of the protectorate closest to independence, as it was right after independence that the emigration movements started.

[6] The CAPM Archive in Pau estimates to have 420,000 records for indigenous Moroccan soldiers. The total number of soldiers enlisted during the protectorate accounts for approximately 10% of the Moroccan population in 1921.

that Moroccan soldiers were randomly allocated to battalions[7] battalions were designed to be interchangeable and would rotate across deployment locations. This feature of the French colonial army determined the quasi-exogenous exposure of Moroccan municipalities (and cohorts) to different deployment locations, on which we will base our estimation strategy. Although soldiers could not choose their battalion of assignment, they could choose whether or not to serve in a conflict affected area. For this reason we will focus on estimating the effects of deployment in the three peaceful countries at the time: Algeria, France and Germany.

In our analysis, we compare patterns of permanent emigration to France in municipalities — and cohorts within municipalities — with different levels of exposure to these three deployment locations. We construct the deployment variables from a hand-coded dataset that we digitized between 2019 and 2021 and comprises individual-level information on a 50% random sub-sample of Moroccan soldiers who enlisted in the French army between 1946 and 1956. We proxy permanent emigration, at the Moroccan municipality level, with the stock of Moroccan people who died in France between 1990 and 2021, a measure that we obtain by geo-coding the municipality of birth of all Moroccans included in the post-1990 French death records[8].

Our first hypothesis is that soldiers deployed to a specific location in peacetime are exposed to the local context, learn about the local labor market, and in some cases, form ties with the local population, elements that might make them more willing to move there if needed. However, only the soldiers deployed to France were exposed to a viable destination for emigrants post-independence. Indeed, if strict immigration policies limited Moroccan immigration to Germany and Algeria in the 1960s, emigration to France was facilitated by the bilateral agreements stipulated with its ex-colonies and the automatic visa eligibility for ex-soldiers[9]. Municipalities with a higher share of soldiers deployed to France had thus a higher share of soldiers exposed to an emigration destination pre-independence and subsequently had a higher share of first movers to France. In other municipalities, repatriated soldiers were less likely to emigrate internationally and more likely to stay in Morocco and find employment in the local labor market. This created a divergence in patterns of emigration between Moroccan municipalities. In the first set of towns, deployment to France sparked international emigration, which continued throughout the decades[10], while emigration from the other set of towns lagged.

Our second hypothesis is that international deployment has influenced the economic development of Moroccan municipalities. The channels through which this might have happened are sev-

[7] A battalion is a sub-unit of a regiment in the French military organization. Battalions, not soldiers, would be assigned to a mission and a country of deployment.

[8] The French death records are publicly accessible online and contain the universe of individuals who died in France from 1970 to the most recent quarter. Although the country of origin are included from 1990, the municipality of birth is only recorded for individuals who died after 1990.

[9] Moving to France before independence was strictly regulated for ex-subjects. The largest migratory waves happened thanks to labor contracts and military deployment (Natter, 2014) and were always temporary, as people were repatriated once their contract was over.

[10] This could have happened through several different channels. First, individuals more exposed to international emigration might be more likely to realize that this could be a profitable opportunity and be more likely to emigrate themselves (Bryan *et al.*, 2014). Also, having network members abroad might reduce moving costs, as you will be supported once at the destination. Finally, first movers who send remittances might help reduce financial barriers associated with moving abroad, such as traveling costs.

eral. First, Moroccan soldiers in France and Algeria might have learned how to speak French and Arabic, two predominant languages among the Moroccan elite and administration after independence. Second, the difference in emigration patterns might influence economic development through remittances, foreign direct investment, and structural changes in the labor market. Finally, exposure to different countries through deployment might have given rise to different trade patterns. We test the first two hypotheses in our analysis.

The first part of our empirical analysis investigates the effects of deployment to France on the emigration to the Métropole of the cohorts of soldiers[11] (France). We leverage the variation in exposure to different deployment locations by cohort and municipality pair. In our analysis, we include municipality fixed effects and cohort fixed effects to account for time-invariant municipality-level characteristics and cohort-invariant location characteristics. We also control for cohort-municipality level characteristics measured before the soldiers' enlistment. Consistent with the arbitrary nature of deployment, deployment to an international destination, France or Algeria, is not associated with nearly all of the cohort-level soldiers' characteristics measured at the moment of enlistment. The only exception is the average age at the year of enlistment, which negatively correlated with deployment to France. We include it in our benchmark specification, but its inclusion does not influence the results. We compare cohorts with higher exposure to deployment to France with cohorts less exposed and document a positive effect of colonial deployment to France on post-colonial emigration to the *Métropole*. An increase of 10% in soldiers deployed by cohort increased emigrants for that cohort by .42%. We find no effect of deployment to Algeria on emigration to France. The effect is driven solely by the men in our sample, and we find no effects for women of the same cohort. We interpret these results as evidence that exposure to the *Métropole* increased individuals' probability of relocating there once colonial domination was over in 1956.

The second part of our analysis explores the effects of deployment on the long-term emigration patterns of the communities of origin of these soldiers. As long-term outcomes are at the municipality level, we exploit municipality-level variation in military patterns. Even in this case, in line with the exogenous allocation of battalions to deployment locations, we show that exposure to a specific international location — France or Algeria — is not associated with historical and geographic characteristics measured before 1946. Among the historical characteristics we test, we construct several measures of a municipality's proximity to colonial infrastructure by digitizing colonial maps for railroads, roads, trails, enlistment stations, and military ports before 1946.

Notwithstanding these historical similarities, municipalities more exposed to deployment to France experienced higher emigration post-independence. Our results show that an increase of 1% in the fraction of soldiers deployed to France, keeping everything else constant, increased by 10% the mean the stock of international emigrants born between 1941 and 1990 from that municipality. When we look at the dynamic effects for cohorts born in different decades, we see that the positive effects found for the cohorts of Moroccans born before 1940 — including soldiers — persist for cohorts of Moroccans born after 1940 — hence not including soldiers. This finding is consistent with positive and persistent spillover effects of first migrants on the emigration of community members (Bryan *et al.*,

[11] The *Métropole* is a way to denote the center of colonial power, in this case, France.

2014). We also find smaller in magnitude but positive effects on the emigration of women, although their patterns of emigration lag ten years behind those of men, consistent with spouses following their partners to France. Finally, we find positive effects of deployment to France on the probability of having a child born abroad, a proxy for temporary emigration. And on internal emigration. These results, taken together, suggest that municipalities with a higher share of soldiers deployed to France saw a shift in the propensity to emigrate, not only permanently to France but also temporarily abroad and within Morocco.

In the last part of our analysis, we estimate the long-run economic effects of international deployment on the community of origin of the soldiers. We use individual-level census data from the Moroccan census of 2014 that include both the municipality of origin and the municipality of residence of a 10% sample of individuals. We define the community of origin of soldiers as the people who were also born in the municipality of birth of the soldiers, regardless of where they currently reside in Morocco. This allows us to abstract from the selection implied by internal migration since we account for it. Our results suggest positive effects of deployment to France on economic development for the community of origin, although small in magnitude. We find evidence of a shift from agriculture to services, with workers becoming more skilled and better off (higher wealth index). On average, we see a lower probability for people to be homeowners and a smaller household size. We also estimate the positive and significant effects of being internal emigrants. We do not find effects on education, although we find suggestive evidence of positive effects on older cohorts. In the second step, we define the community of origin of the soldiers as the people currently residing in the municipalities of the birth of soldiers in the army. Here, our goal is to understand what happens to the municipality itself, net to immigration and emigration flows. Although the effects go in the same direction as before, they are of a smaller magnitude. Interestingly, this is driven by immigrants, while residents who were born in the same municipality seem to be better off alongside a series of outcomes (education, employment, sectoral composition). We interpret our results as indicative that deployment slightly increased economic outcomes for individuals born in the municipality of origin of the soldiers.

Our paper contributes to several strands of work in economic history, development economics, and political economy. An established literature in political economy demonstrated the key role played by colonial institutions in shaping contemporary economic outcomes (Michalopoulos and Papaioannou, 2020; Acemoglu *et al.*, 2001, 2002; Nunn, 2014; Alesina *et al.*, 2011). Colonial policies with persistent effects span several realms, such as education (Huillery (2009); Wantchekon *et al.* (2015)), health (Lowes and Montero (2021); Cagé and Rueda (2020)), and inequality (Salem (2022); Koehler-Derrick (2021)). First, by estimating the persistent effects of deployment in the French colonial army on emigration and economic development, we introduce to this literature an understudied and pervasive policy in Africa — enlistment and deployment in the French colonial Army — that directly involved more than 6 million people in less than a century. Although we are not the first to study the effects of a colonial army on the colonized (see Jha and Wilkinson (2012) on the British army in India), we are the first to highlight the important persistent effects of the French army in the African continent. Second, we build a unique dataset on enlistment and deployment of soldiers in

Morocco by digitizing more than 23,000 individual military records[12].

Our work also contributes to the economic literature on international emigration. A body of works has shown that, on average, the choice of emigrating has positive effects on the emigrants Gibson *et al.*, 2018; Shrestha, 2019; McKenzie *et al.*, 2013; Bryan *et al.*, 2014; Baseler, 2021; Nakamura *et al.*, 2022; Deryugina *et al.*, 2018. Another line of work has instead focused on the effects that immigrants have on the labor market outcomes of natives and found mixed evidence (Dustmann *et al.*, 2013; Becker and Ferrara, 2019; Borjas, 1999). A smaller body of work has attempted to estimate the effects of emigration on the community of origin. As a result, the long-term effects of permanent international emigration remain unclear. Gibson *et al.* (2011) finds strong negative effects on the family of those left behind in the short-run, consistent with the brain-drain literature, and Clemens and McKenzie (2018) argue that although remittances might help improve outcomes for those who receive them, they are unlikely to spur growth at the community level. Another set of studies, however, finds a positive long-run effect of international emigration (Mishra, 2007). We add to this literature in two ways. First, by showing persistent effects on emigration, we build on Bryan *et al.* (2014) and show that emigration begets emigration through, most likely through information, networks, and remittances. Second, by estimating the persistent economic effects of deployment to France on the community of those left behind, we provide suggestive evidence of the long-term economic effects of permanent international emigration. Our findings suggest that international emigration has positive, long-lasting effects on economic development in the community of origin. There might be multiple channels driving this result. On the one hand, remittances received by the households might be invested in local public goods, education, or investments in the private sector, hence moving people out of agriculture and into the service sector. On the other hand, municipalities with higher levels of international emigration might experience a shift in attitudes towards emigration, with people being more prone to emigrating and hence bettering their economic conditions. Although we do not find evidence of an increase in education, we do find evidence of an increased propensity to migrate, we lack the data to draw any conclusion on the role of remittances and foreign direct investment.

Finally, we contribute to the literature that estimates the effects of enlistment in the army. A growing literature has estimated the persistent effects of combat on political attitudes, voting, and collective action in various settings (Cagé *et al.*, 2021; Tur-Prats and Valencia Caicedo, 2020; Jha, 2012; Blattman, 2009; Koenig, 2015). Angrist (1990) found persistent negative impacts of being a veteran on earnings, and Costa *et al.* (2018) explore how service in the army contributes to establishing long-term friendships among veterans. To our knowledge, we are the first to explore the long-term effects of a key feature of army service: international deployment. We furthermore contribute to this literature by focusing on the understudied phenomenon of colonial armies and providing evidence on how that can generate colonial path dependence between the colonized countries and the colonizer.

The rest of the paper is organized as follows. Section 2 discusses the historical context, and Section 3 describes the data used. Section 4 explains the empirical strategy adopted to estimate the effects of deployment on the cohort of soldiers and discusses the associated results. Section 5 analyzes

[12]We are currently in the process of digitizing individual soldier records from Morocco 1930-1945, Senegal 1930-1960, Mali 1930-1960 and Burkina Faso 1946-1960.

the spillover effects on the emigration patterns of the community. Section 6 estimates the long-run economic effects of deployment, and Section 7 concludes.

2 Historical Background

2.1 The French Colonial Army

Establishment and Numbers of the French Colonial Army. Between 1830 and 1962, France raised one of the largest colonial armies known in African history. By the end of the 19th century, French colonial expansion in Africa was rampant, and the number of territories that needed to be controlled, extensive. If on the one hand, the French military played a key role in the consolidation of colonial power, (Maghraoui, 2004), on the other hand, it involved high administrative costs and it increased the discontent of French soldiers (Clayton, 1988)[13]. In October 1830, following the French colonial principle of colonial self-sufficiencythe first indigenous battalion was formed in Algeria, and with it, the *Armée d'Afrique*[14]. The establishment of *La Colonial* — the army section enlisting sub-Saharan African soldiers — soon followed. On July 21st, 1857, in Plombiéres (France)[15] Napoleon III signed a decree that formed the first battalion of West African soldiers: the *Tirailleurs Sénégalais*. During the first years of their existence, both *La Coloniale* and the *Armée d'Afrique* were engaged locally to maintain order in the controlled territories and fight, on France's side, in the new colonization wars. Their fate, however, changed in 1911. On the verge of a world conflict — and with declining birth rates due to the influenza epidemic (Mangin, 1910) — France had to look for a military workforce outside of its national boundaries. In the essay *La Force Noire* (Mangin, 1910), Charles Mangin, an army's general, strongly argues in favor of using African soldiers to complement the declining French military force[16]. The introduction and spread of these ideas within French political and intellectual circles marks the beginning of an abrupt change in the policies regulating the French colonial army. Between 1912 and 1917, several laws increased the number of African soldiers who needed to be recruited in each territory. These numbers were to be reached through compulsory conscription in the colonies and voluntary enlistment in the protectorates, such as Morocco and Tunisia. As a result, between 1830 and 1962, more than 6 million Africans served in the French army, participating in both World Wars, several independence wars, or simply, traveling within the French empire to maintain order and control borders. In these 130 years, many of them will be imprisoned, tortured, and will die to defend France and its interests. For most of them, life as they know it will change forever. It is for this reason that, today, scholars refer to Africans' participation in the French army as the "blood

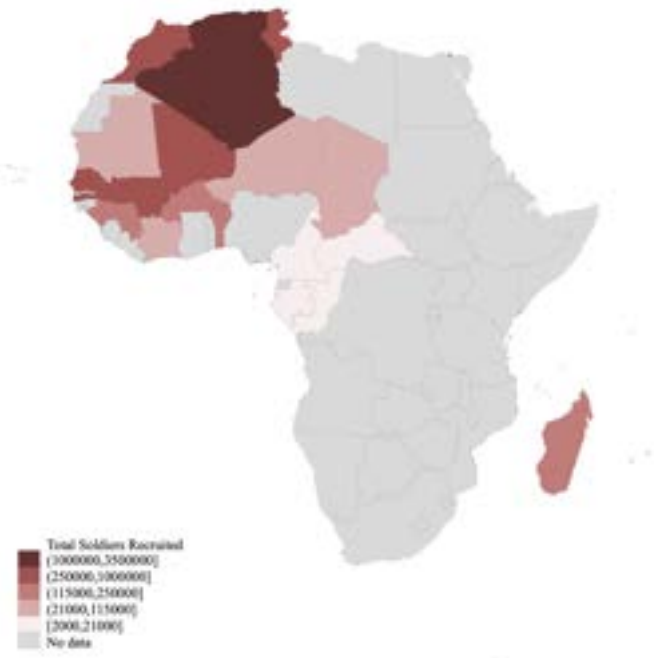
[13] pp 54-55.

[14] The *Armée d'afrique* refers to the section of French military that included indigenous regiments of North Africa.

[15] See the introduction to Mangin (2011) by Antoine Champeaux, for a timeline on the army's establishment.

[16] His arguments do not only test in the large number of soldiers that African recruitment would imply, but also in the special quality of African soldiers. In his racist views, Africans will make great soldiers as they endure long marches and wars, and their underdeveloped nervous system makes them stronger in battle. *"La ténacité dans les longues luttes est l'une des qualités les plus nécessaires dans les guerres modernes (...). La manque de nervosité de la race noire l'y rendra précieuse dans le combat, le soldat noir dépense moins de force nerveuse que tout autre et dispose par conséquent d'une somme de résistance et d'une puissance d'action plus considérables. L' insouciance du noir et son fatalisme deviennent alors des qualités (...). La Sénégalais posséde donc un constance extraordinaire dans la résistance comme dans l'attaque."* pp 183, Mangin (2011).

Figure 1: Stock of Soldiers Recruited between 1830 and 1962
by Modern Country



Notes: This figure illustrates the estimated number of soldiers enlisted or conscripted in the French army by country of birth. The source is the *Archives of Military Personnel* at Pau. Colonial territories have been matched to the modern country they belong to. In the case of colonial territories split between two or more modern countries, we assigned to each country a share of soldiers equal to the share of colonial territory lying within that country's borders.

debt"[17], i.e., the debt that France owes its colonies.

In this paper we will focus our attention to a very small — and to some extent less unfortunate — subset of these soldiers: Moroccan soldiers who enlisted in the army towards the end of the protectorate (1946-1956) and were deployed to a peace area to perform policing operations.

Morocco was a French protectorate between 1912 and 1956. During the 45 years of its domination, France enlisted a total of 420,000 Moroccans[18] who participated in different military campaigns within and outside Morocco. Figure A6 reports the stock of Moroccan soldiers in the French army between 1917 and 1956[19]. The number of soldiers levied each year varied substantially, with an average of 4,000 soldiers a year during periods of relative peace, and peaks of 18,000 soldiers per year

[17] Ginio (2017) pp. 6.

[18] Official number of total Moroccans enlisted in the army reported by the Archives of Military Personnel at Pau (CAPM). After 1956, a few Moroccans were recruited for the colonial army in Algeria.

[19] During our visits in the archives of Nantes and Vincennes, we were not able to find the number of soldiers enlisted every year in the French army, among official records. We reconstruct the figures plotted in Figure A7 and Figure A6 from the number of individual record files from stored in the military archives of Pau (CAPM). Our current data collection does not include soldiers who enlisted before 1917, hence we are not able to provide figures on the period between 1912 and 1917

when larger mobilization happened, such as the World Wars and the Indochina war[20]. In the period we consider, i.e., between 1946 and 1956, approximately 39,000 Moroccan soldiers joined the French army[21].

Enlistment and Deployment of Moroccan Soldiers (1946-1956). Soldiers were recruited from all the provinces of French Morocco (see Figure A1), with areas further to the coast contributing the lowest absolute number of soldiers, but the highest shares relative to their population of 2014. Enlistment was voluntary. Prospective soldiers had to present themselves to the recruiting board, where they would be subject to a short survey and a medical examination. Every Moroccan who was at least 17-year-old would be allowed to enlist, if deemed fit to serve[22]

Each year, the General of Moroccan Troops decided how many soldiers needed to be recruited, as a function of the budget allocated to this section of the French Army[24].

Soldiers enlisted in the army either by, presenting themselves to a recruitment station, individual walk-in, or by active regiments' recruitment[25].

In the first case, soldiers would present themselves to a recruitment station and ask to enlist. If deemed fit, they would be assigned to the regiment operating closest to that enlistment station[26]. In the second case, regiments would recruit soldiers by (a) sending tribe representatives to their hometown to recruit community members; (b) by sending a recruitment team the souk of cities and villages[27].

To our understanding, regiments did not follow a set timeline to recruit soldiers. Each regiment could lead its own recruitment tour at any point in the year, upon approval of the General of Moroccan Troops. Figure A10 and A11 report the distribution of soldiers' month of enlistment - on average and by year. The figures show that enlistment is homogenous across months of the year. Although a mild pattern of higher recruitment during winter times can be observed, consistent with enlist-

[20]The sample does not include soldiers who were enlisted between 1914 and 1918 when Moroccan soldiers would be recruited to fight in WWI. World War II appears strikingly in the recruitment patterns of Figure A6. Between 1939 and 1940, more than 30,000 new soldiers were recruited in preparation for the war. The number of recruited soldiers collapsed in 1940 due to the armistice of 22 June 1940, signed between France and Germany, through which the Vichy Republic was established. The change in recruitment patterns was dictated by article 4 of the Armistice, which forced France to demobilize its current forces and instead form a smaller *Armistice Army* (Piketty, 2006). Three days after the arrival of the *Allied Forces* in Algeria and Morocco, on the 8th of November 1942, the North African troops joined the British and American troops and participated in the liberation of Italy and France. (Walker, 1987) This second phase of the war can be seen in recruitment patterns: more than 30,000 new soldiers were recruited between 1942 and 1944. The last ten years of the Moroccan army were characterized by recruitment for the first Indochina war and reconstruction in Europe.

[21]CAPM.

[22]Recruitment instructions were defined in the *Règlement de recrutement* (Archives diplomatiques et consulaires de Nantes, box 1MA/200/89.) Fitness criteria were not specific and did not depend on the recruitment body. In a nutshell, to candidates had to be able to walk long distances, carry weights for long distances and shoot. Horseback riding was required to be part of the Cavalry. Additional requirements applied to those who wished to engage in combat[23].

[24]Chapitre III "Conditions et modalites de recrutement", T/I - Art.301.

[25]Annexe a la note de service n 1230 1/Ree du 28-9-47., Maroc D.I. 86

[26]Maroc, D.I. 86 - *Notes sur le recrutement des indigenes Marocains.*

[27]The recruitment team was composed of a recruitment leader, sub-officials, and a medical team. This allowed them to enlist soldiers who passed the medical examination immediately. *Chapitre III "Conditions et modalites de recrutement", T/I - Art.306.*. Recruitment committees had to alert the local authorities of their arrival and await their permissions. To this moment, we have not found qualitative evidence that the local authorities would then advertise the arrival of the recruitment committee to the population.

ment starting after harvesting season (Belkacem, 2022), the difference in average enlistment between January and the other months is not statistically significant (as reported in Figure A12).Hence, individuals who enlisted in the same municipality were unlikely to be assigned to the same regiment, unless they enlisted in the same exact day. Figure A9 plots two histograms: the distribution of the share of soldiers enlisted the same day in the same municipality who were assigned to the same regiment and the distribution of the share of soldiers enlisted on a different day - but same year- in the same municipality who were assigned to the same regiment[28] More than 40% of the soldiers are assigned to the same regiment as all the other soldiers who enlisted on the same day and same municipality. However, when we look at soldiers who enlisted on different days, only in 5% of the cases all soldiers enlisted in the same municipality are assigned to the same regiment. Hence, as a standalone variable, the municipality of birth did not determine the assignment to a regiment. But it's rather a series of factors such as the date in which soldiers enlist and the corps recruiting at a specific point in time that will determine the regiment an individual is assigned to.

After being assigned to a regiment, soldiers would be assigned to a battalion. To our understanding, assignment to battalions within regiments was as good as random. The French military designed battalions to be interchangeable so that they could rotate to different locations and missions without disrupting operations[29]. These two elements - regiment assignment is not tied to the municipality of birth, and assignment to battalions is quasi-random - will be crucial aspects of our estimation strategy.

The enlisted soldier would first sign a temporary contract of the duration of four months while in training. After the training period- length of which varied according to whether the country was at war or not - the soldier would sign a four years contract (two if they enlisted to participate in the Indochina war). Moroccan soldiers in the French army served different purposes. When not engaged in combat, they would primarily engage in "peace-keeping" and the construction of public goods and infrastructure in the country of deployment. A recruitment booklet for the *Corps de Goums Marocais* found in the French Archive of Nantes[30] explains to potential enlistees what they could do in the army *"Above all, they are the beholders of peace and national security. They can be asked to perform local police operations, borders control, and peace management in other territories of the French Union; they also to perform jobs aimed at enhancing the countries' potential (...) (road and dams construction, forest management, etc.)"*. Soldiers were paid approximately 14 francs a day[31] and had the right to an additional bonus of 300 francs - that could be paid half to the person mobilized and half to the family. - and a travel allowance of 5 francs per day when deployed internationally or in training[32]. To our understanding,

[28]In producing this plot we are interested in understanding whether individuals who enlist in the same municipality at a different point in times face a lower probability of being assigned to the same regiment than individuals who enlisted in the same municipality at the same point in time. We can produce the same figure using the municipality of birth rather than the municipality of enlistment, which might be more likely to be the municipality of recruitment. The main takeaway does not change. Individuals who enlist at the same point in time and are from the same place are substantially more likely to be assigned to the same regiment than individuals who enlisted at different points in time.

[29]See Cagé *et al.* (2021): "Infantry regiments of the French army, in common with that of many militaries, were designed to be interchangeable in strength and equipment, and thus easily deployable in response to the needs of the moment".

[30]Folder: Maroc, Reg Meknes. 37;14 MA/900. No date was found.

[31]Document without a date found in the archive of Nantes reports "The daily stipend is: 10 francs 1st year;14 francs, 2nd year; 16 francs 3rd-5th year." Stipend increases were often discussed and, at times, implemented.

[32]Maroc D.I. 86 - *Note sur le recrutement des indigenes marocain*.

the deployment benefits did not change by deployment location. However, soldiers (or their families) who were deployed to active war areas and were imprisoned, injured, or killed would be eligible to receive a life-long pension. While between 1946 and 1956, the death rate of soldiers deployed to continental Europe or Africa was 0, an estimated 10% of the soldiers deployed to Indochina lost their lives[33]. Finally, soldiers were eligible for retirement pensions after 15 years of service. The amount they were eligible to receive would depend on the length of service and status.

