

# Does Emigration Inhibit Reform? Evidence from the Mexican Agrarian Movement, 1910-1945\*

Emily A. Sellars  
University of Wisconsin–Madison

October 22, 2013

## Abstract

I examine the effect of emigration on land reform in Mexico before and after the Great Depression, an exogenous economic shock that halted emigration to the US and precipitated the repatriation of over 300,000 Mexicans between 1930 and 1935. Subnational data on emigration and agrarian reform show that reform lagged in areas of high emigration during the 1920s and that this trend dramatically reversed in the decade following the Depression. A global game of migration and collective action suggests several mechanisms for this reversal. During the 1920s, the availability of exit options in some areas decreased the relative benefits of peasant organization and defused political pressure for reform. After the Depression closed off the possibility of emigration, villagers had more to gain from reform and more confidence that the reform could be successful because of the likely cooperation of their neighbors. Qualitative historical evidence provides support for the theory, illustrating that US migration acted as a substitute for land redistribution in the pre-Depression period and that returned migrants formed an important constituency for the agrarian movement after the Depression.

---

\*Draft for IPES 2013. Comments and suggestions are welcome. Please do not cite or distribute without permission. I would like to thank Jennifer Alix-Garcia, Scott Gehlbach, Rachel Jacobs, Melanie Manion, Laura Schechter, David Singer, and participants of the Workshop on the Mexican Agrarian Reform, the Wisconsin Comparative Politics Colloquium, the Wisconsin Development Economics Workshop, and the UW Development and Environmental Economics Working Group for comments.

# 1 Introduction

Labor migration is a crucial economic and social force in developing countries, and a large body of work in the social sciences has examined the effects of labor migration on a variety of household economic outcomes. Far fewer studies have addressed the political and institutional impacts of migration on sending societies. Recent work has started to address this shortcoming in the literature. Scholars have linked emigration with democratization (Spilimbergo 2009; Pérez-Armendáriz and Crow 2010; Pfutze 2012), macroeconomic flexibility (Chami et al. 2008; Singer 2010), and foreign investment (Leblang 2010), but also with corruption (Ahmed 2012*a,b*), political apathy (Goodman and Hiskey 2008), and institutional stagnation (Chaudhry 1989).

Beginning with Hirschman’s *Exit, Voice, and Loyalty* (1970), many have asserted that emigration defuses political agitation by allowing disaffected citizens to “vote with their feet” in place of mobilizing for change. A few recent studies have suggested that in Mexico—where 10% of the population lives abroad and remittances average more than \$200 million annually (World Bank 2011)—emigration has reduced political pressure on the government to address economic and social inequality and instability (Fox 2007; Goodman and Hiskey 2008; Germano 2010). Conversely, several scholars of the Mexican democratic transition have argued that US-Mexico migration encouraged political change by reducing citizens’ economic reliance on the clientelist networks of the hegemonic Institutional Revolutionary Party (PRI) (Diaz-Cayeros, Magaloni and Weingast 2006; Pfutze 2012). The discussion of migration as a “safety valve” in Mexican politics has expanded beyond academia to official legislative deliberations (Dávila 1932), newspaper articles (Fitzgerald 2009), and Zapatista political meetings (Aquino Moreschi 2009). The assertion that emigration acts a stabilizing force for Mexico has even arisen in the recent US political debate on immigration reform (Fox 2007). In an op-ed for the *Wall Street Journal*, Stephen Haber argued that restrictive US immigration policies that close Mexico’s “escape valve” would inflame populist mobilization in Mexico, politically and socially destabilizing the country (Haber 2006, p. A14). Along

the same lines, one Mexican activist noted that a potential upside of US policies to impede emigration would be that “Mexico might be forced to get its own house in order” (qtd. in Thompson 2006, p. A1).

This paper presents new theory and evidence on the relationship between emigration and political reform. After the Mexican Revolution in 1910, Mexico underwent one of the largest programs of land redistribution in history, under which massive amounts of land were expropriated from large estates and transferred for peasant use. Today, over half of the land in Mexico is held by rural villages (*ejidos*) that were created as part of the agrarian reform. The implementation of this program began during a time of high emigration from Mexico. In the decades after the Revolution, hundreds of thousands of Mexicans left to work in the United States, and many more relied economically on migrant remittances sent from the US. These migration patterns were suddenly interrupted by the US stock market collapse of 1929 and the onset of the Great Depression. The Depression almost completely eliminated emigration opportunities from Mexico and precipitated the repatriation of over 350,000 Mexicans between 1930 and 1935 (Taylor 1934; Hoffman 1974).

I examine state-level petitions for land redistribution before and after the beginning of the Depression. While the relationship between migration and land reform in Mexico is complex (e.g. Sanderson 1984; Durand and Massey 1992), the Depression represented an exogenous shock to migration opportunities that was unrelated to the agrarian reform movement. The evidence presented in this paper suggests that the removal of emigration options invigorated the reform movement. At the end of the 1920s, Mexican leaders had taken steps to phase out the limited land reform program, but these policies were dramatically reversed after the Depression. In the 1930s, the redistribution of land accelerated across the country, especially in areas that had previously experienced high emigration. The relationship between pre-Depression emigration and post-Depression reform is statistically significant and substantively large.

Using a formal model of migration and collective action, I trace this outcome to sev-

eral complementary mechanisms. First, emigrants during the 1920s were disproportionately selected from those who could have been beneficiaries of the reform, which defused local agrarian mobilization and allowed political officials to avoid undertaking the costly reform process until after the Depression. The formal model and qualitative evidence also suggest that those who did not or could not migrate were also reluctant to participate in the agrarian reform movement prior to the Depression as the likely migration of their neighbors undermined their confidence that participation would be sufficient to achieve reform. Finally, once exit opportunities were eliminated and the migrants returned to Mexico, the human capital acquired while in the US facilitated collective action and revitalized agrarian mobilization.

Section 2 provides background on early 20th century Mexico-US migration, the Mexican Revolution, and the agrarian reform. In Section 3, I develop a formal model of migration and collective action under incomplete information and discuss the empirical predictions of this model. In Section 4, I describe the subnational data on land reform and migration used in this paper, outline the empirical strategy, and present a series of econometric results indicating that the closure of migration options stimulated land reform. I then review qualitative evidence in support of the mechanisms suggested by the formal model. I conclude by discussing the contributions of this work to understanding the political effects of emigration and the effects of restrictive immigration policies on migrant sending societies.

## **2 Historical Background**

### **2.1 Mexico-US Migration, 1876-1929**

Mass migration between Mexico and the United States began in the late nineteenth century as the result of several economic and demographic factors. The rule of Porfirio Díaz (1876-1910) was characterized by political stability, demographic growth, and export-driven economic expansion. The population boom coupled with an ongoing process of land concentration drove a dramatic increase in the number of landless peasants in central Mexico,

which caused real agricultural wages to stagnate and then decline (McBride 1923; Tannenbaum 1929; González Navarro 1957). This process occurred alongside the development of the Mexican railroad system, which dramatically reduced transportation costs within and across the country (Coatsworth 1981). Motivated by economic growth in the labor-scarce western United States, recruiters for American railroad companies, factories, and farms traveled to Mexico in search of manpower. While attractive employment options existed in the relatively wealthy and sparsely settled border areas, the dense central-western states along the main railroad line became a key source of labor for the US (McBride 1923; Bogardus 1934; Cardoso 1980; González Navarro 1993-4; Durand, Massey and Zenteno 2001).

Migration to the United States increased further following the Mexican Revolution in 1910. The population of Mexico fell by nearly one million people between 1910 and 1921 due to violence, disease, and emigration. Emigration accelerated in the 1920s as Mexico experienced ongoing social unrest, two major armed conflicts (the de la Huerta Rebellion of 1923-1924 and the Cristero War of 1926-1929), and extreme economic and political uncertainty (González Navarro 1970; Cardoso 1980). While precise figures are unknown (see Section 4), it is estimated that over 400,000 Mexicans left for the United States between 1920 and 1930, comprising over 10% of total US immigration during the decade (Bogardus 1934; Taylor 1934; González Navarro 1970; Durand and Massey 1992). Mexicans were exempt from US immigration quotas implemented in the early 1920s and remained a primary source of manpower in American agriculture and industry (González Navarro 1970). While some parts of the Mexican government saw ongoing high emigration as a source of instability and national embarrassment, laws intended to curb emigration were only sporadically enforced and migration continued largely unabated until the US stock market crisis and the Great Depression (Fitzgerald 2006, 2009).

## 2.2 Mexican Agrarian Reform, 1910-1929

Agrarian reform was one of the central motivations of the Mexican Revolution, a complex set of conflicts beginning in 1910 that were fought between different factions with different political priorities across different geographic regions of Mexico (Knight 1986). Political unrest persisted long after the fall of autocrat Porfirio Díaz in 1911. A civil war led by revolutionary leaders Pancho Villa in northern Mexico and Emiliano Zapata in the center-east and south began to subside by the early 1920s, but numerous small- and medium-scale civil conflicts, failed military coups, and high-level assassinations continued through the early 1930s. A timeline of relevant events is provided in Table 1.

At the time of the Mexican Revolution, over 90% of rural Mexicans owned no property, and many villages had recently lost access to communal lands as the result of economic policies favoring large plantations in the late nineteenth century (McBride 1923; Tannenbaum 1929). The loss of land was a major impetus for peasant involvement in the Revolution, and several factions, notably the militias of Pancho Villa in the north and Emiliano Zapata in the center-east, promised to seize and redistribute plantation land to encourage peasant participation (Knight 1986). Under pressure from these groups among others, a federal program of agrarian reform was announced by presidential decree in 1916 shortly after president Venustiano Carranza reconsolidated power in Mexico City. The agrarian program was formalized in Article 27 of the 1917 Constitution and modified in a series of laws and presidential decrees from 1922 onwards (see Sanderson 1984).

The Mexican land reform granted land at the level of the *ejido* or rural community. Ejidos included both land that was to be communally managed and parcels for individual use. Land beneficiaries, or *ejidatarios*, had limited property rights over their plots. Individual parcels and usage rights could not be transferred or sold, and any rights to the land could be lost if the land was not cultivated or if the beneficiary left the village. The unique design of the ejido system was based in part on pre-colonial land institutions, which awarded peasants similarly limited usufruct rights over communal lands (McBride 1923; Gibson 1964;

Coatsworth 1974).<sup>1</sup>

The process for applying for an ejidal grant during this time period was as follows.<sup>2</sup> First, the communities needed to organize a petition to the state government outlining the need for a land grant and the type of grant desired: the *dotation* or endowment of a new ejido, the *restitution* of community lands seized during the Porfirian period, the *recognition* of land rights for new population centers, or the *expansion* of an existing ejido.<sup>3</sup> Because restitution grants required precise documentation of prior community ownership of the land in question, the vast majority of ejidal grants were of the first type. Eligibility requirements for the program shifted between presidential administrations, but generally petitioners had to show that their community had been in existence for at least six months and contained more than the minimum number of eligible residents, which varied from 20 or 25 heads of household in rural areas to over 100 in urban areas (Craig 1983; Sanderson 1984). The agrarian reform laws also stipulated the types of landholdings that could be expropriated for the creation of the ejido, and petitioners had to show that that were nearby properties that exceeded the maximum size allowable by law (500 hectares for most of the 1920s, depending on soil quality and crops grown). State officials would verify the population and land requirements and make a recommendation to the governor of the state. If the governor approved the petition, the land was provisionally awarded to the community and a document was sent to the presidency for final approval. This process would often take several years, and many petitions failed to receive approval at either the state or federal level (Craig 1983; Cueva Ramírez 1994; Sanderson 1984).

---

<sup>1</sup>Many studies have suggested that the incomplete property rights granted by the reform contributed to declines in agricultural productivity and long-run dependence on the clientelist political networks of Mexico's hegemonic political party, the PRI (e.g. Yates 1981; Magaloni 2006; Albertus et al. 2012; Larreguy 2012; Dell 2012). Despite these effects, long-term political control of the peasantry does not appear to have been the important motivation for reform during this time period when the immediate political survival of the government was constantly under threat and when corporatist party structures had not yet been established. See Knight (1986) and Sanderson (1984) for a discussion.

<sup>2</sup>See Craig (1983) Appendix A and Sanderson (1984) Chapter 3 for a detailed description of the different agrarian reform laws and the specific procedures under different presidential administrations.

<sup>3</sup>There are also numerous types of petitions that relate to granting and regulating water rights and individual land use rights around and between existing ejidos. See Sanderson (1984).

Despite the legal foundations and political rhetoric favoring large-scale land redistribution, the implementation of agrarian reform was very limited. Federal power during this time was dominated by a series of leaders from the wealthy and sparsely populated northern states who had a limited and less radical vision of the agrarian movement than groups from central and southern Mexico. The early period of reform granted land in a few specific areas of the country in order to defuse ongoing rebellion in central Mexico and undermine support for Zapata (Sanderson 1984; Markiewicz 1993). Political leaders used targeted reform to increase support for the federal government at crucial points during the 1920s, but evidence suggests that federal officials did not envision carrying out a broader program of land expropriation and redistribution (Knight 1991; Markiewicz 1993; Haber, Rezo and Maurer 2003). The reform program was designed to exclude large groups of the peasantry (specifically, resident laborers and sharecroppers on plantations), and the excluded peasants often allied with landowners in the fight against reform (Meyer 1991; Markiewicz 1993). Municipal leaders—who were often large landowners themselves or were beholden to large landowners from support—faced pressure from above and below to curb agrarian reforms and often joined forces with conservative factions to prevent agrarian mobilization through bureaucratic wrangling, political threats, and violence (Craig 1983; Salamini 1990; Markiewicz 1993). In cases where local officials were sympathetic to the agrarian cause, private armed “white guards” were recruited to defend landowner property from expropriation and threaten agrarian activists (Craig 1983; Knight 1986; Markiewicz 1993). In some areas of the country, agrarian mobilization was further inhibited by widespread civil conflicts like the Cristero War (1926-1929), in which large landowners formed alliances with the clergy and military officials and fought bitterly to prevent land reform (Taylor 1933; Craig 1983; González Navarro 2000).<sup>4</sup>

---

<sup>4</sup>The Cristero conflict is a complicated and controversial time in Mexican history. Early accounts of the war, often written by leftist scholars and officials, emphasized the pro-landowner position of the Catholic Church and Cristeros. Later scholars, led by Meyer (1973), argued that the Cristeros were not necessarily enemies of agrarian forces, but rather enemies of the federal government, which sometimes allied with agrarian interests.

By the end of the 1920s, it appeared that the Mexican land reform program would taper off after a very limited implementation (Craig 1983; Sanderson 1984). By the onset of the Depression in 1929, less than 5% of agricultural land in Mexico had been redistributed, and over 80% of farmland remained in farms of 1,000 hectares or more (Markiewicz 1993). Agricultural investment, production, and export expanded during the 1920s, suggesting that landowners did not anticipate an imminent expropriation of their property (Haber, Rezo and Maurer 2003). In early 1930, leader Plutarco Elías Calles announced the “failure” of the ejido system and requested that state governors set a deadline to end the agrarian program in “a relatively short period of time” (qtd. in Markiewicz 1993, p. 59). These plans were reversed by the surge of agrarian mobilization that took place over the next decade.

### **2.3 The Great Depression and Cárdenas Rupture**

The US stock market collapse in late 1929 triggered a worldwide economic crisis with significant impacts on the Mexican economy and society. While the collapse of trading markets had less severe economic impacts than in other Latin American countries, it contributed to crises in the textile and mining sectors and led to a significant uptick in urban unemployment (González Navarro 1970; Knight 1991, p. 246-7). A more serious consequence of the Depression was the sudden break in long-standing migration patterns from Mexico to the United States, which produced widespread social and economic consequences (e.g., González Navarro 1970; Hoffman 1974; Craig 1983; Meyer 1991; Benjamin 2000). Faced with high unemployment at home, the US government adopted a series of policies aimed at reducing the immigrant population (Hoffman 1974; González Navarro 1974). These policies (along with ongoing economic stagnation) effectively closed the US border to further migration and led to the repatriation of hundreds of thousands of Mexicans from the United States. Many of the returnees had been living in the United States for a significant period of time, and a significant number were deported forcibly (Hoffman 1974). About 80% of repatriates returned to their village of origin, usually in the center-west region of the country where

there was still a large population of landless peasants and agricultural wages remained low (Bogardus 1934; Taylor 1934; González Navarro 1970).

The Great Depression occurred at a politically fragile time in Mexico. In 1928, President Calles, faced with unrest following the assassination of president-elect Álvaro Obregón, united with the followers of Obregón to form the National Revolutionary Party (PNR, the precursor to the PRI), which consolidated and stabilized political power by uniting most revolutionary parties under a single tent (Benjamin 2000). Over the next several years, known as the Maximato, Calles and his strongmen used political pressure to control a series of subordinate presidents who were handpicked by Calles through the PNR system (Benjamin 2000). In 1933, Calles' control in the PNR was disrupted when organized peasant groups, mobilized by the effects of the Depression, rebelled against Calles' chosen presidential candidate, Manuel Pérez Treviño, at the party nominating convention (Benjamin 2000; Craig 1983). Agrarian groups focused their support around the candidacy of Lázaro Cárdenas, the left-wing former governor of the central state of Michoacán. As I describe in Section 5, returned migrants played a central role in organizing support for Cárdenas and backing a party platform and a six-year plan with provisions for dramatically expanding the agrarian reform program, modernizing public education, strengthening worker cooperatives and labor unions, and formalizing business-state relationships (Craig 1983; Benjamin 2000). This represented a radical turn for the PNR (Knight 1991; Benjamin 2000). Cárdenas became the official PNR candidate and, as was typical in Mexican politics, did not face any opposition in the general election (Benjamin 2000; Markiewicz 1993). Soon after Cárdenas took office in late 1934, Calles was sent into exile.

Under Cárdenas, the land reform program accelerated. Land grants quadrupled between 1933 and 1934, and the rate at which high-quality land was distributed remained high for several years thereafter, peaking in 1936 (see Figure 3 and Sanderson 1984). The Cárdenas reforms dramatically expanded eligibility for land grants, increased the amount and types of land that could be expropriated for redistribution, and facilitated the process of agrarian

mobilization by simplifying the reform process and providing for the armed defense of peasant leaders against landowners (Craig 1983; Sanderson 1984; Benjamin 2000). Prior to the Agrarian Law of 1934, resident workers on haciendas (or “debt peons”) had been ineligible to receive land and often mobilized against reform alongside landowners (Sanderson 1984; Markiewicz 1993). By expanding the eligibility to these peasants, Cárdenas was able to draw on a much larger base of support for his agrarian program (Markiewicz 1993; Benjamin 2000).

Not all areas of Mexico benefited equally from the expansion of the agrarian program during the 1930s. Parts of north and central Mexico saw little reform during this period due to expanding urbanization, which shifted labor away from agricultural employment and reduced the demand for land. In other regions, particularly states that had been under Zapatista control during the civil war, the demand for land reform had been largely met before the Depression (Womack 1968; Sanderson 1984). Data on the agrarian reform program collected by Sanderson (1984) show that a third of new ejido beneficiaries and nearly a third of all federal land petitions in the 1930s came from only four states: Veracruz on the Gulf Coast and Jalisco, Michoacán, and Guanajuato in the center-west. Veracruz had been a center of agrarian mobilization during the 1920s, and the radical governor of the state, Adalberto Tejeda, had distributed land unofficially without seeking federal approval until political ally Cárdenas took office (Salamini 1978). The three central-western states experiencing a spike in agrarian petitions during this period had been major sources of emigration prior to the Depression, producing nearly a third of Mexican immigrants to the US in the early twentieth century (González Navarro 1957; Cardoso 1980; Durand, Massey and Zenteno 2001). In the following sections, I develop a formal model to shed light on why reform in the 1930s was concentrated in high migration states and then present econometric evidence linking emigration with reform in the Cárdenas period.

### 3 Collective Action and Migration

Several models have formalized Hirschman’s foundational (1970) “exit and voice” trade-off (Gehlbach 2006; Shimizu forthcoming). In departure from these, this paper examines the relationship between emigration and reform through modeling the collective action problem of peasant organization in the presence of exit options. The model employs a global games framework, a class of collective action models under incomplete information (Carlsson and van Damme 1993; Morris and Shin 2003). While collective action and coordination games often generate multiple equilibria, global games introduce uncertainty into the environment in a way that can generate a unique equilibrium prediction under specific assumptions. Morris and Shin (2003) and Gehlbach (2013) provide introductions to these models. Several recent studies have used this framework to analyze collective action in a variety of institutional contexts (e.g. Bueno de Mesquita 2010; Edmond 2012; Boix and Svolik 2013; Finkel, Gehlbach and Olsen 2013).

Consider a continuum of landless peasants of mass  $L$  living in a village with land of size 1. (One can then interpret  $L$  as a measure of the amount of labor per unit of village land.) Each villager  $i$  chooses his action,  $d_i$ , from three possibilities. He may choose to stay in the village and work at the local wage rate ( $d_i = N$ ), to migrate to a foreign economy and earn higher foreign wage ( $d_i = M$ ), or to stay in the village and participate in costly collective action to achieve land reform ( $d_i = P$ ). Let  $L = L_M + L_P + L_N$ , where  $L_M$ ,  $L_P$ , and  $L_N$  represent the mass of villagers choosing to migrate, protest, and not protest respectively.

The payoff to working in the local labor market is the domestic wage  $w_D$ .<sup>5</sup> I assume that foreign wages are higher than local wages ( $w_F > w_D$ ), but villagers who migrate must pay an idiosyncratic migration cost  $\mu_i$ . I assume that  $\mu_i$  may take on two values,  $\mu_L$  or  $\mu_H$ , representing low and high migration costs respectively. I assume that migration is an

---

<sup>5</sup>It might seem odd to assume that local wages do not depend on population density or on migration opportunities. Under the standard assumption that the labor supply curve is upward sloping,  $w_D$  will be decreasing in  $L^*$  and increasing in migration rates. This would strengthen the comparative statics derived below.

attractive alternative to working in the local labor market only for individuals with  $\mu_i = \mu_L$ . Heterogeneity in migration costs within a community could be thought of as capturing the individual characteristics, such as family responsibilities or risk preferences, that make migration more or less costly for some individuals. Let  $q$  be the proportion of individuals with low migration costs in the community.<sup>6</sup>

Villagers must decide whether to participate in the land reform movement ( $d_i = P$ ). If land reform is successful, those who participated in the movement would each receive land rights worth  $\beta$ . The assumption that  $\beta$  is provided only to those who actively participate accords with the form of Mexico's agrarian program as only those who had signed the public petition for reform were given individual land rights in beneficiary villages. Participation in the movement is costly and the probability of success is not known. I assume that those who participate in the movement must pay an upfront cost  $\kappa$ , and that the movement succeeds only if the number of peasants who participate in the movement,  $L_P$ , exceeds a threshold level set by the government,  $L^*$ . In the context of agrarian reform, the existence of a threshold participation level might literally represent the minimum number of peasants who could petition for a land grant jointly, but one could also interpret  $L^*$  as the amount of organization or protest necessary to influence the political process surrounding land reform. I assume that  $\beta - \kappa > w_F - \mu_L > w_D$  so that all villagers would prefer land reform to working or migrating if the probability of a successful reform were high enough.