The International Deployment of Moroccan Soldiers (1946-1956) A vital aspect of the army was international deployment, i.e. the movement of troops from Morocco to another country for military purposes. Not all soldiers were deployed abroad, but those who were would be stationed in different regions of the empire and would spend on average one year in the country of assignment . As colonial officials strictly regulated emigration from Morocco during the colonial time, this was one of the few occasions in which Moroccans were exposed to a foreign environment. For many of them, this meant going to combat. The vast majority of soldiers deployed through the years were sent to active war areas - World War I, World War II, Indochina, and Madagascar are just some examples - and many of them encountered a tragic fate[34]. A lucky minority of them, however, would be deployed in not active combat zone to tend to other needs of the empire. Figure 2 reports the shares of soldiers - over total soldiers -deployed in the main deployment locations by year of enlistment of soldiers for the cohorts enlisted between 1946 and 1956; for this period too, we observe exactly this pattern. The four major deployment locations for Moroccan soldiers are Algeria, France, Germany, Madagascar, and Vietnam. While in the latter two soldiers were engaged in the sedation of independence wars (conflicts with a 10% death rate), the former three destinations were mainly peaceful[35], with soldiers employed in regular policing jobs, training and post-World War II reconstruction. For them, deployment represented the unique opportunity to go to and learn about a country other than Morocco. This paper aims to understand the consequences of being deployed to one of these three non-combat locations on contemporary outcomes.

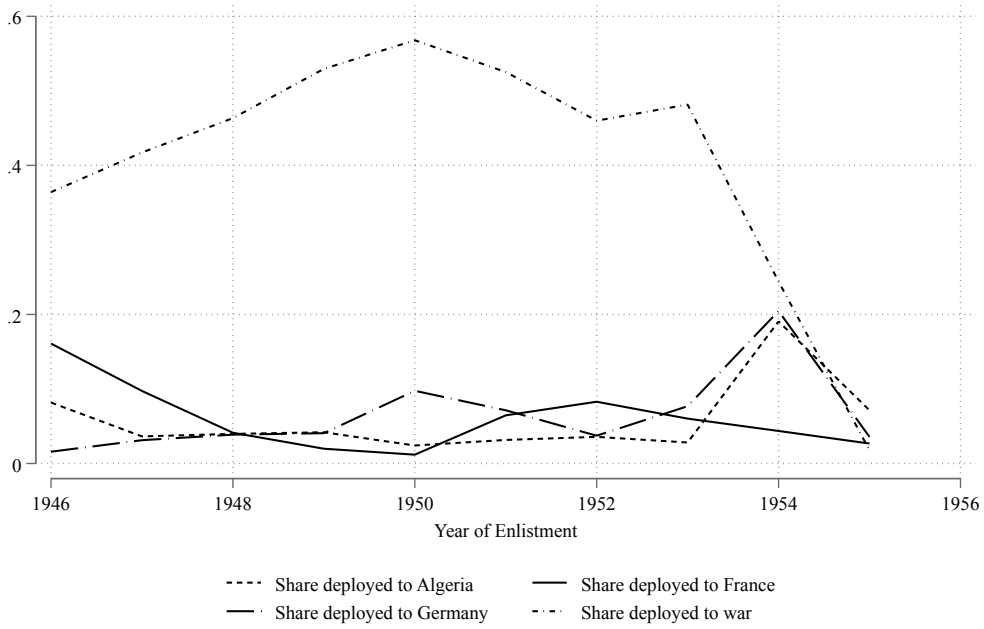
In the French army, battalions - sub-units of regiments - were the units at which deployment was determined, not individuals. In Figure 3, we provide evidence that soldiers were moving by battalion, not individually. The first histogram we report - in pink - reports the distribution of the day of deployment, within a month, year, and the battalion of assignment: 45% of the soldiers leave the same day as their battalion, and the median soldier leaves within a day from his battalion. The second histogram - in blue - reports instead the standard deviation of the deployment day, within month and year. When we don't consider the battalion of assignment, only 5% of the soldiers leave the same day; the median soldier leaves 5.7 days after the soldiers deployed in the same month and year. We interpret this as suggestive evidence that deployment happens at the battalion level. (Cagé *et al.*, 2021). Regiments and battalions were not tied to a particular post between 1946 and

[33]Maroc D.I. 89 - *Gestion des effectifs Marocains* Art 106. 10% is a high death rate if one considers that the death rate of soldiers in WWI was 14%.

[34]Between 1946 and 1956 more than half of the enlisted soldiers went to Indochina, a conflict with a 10% death rate.

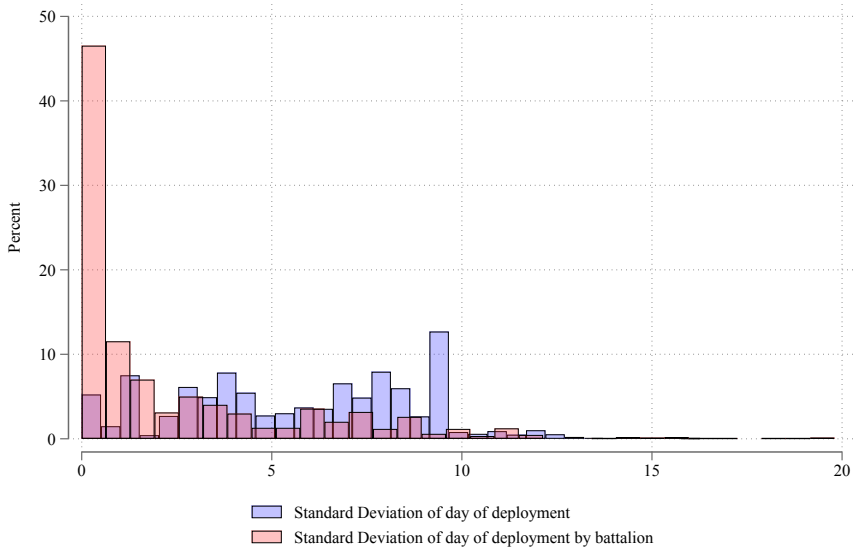
[35]Algeria was the only country in which there was some tension, as independent movements had started their first armed operations against the colonizer.

Figure 2: Share of soldiers deployed by location of destination



Notes: This figure reports the share of soldiers deployed to each of the four main deployment destinations between 1946 and 1956 per year of enlistment.

Figure 3: Deployment by Battalion



Notes: The figure reports the standard deviation of day of deployment within a month, year, and regiment (in pink) and within a month and year (in purple). The sample is a 50% random sample of soldiers who served in the French army between 1946 and 1956 in Morocco. The data have been digitized from individual soldier files in the CAPM archive.

1956 but were flexibly relocated according to the needs of the French army. The history of the 6th RTM (régiment de tirailleurs marocains) is illustrative of a regiment (and battalions) mobility. It was formed in Morocco in 1920 and was immediately sent to occupy Germany for 21 months. Later engaged in Spanish Morocco against the upheaval of the Rif (1923-1926) than in Syria (1927), it was transferred back to the *Métropole* in 1927, where it rotated between different garrisons. It fought in the Sarre in 1940, disbanded in June, re-instituted to join the Allied army in October, and participated in 1944-45 in the campaigns of Italy, France, and Germany. In 1947 one battalion was sent to Indochina while the rest was posted in Morocco, where it participated in repressing the riots (1952-54). In 1956, the regiment was dissolved.

2.2 Post-independence Moroccan Emigration from Morocco

Emigration to France Until the eve of WWI, foreign immigration in France was essentially unregulated and fed by neighboring countries, such as Belgium, Italy, Spain, Germany, and Switzerland, which represented more than 80% of the total immigration to France. The beginning of WWI compelled France to organize the recruitment of a colonial workforce to provide for the increased needs of national defense, the steel and arms industries, and coal mines. During the interwar period, the share of immigrants in the French population rose from 3.95% in 1921 to 6.6% in 1931. Immigration became a central theme of public debate leading to returns and repatriations and the enactment of quotas by profession.[36] French administration resorted again to the colonial workforce in the aftermath of WWII to rebuild the economy, this time by strictly organizing the recruitment.
Before independence, immigration to the *Métropole* was therefore highly regulated: those who moved to France (soldiers, workers) often did so under a contract that strictly regulated their return home. However, enlistment in the French Army eased the passage of temporary Moroccan emigrants. In the interwar period, Moroccan soldiers and working immigrants were present in equal size (approximately 10,000 in each category) in France (Ray, 1938). The letter notes that the geographic and ethnic composition of the economic and military workforce departed substantially. If the civilian workforce mainly was homogenous and composed of South Moroccans from *Shleuh* tribes, the military population was more representative of the regional and ethnic (*Berbers* and *Arabs*) diversity of Morocco. Both groups of immigrants also diverged in terms of destination. Economic migrants were sent to mining cities in the North of France, while soldiers were stationed in garrison cities, making overlaps between both communities unlikely.

After independence up to the end of the 80s, movement from the colonies to France was facilitated by France's economic boom and the enactment of specific migration bilateral treaties regulating work permits.[37]

The share of foreigners in the French population rose from 4.12% in 1954 to 6.78% in 1982, with the North African contingent (mainly Morocco and Algeria) representing the gist of it. France is also the main destination for the emigration of the North and West African population. A 1994 study on the

[36] August 10th 1932.

[37] Three important agreements ease the granting of work permits for the North-African population: the French-Algerian agreement signed in December 1968, the French-Tunisian agreement signed in March 1988, and the French-Moroccan agreement signed on October 1987.

emigration in Morocco (Mghari, 2006) estimates that returning migrants mainly came from France (73%).[38] At the beginning of the 80s, France started imposing stricter immigration laws, implying a stabilization of the share of immigrants rather than a decrease. In the 2010s, the percentage of foreigners fluctuated around 6%, 12% of which are Moroccans (see figure A13).

Former soldiers and their families face a lower cost of migrating to France. A law[39] facilitates the right for all former foreign soldiers of the French Army (including former colonial soldiers) to claim a residence permit and obtain citizenship. Specifically, a former soldier can claim a residence permit if he serviced in a combat unit of the French army and obtain citizenship if he was injured in military operations. They are also incentivized to move and earn a living in France. The so-called *crystallization* of foreigners' military pensions[40] pushed many North Africans to move to France to be eligible for social pensions, especially since the passing of a 1986 law allowing pension beneficiaries to obtain a 10-year residence permit.

Emigration to Germany, Algeria, and Vietnam Emigration to West Germany was strictly regulated. From 1963 to the end of the 80s, Moroccans found in West Germany without a permit to stay would be deported immediately. To avoid mass deportation in 1963, the West German government and the Moroccan government set a quota of 4,000 people who would be allowed in West Germany at a given moment. In 1965, they raised the quota to 7,000, a limiting number considering that more than 80,000 Moroccans were residing in France by 1965. Applying for a permit to stay in Germany was complicated, as literacy in either Spanish or German was required. Finally, migrant workers could only work in mines. This resulted in a meager stock of Moroccan migrants in Germany, compared to France, which we can observe in Figure 4. Emigrating to Algeria was not an easy task either. First, when Morocco became independent, Algeria was in the midst of its independence war with France, which might have disincentivized large emigrations from Morocco. Although seasonal emigration continued during the war, the increasing tensions between the two independent countries were exacerbated in 1962, with the closure of their shared border and the inevitable fading out of migration flows between the two countries(Natter, 2014). To this day, the Moroccan and Algerian border is closed, with bi-national families having to fly through a third country to meet.

3 Data

3.1 Historical Military Data

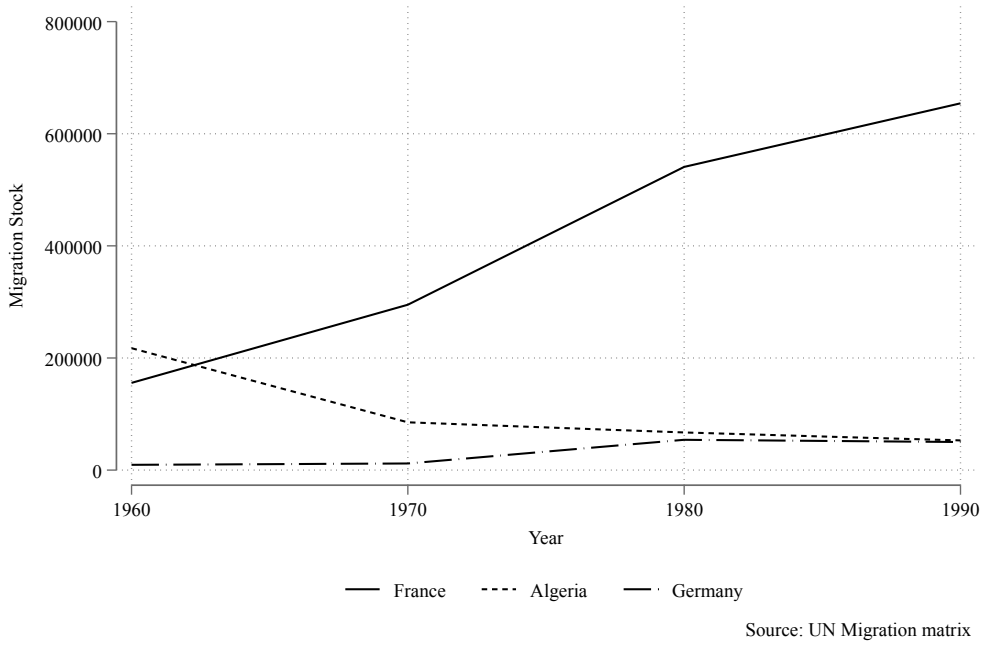
Data on enlistment and deployment at the municipality-by-cohort level were obtained from handwritten individual-level soldiers' files held by the French Archive of Military Personnel (CAPM) in

[38] Followed by Italy, the Netherlands and Belgium (respectively 7.1, 4 and 3.7%) Germany and Spain having hosted a very marginal share. Mghari (2006) study reveals that in 1994 half of the stock of emigrants had returned to the country.

[39] Law n° 99-1141 of December 29th, 1999.

[40] A series of laws in 1958 transformed pension benefits to colonial soldiers into compensations not indexable on the cost of living. In the 2000s, it amounted to 66 o 150 euros per trimester or 10 to 20 times less than their French counterparts earned. A 2010 ruling by the Supreme Court finally censured the body of laws that introduced discrimination between French and foreign former combatants.

Figure 4: Evolution of Moroccan nationality in the foreign population in France from 1946 to 2018



Notes: The figure reports the stock of Moroccan emigrants per country of destination as reported by the UN Bilateral Migration Matrix.

Pau, France. Between 1912 and 1956, France enlisted approximately 420,000 native Moroccan soldiers. Each of these soldiers had a correspondent enlistment file, on which army officials would annotate basic demographic characteristics measured at the moment of enlistment and information on their career in the military. At the end of service, the soldier files contain the soldier's name, year of birth, commune of birth (*douar*), the *Contrôle Civil* of birth[41], name of the parents, height, the regiment they were assigned to at the moment of enlistment, the subsequent changes in the regiment, the deployments abroad, and, if applicable, injuries, imprisonments, and decorations. Appendix C contains an example of a registration card in which identifiable information has been removed for privacy. Between 2019 and 2021, we digitized demographic information for a representative 25% sample[42] of Moroccan soldiers who served in the French army between 1912 and 1956, and military information for a representative 25% sample of Moroccan soldiers who served in the French army between 1946 and 1956. This corresponds to a total of 94,000 Moroccan soldiers and 24,000 soldiers, respectively.

Historical communes of birth are assigned unique coordinates through a two-step process. First, we matched them to a contemporary list of communes obtained from the High Commission for Plan-

[41]The *Contrôle Civil* was a higher administrative unit than communes, established during the French Protectorate in Morocco (see Gruner (1984)).

[42]Individual cards are gathered in dossiers by year of enlistment. Since there is no further subdivision by a geographical unit of origin or enlistment, we only stratify our sample by year of enlistment. The strategy relies on randomly sampling 1,000 observations for the first year of observation (1912) and then applying the population growth rate.

ning of Morocco[43]. Second, we matched them to the GeoNames geographical database[44]. In both cases, matches are made using historical communes' names. Among the 16,315 *douars* with a unique spelling, we managed to match 86% of them to 819 corresponding modern municipalities. We describe the matching procedure in more detail in Appendix A.1. The distribution of the number of enlisted soldiers by the municipality is right skewed; the average municipality has, on average, 38 soldiers enlisted, while the median municipality has 11 soldiers enlisted on average.

The military history section in the soldier files allows us to reconstruct their movements while in the army. For each soldier, we focus on their deployment abroad during their first 3.5 years in the army[45]. Additionally, we restrict ourselves to those deployments lasting at least 120 days, the median length of service abroad, allowing us to exclude from the analysis short movements due to transfers[46]. We will check for robustness to other measures of the deployment variable.

Table A8 presents summary statistics of the main measures. The sample includes all municipalities (810) that had some enlistment in the 1946-1956 period. In our sample of 806 municipalities, the average municipality enlisted on average 38 soldiers, 21 of whom were deployed outside of Morocco. This corresponds to an average of 55% soldiers being deployed abroad. Of the soldiers deployed abroad, slightly more than 70% were deployed to Indochina at least once, while approximately 35% of the soldiers were deployed between France, Germany, and another African country (Tunisia, Algeria, and Madagascar) in equal share. It is important to notice that this number is not additive because the same soldier might have been deployed to more than one location during their four years of service.

3.2 Data on International Emigration

Migration to France represents the top destination for emigrants from former colonies. Between 1960 and 1980, 59% of international migrants from ex-French African colonies migrated toward France.[47] For Morocco, this share represents 36% of the total migration stock.

France has released the universe of death records publicly since 1970 with individuals' names and dates of birth. From 1990, they include the municipality of birth for foreign-born people. It includes everyone who died in France and French citizens who died abroad. Total of 16m observations, 14% of which are born abroad (approx 2.4m). We follow the methodology described in Appendix A.1 to assign historical municipalities of birth to modern municipalities. This allows us to have the total

[43] The 2014 communal boundaries downloaded in 2020 from https://www.hcp.ma/.

[44] For the country of Morocco, the GeoNames geographical database combines communes names combines the National Geospatial-Intelligence Agency's (NGA) Names dataset and the U.S. Board on Geographic Names dataset, with the HCP dataset we used in the first step to provide a more comprehensive list of municipality-coordinates pairs (https://www.geonames.org/about.html). This is particularly important in our case since some municipalities changed names after independence.

[45] Soldiers' first contract was usually not longer than four years. During the last six months in the army, they could not be deployed abroad anymore without signing a new contract. We decide to focus on soldiers' first contract as re-enlistment might be endogenous to individual characteristics.

[46] For example, a soldier deployed to Indochina was first moved to Algeria, and sometimes to France), to board on the trans-continental ships.

[47] UN Bilateral Data.

stock of permanent emigrants for each municipality of birth in the sample, as well as a unilateral emigration matrix from Moroccan to French municipalities[48]. We use the stock of deaths, by the municipality of birth, as a proxy for out-migration to France in the 20th century. We identified Europeans born in Morocco and returned to France based on their names[49] and exclude them. As shown in Figure A3, this method is most representative of emigrants born between 1920 and 1960 and permanently resided in France.

3.3 Economic Outcomes Data

We utilize the 2014 national census[50] to measure different socio-economic outcomes at the birth cohort level. We compute education attainment (count of illiteracy, no schooling, primary, secondary and college education), language (write and speak Arabic, French and English, only speak dialectal language[51]), labor outcome (employment status and occupation) and internal migration (count of respondents whose municipality of birth is different from the municipality of residence) for each cohort born from 1894 observed at the municipality level. This strategy has the advantage of recovering historical economic measures – such as the human capital of each cohort – at a granular level. The disadvantage is that we only observe individuals who survived up to 2014. The other caveat is that labor outcomes are only observed for the active population. Cohorts born as early as 1900 until 1940 are, for most of them, inactive now, and the survey does not determine their former occupation. Dynamic labor market effects are only relevant for later cohorts born from 1950.

4 Direct Impacts on the Emigration of Soldiers

The first part of the analysis aims to identify the direct effects of deployment to different peace locations on the cohorts of soldiers directly affected by deployment.

4.1 Empirical Strategy

4.1.1 Assignment to a Deployment location

Understanding how soldiers were assigned to deployment locations plays a key role in identifying the causal effect of deployment on the outcomes of both the cohort of soldiers and their communities of origin as a whole.

In the French army, soldiers could not choose where to be deployed. One notable exception in our context is deployment to a combat zone. First, people could volunteer to be deployed to a war area[52].

[48] Another possibility would be to match soldier names with the death dataset directly. However, soldiers are not identified by their last name but by their father's first name. In contrast, migrants have a patronymic name, which prevents us from individually matching soldiers with migrants.

[49] We perform an algorithm that identifies Moroccan names based on the five most frequent first and last names in Morocco.

[50] The only census available at the individual level

[51] *darija* or *tamazight*

[52] Several examples are provided in the historical accounts of the Moroccan regiments reported in https://www.les-tirailleurs.fr/unites/liste.

Second, it appears that in some cases, people could also opt out from the war; Ginio (2017) describes how the army could not force soldiers to go to war and would heavily rely on volunteers[53]; in an interview, we conducted in February 2022 with an ex-Moroccan combatant, he explained that it was infrequent that soldiers would opt out from going to war, but it could happen if they were scared of combat.

For all other locations, deployment could not be chosen by the soldiers, who were tied to the movements of their battalions Cagé *et al.* (2021). For this reason, the fact that to be eligible for combat, soldiers had to pass a different medical examination and sign a shorter contract makes us worry about the selection bias that would arise in estimating the causal effect of deployment to a combat zone based on the quasi-exogenous exposure induced by the assignment of a battalion to posts (our primary estimation strategy). We will focus on comparing deployment to the three locations that did not entail combat: France, Germany, and Algeria. Furthermore, we restrict our analysis to soldiers deployed in their first contract to avoid potential complications that might arise when considering career progression and deployment.

Our empirical strategy relies on three facts: deployment was decided at the battalion level (or regiment); municipalities would not provide soldiers to a single regiment - soldiers would be assigned to a regiment based on the army's needs - implying a low probability that two soldiers enlisted in the same municipality were assigned to the same regiment; once assigned to a regiment, soldiers were assigned to a battalion within a regiment based on the interchangeability of regiments, not the municipality of origin. This, we argue, implies quasi-exogenous exposure of municipalities to deployment locations, allowing us to estimate the effect on several outcomes of having a higher share of soldiers deployed to France vs. Germany vs. Algeria. We formally investigate our hypothesis in Sections 4.1.2 and 5.1.

Figure A14 shows the army partition by deployment location. To understand how to interpret our results, it's necessary to be careful in constructing the counterfactual. We are interested in estimating the effect of being deployed to France conditional on being deployed to a peace area. To do so, we will use deployment to Germany as our excluded category - or counterfactual - and deployment to Algeria as our placebo. Our specification will allow us to estimate the effect of an increase in the fraction of soldiers deployed to France when the fraction of soldiers deployed to Germany decreases by the same amount. To be sure that we are not estimating the effect of a decrease of soldiers sent to Germany rather than an increase of soldiers sent to France, we will also estimate the effect of an increase in the fraction of soldiers sent to Algeria, again using Germany as a counterfactual. Comparing these two figures will help us isolate the effect of sending a higher share of soldiers deployed to France, all else equal. In the next section, we will describe how immigration laws, post-independence, differed by deployment location, and we will explain why we expect deployment to France to have the highest effect on emigration after the end of the Protectorate.

[53]The setting of Ginio (2017) in French West Africa, in which colonial conscripts could not be forced to go to war.

4.1.2 Empirical Specification

To identify the effect of deployment to France on the emigration of soldiers, we estimate the following model at the cohort-by-municipality level:

$$\begin{aligned} y_{mc} = {} & \phi_1 ihs(\text{Total deployed to France})_{mc} + \phi_2 ihs(\text{Total deployed to Algeria})_{mc} \\ & + \phi_3 ihs(\text{Total deployed to a peace area})_{mc} + \phi_4 ihs(\text{Total deployed a war zone})_{mc} \\ & + \phi_5 ihs(\text{Total never deployed})_{mc} + X'_{mc}\Phi + \phi_m + \phi_c + u_{mc} \end{aligned} \tag{1}$$

where our unit of analysis mc is the municipality-cohort of birth pair, m denotes a Moroccan municipality, given 2014 borders, c is the cohort of birth. In our analysis, we include only municipality-cohort pairs with at least one enlisted soldier for a total of 824 municipalities and 7.2 cohorts on average per municipality. y_{mc} denotes our dependent variables, i.e. socio-economic outcomes of the cohort of soldiers, such as the individual choice to emigrate to France, human capital, and language spoken.