The threshold level of manpower  $L^*$  is not common knowledge. Following the discussion in Morris and Shin (2003), I assume that villagers have a common prior belief that  $L^*$  may be realized as any positive number on the real line with equal probability.<sup>7</sup> Villagers receive private, correlated signals  $s_i$  of the realized value of  $L^*$ . For simplicity, I assume that these are distributed uniformly on  $[L^* - \delta, L^* + \delta]$ . The signal process is common knowledge.

---

<sup>6</sup>In other work, I show that the results can be generalized to assume continuous migration costs.

<sup>7</sup>The prior on  $L^*$  is improper, but as Morris and Shin (2003) note, posterior beliefs about  $L^*$  are well defined conditional on citizens' signals. The improper prior can be thought of as a limiting case of either letting the signal  $s_i$  become sufficiently precise or the prior distribution of  $L^*$  become sufficiently diffuse. See Morris and Shin (2003), Section 3.

From a substantive perspective, collective uncertainty about  $L^*$  conforms with the dramatic yearly shifts in political support for land reform during this time period. However, one might wonder why rural villagers would be unable to share information about their signals and coordinate their actions accordingly. Several aspects of the agrarian movement made coordination difficult. As described above, land reform was a contentious issue in Mexico, and support for the agrarian movement produced divisions within villages and families. Under threat of social exclusion, seizure of property, and violence, many proponents of agrarian reform were hesitant to publicly express support for the movement (e.g. Salamini 1978; Craig 1983; Benjamin 2000). Many accounts of the agrarian movement have addressed the difficulty of organization in this context. As one participant described, leaders were careful to approach only villagers that they believed would be sympathetic to the cause, and they did not identify themselves as “pro-reform” until they received assurance that they were in like-minded company (Craig 1983, p. 97-8).

Villager payoffs are summarized below:

	Movement Succeeds ( $L_P > L^*$ )	Movement Fails ( $L_P \leq L^*$ )
Migrates ( $d_i = M$ )	$w_F - \mu_i$	$w_F - \mu_i$
Participates ( $d_i = P$ )	$\beta - \kappa$	$-\kappa$
Does not participate ( $d_i = N$ )	$w_D$	$w_D$

### 3.1 Equilibrium Reform without Migration

I consider the equilibrium level of collective action and reform in the absence of migration opportunities. In this case, villagers participate in the movement when the expected utility of doing so is greater than the local wage  $w_D$ . Using the payoffs specified above and the fact that the movement succeeds when  $L_P > L^*$ , the expected utility of participating in the protest movement conditional on receiving signal  $s_i$  is:

$$E_i(u(d_i = P)|s_i) = Pr(L_P > L^*|s_i)\beta - \kappa \quad (1)$$

The marginal benefit of protest relative to working is then:

$$E_i[u(d_i = P) - u(d_i = N)|s_i] = Pr(L_P > L^*|s_i)\beta - \kappa - w_D \quad (2)$$

Consider the beliefs of villager  $i$  who receives signal  $s_i$ . Given the uninformative prior on  $L^*$  and his knowledge of the signal distribution, his posterior belief is to treat  $L^*$  as distributed uniformly on  $[s_i - \delta, s_i + \delta]$ . Notice that if  $s_i$  is low enough, he will protest regardless of what he believes his neighbors will do as his participation alone would be sufficient for movement success as  $L^*$  approaches 0. Conversely, if  $s_i - \delta > L$ , he will never choose to protest as he believes that the movement will fail even if everyone in the village participates. Further, expression 2 is monotonically increasing in the mass  $L_P$  of citizens who protest and decreasing in  $L^*$ . Following Morris and Shin (2003), there is therefore a unique Bayesian Nash equilibrium of this game in which citizens follow a “switching strategy,” in which they protest when their signal is below some threshold  $s_i = \bar{s}$  and do not otherwise.<sup>8</sup>

The villager who receives the cutpoint signal  $\bar{s}$  is indifferent between participating and not participating in collective action. Given equation 2, this implies that:

$$Pr(L_P > L^*|s_i = \bar{s}) = \frac{w_D + \kappa}{\beta} \quad (3)$$

The switching strategy indicates that all villagers with sufficiently low signals ( $s_i \leq \bar{s}$ ) will participate in the movement. Given the signal distribution and the switching strategy at  $\bar{s}$ , the mass of villagers who will protest given some realized value of  $L^*$  is:

$$L_P = \begin{cases} L & \text{if } \bar{s} > L^* + \delta \\ \frac{\bar{s} - L^* + \delta}{2\delta} L & \text{if } \bar{s} \in [L^* - \delta, L^* + \delta] \\ 0 & \text{if } \bar{s} < L^* - \delta \end{cases} \quad (4)$$

---

<sup>8</sup>More precisely, these payoffs satisfy Morris and Shin’s Assumptions A1-A5. See Morris and Shin (2003), Section 2.2.1

A villager who receives the cutpoint signal  $s_i = \bar{s}$  has the posterior belief that  $L^*$  is distributed uniformly on  $[\bar{s} - \delta, \bar{s} + \delta]$ . Rearranging the middle expression in 4 in terms of  $L^*$ , the probability that the movement is successful is:

$$Pr \left[ \frac{\bar{s} + \delta}{2\delta + L} L > L^* \right] \quad (5)$$

Using the density of a uniform distribution and expression 5, his posterior estimation of the probability that the movement will succeed is then:

$$Pr(L_P > L^* | s_i = \bar{s}) = \frac{\delta + L - \bar{s}}{2\delta + L} \quad (6)$$

Notice that the numerator is positive only when  $\bar{s} < \delta + L$ , which is equivalent to the above statement that not protesting is a dominant strategy when  $s_i - \delta > L$  for any player. Notice also that 6 is increasing in  $L$  and decreasing in  $\bar{s}$  as one might expect. Combining 6 and 3, we find the threshold signal  $\bar{s}$  below which peasants will protest:

$$\bar{s} = \delta + L - \frac{w_D + \kappa}{\beta} (2\delta + L) \quad (7)$$

Collective action is successful when  $L_P > L^*$ . Plugging expression 7 into 4, the movement is successful when:

$$L^* < L \left[ 1 - \frac{w_D + \kappa}{\beta} \right] \quad (8)$$

Note that the expression for  $L_p$  is non-negative by our assumption that  $\beta - \kappa > w_D$ . Expression 8 implies that reform is more likely as population density ( $L$ ) increases, as local wages ( $w_D$ ) decrease, as the costs of participation ( $\kappa$ ) decrease, and as the benefits of reform ( $\beta$ ) increase.

### 3.2 Model with Migration

The introduction of migration options alters the model in two ways. First, the subset of villagers with low migration costs  $\mu_L$  have a higher reservation utility than in the benchmark case. Migration also introduces heterogeneity into the village, which implies that the cutpoint signal under which peasants will participate in the movement differs between the two subsets of the population. Let  $\bar{s}_N$  and  $\bar{s}_M$  be the cutpoint signals for villagers with  $\mu_H$  and  $\mu_L$  respectively. A villager with high migration costs ( $\mu_H$ ) prefers to remain in the village and work at the local wage. He will be indifferent between participating and not participating when the expected payoff of collective action is equal to  $w_D$ . This tradeoff is equivalent to expression 3 above, substituting  $\bar{s}_N$  for  $\bar{s}$ . To be indifferent, those with an exit option ( $\mu_L$ ) need more assurance that reform will be successful due to their higher reservation utility. Potential migrants are indifferent between participating in the movement or not when:

$$Pr(L_P > L^* | s_i = \bar{s}_M) = \frac{w_F - \mu_L + \kappa}{\beta} \quad (9)$$

Because high values of  $L^*$  indicate that reform is more difficult, beliefs about the probability of successful reform are decreasing in the signal. As above, this implies that there is a cutpoint signal for each group below which peasants will participate in the movement. Given the assumption that  $w_F - \mu_L > w_D$ , expressions 3 and 9 imply that this cutpoint signal must be lower among migrants because they have a higher payoff in the absence of reform. As above, the cutpoint strategies and signal generating process imply that there will be a unique  $L^*$  below which the reform will succeed in a given village.

To construct the equilibrium, consider the proportion of villagers who protest given a specific realization of  $L^*$  and the cutpoint signals for migrants and non-migrants respectively.

Assume that  $\delta$  is sufficiently large so that  $L^* - \delta \leq \bar{s}_M < \bar{s}_N \leq L^* + \delta$ .<sup>9</sup>

$$L_p = (1 - q) \left( \frac{\bar{s}_N - L^* + \delta}{2\delta} \right) L + q \left( \frac{\bar{s}_M - L^* + \delta}{2\delta} \right) L \quad (10)$$

Rearranging 10, the probability that reform is successful given  $L^*$  is:

$$Pr \left[ \frac{(1 - q)\bar{s}_N + q\bar{s}_M + \delta}{2\delta + L} L > L^* \right] \quad (11)$$

This is identical to the expression 5 above after replacing  $\bar{s}$  by a weighted average of  $\bar{s}_M$  and  $\bar{s}_N$ . As above, given the flat prior and the signal generating process, the posterior belief of peasants who receive signal  $s_i$  is that  $L^*$  is distributed uniformly on  $[s_i - \delta, s_i + \delta]$ . Using expression 10, the subjective beliefs of the peasants receiving the cutpoint signals  $\bar{s}_N$  and  $\bar{s}_M$ , respectively are:

$$Pr [L_p > L^* | s_i = \bar{s}_N] = \frac{1}{2\delta} \left( \frac{(1 - q)\bar{s}_N + q\bar{s}_M + \delta}{2\delta + L} L - \bar{s}_N + \delta \right) \quad (12)$$

$$Pr [L_p > L^* | s_i = \bar{s}_M] = \frac{1}{2\delta} \left( \frac{(1 - q)\bar{s}_N + q\bar{s}_M + \delta}{2\delta + L} L - \bar{s}_M + \delta \right) \quad (13)$$

Substituting these expressions into 3 and 9, we can solve for the  $\bar{s}_N$  and  $\bar{s}_M$  in terms of the parameters of the model:

$$\bar{s}_N = \delta + L - \frac{w_D + \kappa}{\beta} ((1 - q)L + 2\delta) - \frac{w_F - \mu_L + \kappa}{\beta} (qL) \quad (14)$$

$$\bar{s}_M = \delta + L - \frac{w_D + \kappa}{\beta} ((1 - q)L) - \frac{w_F - \mu_L + \kappa}{\beta} (qL + 2\delta) \quad (15)$$

As expected,  $\bar{s}_M < \bar{s}_N$  by the assumption that  $w_F - \mu_L > w_D$ . Further, comparing these

---

<sup>9</sup>Similar to equation 4, if  $\bar{s}_M$  or  $\bar{s}_N$  fall outside of  $[L^* - \delta, L^* + \delta]$ , all of the citizens in the group whose cutpoint falls outside the interval will take the same action.

expressions to 7, we notice that the cutpoint for the non-migrants is lower in this case even though the reservation utility of this group is unchanged. This is because the presence of migration opportunities affects every villager's expectation of his neighbors' actions, even when this villager cannot benefit from migration himself.