The independent variable of interest, $ihs(\text{Total deployed to France})_{mc}$, is the inverse hyperbolic sine transformation of the total number of cohort members deployed to France. In line with our identification assumption, we control for $ihs(\text{Total deployed abroad})_{mc}$, the inverse hyperbolic sine transformation of the total number of cohort members deployed abroad. Municipality level fixed effects to control for all time-invariant or slow-moving differences across municipalities, year of birth fixed effects control for nationwide changes over time. We furthermore control for the average age in years and height-for age-percentile of the cohort as well as the total number of cohort members who ever entered the army. Standard errors are clustered at the municipality by year of birth level. Our coefficient of interest is γ_1, and it identifies the effect of a 1% increase in deployment to France on y_{mc} keeping constant the number of cohort members deployed abroad and under the assumption that deployment to a location is random, conditional on being deployed.

Given the research question, the first best would be to estimate an individual-level regression on a dataset that matches soldiers to death records. However, merging the two datasets has proved more difficult than expected. Indeed, while soldiers' surnames in the military records follow the Moroccan tradition - with one person often carrying more than one surname - the death records follow the French naming convention, which implies one surname per person. When Moroccans moved to France after colonialism, they were forced to change their names to comply with the French convention . Which makes the matching between the two datasets extremely unsuccessful. Doing so allows us to estimate an effect as close as possible - in our setting - to an individual-level effect, as cohorts within a municipality are usually relatively small, with the two being the median size of a cohort in a municipality.

4.1.3 Pre-characteristics Balance

Our identification strategy relies on the assumption that conditional on being deployed abroad, the deployment location did not depend on individual-level characteristics. If this is true, then ϕ_1 esti-

mates a causal effect. To provide evidence of this, we rely on individual-level soldier data collected at the moment of their enlistment (hence before being an active member of the army) and estimate Equation 1 with each covariate on the left-hand side. In Table 1, we report the coefficients and associated p-values in brackets of our estimates.

Among the six main variables collected by French officials that are indicative of pre-enlistment characteristics, only one is significant at the 10% level: the average age of soldiers at the moment of enlistment. Cohorts with a higher share of soldiers deployed to France have, on average younger soldiers. However, the effect is small in magnitude, accounting for only 2.7% of a standard deviation. Furthermore, we check for balance for the average height, the share of soldiers who were illiterate at the moment of enlistment, and the share of soldiers not working, working in agriculture, and working in manufacturing when they enlisted. None of these variables is significant at the 10% level, although it is important to know that the latter variables are recorded for fewer individuals.

We also report the p-value on the F-test of joint significance. The controls are jointly significant at the 5% level, result driven by average age being significant. We will include the average age at enlistment and the average height at enlistment as controls in our main specification.

Table 1: Balance Tables

Country of deployment:	*France*		
	Coeff [*p*-value]	Mean (Std Dev)	Observations
	(1)	(2)	(3)
Average age at enlistment (years)	-0.106 [0.006]	21.623 (3.805)	5366
Average height at enlistment (cm)	-0.123 [0.367]	167.734 (4.399)	5395
Share Illiterate before enlisting	0.001 [0.738]	0.997 (0.051)	749
Share working in agriculture before enlisting	-0.023 [0.691]	0.938 (0.228)	658
Share not working before enlisting	-0.000 [0.984]	0.010 (0.100)	658
Share working in manufacturing before enlisting	0.030 [0.574]	0.047 (0.198)	658
p-value on F-test joint significance (France)		0.034	

Notes: The unit of observation is the cohort-municipality pair. We report the results of the OLS regressions that have as independent variables the inverse hyperbolic sine transformation of the number of deployed to France, and Algeria, at the cohort-municipality pair. The dependent variables are soldiers' demographic and economic characteristics measured during enlistment. Column 1 reports the coefficient and the associated p-value in brackets. In Column 2, we report the mean ad standard deviation. Finally, in column 3, we report the number of observations for each regression. We include cohort and municipality fixed effects; we cluster the standard errors at the cohort-by-municipality level.

We report additional tests that help us rule out selection or sorting in deployment locations in

Appendix B.1.

While the cohort-level analysis allows us to study the effects of deployment on the soldiers themselves and their coevals, we are also interested in investigating whether these effects have spilled over to other members of the community and, if so, how long they have persisted. To do so, we rely on a municipality-level analysis which we explain in more detail in Section , where we will also report a battery of balance tests on municipality-level characteristics measured before 1946.

4.2 Results

This section reports the estimated results for specification 1. We first estimate the effect of deployment to France on emigration to France after independence and then on other relevant economic outcomes. Absent a way of tracking soldiers further in life, we interpret the cohort level results, where a cohort is defined as the same year of birth, same municipality of birth, and same gender, as the closest estimates to a direct causal effect of deployment on the soldiers. Table 2 reports the estimated coefficients for emigration to France.

Table 2: Deployment Effects on Emigration to France of the Cohort

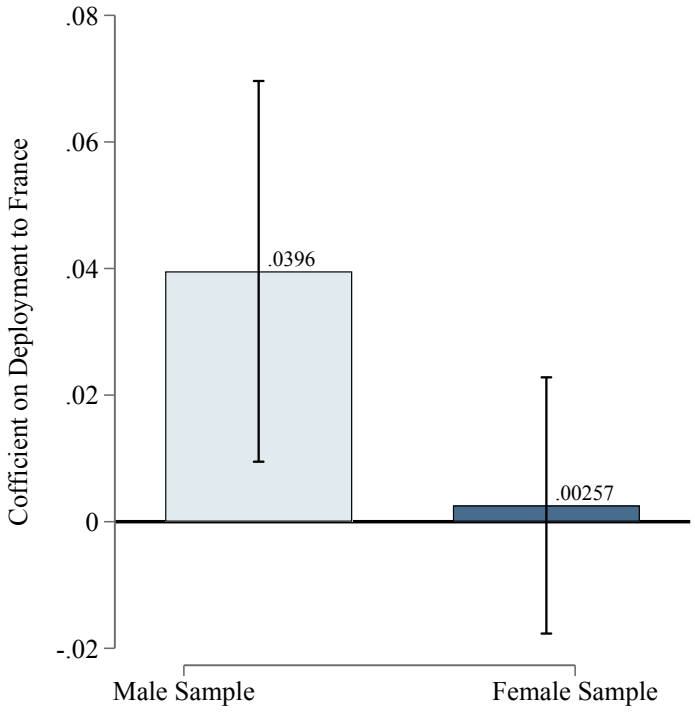
Dep Var: *ihs*(Total emigrants to France)			
	(1)	(2)	(3)
ihs(Total deployed to France)	0.0455***	0.0459***	0.0460***
	(0.0160)	(0.0160)	(0.0160)
ihs(Total deployed to Algeria)	0.00820	0.00907	0.00943
	(0.0157)	(0.0157)	(0.0158)
R-squared	0.803	0.804	0.804
N. Obs	5855	5855	5855
Municipality FE	✓	✓	✓
Birth Cohort FE	✓	✓	✓
Demographic controls		✓	✓
Military Career controls			✓
P-value France=Algeria	0.036	0.038	0.040
Mean Dependent Variable	0.228	0.228	0.228
Sd Dependent Variable	0.698	0.698	0.698

Notes: OLS estimates are reported. An observation is a municipality of birth by cohort. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in a cohort-municipality pair. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the total number of people by cohort-municipality pair deployed to Algeria during their first military appointment. Column (1) includes municipality of birth and cohort fixed effects. Column (2) adds the average height and age for the cohort by municipality pair at the moment of enlistment, and column (3) includes the average year of enlistment and the share that belongs to the RTM troop. The p-value of the difference between deployment to France and outside France is reported at the bottom of each column. Standard errors clustered at the municipality by cohort level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Cohort members of a soldier with a higher fraction of soldiers deployed to France are more likely to be in France at the moment of their deaths. An increase in 1% of cohort members deployed to France corresponds to an increase in 0.046% in outmigration to France after independence.

The results are robust to trimming municipalities at the top and bottom of the population distribution in 2014 (see Table A5), suggesting that this is not driven by municipalities at the extremes of the population distribution in 2014. Furthermore, the estimate is robust to different specifications (see Section B.2.2). To corroborate our hypothesis that this is capturing the effects on the soldier themselves rather than spillover effects on their cohort, we estimate the specification above for the total sample of people in the cohort (including women) and women only. We report the coefficient of deployment to France in Figure 5. As expected, the observed effects are driven by the sample of men, and we find no impact on the women of the same cohort. We interpret this result as indicative of the fact that the effects that we are estimating are close to the direct effects on the cohort of soldiers.

Figure 5: Gender Heterogeneity of Cohort Effects of Deployment to France



Notes: OLS estimates are reported. Each bar corresponds to the coefficient of the ihs of total deployed to France. We report the estimates for three samples: the full cohort, the male cohort (as in Table 2), and the female sample. We report 95% confidence intervals and calculated clustering standard errors at the municipality-by-cohort level.

We report the corresponding table in Appendix A11.

We interpret these results as evidence that deployment to France increased the out-migration of the soldiers directly affected. Although we could not match individuals between the military dataset and French death records, we view this cohort-level analysis as the best approximation to individual-level data. Indeed, the cohorts of soldiers considered are mostly small. A municipality-by-cohort pair has, on average, five soldiers enlisted, while the median is 2. Our estimates are robust to the exclusion of the top and bottom percentiles of the distribution. Similarly, the average stock of male emigrants by cohort-municipality pair is 4, while the median is 1. This suggests that, although we do not

match individuals, the cohort-level analysis might closely approximate an individual-level analysis that tracks soldiers over time and identifies whether they have died in France. The heterogeneity between the male and female samples provides further evidence supporting our hypothesis.

Deployment to France was a bundled treatment that might have affected individuals' human capital. For instance, individuals deployed to France might have learned French better, while soldiers deployed to Algeria might have improved their knowledge of Arabic, both widespread languages post-independence. We test this hypothesis using the information included in the 2014 census and performing a cohort-by-municipality analysis with education and language as our dependent variables. In Appendix B.4, we report the exact specification we use in this analysis and the associated results. A higher share of individuals deployed to France in one's cohort does not increase the probability that the person reports speaking French in 2014 or their reported level of education. Although this analysis suffers from survival bias[54] and selection bias - we are only observing those individuals who did not die or emigrated by 2014 - we interpret these results as suggestive of the fact that deployment to France has not substantially impacted other critical aspects of the life of returnee soldiers.

Why did ex-soldiers deployed to France emigrate to France, and soldiers deployed in other locations did not? This section identifies and discusses the mechanisms that might have contributed to ex-soldiers migrating to France. The first mechanism that we explore is language. If soldiers who were deployed to France were learning better French, then the cost of migrating to France for them would be lower than soldiers who were deployed to Germany or Algeria. To address this mechanism, we adopt both a quantitative and qualitative approach. First, using the Moroccan census data of 2014, we explore whether individuals in a cohort-municipality with higher exposure to France were more likely to speak or write in French. We report the results in Appendix B.4 and do not find any evidence of this to be the case.

The second mechanism we test is human capital accumulation: is it possible that soldiers deployed to France accumulated human capital that was more expendable in France after independence? For a sub-sample of soldiers we have specific information on the tasks performed while deployed. We plan on testing whether there was a significant difference in tasks between those who were deployed to France vs other places.

The third mechanism we test are social ties and information on the labor market. We will test this mechanism with two exercises. First, we will exploit the fact that for a subset of soldiers we have specific information on where they were deployed within France. We have constructed an origin-destination matrix at the municipality and will look at whether, within France, ex-soldiers were more likely to relocate were they had been deployed. In the second exercise instead we will look at the labor market composition of Moroccans in a municipality with a higher share of people in a highly exposed cohort.

We do not think that the legal framework, differences in income or career progression played a determinant role in determining the observed emigration patterns.

[54]The average year of birth in the cohort by municipality census is 1933 (80 years old). The World Bank *Life Expectancy at Birth Index* for individuals born in 1960 - the earliest year available - is 48. We hence expect the majority of the individuals in this sample to have died by the year in which the census was collected.

5 Spillover Effects on the Emigration of community Members

In this section, we estimate the effects of deployment to France on emigration to France for the community of origin of soldiers. We define as a community of origin the individuals, in the French death records or the 2014 Moroccan census, who were born in the same Moroccan municipality as the soldiers. In this part of our analysis, an observation is a municipality. We will rely on municipality-level variation in the stock of soldiers deployed to different locations.

5.1 Empirical Strategy and Pre-characteristics Balance

The estimating equation for the second part of our analysis is conceptually similar to the one described by 1 but adapted to municipality-level variation.

$$\begin{aligned} y(t)_{md} = {} & \psi_1 ihs(\text{Total deployed to France})_{md} + \psi_2 ihs(\text{Total deployed to Algeria})_{md} \\ & + \psi_3 ihs(\text{Total deployed to a Peace Area})_{md} + \psi_4 ihs(\text{Total deployed a War Zone})_{md} \\ & + \psi_5 ihs(\text{Total never deployed})_{mc} + X'_{md}\Psi + \psi_d + \varepsilon_{md} \end{aligned} \tag{2}$$

where m indexes the municipality, d the province. Our dependent variable $y(t)_{md}$ is the stock of emigrants born in decade t, in municipality m and in province d[55]. $X_{m,p}$ are historical and geographic controls[56]. Province fixed effects, ψ_d, control for time-invariant province-level characteristics. Standard errors are clustered at the municipality level, our measure of treatment. We exclude from the sample municipalities that have no soldier enlisted after 1946. Our coefficient of interest is ψ_1 which captures the effect of increasing the number of soldiers deployed to France by 1%, keeping constant the total number of soldiers deployed abroad. Our main independent variable is $ihs(\text{Total deployed to France})_{md}$, the inverse hyperbolic sine transformation of the total number of soldiers deployed to France. We also control for the inverse hyperbolic sine transformation of the total number of people deployed in Algeria, in a war zone, in a peaceful area, and never deployed.

Our central hypothesis is that ψ_1 is greater than 0; in other words, deployment to France in the last ten years of the protectorate has induced emigration to France post-independence. Our hypothesis is also that deployment to the different location have a lower effect on emigration to France than deployment to the *Métropole*, if not 0.

The identifying assumption is that, conditional on the number of soldiers deployed abroad; the fraction deployed to France at the municipality level is as good as random. We run several tests to provide evidence that this is a sensible assumption. First, we test balance on observable covariates by estimating equation 2 with covariates on the left-hand side. We report the results of the covariates

[55] We will use this specification for any of our outcomes that have municipality level variation, e.g. Nightlights

[56] We control for the inverse hyperbolic sine transformation of the total of soldiers enlisted, proximity to an enlistment station, distance to the Algerian border, distance to military ports, distance to navigable rivers, distance from roads, railroads, trail, and coast, measured before 1945. We additionally control for average temperature and rainfall between 1900 and 1945, elevation, slope, latitude, longitude, latitude $\times$ longitude, soil suitability, and the average height-for-age percentile of soldiers who served in the army before 1946. All the variables are standardized. Whenever a control variable is missing for a municipality, we replace it with 0 and create a dummy that takes value one if we substitute the missing value and 0 otherwise.

included in X' in Table 3. However, we run the balance test on a more extensive set of variables and report those results in Appendix C.1. Out of 30 control variables we tested balance for, only one is significant at the 5% level (plough potential), which is below chance level. Furthermore, the p-value associated with the F-test of joint significance of the selected controls is above the conventional significance levels, suggesting that these covariates do not explain substantial variation in deployment patterns.

5.2 Results

Results are presented in table 4. The estimated coefficients for deployment to France are positive and statistically significant at the 5% confidence interval. The magnitude of the coefficients marginally increases with the duration of deployment. A one percent increase in total soldiers deployed to France by .14% total emigrants. In magnitude, this means that an additional soldier deployed to France (from a mean of 2.5) is associated with 1.5 more emigrants to France at the municipality level. Notice that this coefficient is higher than the one estimated on the cohort, suggesting a multiplier effect on the emigration of following cohorts or, in other words, that the effect persisted across generations.

Table 3: Balance Tables - Selected Covariates

Country of deployment:	*France*		
	Coeff [P-value]	Mean (St Dev)	Observations
Proximity to enlistment stations (1945)	0.004 [0.947]	0.073 (1.045)	810
Distance from Algeria	0.010 [0.472]	-0.085 (0.991)	810
Distance from military ports	-0.011 [0.424]	0.064 (0.971)	810
Distance from rivers	0.034 [0.352]	-0.065 (0.966)	810
Distance from roads (1945)	-0.019 [0.526]	0.014 (0.971)	810
Distance from railways (1939)	-0.012 [0.419]	0.052 (0.988)	810
Mean rainfall (1900-1945)	0.004 [0.877]	-0.025 (1.017)	810
Mean temperature (1900-1945)	0.060 [0.221]	-0.058 (1.065)	810
Slope	-0.018 [0.678]	0.079 (1.014)	809
Elevation	-0.042 [0.248]	0.087 (1.038)	809
Soldiers' height before 1946	0.037 [0.413]	-0.005 (0.885)	771
Latitude	-0.007 [0.620]	32.354 (1.600)	810
Longitude	-0.016 [0.338]	-6.698 (1.979)	810
Latitude x Longitude	-0.008 [0.340]	0.003 (0.944)	810
Soil Suitability Index	-0.016 [0.558]	-0.003 (0.999)	810
p-value on F-test joint significance (France)		0.700	

Notes: An observation is a municipality. Coefficient and p-value estimates of regressing municipality characteristics over the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, the total number of people deployed to war and never deployed. We also include province-level fixed effects. Standard errors clustered at the municipality level. Column 1 reports estimates for deployment to France, and column 2 the mean and standard deviation for the associated variable. All municipality characteristics are measured before 1946.

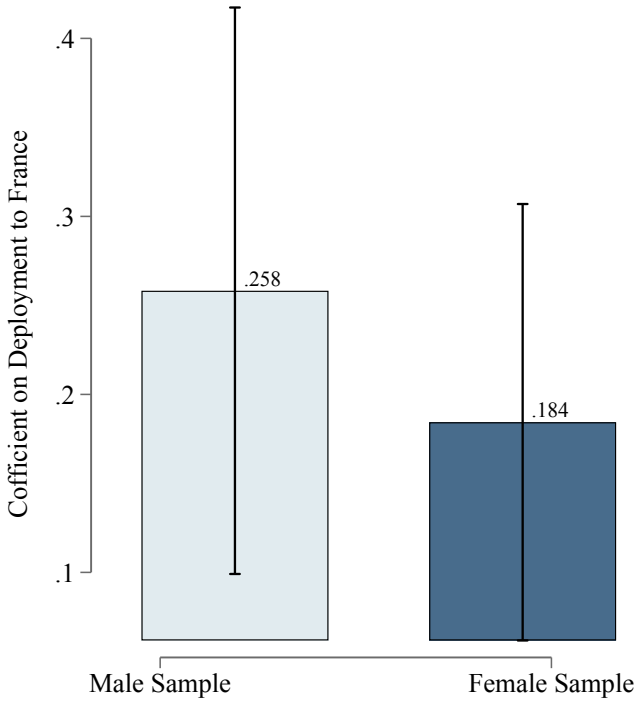
Table 4: Municipality level Effects on the Emigration

Dep Var: *ihs*(Total emigrants to France)			
	(1)	(2)	(3)
ihs(Total deployed to France)	0.283***	0.266***	0.252***
	(0.0843)	(0.0827)	(0.0816)
ihs(Total deployed to Algeria)	-0.0268	-0.0547	-0.0436
	(0.0807)	(0.0785)	(0.0796)
R-squared	0.377	0.402	0.423
N. Obs	814	814	813
Province FE	✓	✓	✓
Geographic Controls		✓	✓
Historical Controls			✓
P-value France=Algeria	0.004	0.002	0.005
Mean Dependent Variable	2.325	2.325	2.325
Sd Dependent Variable	1.658	1.658	1.659

Notes: An observation is a municipality. The dependent variable is the ihs of total emigrants in France. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people enlisted and for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

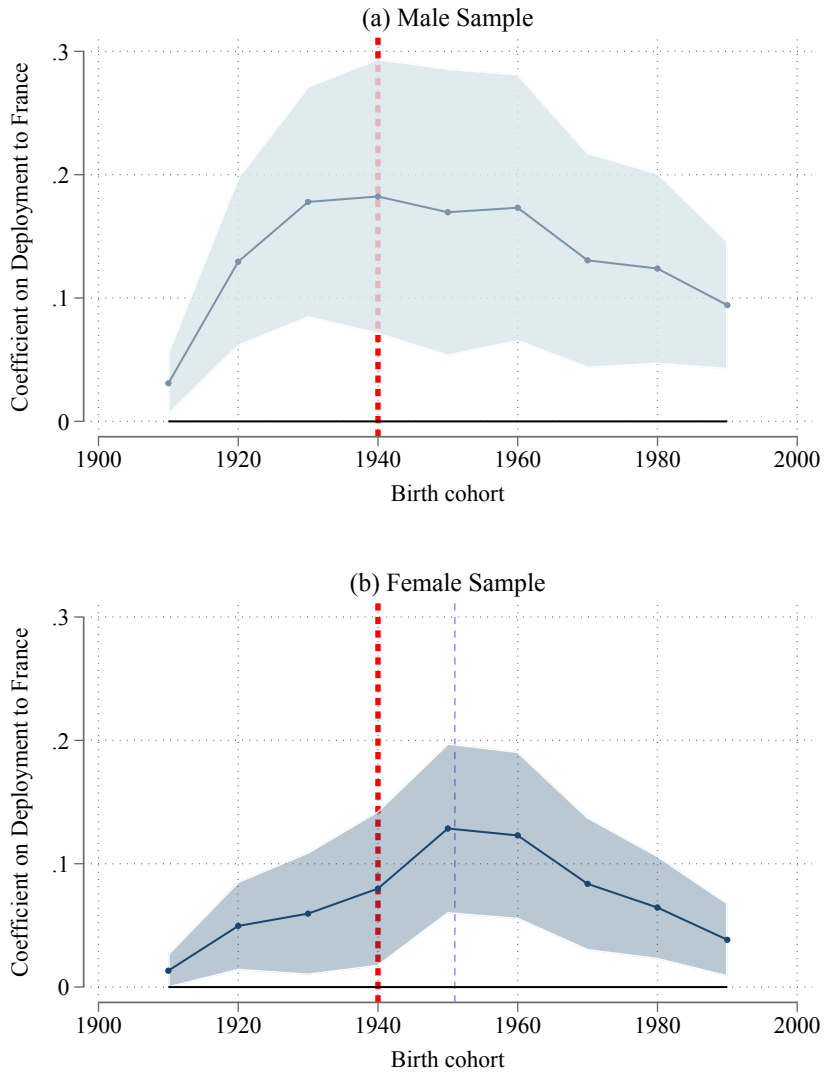
To examine the dynamic relationship between deployment to France and migratory and economic outcomes, we decompose each outcome into five years birth span. Intuitively, we are testing whether the geographic mobility experienced in the army has lasting effects over several generations. Intuitively, we are testing whether the deployment induced emigration, contributed to the establishment of long-lasting emigration networks from the municipality of origin of the soldiers, to France. Figure 7 plots the coefficient of total military deployment to France on the emigration of different cohorts, separately for men and women.

Figure 6: Gender Heterogeneity of Cohort Effects of Deployment to France



Notes: OLS estimates are reported. Each bar corresponds to the coefficient of the inverse hyperbolic sine of the total deployed to France. We report the estimates for three samples: the full cohort, the male cohort (as in Table 2), and the female sample. We report 95% confidence intervals and calculated clustering standard errors at the municipality-by-cohort level.

Figure 7: Gender Heterogeneity of Cohort Effects of Deployment to France



Notes: Each graph reports the estimate of deployment to France on the inverse hyperbolic sine transformation of the stock of emigrants in each decade of birth and their 95% confidence intervals. The coefficients are estimated with equation 2, an observation is a municipality, and standard errors are clustered at the municipality level. The regression includes the following pre-determined controls: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects.

Deployment to France has a lasting effect on migration to France up to cohorts born in the 1990s. The dashed line represents the last cohort in which deployment might have been possible. The result is positive and statistically significant for all the cohorts considered in the men and women sample. For the sample of men emigrants, we see that the effect of deployment to France on emigration increases up to 1940 (the last cohort that includes soldiers) and then remains stable. The effect of

deployment to France on the emigration to France of the women of the community is positive but of a smaller magnitude than the effect observed for the men sample. Furthermore, the dynamic of the treatment effect of women closely resembles that observed for men, but it lagged by approximately ten years. This is consistent with wives following their husbands in their emigration journey, as the average gap between husbands and wives in the Morocco 2014 census is approximately eleven years.

5.3 Other Measures of Emigration: Temporary Emigration and Internal Emigration

Additionally, we investigate whether deployment to France affected other measures of emigration. In particular, the Moroccan census allows us to measure two alternative types of emigration: temporary international emigration and internal emigration. The first variable is proxied by a dummy that takes value one if at least one of the children in the household was born outside of Morocco[57]. The second variable instead takes value 0 if a Moroccan-born individual currently resides in the municipality of birth and value one if they reside in the same municipality.