Plugging 14 and 15 into 10, reform succeeds when:

$$L^* < L \left[ 1 - \left( q \frac{w_F - \mu_L + \kappa}{\beta} + (1 - q) \frac{w_D + \kappa}{\beta} \right) \right] \quad (16)$$

This expression is equivalent to 8 after substituting  $\frac{w_D - \kappa}{\beta}$  with a weighted average of the righthand sides of 3 and 9. As above, the probability of reform is increasing in the population density ( $L$ ) and in the benefits of reform ( $\beta$ ), and it is decreasing in local wages ( $w_D$ ) and the costs of collective action ( $\kappa$ ).

More relevant to this study, expression 16 shows that reform is less likely as migration becomes more attractive (i.e.  $w_F$  increases or  $\mu_L$  decreases) and as migration becomes more accessible ( $q$  increases). There are two reasons why migration accessibility and attractiveness lower the equilibrium provision of reform. Those who can migrate have a more profitable outside option, which decreases the perceived benefit of participation in the movement for any given signal  $s_i$ . Additionally, all of the villagers, regardless of their personal migration cost, know that a subset of their neighbors have a profitable exit option. This affects everyone's belief about the likely level of cooperation for any given signal of the ease of reform and lowers the cutpoint signal for both groups. As a result, some realizations of  $L^*$  that were low enough to generate successful reform in the model without migration will result in no reform when exit options are available, even under the assumption that all peasants would be better off if reform were successful. The model then suggests two reasons why land reform should accelerate in high migration areas after the Great Depression: peasants had more to gain from reform in the absence of migration opportunities and they had more confidence that their neighbors would cooperate in the reform movement. I examine the empirical evidence

for these model predictions in the following sections.

## 4 Empirical Analysis

### 4.1 Data and Summary Statistics

In her foundational study of Mexican land reform, Sanderson (1984) collected and digitized records of presidential decisions on petitions for land redistribution to the federal government using information from the *Diario Oficial*, the official government publication of Mexico. I examine two related outcomes for this study: the number of definitive grants of new ejidos between 1916 (the earliest date in Sanderson’s record) and 1945 from each state and the number of new land reform beneficiaries in each state during this same period. The measures are highly correlated, but there are some regional differences in the number of beneficiaries per grant.<sup>10</sup> I aggregate together three categories land resolutions: dotation resolutions, which were submitted by villages that had no record of prior communal property, restitution grants, which were submitted by villages with written evidence that their communal land had been seized in the Porfirian period, and resolutions for the recognition of new population centers, which were submitted by individuals establishing new agricultural villages in unpopulated areas.<sup>11</sup> The vast majority of grants made during this period were of the first type.

There are a few important things to note about the land reform data. First, the recorded dates for each resolution are those of the publication in the *Diario Oficial* rather than the date when the petition was first filed, when the land was transferred, or when the presidential decision was made. Therefore, there is a delay of a few years between when a petition for reform was made and when it enters the dataset. In addition, because Sanderson’s

---

<sup>10</sup>The average ejidal grant in this period had 76 beneficiaries and was approximately 1,500 hectares in size, but some grants were as large as 400,000 hectares or 2,000 beneficiaries.

<sup>11</sup>The fourth major type of land grant mentioned in Section 2, the expansion of existing ejidos, required earlier successful land reform and is excluded from the analysis.

dataset was constructed from federal records, the data only include grants that were under consideration for presidential approval. As discussed in Section 2, land reform was a multi-stage process through which peasants had to jointly petition for a new land grant, undergo a series of eligibility studies, and receive provisional approval from state authorities before soliciting presidential approval. The land reform data therefore do not measure peasant agitation directly, but they capture both the demand for land reform at the local level and the receptiveness of state authorities to the agrarian cause. The data include petitions that received approval from the presidency and those that were denied. Though the rejection rate varied by year and by presidential administration, over 80% of petitions that were resolved by the presidency between 1916 and 1945 received a positive decision from the president as the barriers to land reform were felt more strongly at the state and local levels. For this study, I restrict attention to grants that received presidential approval, but the results are unchanged if I examine all petitions that reached the presidency. See Sanderson (1984) for more information on the dataset.

Data on Mexican migration and repatriation come from several sources. Historically, the border between Mexico and the United States was sparsely monitored, especially prior to the establishment of the US Border Patrol in 1924.<sup>12</sup> Some of the first academic studies aimed at measuring the size of Mexico-US migration were carried out during the 1920s and 1930s, though the focus of these tended to be on estimating the size of the immigrant stock in different US regions rather than on recording the subnational origins of Mexican immigrants. I use two primary measures of migration intensity taken from these studies for the analysis in this paper. The first is Taylor’s 1934 estimate of state-level emigration from 1926-1932, which drew on his fieldwork in Mexico and unpublished records from the Mexican Migration Service and Secretariat of Economics and Statistics. The other measure is the number of money orders sent to each Mexican state from the United States in July

---

<sup>12</sup>It is interesting to note that all Mexican migration during this time period was technically “illegal” from the perspective of one of the countries as the US banned workers from entering with pre-established labor contracts and those without labor contracts were prohibited from leaving Mexico. See Fitzgerald (2009), Chapter 2.

and August 1926 (Gamio 1930). I checked the consistency of these against two alternate measures of subnational emigration: data on the state of origin of entrants to US at southern border ports in April 1924, which were collected for a US Department of Labor report on migration in the mid-1920s (Foerster 1925), and Taylor’s estimate of state-level repatriations from the US between 1926 and 1932 (Taylor 1934).<sup>13</sup> These measures are highly correlated (Table 2). Figure 2 illustrates the geographic intensity of migration as measured by the two primary migration variables. Because Taylor’s estimate of emigration flows was constructed based on information on border crossings, his measure places higher emphasis on Mexico’s northern states, where migration tended to be seasonal or circular. By contrast, Gamio’s data on money orders accentuate migration from the center-west states because migrants from this region tended to remain in the US for longer periods of time while remitting their earnings to family in Mexico.

The population and geographic controls used in some specifications were obtained from the Mexican Censuses of 1910, 1921, and 1930. For some models, I include additional controls on pre-revolution land tenure from McBride (1923) and Tannenbaum (1929). For the analysis of land reform during the 1930s, I adjust population and land data to account for previous reform using the census data and Sanderson’s data on successful land grants in the earlier period.

Table 3 presents descriptive statistics for the variables used in this paper. In Figure 3, I plot the number of federal land reform petitions by year over this time period. A few descriptive trends are apparent. First, the number of petitions was increasing during the 1920s under the presidencies of Obregón and Calles, but there is a clear decline in the data corresponding with the movement away from land reform during the Maximato and a clear increase during the presidency of Lázaro Cárdenas in the 1930s. Figure 4 illustrates the geographic distribution of reform in the pre- and post-Depression period. As described by Tannenbaum (1929) and Sanderson (1984), the earliest reform was focused in central-

---

<sup>13</sup>I attributed one observation in Foerster’s data labeled “Tepic” to Nayarit, which contains Tepic as the capital city.

eastern Mexico and the area around Mexico City as a strategy to demobilize the supporters of Emiliano Zapata, and much of the available land in these regions had been exhausted by 1930. After the Depression, reform increased in most other areas of the country. As described in Section 2, the most dramatic increases in the 1930s were in the center-west region, where emigration had been and repatriation was very high, and in the state of Veracruz, which was a center for radical peasant mobilization throughout the period (Salamini 1978; Sanderson 1984).

## 4.2 Empirical Strategy

The empirical strategy estimates the effect of emigration on land reform made before and after the Great Depression began at the end 1929. The subnational measures of emigration during the 1920s are only available at the state level. During this time period, there were 31 federal entities in Mexico.<sup>14</sup> Because the number of states is small, and because the data on emigration do not change over time, I employ two parsimonious reduced-form estimation strategies. Following recent work by Bhattacharya, Gethman and Miller (2013), I pool the yearly land reform data from 1916 to 1945 and estimate the relationship between state-year land reform petitions or beneficiaries and the interaction between state-level migration prior to the Depression and year dummies. As noted by these authors, their approach follows those of Qian (2008), Nunn and Qian (2011), and others in assuming that the benefits of a population-wide program to combat a disease are felt most strongly in areas with a higher exposure to the disease prior to the onset of the program. In this context, the assumption is that the areas that were affected most by the end of US immigration due to the Depression were those that experienced high levels of migration during the 1920s.

---

<sup>14</sup>The territory of Baja California was later divided into two states: Baja California and Baja California Sur. The census and land reform data report information for these separately, and I aggregate this information to match the migration and land tenure data.

More precisely, I estimate equations of the following form:

$$reform_{iy} = \alpha + \sum_t \beta_t[(emigration_i \times year_{yt})] + \delta_i + \delta_y + \epsilon_{iy} \quad (17)$$

where  $reform_{iy}$  is the number of land reform petitions or the number of land reform beneficiaries in state  $i$  in year  $y$ ,  $emigration_i$  is the state-level migration rate during the 1920s (either Taylor’s estimate of 1926-32 emigration or Gamio’s measure of the number of money orders sent from the US in the summer of 1926), and  $\delta_i$  and  $\delta_y$  represent state and year fixed effects. In some specifications, I also include year interactions with pre-revolutionary land tenure patterns. As described in Section 2, one of the key changes to the land reform laws after the Depression was the expansion of eligibility to indentured workers on haciendas. Many scholars have noted that migration was most intense from regions of the country where the hacienda system was more established (e.g. McBride 1923; González Navarro 1993-4), and there is a positive correlation between state-level migration rates and the percentage of workers living in hacienda communities prior to the revolution. To address this issue, some specifications include year interactions with the proportion of the state population that lived in hacienda communities in 1910. This data is not available for two Mexican states (Quintana Roo and Mexico City). An additional concern is controlling for other mechanisms through which the Depression impacted land reform besides migration and repatriation. In particular, the closure of export markets may have altered the potential returns to agricultural land, influencing the incentives of landowners and lawmakers to oppose redistribution. To account for this, I extract the area-weighted average potential yields for a series of important Mexican export crops (banana, chickpea, coffee, cotton, sugar, and tomato<sup>15</sup>) using information from the Food and Agriculture Organization’s Global Agro-Ecological Zones (GAEZ) database, which uses information on climate, soil quality, and elevation to identify the areas of the country where certain crops may be grown. I include separate time interactions for

---

<sup>15</sup>These, along with henequen or sisal, were the major agricultural export products during the late 1920s (Haber, Rezo and Maurer 2003)

the maximum potential export yield of these crops in order to control for any dependence between migration intensity and export-oriented agriculture.

I also estimate a series of simple cross-sectional regressions of aggregate land reform petitions or beneficiaries by state in the pre- and post-Depression periods (1916-1929 and 1930-1945). I pool the two periods together in estimations of the following form:

$$reform_{it} = \alpha + \beta_1 emigration_i + \beta_2 1930s_t + \beta_3 emigration_i \times 1930s_t + \mathbf{x}_{it}\boldsymbol{\gamma} + \epsilon_{it} \quad (18)$$

where  $reform_{it}$  and  $emigration_i$  are measured as described above,  $1930s_t$  is a dummy variable taking a positive value in the post-Depression period, and  $\mathbf{x}_{it}$  is a vector of control variables. Due to the small number of observations (62), I estimate a parsimonious version of the model using only population density and total land area as controls. The importance of population density to peasant agitation is highlighted by many histories of the agrarian movement (e.g. Tannenbaum 1929; Salamini 1978; Sanderson 1984) and by the theoretical model for this paper. The key parameter of interest is  $\beta_3$ , the coefficient on the interaction between pre-Depression emigration and the dummy variable indicating the post-1930 period.