Table 5: Effects on having a child in the household that was born outside of Morocco

Dep Var=1 if one of the children was born abroad			
	(1)	(2)	(3)
ihs(Total deployed to France)	0.000922***	0.000766***	0.000723***
	(0.000252)	(0.000243)	(0.000239)
ihs(Total deployed to Algeria)	0.0000618	-0.0000301	-0.0000737
	(0.000304)	(0.000284)	(0.000288)
R-squared	0.00357	0.00375	0.0232
N. Obs	324061	323797	323371
Province FE	✓	✓	
Birth Cohort x Province x Gender FE			✓
Geographic Controls		✓	✓
Historical Controls		✓	✓
P-value France=Algeria	0.021	0.024	0.025
Mean Dependent Variable	0.00546	0.00546	0.00546
Sd Dependent Variable	0.0737	0.0737	0.0737

Notes: An observation is an individual born after 1941 and currently residing in Morocco. The dependent variable is a dummy that takes value one if the household has at least one parent who has a child born outside of Morocco. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

[57]The 2014 census includes information on whether an individual is born abroad, but not the country in which they were born. The dummy takes value one if the parent was born in Morocco, but the child was born abroad.

Table 6: Effects on being an internal migrant

Dep Var=1 respondent is an internal emigrant			
	(1)	(2)	(3)
ihs(Total deployed to France)	0.0321***	0.0265***	0.0240***
	(0.0106)	(0.0102)	(0.00863)
ihs(Total deployed to Algeria)	0.00394	-0.000881	0.000793
	(0.0134)	(0.0125)	(0.0108)
R-squared	0.0438	0.0499	0.174
N. Obs	1976220	1974139	1974119
Province FE	✓	✓	
Birth Cohort x Province x Gender FE			✓
Geographic Controls		✓	✓
Historical Controls		✓	✓
P-value France=Algeria	0.097	0.088	0.089
Mean Dependent Variable	0.343	0.343	0.343
Sd Dependent Variable	0.475	0.475	0.475

Notes: An observation is an individual born after 1941 and currently residing in Morocco. The dependent variable is a dummy that takes value one if the individual resides in a municipality different from their municipality of birth. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

For both variables, we find positive effects of deployment to France on emigration. An increase of 10% in soldiers deployed to France increases the probability of having one child in the household born abroad by .12 standard deviations. In contrast, an increase in 10% of the number of people deployed to France keeps the number of deployed to a peace area constant and increases the probability of internal emigration by .67 standard deviations. We interpret these results as consistent with an increase in general emigration behavior.

6 Long- Run Economic Effects

In this last section, we estimate the long-term economic effects of deployment on two communities of origin. First, we analyze how deployment to France affected labor market outcomes and the general well-being of those born in the municipalities of origin of the soldier, regardless of where they currently reside. Second, we estimate the effect of deployment to France on the outcomes of those who, in 2014, resided in the municipality of birth of the soldiers, regardless of where they were born.[58] To do so, we use outcomes from the 2014 census and estimate an individual-level regression that relies on the municipality-level variation described in 2. Our sample consists of individuals born in one of the municipalities of origin of the soldiers but born after the last cohort of soldiers, i.e. after 1941.

6.1 Empirical Strategy

Our estimating equation for the third and final part of the analysis is

$$\begin{aligned} y(t)_{imcd} = {} & \delta_1 ihs(\text{Total deployed to France})_{md} + \delta_2 ihs(\text{Total deployed to Algeria})_{md} \\ & + \delta_3 ihs(\text{Total deployed to a Peace Area})_{md} + \delta_4 ihs(\text{Total deployed a War Zone})_{md} \\ & + \delta_5 ihs(\text{Total never deployed})_{mc} + X'_{md}\Delta + \delta_{dc} \cdot \mathbb{I}(\text{Female})_{imcd} + \varepsilon_{imcd} \end{aligned} \tag{3}$$

An observation is an individual i born in municipality m, province d, and year c. The notation follows that of Equation 2 and we add individual-level controls. We cluster the standard errors at the municipality level. Exploiting this regression, we estimate the effects of international deployment on the wealth index, education labor market outcomes, and language spoken by the community members. We will also present results on nightlights, a proxy for economic development. As this variable can only be measured at the municipality level, we will report the results obtained estimating 2 for this particular outcome.

6.2 Results

Our main finding is that deployment to France, versus other locations, did not affect education or language spoken but shifted the labor market structure from agriculture to services and mildly affected the well-being of the communities of origin. We report our estimates of Equation 3 in Tables 9,

[58] This is a relevant difference since internal emigration in Morocco averages 3.6% a year.

7 and 8.

Education and Language Spoken. The first set of results we report illustrates the effect of international deployment on the education levels and language spoken by the communities of origin of the soldiers. We might expect to see results on these outcomes for several reasons. Soldiers deployed to different locations might acquire other language skills that are then transmitted to the later generations, generating differences in the languages spoken across communities. Furthermore, remittances from emigrants might help the communities back in Morocco to invest in their children's education, which would increase the overall education level. Our estimates for education and language are reported in Table 7. Columns 1-4 report the estimated coefficients for a dummy that takes value one if the respondent is illiterate and a dummy that takes value one if the respondent completed primary, secondary school, or college. On average, we don't find the effects of deployment on education or the language spoken by respondents. However, we find interesting patterns when investigating the dynamic across birth cohorts. Although deployment to France has not affected later cohorts, we find positive and significant coefficients on education outcomes for cohorts of individuals born before 1970, especially women (see Figure A4). This finding is consistent with the timing of Moroccan mass education policies, which had an equalizing effect on the education of children for those born in the 70s (Llorent Bedmar (2014),Hoffman (2000)).

Columns 5-8 report the results relative to the languages spoken by the respondent. In particular, we test whether respondents are more likely to speak only the Moroccan dialect and to speak or write French, Arab or English. Also, in this case, we see very similar patterns. On average, language was not affected by deployment to France, but we see positive and significant effects for women born before 1970 (see A5 for gender and cohort heterogeneity).

Labor Market Outcomes. In our second set of results, we investigate the effects of international deployment on the labor market structure of the community of origin. In particular, we empirically test whether deployment to France affected the sectors in which individuals work and their skill acquisition. We report the results in Table 8. Our results highlight one key finding: respondents born in the municipalities with a higher share of soldiers deployed to France today are less likely to work in the agricultural sector and more likely to work in the service sector. This shift in the labor market is reflected in a change in skill composition, with fewer respondents reporting to be low-skilled and more declaring to be medium-skilled. These effects are significant at the 10% level, although they are not statistically different from the estimated coefficients on deployment to Algeria.

Table 7: Effects on Human Capital

	(1) Illiterate	(2) Primary	(3) Secondary	(4) Dialect Only	(5) S/W French	(6) S/W Arab
ihs(Total deployed to France)	-0.00387	0.00323	0.00465	-0.00421	0.00247	0.00361
	(0.00500)	(0.00525)	(0.00541)	(0.00502)	(0.00558)	(0.00500)
ihs(Total deployed to Algeria)	0.00548	-0.00616	-0.00322	0.00524	-0.00521	-0.00576
	(0.00575)	(0.00604)	(0.00630)	(0.00582)	(0.00647)	(0.00575)
R-squared	0.416	0.540	0.402	0.537	0.382	0.575
N. Obs	1974119	1974119	1974119	1974119	1974119	1974119
Province FE	✓	✓	✓	✓	✓	✓
Birth Cohort x Province FE	✓	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓	✓
P-value France=Algeria	0.167	0.193	0.290	0.164	0.318	0.165
Mean Dependent Variable	0.230	0.615	0.330	0.420	0.396	0.565
Sd Dependent Variable	0.421	0.487	0.470	0.494	0.489	0.496

Notes: An observation is an individual born after 1941 and currently residing in Morocco. The dependent variables are (1) a dummy that takes value if the individual reported being illiterate, (2) a dummy that takes value one if the individual completed primary school and 0 otherwise, (3) a dummy that takes value one if the individual completed secondary school and 0 otherwise, (4) a dummy that takes value one if the individual completed college and 0 otherwise,(5) a dummy that takes value one if the individual speaks only Moroccan dialect, (6) a dummy that takes value one if the individual speaks French, (7) Ara, (8) English. All the variables were measured in 2014. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 8: Effects on Labor Market Outcomes

	(1) Agriculture	(2) Industry	(3) Services	(4) High-skilled	(5) Med-skilled	(6) Low-skilled
ihs(Total deployed to France)	-0.0266**	0.00967	0.0169**	0.00341	0.00750*	-0.0100*
	(0.0114)	(0.00601)	(0.00795)	(0.00278)	(0.00400)	(0.00569)
ihs(Total deployed to Algeria)	-0.000516	-0.000303	0.000819	0.00163	-0.00122	0.00107
	(0.0134)	(0.00679)	(0.00900)	(0.00304)	(0.00464)	(0.00649)
R-squared	0.234	0.0617	0.140	0.0984	0.0584	0.0830
N. Obs	597552	597552	597552	604687	604687	690554
Province FE	✓	✓	✓	✓	✓	✓
Birth Cohort x Province FE	✓	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓	✓
P-value France=Algeria	0.109	0.255	0.148	0.654	0.124	0.152
Mean Dependent Variable	0.216	0.292	0.492	0.108	0.597	0.259
Sd Dependent Variable	0.411	0.455	0.500	0.310	0.491	0.438

Notes: An observation is an individual born after 1941 and currently residing in Morocco. The dependent variables are a dummy that takes value one if the individual report (1) working in agriculture, (2) working in the manufacturing sector, (3) working in services, (4) working in a high-skilled occupation, (5) working in a medium skilled occupation, and 0 otherwise. All the variables were measured in 2014. The two independent variables of interest are the ihs of total people deployed to France at the municipality level and the ihs of total people deployed to Algeria at the municipality level. We control for the ihs of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Effects on Well-Being The last set of results, Table 9, the effect of international deployment on the well-being of their community of origin. An observation is a household, and the dependent variables are a wealth index, constructed taking the first component of the principal component analysis of the dwelling characteristics and the household assets, a wealth index that only considers the household assets[59]; the household size and a dummy that takes value one if the household owns the house in which they currently live. We find positive effects of deployment to France on the wealth index of individuals in the community of origin. However, the effects are only significant at the 10% level for one of the variables. The household size decreases significantly, and individuals are less likely to be homeowners. We interpret our results as suggestive of the non-negative effect of deployment to France on the communities of origin.

[59]We exclude from this index items such as phone, television, motorbike, etc.

Table 9: Effects on Wealth

	(1) Wealth Idx	(2) Wealth Idx (dur)	(3) Household size	(4) Home owner
ihs(Total deployed to France)	0.0371	0.0483*	-0.0298	-0.0137**
	(0.0247)	(0.0273)	(0.0279)	(0.00555)
ihs(Total deployed to Algeria)	-0.00380	-0.00763	0.0624*	-0.00329
	(0.0297)	(0.0337)	(0.0328)	(0.00722)
R-squared	0.281	0.293	0.195	0.115
N. Obs	358442	384174	396728	396728
Province FE	✓	✓	✓	✓
Birth Cohort x Province FE	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓
P-value France=Algeria	0.252	0.167	0.019	0.226
Mean Dependent Variable	0.00999	0.00165	4.591	0.701
Sd Dependent Variable	1.001	1.002	2.278	0.458

Notes: An observation is a household. The dependent variables are (1) the principal component analysis of a household's dwelling characteristics, (2) the principal component analysis of a household's dwelling characteristics, excluding non-durable assets, (3) the number of members of the household, (4) a dummy that takes value one if the household owns the house they live in. All the variables were measured in 2014. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

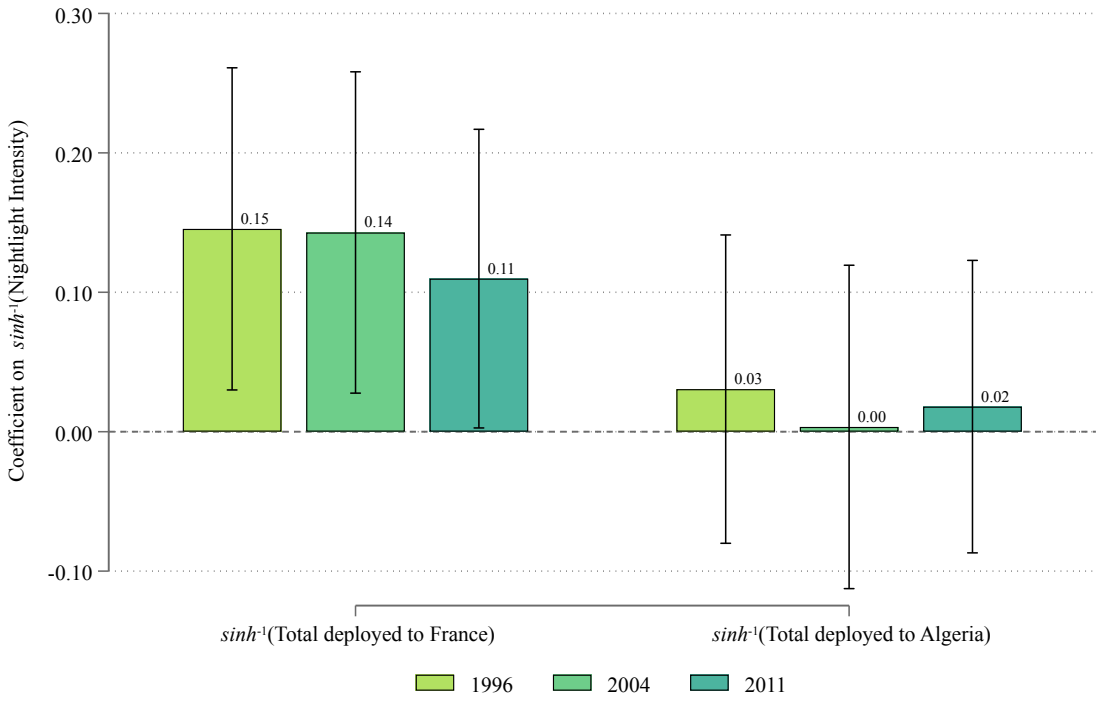
Finally, we estimate the effect of deployment to France on economic activity in the municipality of origin of the soldiers. We proxy economic activity within the municipalities borders with nightlight luminosity. The U.S. Air Force Defense Meteorological Satellite Program (DMSP) provides several measures of nighttime luminosity, from 1992 to 2013. We adopt the radiance-calibrated measure of nightlights, available between 1996 and 2011, that combines the DMSP-OLS with auxiliary data subject to a less severe top and bottom coding problem (Bluhm and Krause, 2022). This is particularly relevant for Morocco where, according to the DMSP-OLS measure of 1996, the median municipality was not lit. We will calculate the effects of deployment on nightlights for the years 1996, 2004 and 2011, the three years for which the radiance-calibrated measure of nightlight is available that are closest to the Moroccan census years: 1994, 2004, and 2014. As it can be observed in Figure A17 and Figure A18, between 1996 and 2011, Morocco had an highly unequal distribution of economic activity. In order to attenuate the impact of the most luminous cities on our estimates, we use the inverse hyperbolic sine transformation of nightlight intensity as our main dependent variable.

In Figure A12, we report the estimated coefficients of the effect of deployment to France and Algeria, for 1996, 2004, and 2011, the three years that are available and closest to the Moroccan census years (1994, 2004, and 2014). We find a positive and statistically significant effect of deployment to France on nightlight intensity, while the same is not true for deployment to Algeria. The two coefficients are statistically different from each other only for the year 2004, as reported in Table A12. An increase in 1 standard deviation in the $\sinh^{-1}$ of soldiers deployed to France during colonial times (approximately 2.5 more soldiers), corresponds to an increase in nightlight intensity by .09 standard deviations in 1996, by .08 standard deviations in 2004 and by .06 standard deviations in 2011. Taken together, these results suggest that deployment to France had a positive effect on economic activity, as proxied by nightlight intensity, while deployment to Algeria did not. And that the difference between these two effects is slightly decreasing with time[60].

Our estimate are robust to the use of different satellite data, as reported in Table A13. We show robustness of our main estimates to using other two satellite data sources, the Bluhm and Krause (2022) pareto-corrected DMSP-OLS, that applies a further correction for top and bottom coding, and the VIIRS satellite data, available from 2012 and described by Gibson *et al.* (2021) as the most appropriate measure for empirical analysis. Finally, in Table A14 we report robustness to using the raw measure of nightlight or its logarithm (plus one). The estimated coefficients are robust to using the logarithm, but less to using the raw measure of nightlight, in which case the coefficient of being deployed to Algeria becomes positive and statistically significant. However, the coefficient on Algeria becomes negative and statistically insignificant, when dropping the top 5% of the nightlight distribution from the sample, as shown in Figure A19.

[60]While directly comparing these coefficients would be inaccurate (Bluhm and Krause, 2022), we can compare how the difference between the effect of deployment to Algeria and France evolved between 1996 and 2011. Since the effect of deployment to Algeria is statistically 0 across the years, then by comparing the coefficients on deployment to France we are also comparing how the difference between the two effects changed between 1996 and 2011.

Figure 8: Municipality Level Effects on Economic Activity



7 Conclusions

We investigated the role of forced migration of young men enlisted in the colonial army during the post-World War II period on emigration and the economic outcomes of sending municipalities. We first showed that municipalities picked for deployment are not systematically selected for a specific destination across years. On the contrary, assignment to a specific theater of operation rotates across municipalities and years, rendering strategic selection of individuals into deployment not obvious. Exploiting the quasi-random assignment to different deployment destinations, we showed that deployment to France predicts migration to France in the years following Independence. An increase of 10% in the cohort of soldiers deployed to France increases permanent emigration to France y .42%. The effect persists for five decades and is more prominent among men than women. We interpret these findings as suggesting that the soldiers deployed to France who decided to emigrate permanently constituted the pioneers of a diaspora that has continued to grow post-Independence for several decades. This, in turn, had long-run effects on the communities of origin of the emigrants. Among those currently residing in Morocco, we find a higher propensity to emigrate internationally and a higher likelihood of emigrating internally. We find that the communities of origin did not experience a negative long-term effect from emigration; if anything, we find a positive effect on the left behind, with an associated higher likelihood of moving away from agriculture and working in the private sector instead (services).

Although further exploration is needed to disentangle the channels that drive what we observe, we interpret our findings as evidence of the fact that deployment in the French army, a long-lasting and widespread colonial policy, affected emigration patterns of ex-soldiers and their communities, spurring long-term divergence in the emigration of their communities as well as their economic development. We believe this result to be important for three reasons. On the one hand, it is additional evidence of how pervasive and long-lasting the effects of colonialism have been by highlighting part of the effects of an extensive policy such as the French colonial army. On the other hand, it provides important historical background on a currently debated topic in Europe: immigration from Africa to Europe. As European leaders and population decide whether or not to open their borders to the neighboring African countries, it is important to remember that part of the emigration we keep observing today is a result of the colonial legacy of European countries. Finally, we contribute to understanding the returns to emigration for the community of origin in the long-run, another intensely debated topic with mixed evidence as of now.

References

ACEMOGLU, D., JOHNSON, S. and ROBINSON, J. A. (2001), " The Colonial Origins of Comparative Development: An Empirical Investigation ", *American Economic Review*, vol. 91 nº 5: pp. 1369–1401.

ACEMOGLU, D., JOHNSON, S. and ROBINSON, J. A. (2002), " Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution* ", *The Quarterly Journal of Economics*, vol. 117 nº 4: pp. 1231–1294.

ALESINA, A., EASTERLY, W. and MATUSZESKI, J. (2011), " Artificial States ", *Journal of the European Economic Association*, vol. 9 nº 2: pp. 246–277.

ANGRIST, J. D. (1990), " Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records ", *The American Economic Review*.

BASELER, T. (2021), " Hidden income and the perceived returns to migration ", *Available at SSRN 3534715*.

BECKER, S. O. and FERRARA, A. (2019), " Consequences of forced migration: A survey of recent findings ", *Labour Economics*, vol. 59: pp. 1–16, ISSN 0927-5371, special Issue on "European Association of Labour Economists, 30th annual conference, Lyon, France, 13-15 September 2018.

BELKACEM, R. (2022), " Les combattants marocains de l'armée française 1939-1956 ", *rahmi – réseau aquitain sur l'histoire et la mémoire de l'immigration*, vol. Working Paper.

BLATTMAN, C. (2009), " From Violence to Voting: War and Political Participation in Uganda ", *American Political Science Review*.

BLUHM, R. and KRAUSE, M. (2022), " Top lights: Bright cities and their contribution to economic development ", *Journal of Development Economics*, vol. 157: p. 102880, ISSN 0304-3878.

BORJAS, G. J. (1999), " The economic analysis of immigration ", *Handbook of labor economics*, vol. 3: pp. 1697–1760.

BRYAN, G., CHOWDHURY, S. and MOBARAK, A. M. (2014), " Underinvestment in a profitable technology: The case of seasonal migration in Bangladesh ", *Econometrica*, vol. 82 nº 5: pp. 1671–1748.

CAGÉ, J. and RUEDA, V. (2020), " Sex and the mission: The conflicting effects of early Christian investments on the HIV epidemic in sub-Saharan Africa ", *Journal of Demographic Economics*, nº 86(3): pp. 213–257.

CAGÉ, J., DAGORRET, A., GROSJEAN, P. A. and JHA, S. (2021), " Heroes and Villains: The Effects of Heroism on Autocratic Values and Nazi Collaboration in France ", .

CLAYTON, A. (1988), *France, soldiers, and Africa*, Brassey's.

CLEMENS, M. A. and MCKENZIE, D. (2018), " Why don't remittances appear to affect growth? ", *The Economic Journal*, vol. 128 nº 612: pp. F179–F209.

COSTA, D. L., KAHN, M. E., ROUDIEZ, C. and WILSON, S. (2018), " Persistent social networks: Civil war veterans who fought together co-locate in later life ", *Regional science and urban economics*, vol. 70: pp. 289–299.

DERYUGINA, T., KAWANO, L. and LEVITT, S. (2018), " The Economic Impact of Hurricane Katrina on Its Victims: Evidence from Individual Tax Returns ", *American Economic Journal: Applied Economics*, vol. 10 nº 2: pp. 202–33.

DUSTMANN, C., FRATTINI, T. and PRESTON, I. P. (2013), " The effect of immigration along the distribution of wages ", *Review of Economic Studies*, vol. 80 nº 1: pp. 145–173.

ECHENBERG, M. J. (1991), *Colonial conscripts : the Tirailleurs Sénégalais in French West Africa, 1857-1960*, Social history of Africa, Heinemann ; J. Currey, Portsmouth, NH : London, ISBN 0435080482.

GIBSON, J., MCKENZIE, D. and STILLMAN, S. (2011), " The Impacts of International Migration on Remaining Household Members: Omnibus Results from a Migration Lottery Program ", *The Review of Economics and Statistics*.

GIBSON, J., MCKENZIE, D., ROHORUA, H. and STILLMAN, S. (2018), " The Long-term impacts of international migration: Evidence from a lottery ", *The World Bank Economic Review*, vol. 32 nº 1: pp. 127–147.

GIBSON, J., OLIVIA, S., BOE-GIBSON, G. and LI, C. (2021), " Which night lights data should we use in economics, and where? ", *Journal of Development Economics*, vol. 149: p. 102602, ISSN 0304-3878.

GINIO, R. (2017), *The French army and its African soldiers: The years of decolonization*, U of Nebraska Press.

GRUNER, R. (1984), *Du Maroc traditionnel au Maroc moderne: le contrôle civil au Maroc, 1912-1956*, Nouvelles éditions latines.

DE HAAS, H. (2008), " The Myth of Invasion: the inconvenient realities of African migration to Europe ", *Third World Quarterly*, vol. 29 nº 7: pp. 1305–1322.

HOFFMAN, K. E. (2000), " Administering identities: state decentralisation and local identification in Morocco ", *The Journal of North African Studies*, vol. 5 nº 3: pp. 85–100.

HUILLERY, E. (2009), " History Matters: The Long Term Impact of Colonial Public Investments in French West Africa ", *American Economic Journal : Applied Economics*.

JHA, S. (2012), " Does Combat Experience Foster Organizational Skill? Evidence from Ethnic Cleansing during the Partition of South Asia ", *American Political Science Review*.

JHA, S. and WILKINSON, S. (2012), " Does combat experience foster organizational skill? Evidence from ethnic cleansing during the partition of South Asia ", *American Political Science Review*, vol. 106 nº 4: pp. 883–907.

KOEHLER-DERRICK, G. (2021), " Who Counts? Colonialism, Information, and Mass Education in Morocco ", .

KOENIG, C. (2015), " Loose cannons–war veterans and the erosion of democracy in weimar germany ", Technical report.

LLORENT BEDMAR, V. (2014), " Educational reforms in Morocco: Evolution and current status ", *International Education Studies, 7 (12), 95-105.*

LOWES, S. and MONTERO, E. (2021), " The legacy of colonial medicine in Central Africa ", *American Economic Review*, vol. 111 nº 4: pp. 1284–1314.

MAGHRAOUI, D. (2004), " From "Tribal Anarchy" to 'Military Order": the Moroccan Troops in the Context of Colonial Morocco ", *Oriente Moderno*.

MANGIN, C. L.-C. (2011), " La force noire ", *La Force noire*, pp. 1–272.

MANGIN, C. M. E. (1910), " La force noire. 3. éd ", *Paris, Hachette et cie, 1911. viii, 365 p. incl. tables, diagrs. fold, map. 19cm*, vol. 12: p. 15607.

MCCORMICK, M., HUANG, G., ZAMBOTTI, G. and LAVASH, J. (2013), " Roman road network (version 2008) ", *DARMC Scholarly Data Series, Data Contribution Series*, vol. 5.

MCKENZIE, D., GIBSON, J. and STILLMAN, S. (2013), " A land of milk and honey with streets paved with gold: Do emigrants have over-optimistic expectations about incomes abroad? ", *Journal of Development Economics*, vol. 102: pp. 116–127.

MGHARI, M. (2006), " Profils démographique et socio-économique des migrants de retour ", Technical report, Haut-Commissariat au Plan du Maroc.

MICHALOPOULOS, S. and PAPAIOANNOU, E. (2020), " Historical Legacies and African Development ", *Journal of Economic Literature*, vol. 58 nº 1: pp. 53–128.

MICHALOPOULOS, S., NAGHAVI, A. and PRAROLO, G. (2018), " Trade and Geography in the Spread of Islam ", *The Economic Journal*, vol. 128 nº 616: pp. 3210–3241.

MISHRA, P. (2007), " Emigration and wages in source countries: Evidence from Mexico ", *Journal of Development Economics*.

NAKAMURA, E., SIGURDSSON, J. and STEINSSON, J. (2022), " The gift of moving: Intergenerational consequences of a mobility shock ", *The Review of Economic Studies*, vol. 89 nº 3: pp. 1557–1592.

NATTER, K. (2014), " Fifty years of Maghreb emigration: How states shaped Algerian, Moroccan and Tunisian emigration ", .

NUNN, N. (2014), " Historical development ", *Handbook of economic growth*, vol. 2: pp. 347–402.

PIKETTY, G. (2006), " L'armée de Vichy. Le corps des officiers français 1940-1944 (1966) ", .

RAY, J. (1938), *Les Marocains en France*, Librairie du Recueil Sirey.

SALEM, A. (2022), " The Negative Impacts of Colonization on the Local Population: Evidence from Morocco ", *Working Paper*.

SHRESTHA, M. (2019), " Get Rich or Die Tryin': Perceived Earnings, Perceived Mortality Rates, and Migration Decisions of Potential Work Migrants from Nepal ", *The World Bank Economic Review*, vol. 34 nº 1: pp. 1–27, ISSN 0258-6770.

TUR-PRATS, A. and VALENCIA CAICEDO, F. (2020), " The long shadow of the spanish civil war ", .

WALKER, D. A. (1987), " OSS and Operation Torch ", *Journal of Contemporary History*, vol. 22 nº 4: pp. 667–679.

WANTCHEKON, L., KLAŠNJA, M. and NOVTA, N. (2015), " Education and Human Capital Externalities: Evidence from Colonial Benin ", *The Quarterly Journal of Economics*, vol. 130 nº 2: pp. 703–757.

Online Appendix

for "En Route: The French Colonial Army, Emigration, and Development in Morocco"
by Ariane Salem and Awa Ambra Seck

Contents

A Data Sources and Variable Construction **42**
A.1 Geo-coding Historical Communes of Birth 42
A.2 Death Records 46
A.3 Controls 47

B Descrption of Supplementary Results **48**
B.1 Additional Tests on Assignment to a Deployment Location 48
B.2 Robustness Checks: Effect of Deployment on the Emigration of Soldiers 51
B.3 Robustness to Trimming Outliers on 2014 Population size 55
B.4 Additional Results on the Cohort of Soldiers 55
B.5 Long-Run Effects on Education and Language: Heterogeneity by Gender and Cohort 58

C Supplementary Figures and Tables **60**
C.1 Additional Covariates Balance 73
C.2 Effects of Deployment on Emigration on the Soldiers' Cohorts: Gender Heterogeneity 75

A Data Sources and Variable Construction

A.1 Geo-coding Historical Communes of Birth

In this section, we describe the procedure we followed to match historical communes of birth to modern Moroccan municipalities. Soldier records contain two administrative levels of birth: the *douar* (or village), and the *Côntrole civil* a higher level administrative unit comparable to today's district/circle. Due to the absence of historical boundaries of municipalities before independence, we will use historical *douar* and *côntrole civil* names to find their unique historical coordinates and match them to the 2014 municipality boundaries. We explain below our geo-coding procedure.

1. **Direct Matching** We define a reference list of municipality names and coordinates combining the 2014 list of Moroccan municipalities released by the *Haut Commissariat au Plan*, a list of historical names obtained from *Geonames*,[61] and a list of places extracted from *Google maps*[62] and match it to the communes of birth. We manage to perfectly match 35% of the communes in our sample of the communes of birth corresponding to approximately 55% of individuals of our geocoded sample.

[61] Downloaded in 2018 at https://www.geonames.org
[62] Downloaded in 2018 at https://developers.google.com/maps/documentation/places/web-service/overview

2. **Fuzzy Matching** As *douars* of birth are transcribed by French officials, misspellings and non homogeneous transliterations from Arab to French are common. To overcome this problem, we run a fuzzy matching algorithm[63] matching the reference list constructed in 1 to the list of unmatched birth *douars*. With this method, we manage to match 54% of the original communes of birth (corresponding to an additional 30% of soldiers).

3. **Manual Matching** As a third step, we manually match birth *douars* to current municipalities. To manually geo-locate the *douars* of birth, we used the GeoNames geographical database that, for the country of Morocco, includes commune names from the National Geospatial-Intelligence Agency's (NGA) Names dataset and the U.S. Board on Geographic Names dataset, and the HCP dataset[64]. In the case of duplicate names, we use the *côntrole civil* information to choose the most appropriate set of covariates. With this methodology we code the majority of our sample.

4. **Match with Contrôle Civil** As a final step, if none of the previously described methods yielded a set of coordinates for a *douar* of birth, we assigned to it the coordinates of the *contrôle civil*.

We successfully geo-code 86% of the *douars* of birth in our sample and, through the coordinates, we match them to a total of 819 modern municipalities.

Figure A1 shows the sample of municipalities with at least one soldier enlisted. For each municipality, the marker is proportional to the number of soldiers who was born in that municipality and that enlisted between 1946-1956. In the post-war period, soldier would enlist from municipalities in each Moroccan region. The municipalities that contributed the least number of soldiers, are the internal ones, more deserted and mountainous areas. Although these areas were not the largest providers of soldiers, they contributed a substantial share of their population, as shown in Figure A2.

[63] We use the STATA command *matchit*, downloaded in 2021 at https://github.com/julioraffo/matchit. We use two matching algorithms: token and gram. We only keep the matches with a similscore above .82, which is in our case the conservative threshold below which the matching starts becoming less reliable.

[64] (https://www.geonames.org/about.html

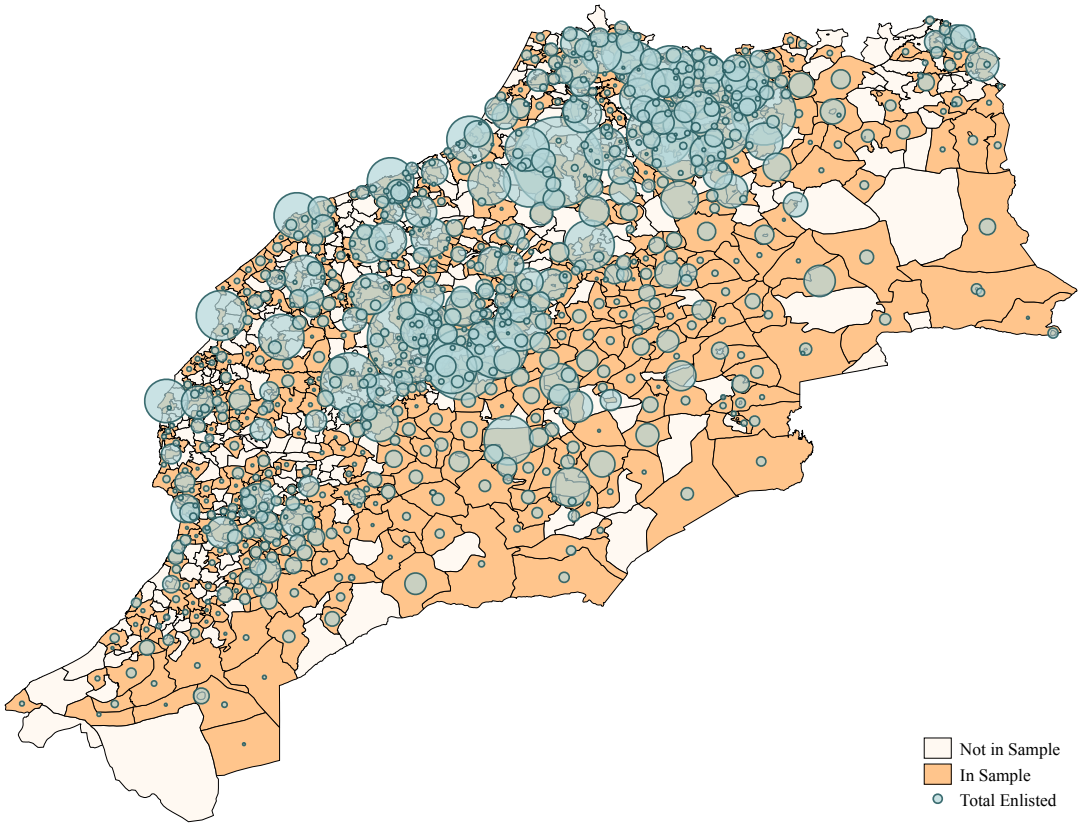


Figure A1: This map shows the sample of municipalities with at least one soldier enlisted in the French army between 1946 and 1956 (dark orange). The blue circles are proportional to the number of people enlisted.

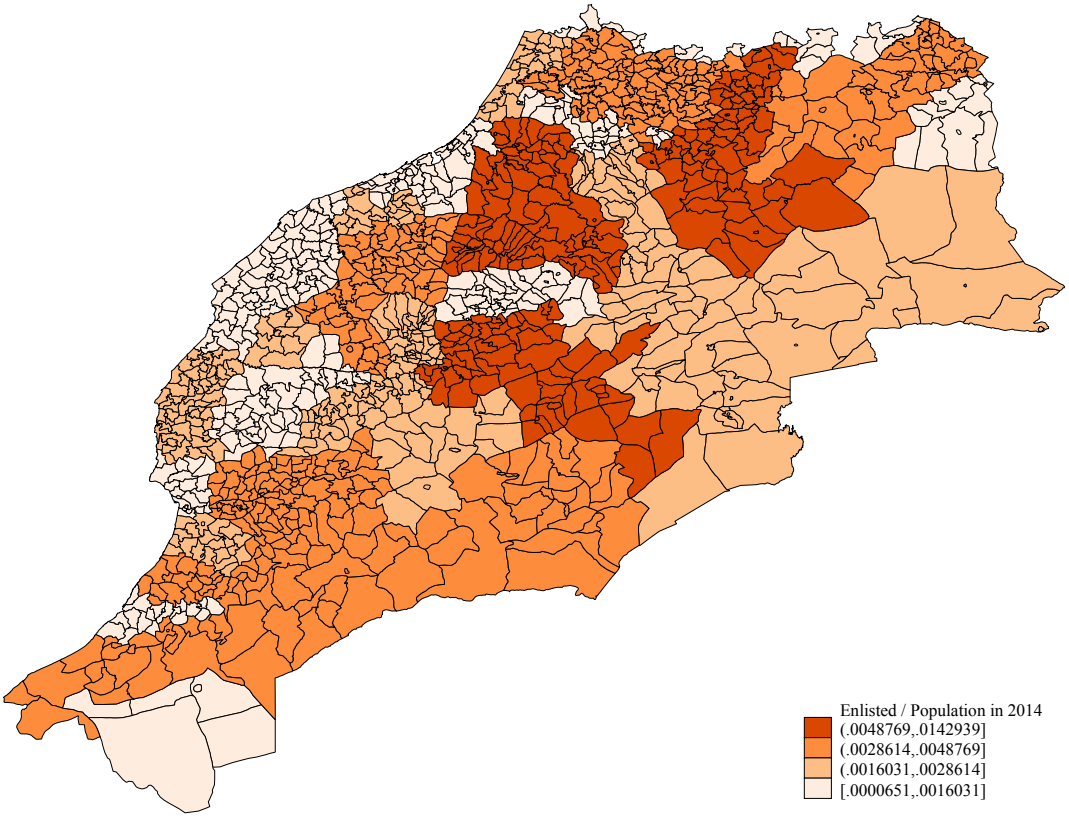
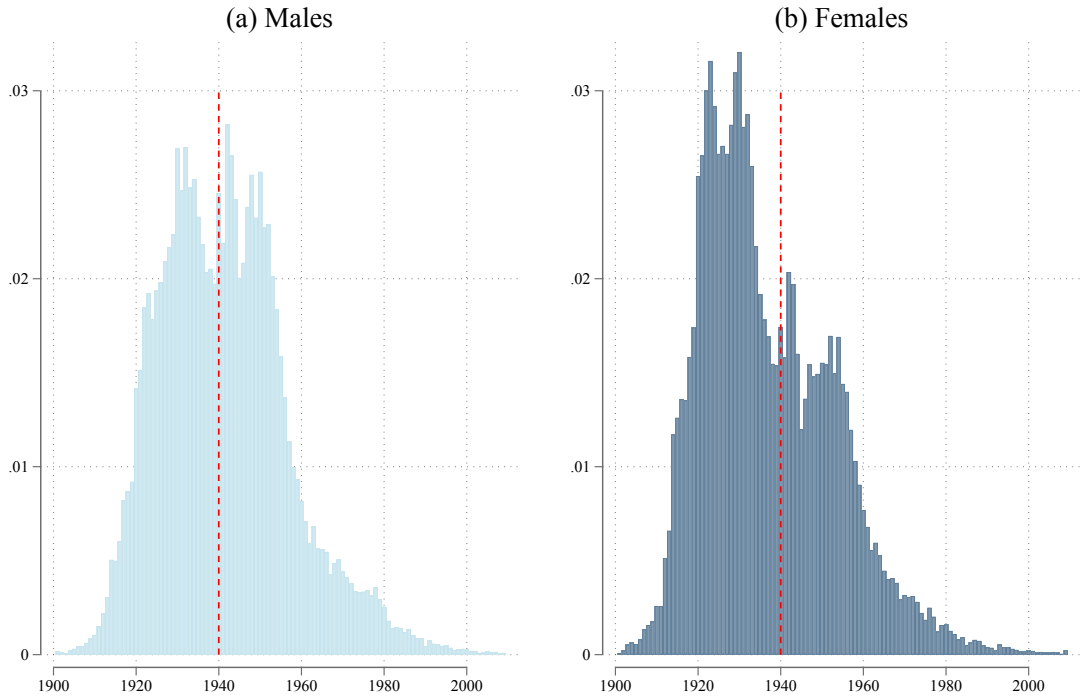


Figure A2: The plot shows the average municipality level share of enlisted soldiers over total population in 2014, by province.

A.2 Death Records

Figure A3: Age Distribution for Individuals died in France between 1990 and 2021



Notes: This picture reports the distribution of Moroccan individuals' birth years in the French death records, broken down by gender. In Panel (a), we report the distribution for males; in Panel (b), we report the distribution for the female sample. The red vertical line corresponds to 1940, the last year the soldiers in our military sample were born. The majority of the sample comprises individuals born before 1920 and 1960, i.e., both corresponding to and after the years of birth of soldiers. The female sample has a higher mass of individuals born before 1940, consistent with the fact that women have a longer life expectancy on average.

A.3 Controls

- Distance from Algeria
- Caloric suitability: Downloaded from https://ozak.github.io/Caloric-Suitability-Index/ May 23rd 2022. This index combines information on potential yields for each crop, contained in the FAO-GAEZ dataset, with the caloric content of crops obtained by the United States Department of Agriculture Nutrient Database for Standard Reference. Following Galor and Ozak(2016), we include the average attainable caloric yield in the regression, excluding crops with 0 yields for pre-1500 and post-1500. We construct the variable at the municipality level, calculating the average yields of each 5'x5' grid cell that overlaps with municipality borders.
- Crop suitability. Data on crop suitability is obtained from the 2013 version of the FAO-GAEZ land suitability index for 1961-1990 (the earliest available period) data from the 2013 version of FAO-GAEZ.
- Plough Potential Downloaded from https://ozak.github.io/Caloric-Suitability-Index/ May 23rd 2022. The measure of plow potential is based on the Caloric Suitability Index and measured at the 5'x5' cell level.
- Latitude: Absolute latitude of the centroid of the municipality polygon. Source: *Haute-Commissariate Au Plan du Maroc*
- Longitude: Absolute longitude of the centroid of the municipality polygon. Source: *Haute-Commissariate Au Plan du Maroc*
- Latitude x Longitude: Absolute longitude of the centroid of the municipality polygon. Source: *Haute-Commissariate Au Plan du Maroc*
- Distance to water bodies We calculate the distance of each municipality to the nearest water body (lake, lagoons, reservoirs). The data come from the "Africa water bodies dataset," which was curated by the Regional Centre for Mapping of Resources for Development (RCMRD) established in Nairobi ? Kenya, in 1975, and it was downloaded May 26th,2022, from https://datacatalog.worldbank.org/search/dataset/0040797. One caveat is that the data contain contemporary water bodies, not historical ones, and, as such, it might be endogenous to our treatment.
- Distance from rivers. Downloaded from http://landscapeportal.org/layers/geonode:africa_rivers_1 on May 26th,2022.
- Distance from the ice-free coastline. Data obtained from the World Vector Shorelines and downloaded from https://www.ngdc.noaa.gov/mgg/shorelines/data/gshhg/latest/ on May 27th,2022.
- Rainfall and Air Temperature. The specification includes average rainfall and temperature between 1900 and 1945, as well as rainfall and temperature variability between 1900 and 1945,

measured as the standard deviation of each of the two variables. The weather data was downloaded from http://climate.geog.udel.edu/~climate/html_pages/download.html on April 1st, 2021.

- Slope and Elevation. We downloaded elevation data from http://viewfinderpanoramas.org/dem3.html on August 1st, 2021. The original data source is the 2000 Shuttle Radar Topography Mission conducted by NASA. From this, we calculate the slope as

$$\text{Slope}_m = \max \text{elevation}_m - \min \text{elevation}_m$$

Historical controls/Presence of infrastructure Pre-1945

- Height of soldiers enlisted before 1945. The height data is obtained from Salem (2022), which includes information on the average height by the municipality for soldiers who served in the French Colonial Army from 1917 to 1954.
- Distance from modern roads (in 1945) Source: Gallica maps *(add link)*
- Distance from pre-colonial trails (measured in 1912) Source: Gallica maps
- Distance from military ports We calculate the distance from Casablanca, Mers el Kebir, and Oran, which were the main military ports at the time. We obtained the coordinates using GeoNames.
- Ancient ports and harbors, Graauw, Maione-Downing, and McCormick (2014). "This database presents work done by Arthur de Graauw to collect, identify and locate ancient harbors and ports. It is based on a study of existing documentation and does not aim to find unknown ports. The result is a list of around 2900 ancient ports based on the writings of 66 ancient authors and a few modern authors, incl. the Barrington Atlas."
- Islamic Trade routes, gracefully obtained by Michalopoulos *et al.* (2018).
- Roman routes, the network of ancient roman roads constructed by McCormick *et al.* (2013) Ans accessible as: "Roman Road Network (version 2008)", https://doi.org/10.7910/DVN/TIOKAU, HarvardDataverse,V1

B Descrption of Supplementary Results

B.1 Additional Tests on Assignment to a Deployment Location

Additional evidence on the assignment of a deployment location Could people select to deploy to France? Archival evidence and the covariate balance suggest this was not likely the case. To further investigate this question, we estimate whether it was the case that more people enlisted in municipalities with a higher fraction of soldiers deployed to France the previous year and whether municipalities that were enlisting a higher fraction of soldiers in t would also enlist a high fraction of

soldiers in $t+1$. To do so, we construct a panel dataset of municipalities and years of enrollment and estimate the two specifications below:

$$ihs(\text{Tot Enlisted})_{mt} = \alpha_1 ihs(\text{Total deployed to France})_{c,m,t-1} + \alpha_2 ihs(\text{Total deployed abroad})_{c,m,t-1} + \alpha ihs(\text{Total enlisted})_{m,t-1} + \nu_m + \mu_t + \varepsilon_{mt} \quad (4)$$

$$\text{Share deployed}_{dmt} = \beta_1 ihs(\text{Total deployed to France})_{c,m,t-1} + \beta_2 ihs(\text{Total deployed abroad})_{c,m,t-1} + \beta ihs(\text{Total enlisted})_{m,t-1} + \nu_m + \mu_t + \varepsilon_{mt} \quad (5)$$

where m, t, and d denote municipality, year of enlistment, and deployment destination. An observation is a municipality and year of enlistment pair. Equations 4 and 5 estimate the same model for different outcomes: $ihs(\text{Tot Enlisted})_{mt}$ total enlistment and $\text{Share deployed}_{dmt}$, the share between 0 and 1 of enlisted soldiers deployed to France in municipality m and year t.

Regressors include $ihs(\text{Total deployed to France})_{c,m,t-1}$ and $ihs(\text{Total deployed to Abroad})_{c,m,t-1}$, respectively the inverse hyperbolic sine transformation of the total number of people born in m, enlisted in t and deployed to France or Abroad. We control for $ihs(\text{Tot Enlisted})_{mt-1}$, municipality of birth fixed effects, and year of enlistment fixed effects. Standard errors are clustered at the municipality level.

Results, presented in table A1, allow answering a set of questions.

1) How are municipalities assigned to a different destination of deployment? The matrix of results from columns (1) and (2) reflects an alternation of deployment destination, whatever the duration, across municipalities and years. This suggests that regiments were rotating yearly on different battlefields and that the administration was not disproportionately selecting from a specific locality.

2) Did soldiers select for deployment to France or outside France? We learn from columns (3) and (4) that enlistment does not depend on deployment history, suggesting that soldiers were not enlisting, trying to select one or other deployment locations.

Answer 1 provides evidence that municipalities were not disproportionately selected for deployment. Answer 2 gives a reassuring ground for the absence of individual selection into deployment to France relative to other destinations. Lastly, we estimate whether municipality FE predicts deployment to a specific international location.

Table A1: Is deployment in t-1 predictive of deployment and enlistment in t?

	(1) Share France$_t$	(2) Share France$_{t+1}$	(3) *ihs*(Total enlisted)$_t$	(4) *ihs*(Total enlisted)$_{t+1}$
ihs(Total, deployed to, France)$_{t-1}$	-0.0128***	-0.00709**	0.0275	0.0786
	(0.00409)	(0.00292)	(0.0420)	(0.0502)
ihs(Total, deployed to, Abroad)$_{t-1}$	0.00112	-0.00213	0.105***	0.0363
	(0.00267)	(0.00415)	(0.0284)	(0.0341)
Observations	2,504	1,809	2,504	2,416
R-squared	0.274	0.252	0.736	0.736
Municipality FE	✓	✓	✓	✓
Enlistment year FE	✓	✓	✓	✓

Notes: OLS estimates are reported. An observation is a municipality in a year from 1946 to 1956. Dependent variables for column (1) and (2) is the share of destination-specific deployment on total enlistment within the first four years of enlistment, in t and $t+1$. The dependent variable in columns Column (3) and (4) is the inverse hyperbolic sine transformation of total enlistment in years t and t+1, respectively. *ihs*(Total deployed to France)$_{c,m,t-1}$ is the inverse hyperbolic sine transformation of the total number of people deployed to France, *ihs*(Total deployed abroad)$_{c,m,t-1}$ is the ihs of the total number of people deployed abroad. Regressions include two levels of fixed effects: municipality and enlistment years. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

B.2 Robustness Checks: Effect of Deployment on the Emigration of Soldiers

B.2.1 Main Specification Including Controls

Table A2: Benchmark Specification - Showing Control Variables

Dep Var: *ihs*(Total emigrants to France)			
	(1)	(2)	(3)
ihs(Total deployed to France)	0.0455***	0.0459***	0.0460***
	(0.0160)	(0.0160)	(0.0160)
ihs(Total deployed to Algeria)	0.00820	0.00907	0.00943
	(0.0157)	(0.0157)	(0.0158)
ihs(Total peace area)	-0.00225	-0.00303	-0.00389
	(0.0129)	(0.0129)	(0.0129)
ihs(Total war area)	0.0445***	0.0444***	0.0444***
	(0.00791)	(0.00791)	(0.00790)
ihs(Total Stationed in Morocco)	0.0554***	0.0545***	0.0547***
	(0.00834)	(0.00834)	(0.00835)
Average age at enlistment		-0.000958	-0.00455
		(0.00288)	(0.00594)
Average height at enlistment		0.0000335	0.0000160
		(0.000234)	(0.000235)
Share RTMs			0.0154
			(0.0196)
Average year of enlistment			0.00559
			(0.00637)
R-squared	0.803	0.804	0.804
N. Obs	5855	5855	5855
Municipality FE	✓	✓	✓
Birth Cohort FE	✓	✓	✓
Demographic controls		✓	✓
Military Career controls			✓
P-value France=Algeria	0.036	0.038	0.040
Mean Dependent Variable	0.228	0.228	0.228
Sd Dependent Variable	0.698	0.698	0.698

Notes: OLS estimates are reported. An observation is a municipality of birth by cohort. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in a cohort-municipality pair. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the total number of people by cohort-municipality pair deployed to Algeria during their first military appointment. Column (1) includes municipality of birth and cohort fixed effects. Column (2) adds the average height and age for the cohort by municipality pair at the moment of enlistment, and column (3) includes the average year of enlistment and the share that belongs to the RTM troop. The p-value of the difference between deployment to France and outside France is reported at the bottom of each column. Standard errors clustered at the municipality by cohort level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

B.2.2 Robustness to Alternative Specifications

In this section, we test the robustness of our estimates to alternative specifications. First, we are interested in showing the coefficients for the share of individuals deployed to different international locations among all the soldiers enlisted in that cohort-municipality pair. Although sorting into and out of war areas does not allow us to interpret the coefficient on deployment to war causally, we wanted to show it for transparency. In this case, the excluded category comprises soldiers who were enlisted between 1946 and 1956 but never deployed abroad.