### 4.3 Results

Before introducing the econometric results, I investigate the relationship between pre-Depression migration intensity and post-Depression reform graphically. Figure 5 plots yearly land reform petitions by migration tercile. The spike in land reform during the 1930s is apparent in all three terciles, but the increase is significantly larger in the highest migration group. Several factors account for the delay between the start of the crisis in late 1929 and the surge of land reform beginning in 1934. First, as noted above, the Sanderson dataset records the date that the final presidential decision was published in the *Diario Oficial*, which was generally several years after the petition had been filed. Additionally, as I detail further in Section 5, one of the ways that pro-agrarian forces agitated for reform after the

Depression was through political organization within the official party system in support of Cárdenas, who took office in late 1934. Figures 6 and 7 present scatterplots of the change in petitions and the change in reform beneficiaries before and after the Depression by migration rate. As expected, these show a positive correlation between pre-Depression migration and post-Depression reform.

The econometric results of the fixed-effects estimations are presented in Tables 4 and 5. In the estimations using total reform grants as the dependent variable, the interaction term between pre-Depression migration intensity and the year fixed effect is not statistically different from 0 for any year in the pre-Depression period, but it is both statistically significant and substantively large for several years in the mid-1930s in all specifications. These results are robust to including year interactions with the percentage of the population indentured on haciendas prior to the Revolution and with the trade potential variable from the FAO GAEZ data. As noted above, the delay in the effect of migration on reform can be attributed both to the delay in publication in the *Diario Oficial* and to the political process of obtaining sympathetic political leadership. Figure 8 plots the estimated year fixed effects for the highest migration quantile and the lowest three migration quantiles estimated in the third column of Table 4. There is little difference between the two groups prior to the mid-1930s, but the year effects are statistically different between 1935 and 1938. The results in Table 5 using land reform beneficiaries as the dependent variable are qualitatively similar.

Table 6 presents the pooled cross-sectional results for the pre- and post-Depression periods. As suggested by the model, the interaction term between pre-Depression migration and post-Depression reform is positive and significant using either measure of migration and either dependent variable. The effect of emigration during the 1920s is negative and significant in some specifications. However, this result is not robust to small changes in model specification such as linearizing the measures of area and density or including total state population in place of density as a control variable. Additionally, because the emigration measures used in this paper capture movements that would have been contemporaneous with 1920s reform,

one should interpret these results with caution as the reform movement may have influenced the migration flows themselves. The cross-sectional results provide further evidence that reform differentially increased in migration-dependent areas after the Depression in line with the predictions of the model.

## 5 Qualitative Evidence

In this section, I draw on qualitative historical accounts of the Mexican land reform movement to examine some of the mechanisms underlying the econometric results of the previous section. The formal model presented in Section 3 suggests that the presence of migration exit options should lower the provision of reform through two mechanisms. First, the existence of profitable outside options lowers the perceived benefit of reform for those who can profit from these exit opportunities. Additionally, the presence of these options lowers everyone's projection of village participation for any given signal of the ease of the reform process. In line with the model, the historical evidence suggests that migration did play a role in defusing political pressure for reform prior to the Depression. Interestingly, the process of return migration after the Depression also contributed to the acceleration of reform in the 1930s as returned migrants drew on values and skills gained during their US experience to stimulate the agrarian movement.

As Craig (1983) notes, the people who migrated from Mexico during the 1920s were disproportionately selected from groups who could potentially benefit from land reform. Mexican migrants were typically healthy young men from rural areas of the country who had worked in agriculture, the key target demographic of the agrarian movement (Gamio 1930; Bogardus 1934; González Navarro 1970). Additionally, the vast majority of migrants during this time period would have been eligible for reform as most were seasonal laborers, sharecroppers, or small farmers as opposed to resident workers on haciendas. Resident workers were largely unable to take advantage of migration opportunities as they were frequently

tied to the land through debt contracts and would have been unable to leave dependent family members behind (Craig 1983).<sup>16</sup> As outlined in Section 2, only non-resident workers were eligible for ejidal grants prior to the Agrarian Code of 1934.

The formal model assumes that the costs of collective action are the same for all villagers, but there are several reasons to suspect that those who migrated in the 1920s would have been an especially valuable asset to the agrarian movement. There is a vast literature on the positive selection of migrants and on the brain drain effects of migration (e.g. Feliciano 2005; Kapur and McHale 2005). Craig (1983) describes how those who emigrated from her study community frequently had higher levels of education and were more like “to be open to new experiences, to challenge established order, and to be willing to take risks” than those who remained in Mexico (Craig 1983, p. 178).

There is evidence that state- and local-level leaders in the 1920s were aware that migration could undermine agrarian mobilization, and officials manipulated migration incentives to demobilize the peasantry. Starting in 1926, the government required that all migrants obtain signed contracts from the municipal government in their community of origin as a way of addressing political pressure from landowners to increase the supply of labor (Fitzgerald 2006, 2009). Municipal leaders were able to use the promise of emigration to discourage insurgent conflict, and elites who feared land reform frequently wrote “letters of recommendation” for villagers to ease the process of obtaining migration documents from municipal authorities (Fitzgerald 2009, p. 45). Landowners fearing agrarian mobilization facilitated emigration in other ways as well. Taylor (1933) describes the process through which elites in his study community in the center-west region would loan money to landless laborers to enable them to purchase train tickets to the United States. Because there were no banks or other sources of credit in the municipality, the landowners could use the promise of a loan to discourage cooperation with the agrarian movement. As one farmer in Taylor’s community noted, landowners were willing to pay an upfront cost to encourage emigration because they

---

<sup>16</sup>The institution of resident labor or debt peonage in Mexico was complex and varied greatly in enforcement mechanisms and repressiveness. See Knight (1986) for a review.

“prefer[red] to let the workers get away so that they [wouldn’t] concentrate in towns and ask for land” (Taylor 1933, p. 44).

The Great Depression not only disrupted these long-standing emigration flows, it also resulted in the repatriation of hundreds of thousands of Mexicans, some of who had been living in the United States for a generation. The return of migrants to Mexico after 1930 reinvigorated the agrarian reform movement. During floor debates on repatriation programs, a member of Mexico’s lower house of Congress argued that the repatriates represented “another injection of force, another injection of optimism, and a stimulus toward the betterment of [Mexican] agriculture” in the post-Depression period as many of the repatriates were young, motivated, and hardworking (Dávila 1932). The returned migrants swelled the membership of peasant organizations advocating for reform (Gamio 1930; Craig 1983). Faced with an upsurge in demand for land redistribution, local leaders sent urgent messages to state and national authorities asking them to resolve pending reform petitions, a departure from their earlier attempts to impede the movement (Craig 1983). Repatriates became an important constituency in support of Lázaro Cárdenas’ nomination in the PNR party convention of 1933 and the radicalization of the federal government’s agrarian program (Markiewicz 1993).

The repatriation of skills, values, and information gained abroad further stimulated agrarian reform. As early as the turn of the twentieth century, returnees from the United States had the reputation of being “uppity” among landowners (LaFrance 1990, p. 22). Manuel Gamio, an important early scholar of Mexico-US migration, went as far as to argue that the radical agrarian movement itself was in fact imported from the United States after Mexican immigrants saw the more egalitarian land tenure patterns of the American west (1930, p. 161-2). One agrarian activist described how returnees had “seen another life” in the United States and “weren’t going to going to return to the haciendas to earn the 15 centavos [about 7 US cents] that was paid” (Craig 1983, p. 93). Other accounts stress the importance of US experience in altering the relationship between peasants and the Catholic clergy, who were often violently opposed to agrarian reform (Craig 1983; González Navarro 2000). The

belief that emigration diluted the authority of the Catholic Church is widespread in the literature on Mexican migration and is often attributed to exposure to American religious practices and Protestantism (e.g. Gamio 1930; Taylor 1933; Craig 1983; Fitzgerald 2009). As Craig (1983) noted, knowledge of other religious practices and social structures “reduced the credibility of the local priests’ threats of eternal damnation for those who petitioned for lands” (p. 181).

Upon their return to Mexico, repatriates were also able to apply critical skills learned in the US to the agrarian movement. Craig (1983) describes how many migrants in her study community learned to read and write while in the US (at a time when less than a third of villagers in the region were literate) and were able to use these skills to read newspaper articles, write letters and petitions to government officials, and distribute flyers in support of land reform (p. 181-2). Some migrants belonged to labor unions while in the US and learned techniques of organization from their experiences (Gamio 1930; Craig 1983). While in the US, Primo Tapia, an important agrarian activist from the state of Michoacán, had been involved with the Industrial Workers of the World, a radical union that was active in the early 20th century. Tapia’s experience with the I.W.W. was politically radicalizing, and when he returned to Mexico, Tapia applied the skills he had learned organizing strikes and protests to local efforts in support of land reform (Friedrich 1977).

Not all returned migrants became supporters of the agrarian program. In some cases, repatriates had earned enough money in the US to purchase parcels of large plantations directly from landowners, who became more willing to sell their properties under threat of agrarian reform (Taylor 1933; Craig 1983). After the repatriates became landowners themselves, they sided with conservative forces and mobilized against agrarian interests (Taylor 1933; Durand and Massey 1992). This example illustrates the complexity of the relationship between repatriation and the land reform movement, but it also calls attention to the lack of control on the Mexican side of the forces unleashed by the Great Depression. Even where repatriates were political allies of local leadership, their return often spurred

renewed conflict.

## 6 Conclusion

This paper has linked the dramatic increase in Mexican land reform during the 1930s with the abrupt end of Mexico-US migration and the large-scale repatriation of citizens brought on by the Great Depression. In line with the theory developed in Section 3, the elimination of profitable exit opportunities in the US sparked demand for land reform in migrant source areas of Mexico. The empirical analysis shows that the increase in land reform in migration-dependent regions after the Depression was large and significant. Qualitative evidence suggests that the acceleration of reform during the 1930s was due both to the end of the emigration “escape valve” that defused political conflicts prior to the Depression and to the repatriation of skills, values, and information gained by returned migrants while in the United States.

This study sheds new light on the question of how curbing US immigration would affect Mexico. Sanderson (1984) documents that later land reform in Mexico was tied with swings in the US unemployment rate and therefore with the availability of exit options. During the 1990s, the dramatic rise in emigration from Mexico was both credited and blamed for the lack of a widespread rural mobilization or populist political agitation following the peso crisis, NAFTA, and other neoliberal economic reforms affecting the countryside (e.g. Fox 2007; Germano 2010). This study confirms that emigration can be a force of stability that defuses mobilization, but it also suggests that this stability could be temporary. There is no reason to believe that migration patterns will be permanent, and the closure of emigration opportunities could be destabilizing just as it was after the stock market crash in 1929. Many observers have characterized Mexican migration as an “escape valve,” but as many others have noted, it is not an escape valve that Mexico can control (e.g. González Navarro 1970; Sanderson 1984; Fitzgerald 2009).

The case of Mexican land reform following the Depression also contributes to our understanding of the development and distributional impacts of migration on source areas in general. On one hand, emigration during the 1920s reduced violence and defused collective action throughout Mexico, but it also enabled elites to avoid addressing the profound land and wealth inequality in rural areas. For those who could not migrate, the availability of exit options to their neighbors undermined local efforts to organize for redistribution and perpetuated conservative institutions. Non-migrants later benefited from the influx of skills, effort, and information brought by the wave of repatriation to the country, but it is difficult to say whether migrants would have ever returned to Mexico to participate in the agrarian movement had there not been a profound economic crisis on the other side of the US border. Without the Depression, emigration might have continued to preserve stability, defusing grassroots pressure for change as it did during the 1920s with profound welfare effects for migrants and non-migrants alike.