The regression that corresponds to this exercise is

$$\begin{aligned} y_{mc} = {} & \alpha_1 ihs(\text{Total deployed to France})_{mc} + \alpha_1 ihs(\text{Total deployed to Algeria})_{mc} \\ & + \alpha_3 ihs(\text{Total deployed to Germany})_{mc} + \alpha_4 ihs(\text{Total deployed a war zone})_{mc} \\ & + \alpha_5 ihs(\text{Total soldiers enlisted})_{mc} + \alpha_6 ihs(\text{Total never deployed})_{mc} + X'_{mc} A + \alpha_m + \alpha_c + u_{mc} \end{aligned} \quad (6)$$

We report the results in Table A4. In this specification, we see an increase in the stock of emigrants for cohorts municipality pairs with a higher share of deployed to France. At the same time, the coefficient on the total deployed to Germany, Algeria, and a war area is null. Although we interpret these results with caution, our findings suggest that being deployed to a war zone, or Germany, did not increase the propensity of soldiers to move to France afterward.

Then, since our estimate might be sensitive to our choice of taking the inverse hyperbolic sine transformation of the variables of interest, we verify that the specification does not matter. In particular, we first take the logarithm of the number of soldiers deployed and the total number of people deceased and find similar results (estimates reported in Table. A4). Then, we estimate the effects of the share of total soldiers deployed to France over the number of soldiers deployed to a peaceful area. These estimates are reported in Column (5) of Table A4. The causal effect of deployment to France remains positive and statistically significant. However, the difference between deployment to France and Algeria is no longer significant. This is driven by outliers, i.e. municipalities with only one soldier enlisted and for which the share of soldiers always takes values 0 or 1. Our benchmark results are restored when we remove these cohort-municipality pairs in Column (6).

Table A3: Alternative Specification: Share of Deployed on Total Enlisted

Dep Var: *ihs*(Total emigrants to France)			
	(1)	(2)	(3)
ihs(Total deployed to France)	0.0382***	0.0382***	0.0382***
	(0.0122)	(0.0122)	(0.0122)
ihs(Total deployed to Algeria)	-0.00314	-0.00294	-0.00311
	(0.0116)	(0.0116)	(0.0116)
ihs(Total deployed to Germany)	-0.000945	-0.00104	-0.00141
	(0.0112)	(0.0112)	(0.0113)
ihs(Total war area)	0.000650	0.00147	0.00144
	(0.00757)	(0.00758)	(0.00758)
ihs(Total enlisted)	0.101***	0.0992***	0.0993***
	(0.0162)	(0.0163)	(0.0163)
Average age at enlistment		0.000107	-0.00372
		(0.00284)	(0.00584)
Average height at enlistment		0.0000511	0.0000352
		(0.000234)	(0.000235)
Share RTMs			0.00817
			(0.0197)
Average year of enlistment			0.00577
			(0.00630)
R-squared	0.804	0.804	0.804
N. Obs	5855	5855	5855
Municipality FE	✓	✓	✓
Birth Cohort FE	✓	✓	✓
Demographic controls		✓	✓
Military Career controls			✓
P-value France=Algeria	0.020	0.020	0.020
Mean Dependent Variable	0.228	0.228	0.228
Sd Dependent Variable	0.698	0.698	0.698

Notes: This table reports the estimate of an alternative specification with the same OLS estimates are reported. An observation is a municipality of birth by cohort. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in a cohort-municipality pair. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the total number of people by cohort-municipality pair deployed to Algeria during their first military appointment. Column (1) includes municipality of birth and cohort fixed effects. Column (2) adds the average height and age for the cohort by municipality pair at the moment of enlistment, and column (3) includes the average year of enlistment and the share that belongs to the RTM troop. The p-value of the difference between deployment to France and outside France is reported at the bottom of each column. Standard errors clustered at the municipality by cohort level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A4: Robustness to different specifications

	ihs(Total emigrants to France)					
	Full Sample		Deployed in a peace area>0			
	(1)	(2)	(3)	(4)	(5)	(6)
ihs(Total deployed to France)	0.0458***		0.0476**			
	(0.0160)		(0.0197)			
ihs(Total deployed to Algeria)	0.00959		0.0242			
	(0.0158)		(0.0188)			
log(1+Total deployed to France)		0.0457***		0.0473**		
		(0.0164)		(0.0202)		
log(1+Total deployed to Algeria)		0.00868		0.0247		
		(0.0162)		(0.0194)		
Share Total deployed to France					0.0813**	0.0898**
					(0.0375)	(0.0398)
Share Total deployed to Algeria					0.0584*	0.0494
					(0.0348)	(0.0375)
R-squared	0.804	0.815	0.889	0.899	0.889	0.891
N. Obs	5855	5855	1427	1427	1427	1292
Municipality FE	✓	✓	✓	✓	✓	✓
Birth Cohort FE	✓	✓	✓	✓	✓	✓
Enlistment controls	✓	✓	✓	✓	✓	✓
Demographic controls	✓	✓	✓	✓	✓	✓
Military controls	✓	✓	✓	✓	✓	✓
P-value France=Algeria	0.042	0.041	0.305	0.331	0.508	0.280
Mean Dependent Variable	0.228	0.181	0.429	0.343	0.429	0.464
Sd Dependent Variable	0.698	0.568	0.967	0.791	0.967	1.005

Notes: OLS estimates are reported. An observation is a municipality of birth by cohort. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in a cohort-municipality pair. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the total number of people by cohort-municipality pair deployed to Algeria during their first military appointment. Each column includes municipality fixed effects and cohort fixed effects. We control for average height and age at enlistment, the average year of enlistment, and the share that belongs to the RTM troop. In this table, we report the robustness of our main estimates to different specifications., in particular logs and shares. Column (1) reports our main estimates, and Column (2) replicates our main estimates using the logarithm of 1 + the stock of emigrants and deployed soldiers rather than the inverse hyperbolic sine transformation. In Columns (3), (4), and (5), we estimate the causal effect on the sample of municipalities with at least one person deployed to a peace area, as the share of total deployed in a location is defined only if the denominator is different than 0. In Column (6), we restrict the sample to municipality cohorts with more than one soldier. The p-value of the difference between deployment to France and outside France is reported at the bottom of each column. Standard errors clustered at the municipality by cohort level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

B.3 Robustness to Trimming Outliers on 2014 Population size

Table A5: Robustness to trimming small and large municipalities

Dep Var: *ihs*(Total emigrants to France)						
Sample:	$>1^{st}$	$>5^{th}$	$>10^{th}$	$<90^{th}$	$<95^{th}$	$<99^{th}$
	(1)	(2)	(3)	(4)	(5)	(6)
ihs(Total deployed to France)	0.0460***	0.0457***	0.0491***	0.0451***	0.0484***	0.0388**
	(0.0160)	(0.0165)	(0.0167)	(0.0169)	(0.0160)	(0.0161)
ihs(Total deployed to Algeria)	0.00943	0.00874	0.00801	0.0223	0.0243	0.0164
	(0.0158)	(0.0161)	(0.0163)	(0.0163)	(0.0155)	(0.0157)
R-squared	0.804	0.804	0.807	0.457	0.450	0.500
N. Obs	5855	5620	5378	4956	5274	5566
Municipality FE	✓	✓	✓	✓	✓	✓
Birth Cohort FE	✓	✓	✓	✓	✓	✓
Enlistment controls	✓	✓	✓	✓	✓	✓
Age/height controls	✓	✓	✓	✓	✓	✓
Military controls	✓	✓	✓	✓	✓	✓
P-value France=Algeria	0.040	0.044	0.028	0.203	0.165	0.199
Mean Dependent Variable	0.228	0.236	0.245	0.0947	0.0967	0.114
Sd Dependent Variable	0.698	0.711	0.724	0.339	0.340	0.376

Notes: OLS estimates are reported. An observation is a municipality of birth by cohort. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in a cohort-municipality pair. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the total number of people by cohort-municipality pair deployed to Algeria during their first military appointment. Each column includes municipality fixed effects and cohort fixed effects. We control for average height and age at enlistment, the average year of enlistment, and the share that belongs to the RTM troop. In each column, we report robustness to exclude from the sample municipalities at the extremes of the population distribution in 2014. Column (1) excludes from our sample municipalities smaller than the 1?*st* percentile, Column (2) municipalities smaller than the 5?*th* percentile, and Column (3) municipalities smaller than the 10?*th* percentile. We repeat the exercise of trimming large municipalities. Columns (4), (5), and (6) report the robustness of coefficients to trim municipalities larger than the 90?*th*, 95?*th*, and 99?*th* percentile, respectively. The p-value of the difference between deployment to France and outside France is reported at the bottom of each column. Standard errors clustered at the municipality by cohort level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

B.4 Additional Results on the Cohort of Soldiers

To estimate the effects on education and language of deployment to France, we match the individual-level census of 2014 with our municipality by cohort military dataset. Our results will be generated by running the following individual-level regression

$$\begin{aligned} y_{im(i)c(i)} = {} & \pi_1 ihs(\text{Total deployed to France})_{m(i)c(i)} + \pi_2 ihs(\text{Total deployed to Algeria})_{m(i)c(i)} \\ & + \pi_3 ihs(\text{Total deployed to a peace area})_{m(i)c(i)} + \pi_4 ihs(\text{Total deployed a war zone})_{m(i)c(i)} \\ & + \pi_5 ihs(\text{Total never deployed})_{m(i)c(i)} + X'_{m(i)c(i)}\Pi + \pi_{m(i)} + \pi_{c(i)} + u_{m(i)c(i)} \end{aligned} \tag{7}$$

where the notation follows that of Equation 1. We denote with *i* the individual, with *c(i)* the year of birth of the individual *i*, and with *m(i)* the municipality of birth of the individual *i*. As before, we include municipality-fixed effects, years of birth fixed effects, and cohort by municipality-level

controls. The standard errors are clustered at the municipality-by-cohort level.

We report the results in Tables A6 and A7.

Table A6: Effects of Deployment on Education and Language Spoken of the Cohort of Soldiers

	(1) Illiterate	(2) Primary	(3) Secondary	(4) Dialect Only	(5) S/W French	(6) S/W Arab
ihs(Total deployed to France)	-0.00265	-0.00140	-0.000162	-0.00291	-0.00683	0.00232
	(0.0103)	(0.00794)	(0.00591)	(0.0105)	(0.00701)	(0.0101)
ihs(Total deployed to Algeria)	0.000960	-0.0115	-0.00860	0.000782	-0.00831	-0.00115
	(0.0104)	(0.00826)	(0.00601)	(0.0105)	(0.00754)	(0.0103)
R-squared	0.173	0.199	0.116	0.168	0.166	0.170
N. Obs	9172	9172	9172	9172	9172	9172
Municipality FE	✓	✓	✓	✓	✓	✓
Birth Cohort FE	✓	✓	✓	✓	✓	✓
Demographic controls	✓	✓	✓	✓	✓	✓
Military Career controls	✓	✓	✓	✓	✓	✓
Estimation Sample	Individual	Individual	Individual	Individual	Individual	Individual
P-value France=Algeria	0.769	0.283	0.210	0.772	0.859	0.777
Mean Dependent Variable	0.693	0.148	0.0582	0.689	0.118	0.298
Sd Dependent Variable	0.461	0.355	0.234	0.463	0.323	0.457

Notes: OLS estimates are reported. An observation is a male respondent in the 2014 census. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in the cohort-municipality of birth of the respondent. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the stock of people in the cohort and municipality of birth of the respondent deployed to Algeria during their first military appointment. Each column includes municipality fixed effects and cohort fixed effects, and we control for average height and age at enlistment, the average year of enlistment, and the share that belongs to the RTM troop. The dependent variables are: a dummy that takes value one if the individual is illiterate (1), completed primary (2) or secondary (3) school; a dummy that takes value one if the respondent speaks only Moroccan dialect (4) if he can read or write in French (5) or Arab (6). Standard errors clustered at the municipality by cohort level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The dependent variables in Table A6 are dummies that take value one if the individual is: illiterate, has completed primary school, has completed secondary school, speaks only the Moroccan dialect, speaks French, and, finally, speaks Arab. If being deployed in France increased the language skills or human capital of Moroccans, we should hope to see this effect in this analysis. We do not find any significant effect on the estimated variables.

We report in Table A7 the effects on the probability that the person is an internal migrant, the probability that in the household there is someone with a child born abroad, and finally, a wealth index estimated with the reported characteristics of the person's dwelling. In this case, we also do not find any effects of being deployed to France on these variables.

Taken together, we interpret these results as suggestive that deployment to France did not systematically change other variables - other than international and permanent emigration - for the cohort of soldiers.

In doing so, we are aware that this analysis suffers from two caveats. First, our outcomes are measured in 2014, a year in which the average (and median) person in our sample is 80. Hence, if deployment to France has systematically changed the life expectancy of those deployed, our estimates might suffer from survival bias. Also, suppose deployment to France has changed not only the probability of emigration of the cohort of soldiers but also the composition of emigrants. In that case, the sample we were observing in 2014 suffers from selection bias, as the sample comprises those who

have decided to stay behind. For this reason, we interpret these results with the required caution.

Table A7: Effects of Deployment on Other Measures of Emigration and Assets

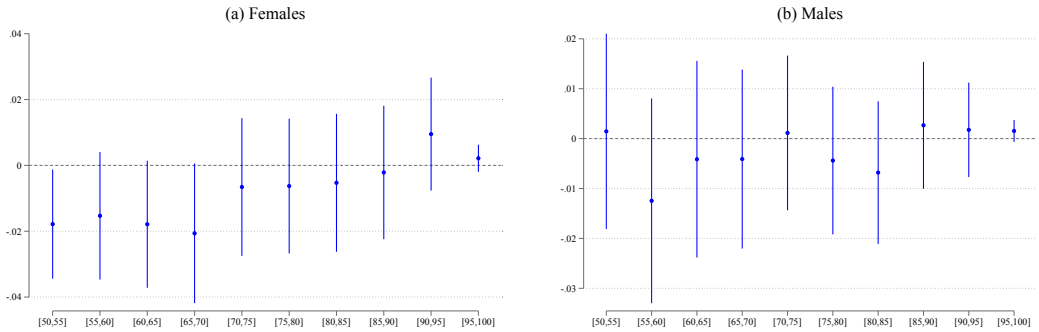
	(1) Internal Emigrant	(2) Has a Child Born Abroad	(3) Wealth Index (dur)
ihs(Total deployed to France)	0.00812	-0.000225	0.00872
	(0.0102)	(0.00214)	(0.0167)
ihs(Total deployed to Algeria)	-0.00462	0.000291	-0.0302
	(0.0109)	(0.00166)	(0.0184)
R-squared	0.287	0.0819	0.538
N. Obs	9172	5483	7346
Municipality FE	✓	✓	✓
Birth Cohort FE	✓	✓	✓
Demographic controls	✓	✓	✓
Military Career controls	✓	✓	✓
Estimation Sample	Individual	Household	Household
P-value France=Algeria	0.284	0.753	0.067
Mean Dependent Variable	0.469	0.00255	-0.0315
Sd Dependent Variable	0.499	0.0505	1.068

Notes: OLS estimates are reported. An observation is a male respondent in the 2014 census. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in the cohort-municipality of birth of the respondent. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the stock of people in the cohort and municipality of birth of the respondent deployed to Algeria during their first military appointment. Each column includes municipality fixed effects and cohort fixed effects. We control for average height and age at enlistment, the average year of enlistment, and the share that belongs to the RTM troop. The dependent variables are a dummy that takes value one if the individual resides in a municipality different than the one in which he was born (1), a dummy that takes value one if there is a child born abroad in the household of the individual (2), a standardized wealth index. Standard errors clustered at the municipality by cohort level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

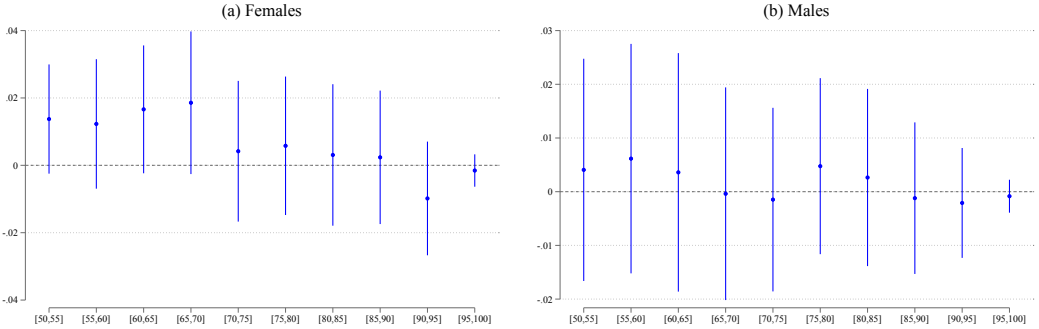
B.5 Long-Run Effects on Education and Language: Heterogeneity by Gender and Cohort

Figure A4: Heterogeneous treatment effects by Gender and Year of birth

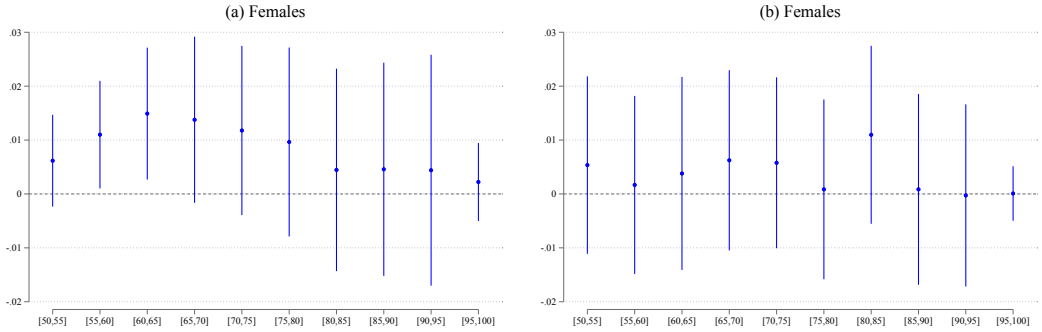
Panel A: Dep Var=1 if Respondent is Illiterate



Panel B: Dep Var=1 if Respondent Completed Primary School



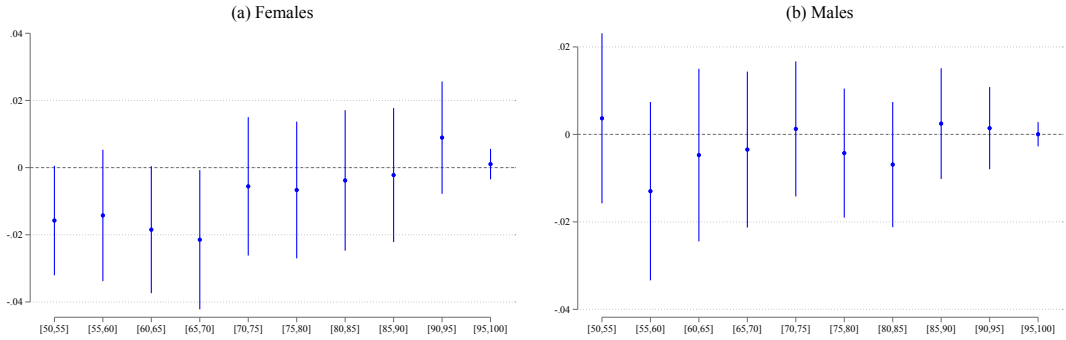
Panel C: Dep Var=1 if Respondent Completed Secondary School



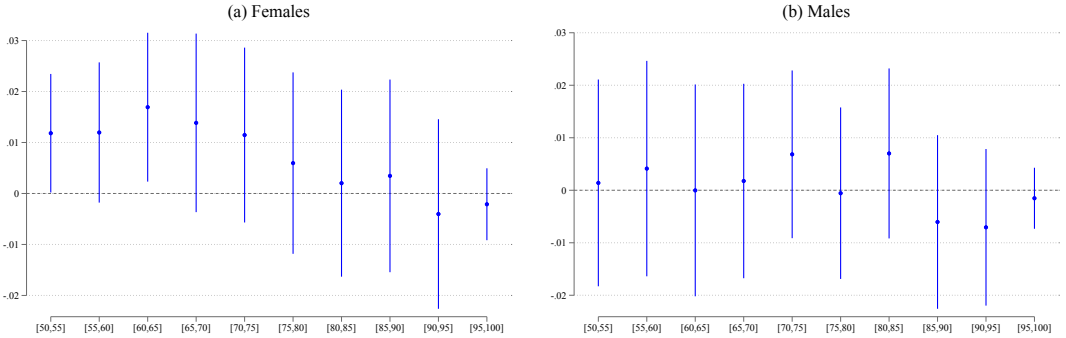
Notes: An observation is an individual born after 1941 and currently residing in Morocco. We are plotting the coefficients, and their 95% confidence interval, estimated with equation 3 for five years of birth groups, separately by gender. All the variables were measured in 2014. The two independent variables of interest are the ihs of total people deployed to France at the municipality level and the ihs of total people deployed to Algeria at the municipality level. We control the ihs of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects.

Figure A5: Heterogeneous treatment effects by Gender and Year of birth

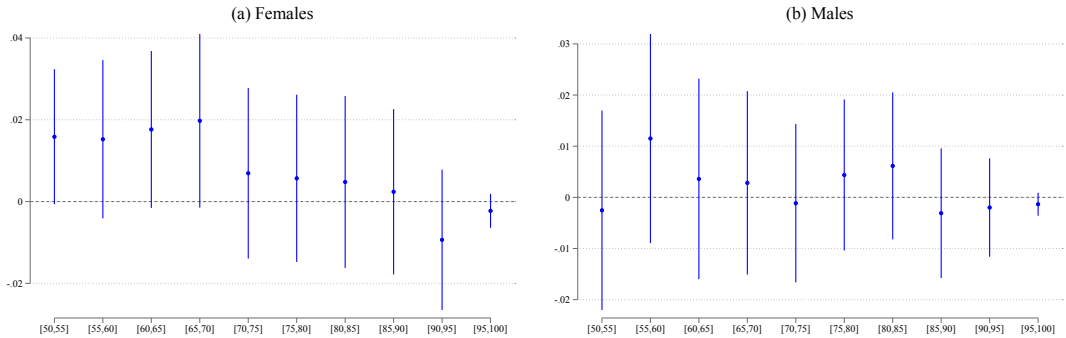
Panel A: Dep Var=1 if Respondent Speaks Only Dialect



Panel B: Dep Var=1 if Respondent Speaks French



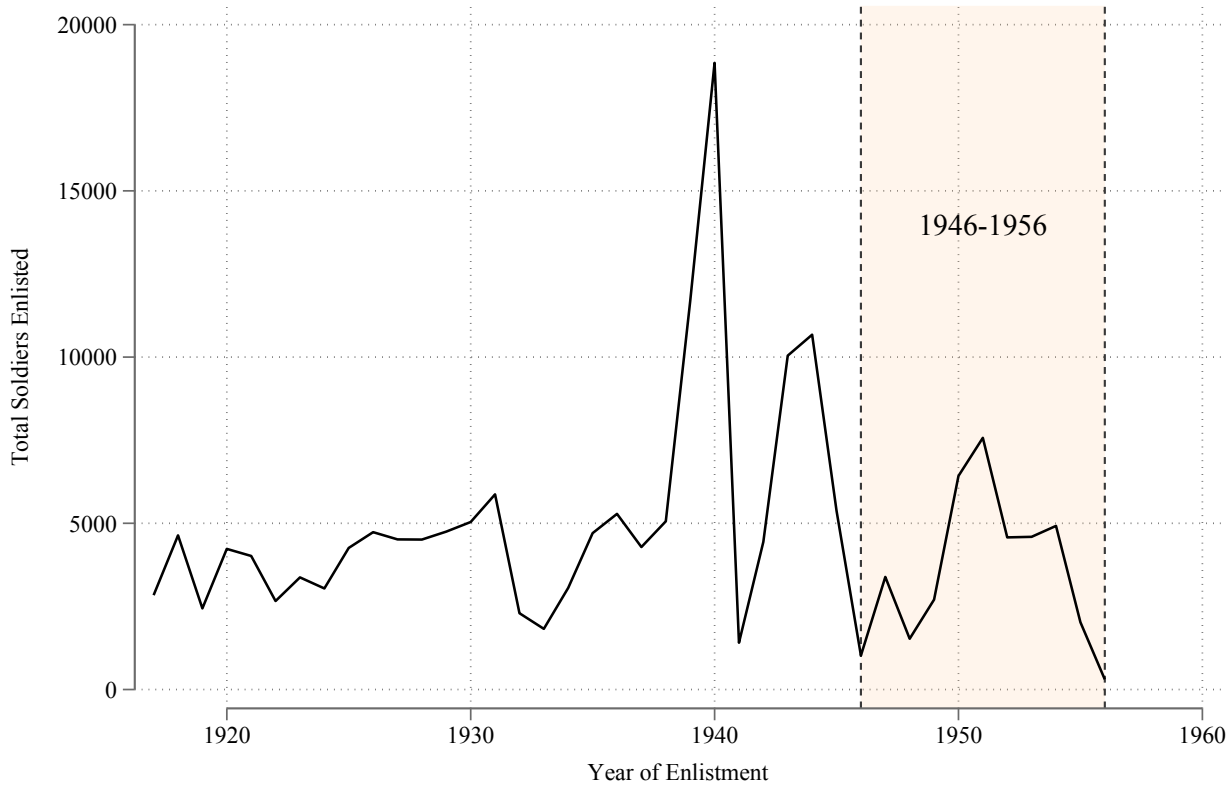
Panel C: Dep Var=1 if Respondent Speaks Arab



Notes: An observation is an individual born after 1941 and currently residing in Morocco. We plot the coefficients and their 95% confidence interval estimated with equation 3 for five years of birth groups, separately by gender. All the variables were measured in 2014. The two independent variables of interest are the ihs of total people deployed to France at the municipality level and the ihs of total people deployed to Algeria at the municipality level. We control the ihs of total people deployed to a peace area, war area, and never deployed. Furthermore, we control for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects.