## References

- Ahmed, Faisal Z. 2012a. “The Perils of Unearned Foreign Income: Aid, remittances, and government survival.” *American Political Science Review* 106:1.
- Ahmed, Faisal Z. 2012b. “Remittances Deteriorate Governance.” *Review of Economics and Statistics* (online version).
- Albertus, Michael, Alberto Díaz-Cayeros, Beatriz Magaloni and Barry. 2012. “Authoritarian Resiliency and Poverty Traps: Land Reform in Mexico.” Stanford University.
- Aquino Moreschi, Alejandra. 2009. “Entre el “sueño zapatista” y el “sueño americano”: La migración a Estados Unidos vista desde las comunidades zapatistas.” *Migración y Desarrollo* 13:5–21.
- Benjamin, Thomas. 2000. Rebuilding the Nation. In *The Oxford History of Mexico*, ed. Michael C. Meyer and William H. Beezley. New York, NY: Oxford University Press.
- Bhattacharya, Jay, Christina Gethman and Grant Miller. 2013. “The Gorbachev Anti-Alcohol Campaign and Russia’s Mortality Crisis.” *American Economic Journal: Applied Economics* 5(2):232–260.

- Bogardus, Emory S. 1934. *The Mexican in the United States*. Los Angeles, CA: University of Southern California Press.
- Boix, Carles and Milan Svoblik. 2013. "The Foundations of Limited Authoritarian Government: Institutions, Commitment, and Power-sharing in Dictatorships." *Journal of Politics* forthcoming.
- Bueno de Mesquita, Ethan. 2010. "Regime Change and Revolutionary Entrepreneurs." *American Political Science Review* 104(3):446–466.
- Cardoso, Lawrence A. 1980. *Mexican Emigration to the United States, 1897-1931: Socio-Economic Patterns*. Tuscon, AZ: University of Arizona Press.
- Carlsson, Hans and Eric van Damme. 1993. "Global Games and Equilibrium Selection." *Econometrica* 61(5):989–1018.
- Chami, Ralph, Adolfo Barajas, Thomas Cosimano, Connel Fullenkamp, Michael Gapen and Peter Montiel. 2008. *Macroeconomic Consequences of Remittances*. Washington, DC: International Monetary Fund.
- Chaudhry, Kiren Aziz. 1989. "The Price of Wealth: Business and State in Labor Remittance and Oil Economies." *International Organization* 43(1):101–145.
- Coatsworth, John. 1974. "Railroads, Landholding, and Agrarian Protest in the Early Porfiriato." *Hispanic American Historical Review* 54(1):48–71.
- Coatsworth, John H. 1981. *Growth Against Development: The Economic Impact of Railroads in Porfirian Mexico*. DeKalb, IL: Northern Illinois University Press.
- Craig, Ann L. 1983. *The First Agraristas: An Oral History of a Mexican Agrarian Reform Movement*. Berkeley, CA: University of California Press.
- Cueva Ramírez, Luis George. 1994. Land Tenure, Markets, and Agrarian Reform in Central and Southern Jalisco: 1915-1940 PhD thesis University of California, San Diego.
- Dávila, José María. 1932. "Diario de los Debates, Cámara de Diputados XXV, December 15, 1932."
- Dell, Melissa. 2012. "Path Dependence in Development: Evidence from the Mexican Revolution." Working paper, Harvard University Department of Economics.
- Diaz-Cayeros, Alberto, Beatriz Magaloni and Barry R. Weingast. 2006. "Tragic Brilliance: Equilibrium Party Hegemony in Mexico." Department of Political Science, Stanford University.
- Durand, Jorge and Douglas S. Massey. 1992. "Mexican Migration to the United States: A Critical Review." *Latin American Research Review* 27(2):3–42.

- Durand, Jorge, Douglas S. Massey and René M. Zenteno. 2001. "Mexican Immigration to the United States: Continuities and Changes." *Latin American Research Review* 36(1):107–127.
- Edmond, Chris. 2012. "Information, Manipulation, Coordination, and Regime Change." Unpublished Manuscript, University of Melbourne.
- Feliciano, Cynthia. 2005. "Educational Selectivity in U.S. Immigration: How Do Immigrants Compare to those Left Behind?" *Demography* 42(1):131–152.
- Finkel, Evgeny, Scott Gehlbach and Tricia Olsen. 2013. "Does Reform Prevent Rebellion? Evidence from Russia's Emancipation of the Serfs." Unpublished Manuscript.
- Fitzgerald, David. 2006. "Inside the Sending State: The Politics of Mexican Emigration Control." *International Migration Review* 40(2):259–293.
- Fitzgerald, David. 2009. *A Nation of Emigrants: How Mexico Manages Its Migration*. Berkeley, CA: University of California Press.
- Foerster, Robert F. 1925. *The Racial Problems Involved in Immigration from Latin American and the West Indies to the United States*. Washington, DC: United States Department of Labor, US Government Printing Office.
- Fox, Jonathan. 2007. *Accountability Politics: Power and Voice in Rural Mexico*. New York, NY: Oxford University Press.
- Friedrich, Paul. 1977. *Agrarian Revolt in a Mexican Village*. Chicago, IL: University of Chicago Press.
- Gamio, Manuel. 1930. *Mexican Immigration to the United States: A Study of Human Migration and Adjustment*. Chicago, IL: University of Chicago Press.
- Gehlbach, Scott. 2006. "A Formal Model of Exit and Voice." *Rationality and Society* 18(4):395–418.
- Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. New York: Cambridge University Press.
- Germano, III, Roy Paul. 2010. The Political Economy of Remittances: Emigration, Social Insurance Provision, and Political Behavior in Mexico PhD thesis University of Texas-Austin.
- Gibson, Charles. 1964. *The Aztecs Under Spanish Rule: A History of the Indians of the Valley of Mexico, 1519-1810*. Palo Alto, CA: Stanford University Press.
- González Navarro, Moisés. 1957. El Porfiriato. La Vida Social. In *Historia Moderna de México*, ed. Daniel Cosío Villegas. Vol. IV México, DF: Editorial Hermes.
- González Navarro, Moisés. 1970. "Efectos sociales de la crisis de 1929." *Historia Mexicana* 19(4):536–558.

- González Navarro, Moisés. 1974. *Población y Sociedad en México (1900-1970)*. Mexico, DF: Universidad Nacional Autónoma de México.
- González Navarro, Moisés. 1993-4. *Los extranjeros en México y los mexicanos en el extranjero: 1821-1970*. México, DF: El Colegio de México.
- González Navarro, Moisés. 2000. *Cristeros y agraristas en Jalisco*. México, DF: El Colegio de México.
- Goodman, Gary L. and Jonathan T. Hiskey. 2008. "Exit without Leaving: Political Disengagement in High Migration Municipalities in Mexico." *Comparative Politics* 40(2):169–188.
- Haber, Stephen. 2006. "Mexican Wave." *Wall Street Journal* p. A14 (May 3).
- Haber, Stephen, Armando Rezo and Noel Maurer. 2003. *The Politics of Property Rights: Political Instability, Credible Commitments, and Economic Growth in Mexico, 1876-1929*. New York, NY: Cambridge University Press.
- Hirschman, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Cambridge, MA: Harvard University Press.
- Hoffman, Abraham. 1974. *Unwanted Mexican Americans in the Great Depression*. Tucson, AZ: University of Arizona Press.
- Kapur, Devesh and John McHale. 2005. *Give Us Your Best and Brightest: The Global Hunt for Talent and Its Impact on the Developing World*. Baltimore, MD: Center for Global Development.
- Knight, Alan. 1986. *The Mexican Revolution*. Lincoln, NE: University of Nebraska Press.
- Knight, Alan. 1991. The Rise and Fall of Cardenismo, c. 1930-c. 1946. In *Mexico since Independence*, ed. Leslie Bethell. Cambridge University Press.
- LaFrance, David. 1990. Many Causes, Movements, Failures, 1910-1913: The Regional Nature of Maderismo. In *Provinces of the Revolution: Essays on Mexican Regional History, 1910–1929*, ed. Thomas Benjamin and Mark Wasserman. Albuquerque, NM: University of New Mexico Press.
- Larreguy, Horacio. 2012. "Monitoring Political Brokers: Evidence from Clientelistic Networks in Mexico." Department of Government, Harvard University.
- Leblang, David. 2010. "Familiarity Breeds Investment: Diaspora Networks and International Investment." *American Political Science Review* 104(3):584–600.
- Magaloni, Beatriz. 2006. *Voting for Autocracy: Hegemonic Party Survival and its Demise in Mexico*. New York, NY: Cambridge University Press.
- Markiewicz, Dana. 1993. *The Mexican Revolution and the Limits of Agrarian Reform, 1915-1946*. Boulder, CO: Lynne Rienner Publishers.

- McBride, George McCutchen. 1923. *The Land Systems of Mexico*. New York: American Geographical Society.
- Meyer, Jean. 1973. *La Cristiada*. México, DF: Siglo Veintiuno Editores.
- Meyer, Jean. 1991. Revolution and Reconstruction in the 1920s. In *Mexico since Independence*, ed. Leslie Bethell. Cambridge University Press.
- Morris, Stephen and Hyun Song Shin. 2003. Global Games: Theory and Applications. In *Advances in Economics and Econometrics: Theory and Applications (Proceedings of the Eighth World Congress of the Econometric Society)*, ed. Mathias Dewatripont, Lars Peter Hansen and Stephen J. Turnovsky. New York: Cambridge University Press.
- Nunn, Nathan and Nancy Qian. 2011. “The Potato’s Contribution to Population and Urbanization: Evidence from a Historical Experiment.” *Quarterly Journal of Economics* 126(2):593–650.
- Pérez-Armendáriz, Clarisa and David Crow. 2010. “Do migrants remit democracy? International migration, political beliefs, and behavior in Mexico.” *Comparative Political Studies* 43(1):19–148.
- Pfutze, Tobias. 2012. “Does migration promote democratization? Evidence from the Mexican transition.” *Journal of Comparative Economics* 40(2):159–175.
- Qian, Nancy. 2008. “Missing Women and the Price of Tea in China: The Effect of Sex-Specific Earnings on Sex Imbalance.” *Quarterly Journal of Economics* 123(3):1251–1285.
- Salamini, Heather Fowler. 1978. *Agrarian Radicalism in Veracruz, 1920-1938*. Lincoln, NE: University of Nebraska Press.
- Salamini, Heather Fowler. 1990. Tamaulipas: Land Reform and the State. In *Provinces of the Revolution: Essays on Regional Mexican History, 1920-1929*, ed. Thomas Benjamin and Mark Wasserman. Albuquerque, NM: University of New Mexico Press.
- Sanderson, Susan R. Walsh. 1984. *Land Reform in Mexico: 1910-1980*. New York, NY: Academic Press, Inc.
- Shimizu, Takashi. forthcoming. “Cheap Talk with an Exit Option: The Case of Discrete Action Space.” *Economics Letters* .
- Singer, David Andrew. 2010. “Migrant Remittances and Exchange Rate Regimes in the Developing World.” *American Political Science Review* 104(2):307–323.
- Spilimbergo, Antonio. 2009. “Democracy and Foreign Education.” *American Economic Review* 99(1):528–543.
- Tannenbaum, Frank. 1929. *The Mexican Agrarian Revolution*. Washington, DC: The Brookings Institution.