C Supplementary Figures and Tables

Figure A6: Number of Moroccan Soldiers by Year of Enlistment



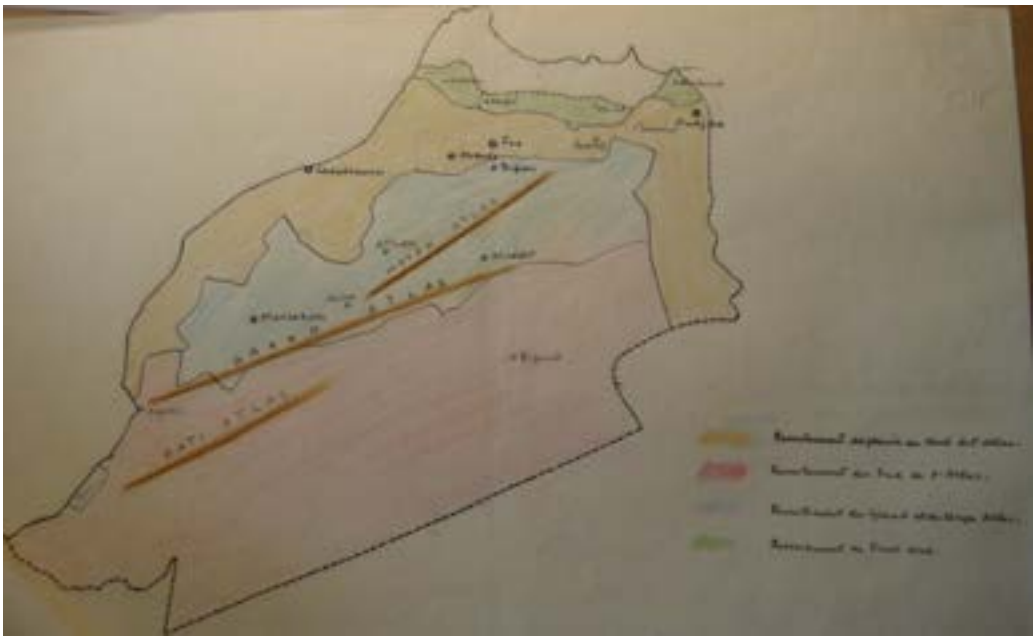
Notes: This line graph shows the total number of Moroccan soldiers enlisted in the French Colonial Army between 1917 and 1956. The shaded area represents our period of interest: from 1946 to 1956. The data used to produce this graph are our estimates, given the total number of files we collected, adopting a 50% sampling rate at the CAPM Archives.

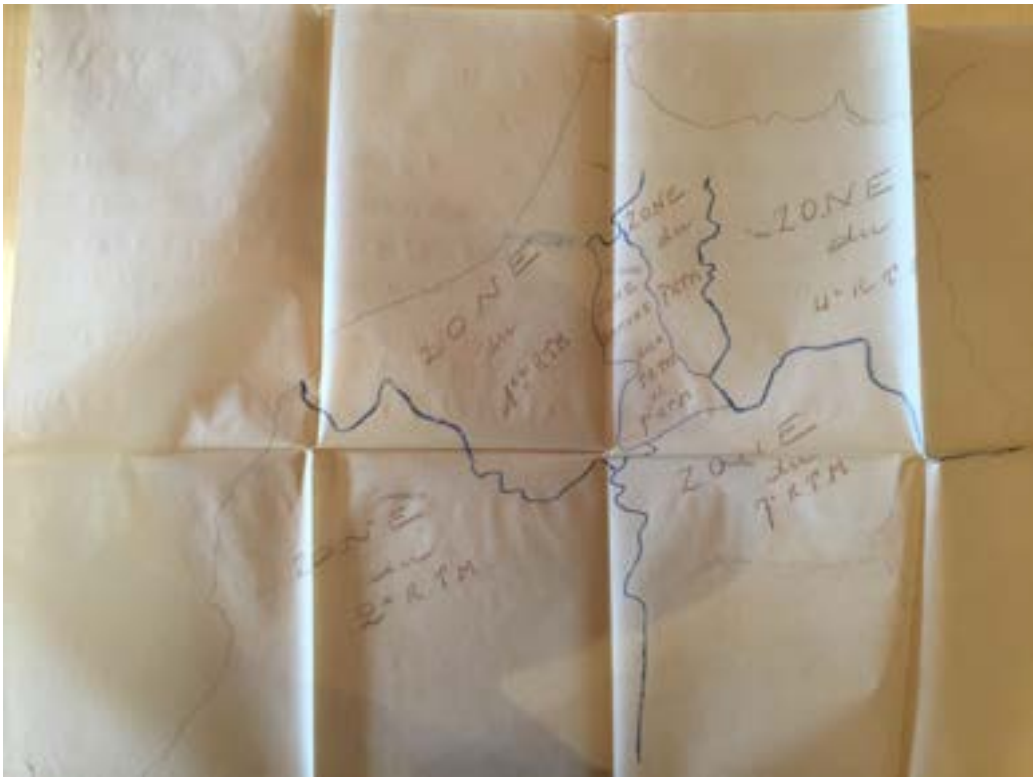
Figure A7: Number of Moroccan Soldiers by Year of Enlistment (1946-1956)



Notes: This line graph is a zoomed image of Figure A6, to the years 1946 to 1956. The data used to produce this graph are our estimates, given the total number of files we collected, adopting a 50% sampling rate at the CAPM Archives.

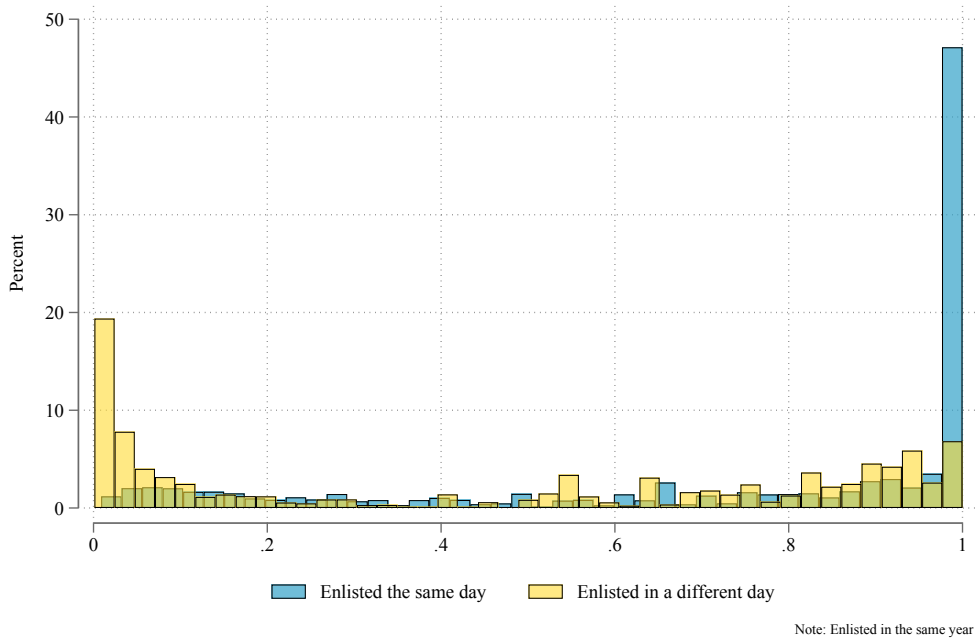
Figure A8: Catchment area for regiment assign





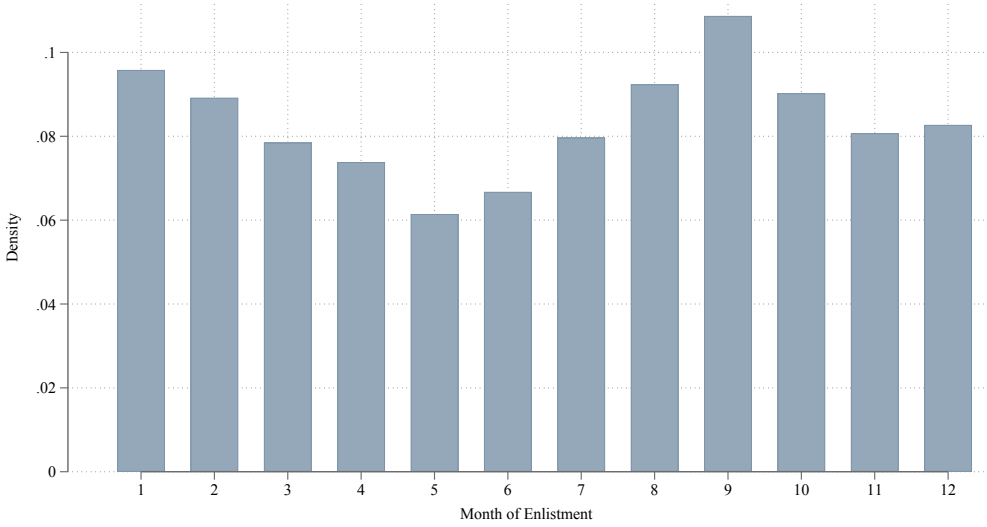
Notes: The two photographs report the catchment areas designed by French officials during the 1940s for regiment recruiting committees.

Figure A9: Distribution of the share of co-resident soldiers enlisted in the same regiment



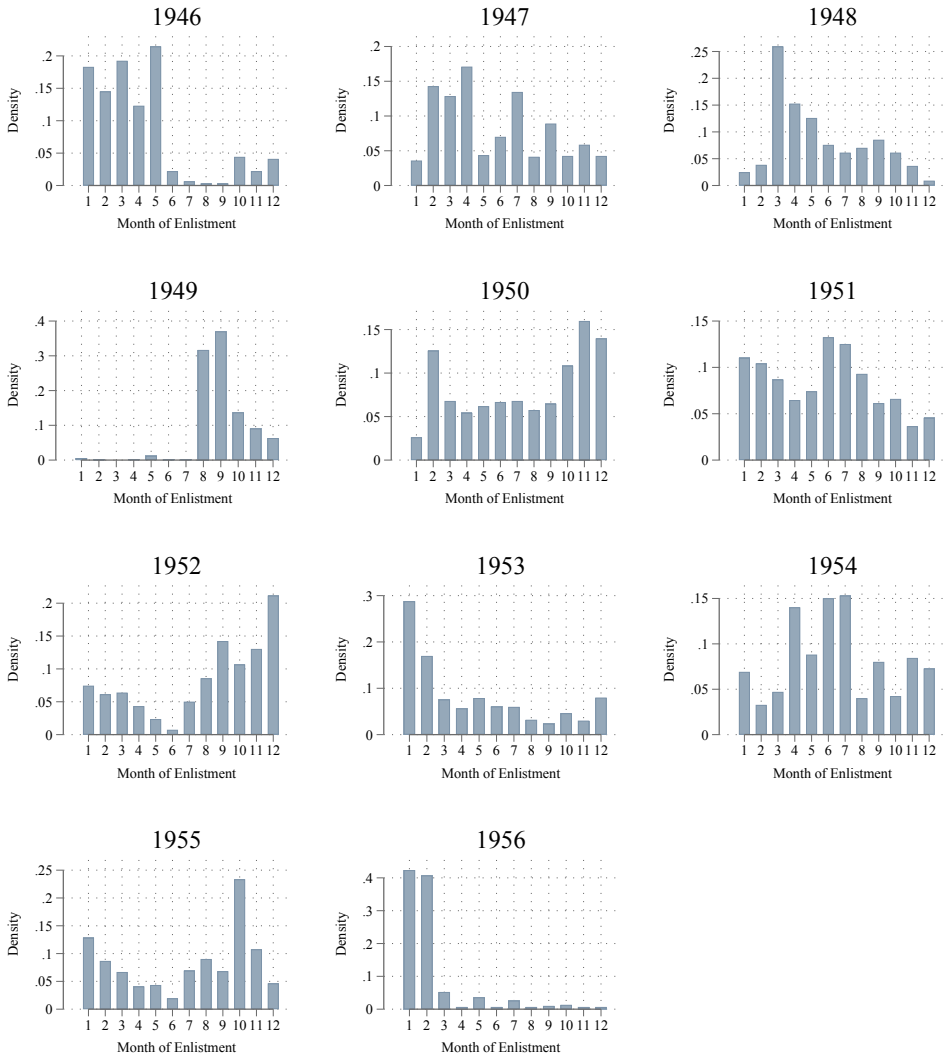
Notes: This figure reports the histogram of the share of soldiers who were born in the same municipality and assigned to the same regiment when enlisted on the same day (in blue) or on a different day of the same year (in yellow). The probability of being assigned to the same regiment for people born in the same municipality decreases substantially if they enlist on a different day.

Figure A10: Distribution of Soldiers' Month of Enlistment



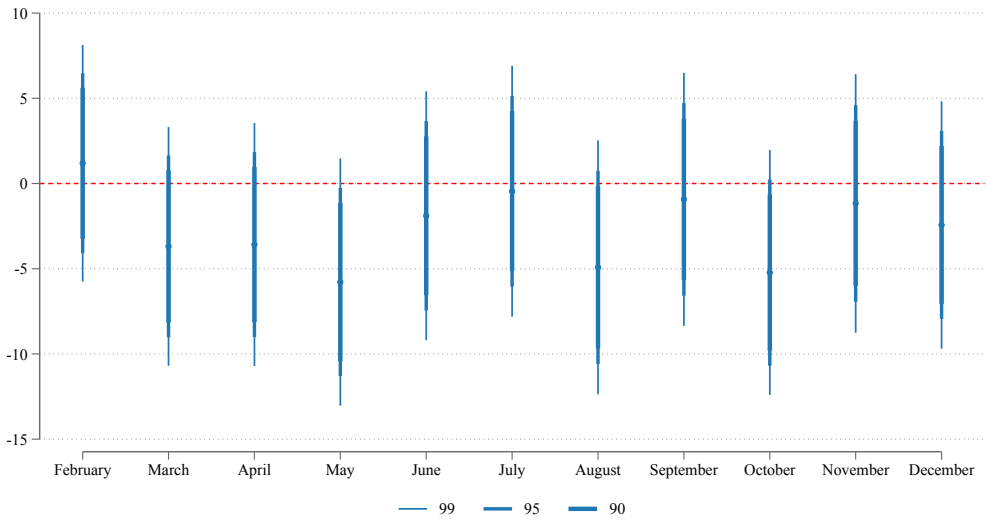
Notes: This figure reports the distribution of the month of enlistment of soldiers. At a national level, across years, there does not seem to be a clear seasonality of enlistment across years.

Figure A11: Distribution of Soldiers' Month of Enlistment, by Year of Enlistment



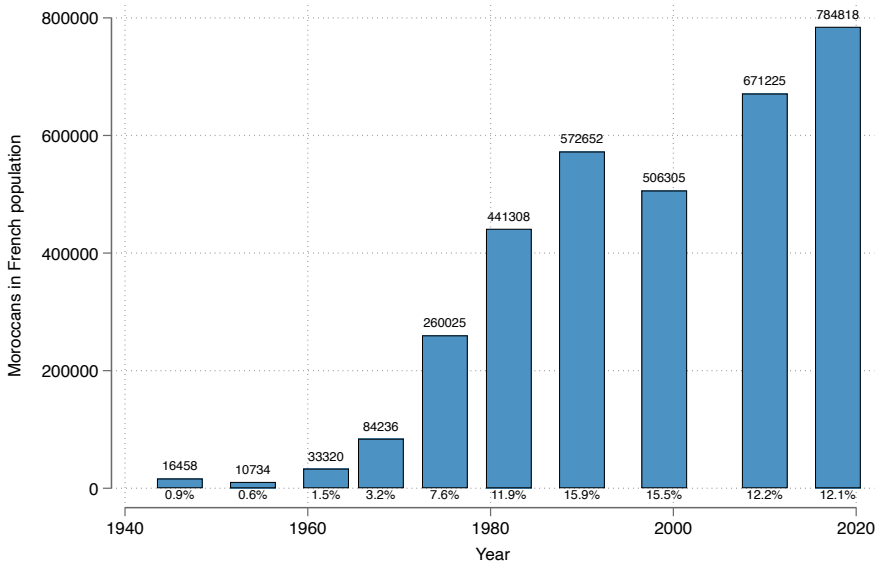
Notes: This figure reports the distribution of the month of enlistment of soldiers. At a national level, by year of enlistment.

Figure A12: Month of Enlistment Fixed Effects



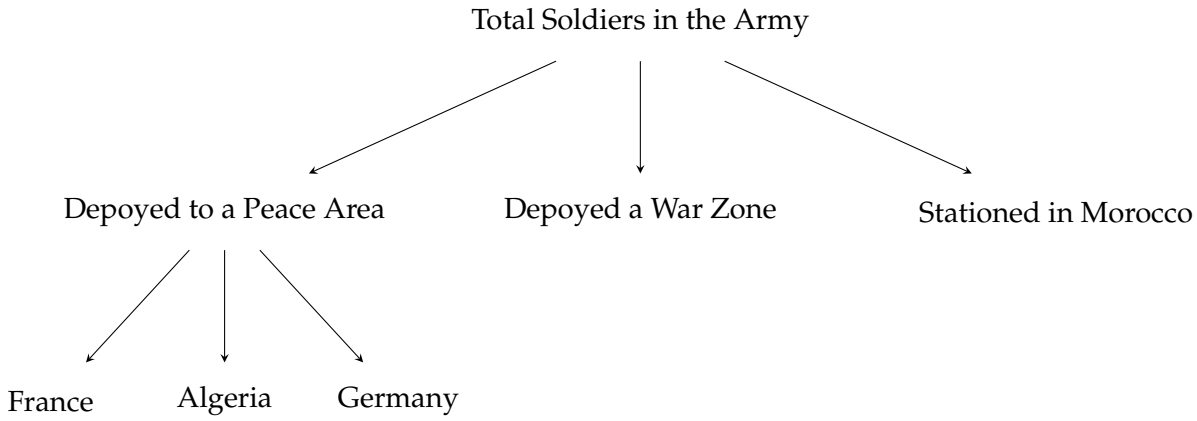
Notes: This figure reports the fixed effects estimated with the specification Tot Enlisted$_{d,m,y}$ = $\mu + \mu_m + \mu_y + \varepsilon_{d,m,y}$ where d denotes the day of enlistment, m the month of enlistment, and y the year of enlistment in the army. Tot Enlisted$_{d,m,y}$ is the total number of people who enlisted in the army in day d, month m, and year y while μ_m and μ_y are month and year fixed effects, respectively. The excluded category is the month of "January". We report the estimated coefficients for the fixed effects corresponding to the months of February-December and the confidence intervals at the 90%, 95%, and 99% levels.

Figure A13: Evolution of Moroccan nationality in the foreign population in France from 1946 to 2018



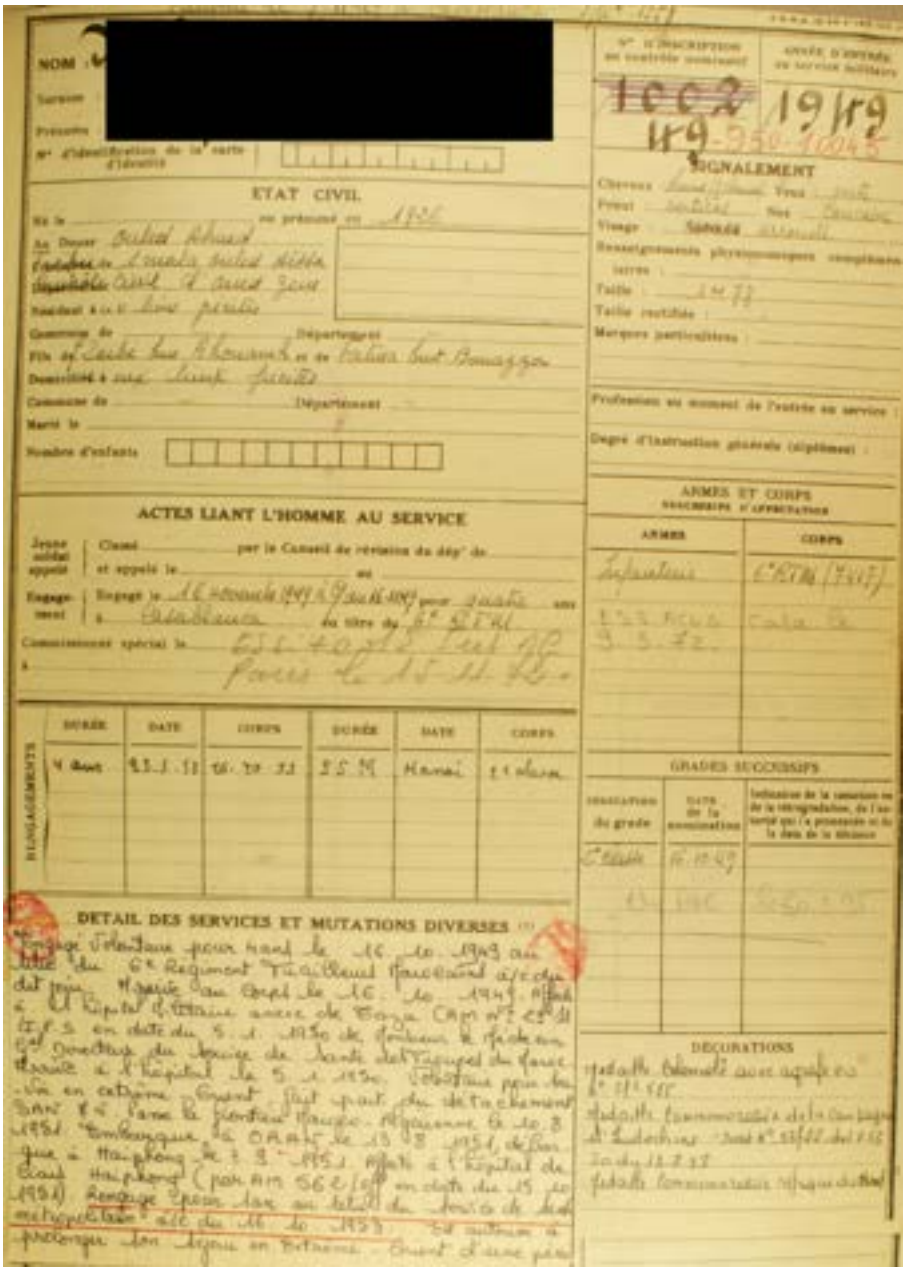
Notes: Count (top of the bar) and share (bottom of the bar) the Moroccan nationality among the foreign population in France (1946, 1954, 1962, 1968, 1975, 1982, 1990, 1999, 2010, 2018). A foreigner resides in France who does not hold French nationality. Source: INSEE.