- Taylor, Paul S. 1933. *A Spanish-Mexican Peasant Community: Arandas in Jalisco*. Berkeley, CA: University of California Press.
- Taylor, Paul S. 1934. "Mexican Labor in the United States: Migration, VI." *University of California Publications in Economics* 12(3):23–50.
- Thompson, Ginger. 2006. "Some in Mexico See Border Wall as Opportunity." *New York Times* p. A1 (May 25).
- Womack, Jr., John. 1968. *Zapata and the Mexican Revolution*. New York, NY: Vintage Books/Random House.
- World Bank. 2011. *Migration and Remittances Factbook 2011*. Second ed. Washington, DC: World Bank.
- Yates, P. Lamartine. 1981. *Mexico's Agricultural Dilemma*. Tucson, AZ: University of Arizona Press.

## 7 Tables and Figures

Table 1: **Important Dates in Mexican History, 1910-1940**

---

1910	Mexican Revolution begins.
1917	Mexican Constitution is approved with explicit provisions for land reform.
1920	Álvaro Obregón elected president. As part of his coalition, he increases land reform in central states where peasant movements were active.
1923	Military coup led by de la Huerta nearly topples Obregón's government
1924	Plutarco Elías Calles elected president. Calles took office as a supporter of reform, but became an opponent of the land reform program over time.
1926	Cristero War begins in central-western Mexico.
1928	Obregón reelected and then murdered. Emilio Portes Gil assumes the presidency. Maximato begins, and Calles becomes the de facto leader of the country.
1929	PNR party (precursor to PRI) founded. US Great Depression starts, leading to the repatriation of hundreds of thousands of Mexicans over the next five years.
1930	Calles announces his intention to end the land reform program.
1933	Lázaro Cárdenas nominated the PNR party convention. Adoption of six-year plan committed to increasing land reform and backing other progressive causes.
1934	Cárdenas elected. Agrarian Law of 1934 passed, which expands eligibility for land grants.
1936	Peak year of petitions for new ejidal grants.
1940	Ávila Camacho takes office.
1942	Beginning of the Bracero Program, which institutionalized temporary labor migration between Mexico and the United States.

Table 2: Correlation Between Migration Measures

	Foerster	Money Orders	Emigrants	Repatriates
Foerster Entries (1924)	1.00	.	.	.
Money Orders (1926)	0.87	1.00	.	.
Emigrants (1926-1930)	0.83	0.73	1.00	.
Repatriates (1926-1930)	0.65	0.63	0.90	1.00

Figure 1: Population Density of Mexico, 1921



Table 3: **Summary Statistics**

	Obs	Mean	Std. Deviation	Min.	Max.
Ejido petitions (1916-1929)	31	138.8	122.7	2	524
Ejido petitions (1930-1945)	31	487.2	366.3	52	1490
Beneficiaries (1916-1929)	31	16357	16500	47	74226
Beneficiaries (1930-1945)	31	30924.7	22604.3	928	85811
State-year petitions (1916-1945)	930	20.87	32.54	0	342
State-year beneficiaries (1916-1945)	930	1576.1	2617.0	0	20346
Emigrants (1926-1932)	31	8356	11806	5	42064
Money orders (July/August 1926)	31	791	1311	0	4775
Area (1921)	31	63368.8	56634.3	1483	245612
Population (1921)	31	462412.3	352801.8	10966	1191957
Density (1921)	31	31.98	108.10	0.22	610.97
Adj. area (1930)	31	63356	56622.21	1481.30	245506.1
Adj. population (1930)	31	517601	395330	10573	1356997
Adj. density (1930)	31	39.62	145.75	0.21	822.2

Figure 2: Geography of Mexican Migration



(a) Money Orders 1926

(b) Emigrants 1926-1932

Figure 3: Federal Land Reform Petitions by Year, 1916-1945

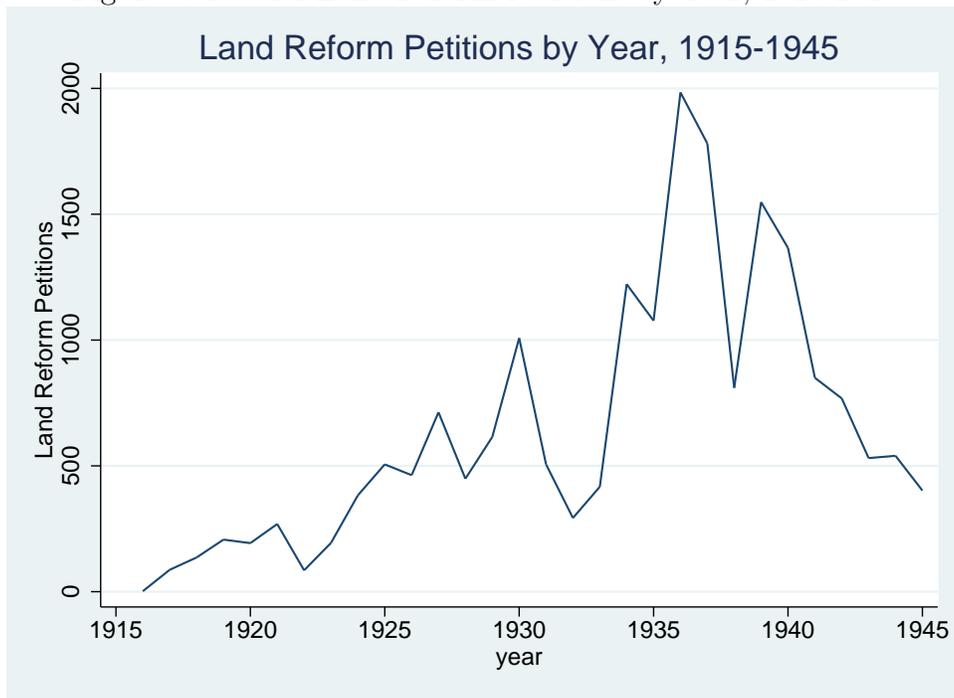


Figure 4: Mexican Land Reform, 1916-1945

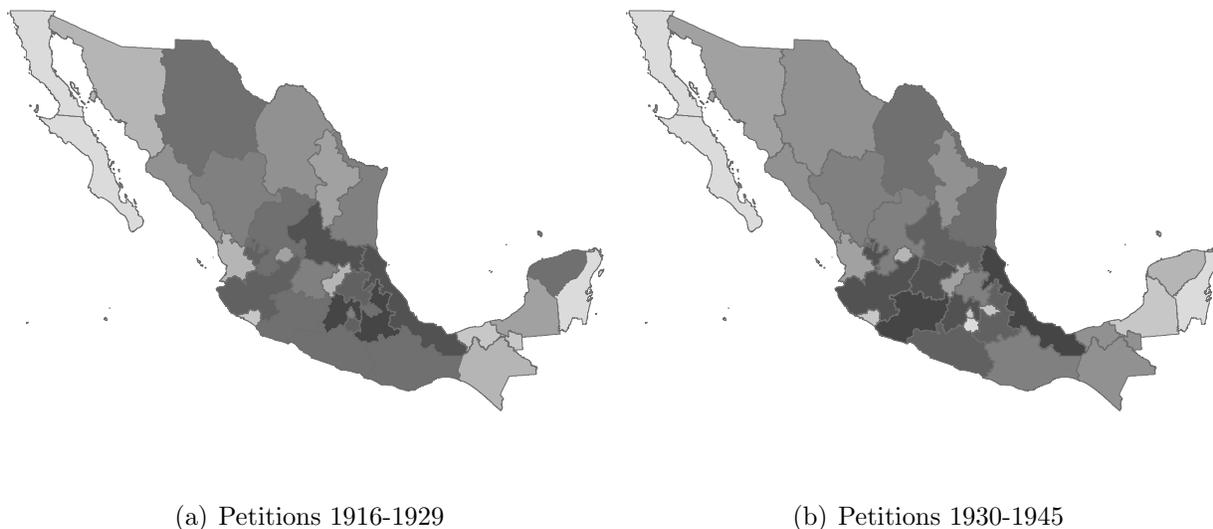


Figure 5: Land Reform Petitions by Migration Intensity and Year, 1916-1945

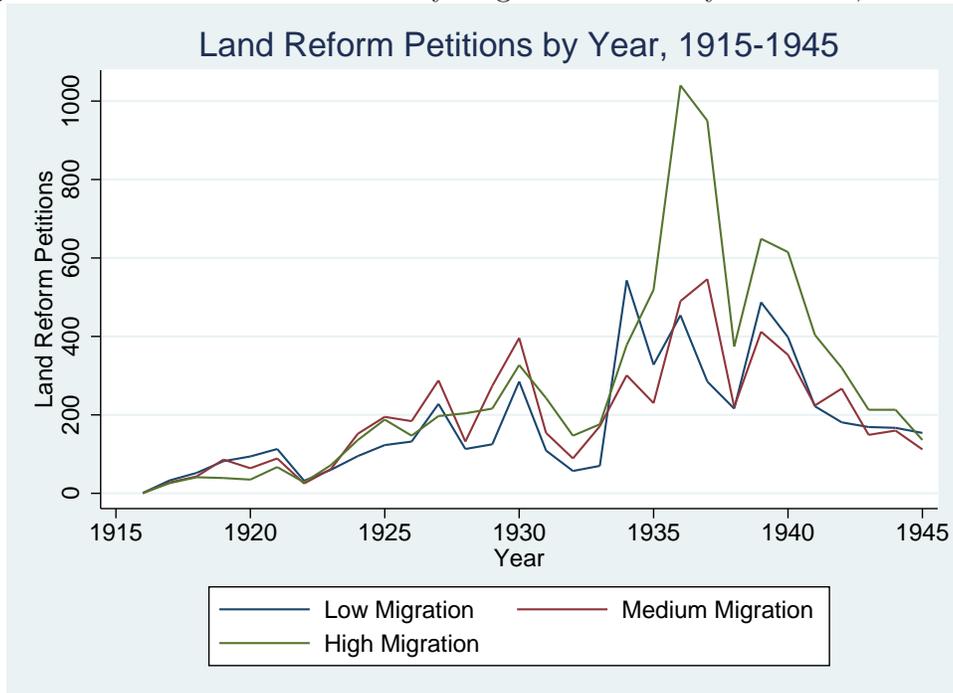


Figure 6: Change in Land Reform Petitions, Pre- and Post-Depression

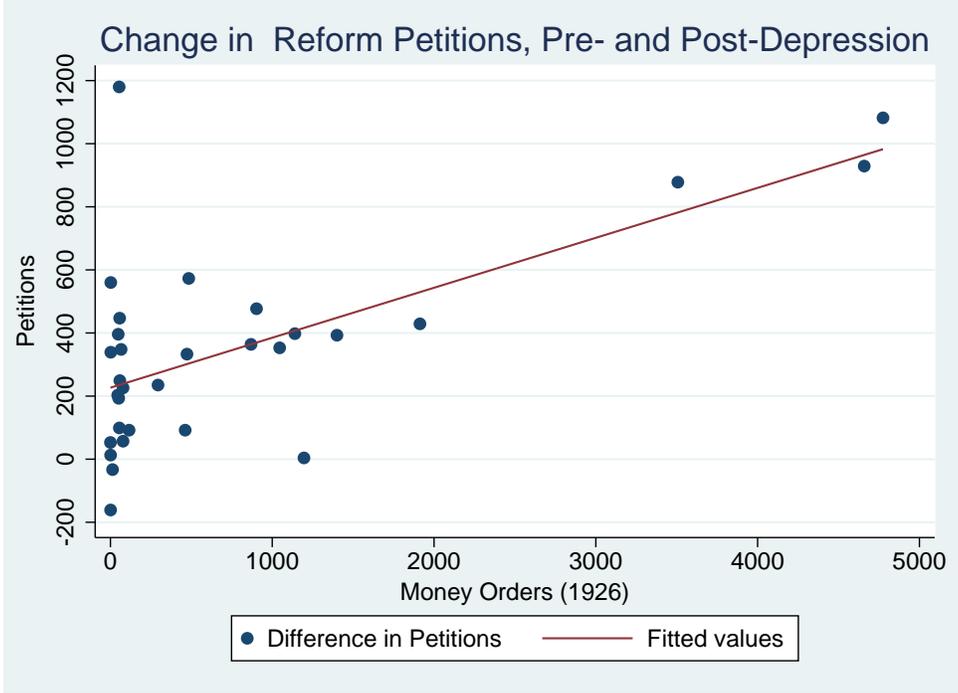


Figure 7: Change in Land Reform Beneficiaries, Pre- and Post-Depression

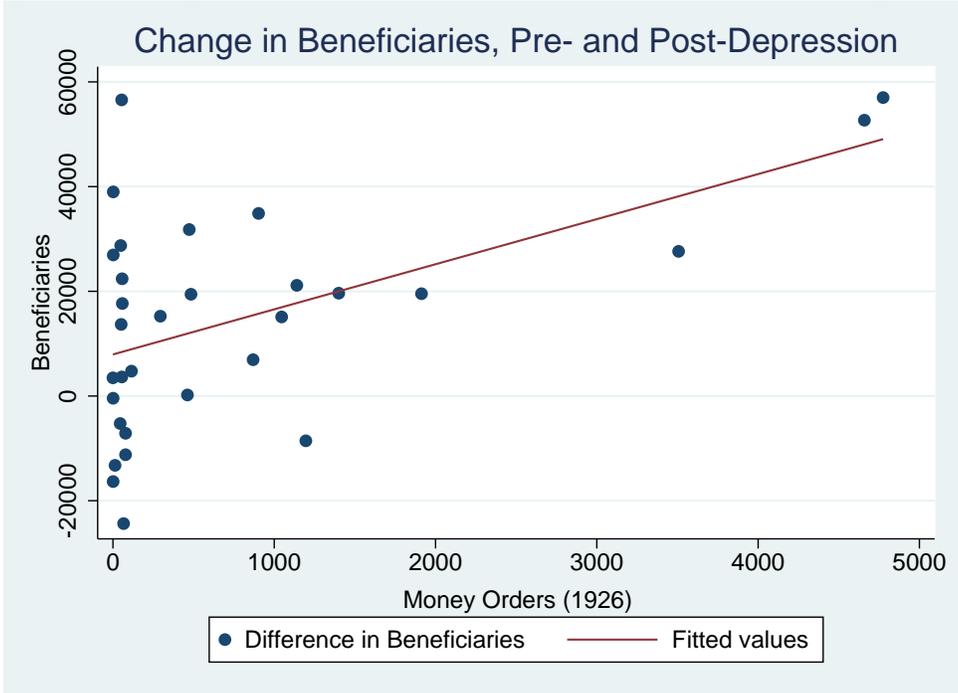


Table 4: Fixed-Effects Estimation of Migration on State-Year Land Reform Grants

Presidency	Year	Migration Measure Used:					Money Orders	Money Orders	Money Orders
		Interaction	Money Orders	Emigrants	Highest Quantile	Money Orders			
<b>Pre-Depression:</b>									
Calles	1926*	Migration	-0.09	-0.06	-2.16	-0.11	0.13		
Calles	1927*	Migration	0.11	-0.01	-3.09	0.03	0.49		
Maximato	1928*	Migration	0.18	0.05	7.06	0.17	0.24		
Maximato	1929*	Migration	0.08	-0.08	1.53	0.11	0.18		
<b>Post-Depression:</b>									
Maximato	1930*	Migration	-0.00	-0.17	-1.06	-0.05	0.27		
Maximato	1931*	Migration	0.30	0.19	9.74	0.30	0.35		
Maximato	1932*	Migration	0.04	0.04	2.77	0.06	0.06		
Maximato	1933*	Migration	0.12	0.19	4.42	0.22	0.32		
Cárdenas	1934*	Migration	0.35	-0.36	-1.70	0.21	0.79		
Cárdenas	1935*	Migration	1.93***	0.99**	25.25**	1.94***	2.45***		
Cárdenas	1936*	Migration	4.06***	2.50***	58.35***	4.27***	5.07***		
Cárdenas	1937*	Migration	2.84***	2.61***	54.06***	2.73***	2.85***		
Cárdenas	1938*	Migration	0.86**	0.81*	16.13	0.72*	0.76		
Cárdenas	1939*	Migration	1.19***	0.85*	14.27	1.04**	1.13**		
Ávila	1940*	Migration	0.82**	1.35***	20.08*	0.97**	1.19**		
Ávila	1941*	Migration	0.44	0.41	14.13	0.53	0.47		
Ávila	1942*	Migration	0.38	0.43	6.63	0.32	0.31		
Ávila	1943*	Migration	0.16	0.10	-0.16	0.19	0.18		
Ávila	1944*	Migration	0.13	0.18	0.09	0.12	0.24		
Ávila	1945*	Migration	0.01	-0.04	-1.00	0.01	0.02		
Groups:			31	31	31	31	29		
Observations:			930	930	930	930	870		
State Fixed Effects:			Yes	Yes	Yes	Yes	Yes		
Year Fixed Effects:			Yes	Yes	Yes	Yes	Yes		
Hacienda Controls:			No	No	No	No	Yes		
Agriculture Controls:			No	No	No	Yes	Yes		

\* p<0.1; \*\* p< 0.05; \*\*\* p<0.01. The scale of money orders is 100s and emigrants is 000s.

Figure 8: Year Interaction on Number of Petitions by Migration Quantile

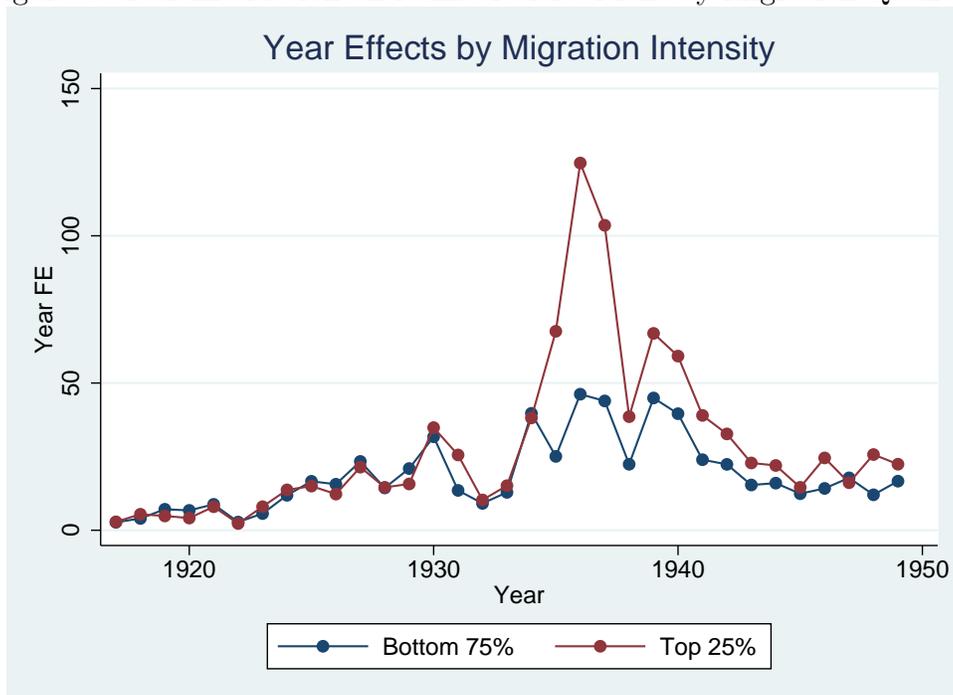


Table 5: Fixed-Effect Estimation of Migration on State-Year Land Reform Beneficiaries

Presidency	Year Interaction	Migration Measure Used:					Money Orders	Money Orders	Money Orders
		Money Orders	Emigrants	Highest Quantile	Money Orders	Money Orders			
<b>Pre-Depression:</b>									
Calles	1926*Migration	-9.09	-9.41	-439.42	-0.16	46.12			
Calles	1927*Migration	47.43	20.53	432.67	52.84	137.35***			
Maximato	1928*Migration	44.50	27.20	567.11	46.14	67.76			
Maximato	1929*Migration	6.32	-27.86	-610.18	25.83	53.49			
<b>Post-Depression:</b>									
Maximato	1930*Migration	17.73	-9.28	601.72	28.37	69.32			
Maximato	1931*Migration	33.24	14.75	1089.27	35.89	45.90			
Maximato	1932*Migration	-0.55	-1.31	-144.02	1.72	4.44			
Maximato	1933*Migration	10.05	10.68	181.61	20.07	36.16			
Cárdenas	1934*Migration	42.69	-22.40	158.92	47.33	87.64**			
Cárdenas	1935*Migration	195.95***	109.31**	4152.60***	199.42***	237.36***			
Cárdenas	1936*Migration	289.70***	203.48***	5432.18***	301.17***	334.02***			
Cárdenas	1937*Migration	284.80***	194.90***	4531.11***	211.45***	208.15***			
Cárdenas	1938*Migration	72.25*	57.04	1273.52	65.50	64.61			
Cárdenas	1939*Migration	53.00	28.73	229.72	39.99	41.86			
Ávila	1940*Migration	47.07	144.17***	274.72	62.08	77.74*			
Ávila	1941*Migration	22.45	14.92	439.28	26.49	21.67			
Ávila	1942*Migration	16.53	16.97	227.94	14.13	9.22			
Ávila	1943*Migration	7.23	2.76	-13.92	9.34	8.13			
Ávila	1944*Migration	6.09	4.01	-21.99	7.36	11.11			
Ávila	1945*Migration	-3.07	-6.40	-102.80	-2.96	-1.28			
Groups:		31	31	31	31	29			
Observations:		930	930	930	930	870			
State Fixed Effects:		Yes	Yes	Yes	Yes	Yes			
Year Fixed Effects:		Yes	Yes	Yes	Yes	Yes			
Hacienda Controls:		No	No	No	No	Yes			
Agriculture Controls:		No	No	No	Yes	Yes			

\* p<0.1; \*\* p< 0.05; \*\*\* p<0.01. The scale of money orders is 100s and emigrants is 000s.

Table 6: Pooled Cross Sectional Regressions, Pre- and Post-Depression

<b>Migration Measure:</b>	Money Orders	Emigrants	Money Orders	Emigrants
<b>Dependent Variable:</b>	Petitions	Petitions	Beneficiaries	Beneficiaries
Migration	-4.83** (1.53)	-6.83*** (1.96)	-2.10 (1.78)	-4.58** (2.17)
Migration*1930s	15.67*** (2.60)	13.03*** (4.49)	8.49*** (2.22)	7.51*** (2.98)
1930s	214.31*** (56.52)	224.51*** (59.84)	69.75* (42.07)	71.01* (43.55)
Log Density	138.50*** (37.01)	154.02*** (35.38)	108.52*** (25.31)	121.70*** (24.08)
Log Area	171.74*** (40.58)	190.89*** (42.95)	129.95*** (24.74)	147.15*** (26.58)
N	62	62	62	62
$R^2$	0.67	0.64	0.60	0.57

\* p<0.1; \*\* p< 0.05; \*\*\* p<0.01. The scale of money orders is 100s and emigrants is 000s.