Figure A14: Partition of the Army



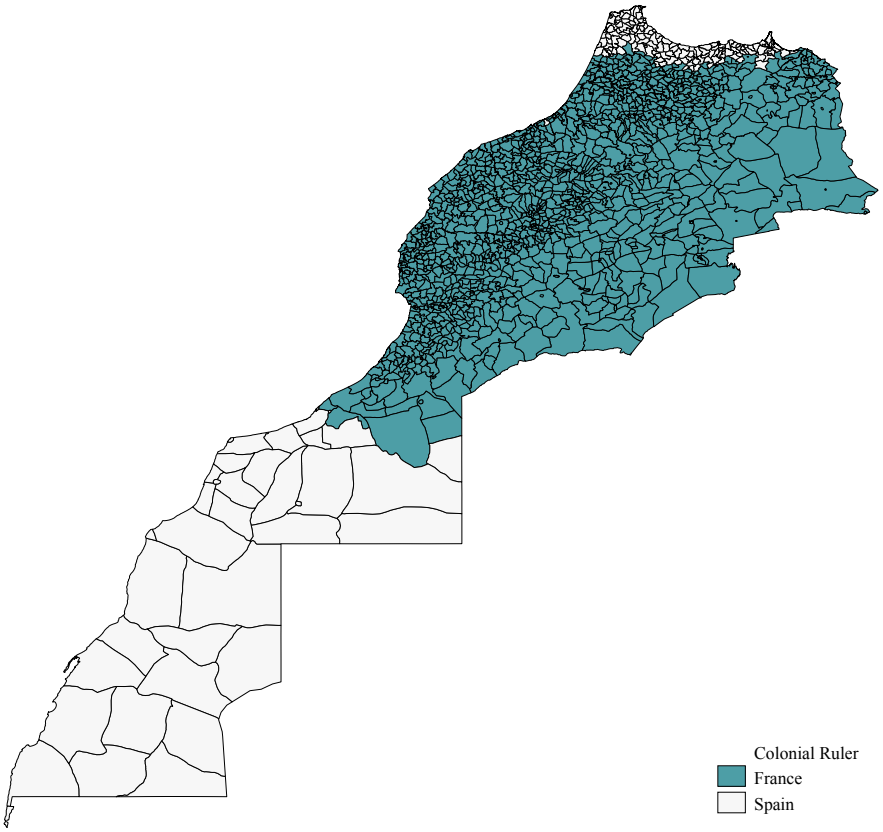
Notes: The figure reports a sketch of the partition of international deployment in the French army between 1946 and 1956 in the protectorate of Morocco.

Figure A15: Individual Soldier Record Example



Notes: This photograph represents an example of the archival files we digitized to obtain the main variables in our analysis. The first quadrant (blacked out) contains the identifiers of the soldiers, and the second quadrant on the bottom lists the year of birth and municipality of birth, which is crucial to our analysis. All the information below this quadrant concern the military history of each soldier: where they enlisted, in which regiment, and lastly, all of their movements while in the army. On the top right corner of the document, we find the year of enlistment and information on the distinctive traits of the soldier, including his height, which we use as a control.

Figure A16: Modern Boundaries of the French Protectorate of Morocco



Notes: This map depicts the boundaries of the French protectorate of Morocco in 1956. The administrative boundaries of municipalities reflect those of 2014. In blue, we plot modern municipalities that historically belonged to the French protectorate, in white municipalities historically under Spanish domination.

Figure A17: Geographic Distribution of Night Light Intensity in Morocco

(a) Radiance Calibrated DMSP-OLS (1996)



(b) Radiance Calibrated DMSP-OLS (2004)



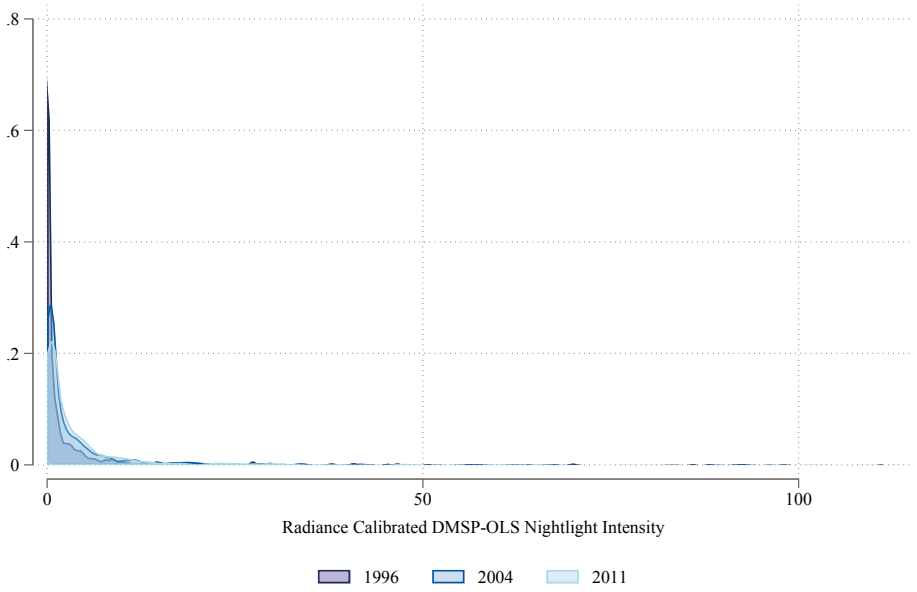
(c) Radiance Calibrated DMSP-OLS (2011)



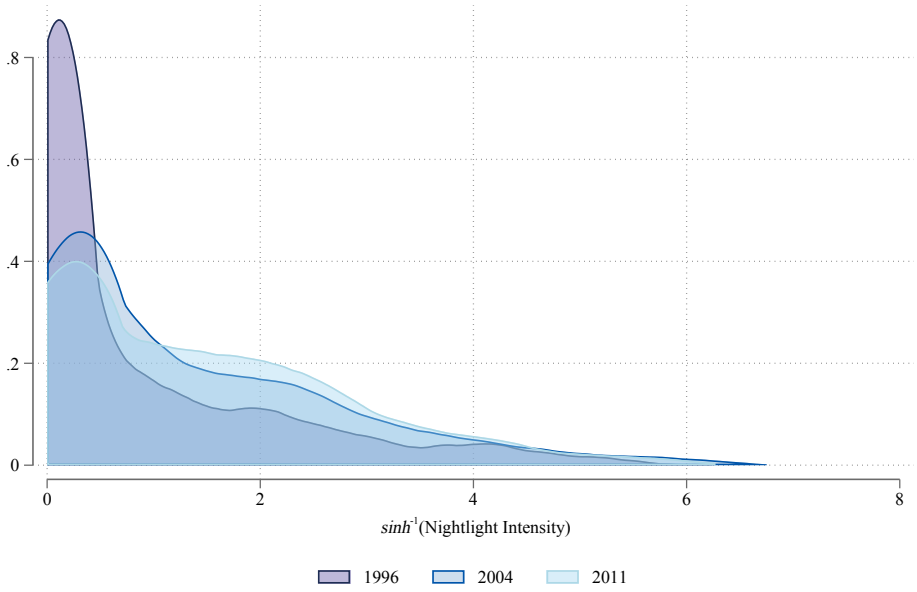
Notes: The three figures report the geographic distribution of nightlight intensity across Moroccan municipalities in 1996, 2004, and 2011 as measured by the radiance-calibrated DMSP-OLS (U.S. Air Force Defense Meteorological Satellite Program).

Figure A18: Distribution of Radiance Calibrated DMSP-OLS Night Light Intensity

(a) K-density of Nightlight Intensity (trimming top 1%)



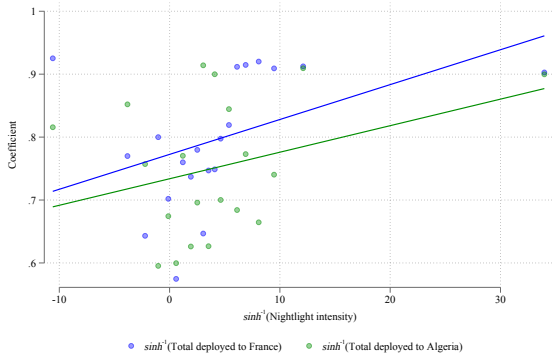
(b) K-density of Inverse Hyperbolic Sine of Nightlight Intensity



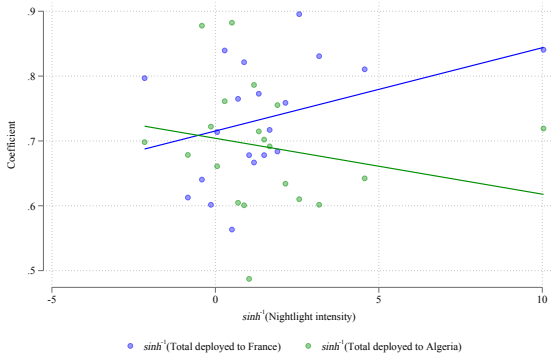
Notes: Figure A18a reports the k-density of radiance-calibrated DMSP-OLS nightlight in Morocco for the years 1996, 2004, and 2011. The distribution is trimmed above the 99th percentile (as measured in 2011). Figure A18b plots the distribution of the inverse hyperbolic sine transformation of nightlight intensity for the same three years. Source: U.S. Air Force Defense Meteorological Satellite Program.

Figure A19: Binscatter of Radiance-Calibrated Nightlights and Deployment

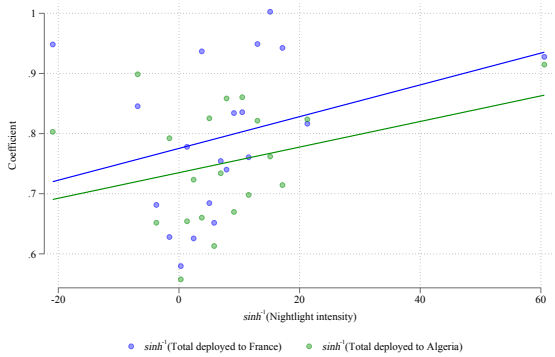
(a) 1996: raw nightlights



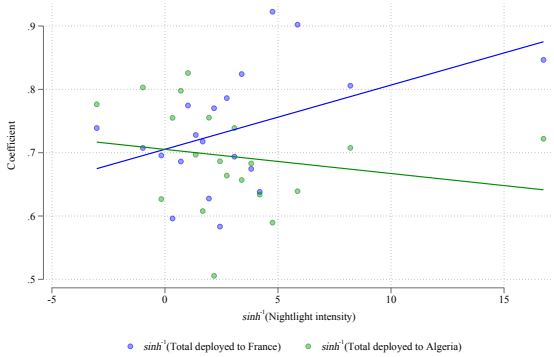
(b) 1996: raw nightlights, trimming top 5%



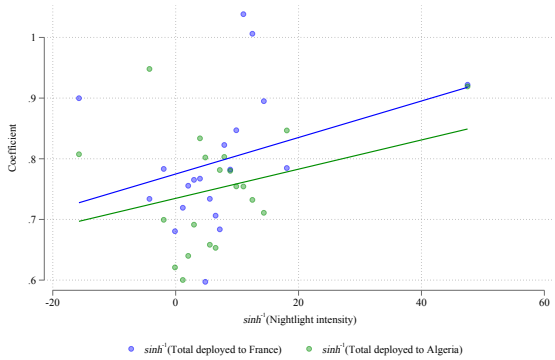
(c) 2004: raw nightlights



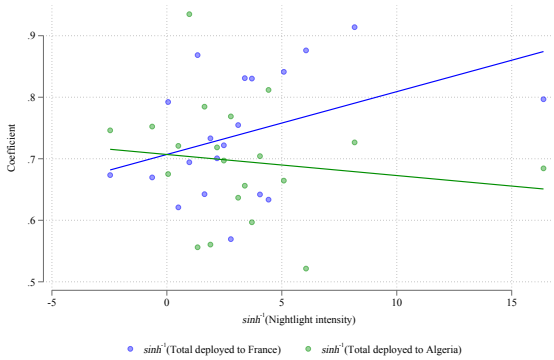
(d) 2004: raw nightlights, trimming top 5%



(e) 2011: raw nightlights



(f) 2011: raw nightlights, trimming top 5%



Notes: In this figure we report the binscatter between the DMSP-OLS measure of nightlights in Morocco and deployment to France and Algeria and the corresponding linear fit. To estimate the residualized values of both nightlights and deployment, we follow Equation 2. The three left panels report the binscatters using the raw data of nightlights for 1996, 2004 and 2011 respectively. The three right panels report instead the binscatters when we trim the top 5% of the distribution of nightlights, for the same years. The figure shows that the positive coefficient of deployment to Algeria on economic activity is driven by the top 5% only. The coefficient is 0 for the rest of the distribution. However, neither the coefficient of deployment to France nor deployment to Algeria are significant at the 10% level, when considering the trimmed data.

Table A8: Summary Statistics

	(1) N. Obs	(2) Mean	(3) St Dev	(4) Min	(5) Max
Panel A: Independent Variables					
Total deployed abroad	806	21.393	54.984	0	783
Total deployed to France	806	2.454	7.098	0	77
Total deployed to Indochina	806	16.690	43.722	0	680
Total deployed to another African country	806	2.246	5.707	0	67
Total deployed to Germany	806	2.706	7.812	0	100
Total enlisted Before 1946	806	131.800	562.242	0	11609
Total enlisted After 1945	806	38.416	91.680	1	1114
Panel B: Dependent Variables - Emigration					
Total emigrants	806	37.598	259.573	0	6144
Total male emigrants	806	31.127	212.393	0	4985
Total female emigrants	806	6.471	47.539	0	1159
Total emigrants born before 1940	806	7.799	66.978	0	1569
Panel C: Dependent Variables - Males Census					
Share illiterate	806	208.960	241.753	1	3688
Share without education	806	344.047	712.893	4	15959
Share completed primary school	806	833.664	3,967.737	0	99240
Share completed secondary school	806	452.246	2,588.765	0	65797
Share completed college	806	87.462	569.317	0	14340
Share speaking only dialect	806	448.464	1,260.812	4	29412
Share speaking Arab	806	784.234	3,598.391	0	90059
Share speaking French	806	540.699	2,911.816	0	73659

Notes: This table reports the summary statistics of the main variables of interest. An observation is a municipality. For each variable, we report the number of municipalities for which it's not missing in column 1, the mean and the standard deviation in columns 2 and 3, and finally, the minimum and the maximum value observed in columns 4 and 5. *Panel A* reports the summary statistics for the main variables on deployment and enlistment, and *Panel C* reports the summary statistics for the census variables used in the main analysis.

C.1 Additional Covariates Balance

Table A9: Balance Table - Economic Covariates

Country of deployment:	*France*		
	Coeff [P-value]	Mean (St Dev)	Observations
Soldiers' height before 1946	0.037 [0.413]	-0.005 (0.885)	771
Mean rainfall (1900-1945)	0.004 [0.877]	-0.025 (1.017)	810
Variability of rainfall (1900-1945)	0.005 [0.789]	-0.029 (1.016)	810
Mean temperature (1900-1945)	0.060 [0.221]	-0.058 (1.065)	810
Variability of tempreature (1900-1945)	-0.012 [0.518]	0.065 (1.005)	810
Plough potential	-0.124 [0.008]	0.005 (1.028)	717
Wheat suitability	-0.021 [0.456]	-0.076 (1.011)	810
Olive suitability	0.003 [0.932]	-0.070 (1.000)	810
Tomato suitability	-0.008 [0.769]	-0.072 (0.991)	810
Barley suitability	-0.035 [0.232]	-0.070 (1.019)	810
Chickpea suitability	0.009 [0.710]	-0.056 (0.985)	810
Wetland rice suitability	-0.026 [0.481]	-0.014 (0.946)	810
Maize suitability	0.046 [0.118]	-0.057 (0.992)	810

Notes: An observation is a municipality. Coefficient and p-value estimates of regressing municipality characteristics over the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, the total number of people deployed to war and never deployed. We also include province-level fixed effects. Standard errors clustered at the municipality level. Column 1 reports estimates for deployment to France, and column 2 the mean and standard deviation for the associated variable. All municipality characteristics are measured before 1946.

Table A10: Balance Table - Geographic Covariates

Country of deployment:	*France*		
	Coeff [P-value]	Mean (St Dev)	Observations
Proximity to enlistment stations (1945)	0.004 [0.947]	0.073 (1.045)	810
Distance from Algeria	0.010 [0.472]	-0.085 (0.991)	810
Distance from historical harbors	-0.001 [0.974]	0.099 (1.024)	810
Distance from islam trade routes	0.039 [0.239]	-0.019 (0.967)	810
Distance from Roman routes	0.005 [0.619]	0.035 (0.979)	810
Distance from lakes and reservoirs	0.007 [0.597]	-0.003 (0.997)	810
Distance from military ports	-0.011 [0.424]	0.064 (0.971)	810
Distance from rivers	0.034 [0.352]	-0.065 (0.966)	810
Distance from roads (1945)	-0.019 [0.526]	0.014 (0.971)	810
Distance from pre-colonial trails (1912)	-0.054 [0.194]	0.019 (0.969)	810
Distance from railways (1939)	-0.012 [0.419]	0.052 (0.988)	810
Distance from ice-free ocean	-0.004 [0.797]	0.089 (1.036)	810
Slope	-0.018 [0.678]	0.079 (1.014)	809
Elevation	-0.042 [0.248]	0.087 (1.038)	809
Latitude	-0.007 [0.620]	32.354 (1.600)	810
Longitude	-0.016 [0.338]	-6.698 (1.979)	810
Latitude x Longitude	-0.008 [0.340]	0.003 (0.944)	810

Notes: An observation is a municipality. Coefficient and p-value estimates of regressing municipality characteristics over the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people deployed to a peace area, the total number of people deployed to war and never deployed. We also include province-level fixed effects. Standard errors clustered at the municipality level. Column 1 reports estimates for deployment to France, and column 2 the mean and standard deviation for the associated variable. All municipality characteristics are measured before 1946.

C.2 Effects of Deployment on Emigration on the Soldiers' Cohorts: Gender Heterogeneity

Table A11: Gender Heterogeneity of Deployment to France on Emigration of the cohort

Dep Var: *ihs*(Total emigrants to France)			
	All	Men	Women
	(1)	(2)	(3)
ihs(Total deployed to France)	0.0460***	0.0396***	0.00256
	(0.0160)	(0.0153)	(0.0103)
ihs(Total deployed to Algeria)	0.00943	0.0132	-0.00480
	(0.0158)	(0.0154)	(0.0108)
R-squared	0.804	0.803	0.630
N. Obs	5855	5855	5855
Municipality FE	✓	✓	✓
Birth Cohort FE	✓	✓	✓
Demographic controls	✓	✓	✓
Military Career controls	✓	✓	✓
P-value France=Algeria	0.040	0.126	0.506
Mean Dependent Variable	0.228	0.209	0.0559
Sd Dependent Variable	0.698	0.670	0.283

Notes: OLS estimates are reported. An observation is a municipality of birth by cohort. The dependent variable is the inverse hyperbolic sine transformation of the total number of individuals who died in France between 1990 and 2020 in a cohort-municipality pair. The variable *ihs(Total deployed to France* represents the inverse hyperbolic sine transformation of the total number of people by cohort-municipality pair deployed to Algeria during their first military appointment. Each column includes municipality fixed effects and cohort fixed effects. We control for average height and age at enlistment, the average year of enlistment, and the share that belongs to the RTM troop. Column (1) reports the coefficient for the sample of all Moroccans who died in France, Column (2) the coefficient only for men who died in France, and Column (3) for women who died in France. The p-value of the difference between deployment to France and outside France is reported at the bottom of each column. Standard errors clustered at the municipality by cohort level are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A12: Municipality level Effects on Economic Development

Dep Var: $\sinh^{-1}$ of Night Light Intensity			
	1996	2004	2011
	(1)	(2)	(3)
$\sinh^{-1}$(Total deployed to France)	0.145**	0.143**	0.110**
	(0.0588)	(0.0587)	(0.0545)
$\sinh^{-1}$(Total deployed to Algeria)	0.0305	0.00343	0.0180
	(0.0563)	(0.0591)	(0.0534)
R-squared	0.533	0.597	0.644
N. Obs	813	813	813
Province FE	✓	✓	✓
Geographic Controls	✓	✓	✓
Historical Controls	✓	✓	✓
P-value $\gamma_1 = \gamma_2$	0.087	0.047	0.166
Mean Dependent Variable	0.845	1.298	1.399
Sd Dependent Variable	1.225	1.373	1.345

Notes: An observation is a municipality. The dependent variables are the inverse hyperbolic sine transformation of nightlight intensity in 1994, 2004, and 2013, as measured by the U.S. Air Force Defense Meteorological Satellite Program (DMSP). The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people enlisted and for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A13: Effects on Economic Activity with Different Measures of Nightlight Intensity

Dep Var: $\sinh^{-1}$ of Night Light Intensity							
Source:	DMSP-OLS Pareto Corrected			DMSP-OLS Radiance Calibrated			VIIRS -DNB
	1994	2004	2013	1996	2004	2011	2014
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\sinh^{-1}$(Total deployed to France)	0.131**	0.135**	0.110*	0.145**	0.143**	0.110**	0.105*
	(0.0608)	(0.0538)	(0.0596)	(0.0588)	(0.0587)	(0.0545)	(0.0572)
$\sinh^{-1}$(Total deployed to Algeria)	0.0402	0.00344	-0.0121	0.0305	0.00343	0.0180	0.0441
	(0.0569)	(0.0542)	(0.0596)	(0.0563)	(0.0591)	(0.0534)	(0.0518)
R-squared	0.498	0.602	0.620	0.533	0.597	0.644	0.445
N. Obs	813	813	813	813	813	813	813
Province FE	✓	✓	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓	✓	✓
P-value $\gamma_1 = \gamma_2$	0.188	0.044	0.102	0.087	0.047	0.166	0.346
Mean Dependent Variable	0.718	1.186	1.502	0.845	1.298	1.399	0.503
Sd Dependent Variable	1.208	1.261	1.431	1.225	1.373	1.345	1.009

Notes: An observation is a municipality. Column (1-3) reports the effect of deployment on nightlight intensity as measured by the DMSP-OLS pareto corrected measure Bluhm and Krause (2022), for the years 1994, 2004 and 2013; column (4-6) reports the effects on nightlight intensity as measured by the radiance calibrated DMSP-OLS measure of nightlight intensity for thr years 1996, 2004 and 2011; finally column (7) reports the coefficients of interests for nightlight intensity as measured by the Visible and Infrared Imaging Suite (VIIRS) Day Night Band (DNB) for 2014, earliest year available. In all the three cases we are reporting the inverse hyperbolic sine transformed measure. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people enlisted and for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A14: Effects on Economic Activity Robustness to Different Definitions of Nightlight Intensity

	$\sinh^{-1}$ of Night Light Intensity			log of 1+ Night Light Intensity			Night Light Intensity		
	1996	2004	2011	1996	2004	2011	1996	2004	2011
	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	
$\sinh^{-1}$(Total deployed to France)	0.145**	0.143**	0.110**	0.121**	0.122**	0.0948**	1.580**	2.804**	1.966**
	(0.0588)	(0.0587)	(0.0545)	(0.0489)	(0.0500)	(0.0461)	(0.753)	(1.193)	(0.866)
$\sinh^{-1}$(Total deployed to Algeria)	0.0305	0.00343	0.0180	0.0330	0.0148	0.0226	1.502**	2.547**	1.776**
	(0.0563)	(0.0591)	(0.0534)	(0.0465)	(0.0498)	(0.0448)	(0.724)	(1.070)	(0.804)
R-squared	0.533	0.597	0.644	0.530	0.589	0.636	0.460	0.428	0.470
N. Obs	813	813	813	813	813	813	580	813	813
Province FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
P-value $\gamma_1 = \gamma_2$	0.087	0.047	0.166	0.106	0.065	0.190	0.922	0.797	0.807
Mean Dependent Variable	0.845	1.298	1.399	0.684	1.048	1.122	5.297	7.115	6.581
Sd Dependent Variable	1.225	1.373	1.345	1.007	1.144	1.114	14.01	23.00	18.78

Notes: An observation is a municipality. Column (1-3) report the effect of deployment on the inverse hyperbolic sine transformation of nightlight intensity. Columns (4-6) report the effect of deployment on the logarithm of one plus nightlight intensity. Finally, columns (6-9) report the estimated effect on the raw measure of nightlight intensity. For all of the nine columns we are using the Radiance Calibrated DMSP-OLS measure of nightlights. The two independent variables of interest are the inverse hyperbolic sine of total people deployed to France at the municipality level and the inverse hyperbolic sine of total people deployed to Algeria at the municipality level. We control for the inverse hyperbolic sine of total people enlisted and for historical and geographic controls. Historical controls include municipality period-sample average: minimum distance to railroad, road, unpaved road, a military port, military garrison (all in 1945), river, coast, Algeria, average standardized deviation in precipitation and temperature between 1900 and 1945, slope, elevation, latitude, longitude, latitude $\times$ longitude, average wheat, olive, tomato, and barley suitability scores. Regressions include a set of province fixed effects. Standard errors clustered at the municipality level are in parentheses. The results are robust to different definitions of nightlight intensity, with the exception of the coefficients estimated with the raw measure of nightlights. This is consistent with the right-skewedness of the nightlight distribution with outliers driving the result, as discussed in the main text. *** p<0.01, ** p<0.05, * p<0.1