

## Supplementary Appendix for “Land Reform in Mexico”

Starting on page 1 of this document we discuss the coding rules and data sources for the variables used in the regressions.

A full set of summary statistics for the variables used in the analyses is found in Table 2 of the manuscript.

On pages 5-6, in Figure 1, we include a series of graphs of yearly land distribution by state for all of Mexico from 1917-1992.

### Coding and Sources for Variables

#### 1. PRI Vote Share

We calculate PRI Vote Share based on the total number of votes for the PRI in presidential elections divided by the total number of votes cast. Data are from Castellanos Hernández, Eduardo, 1997, *Formas de gobierno y sistemas electorales en México*, México, D.F.: Centro de Investigación Científica Jorge L. Tamayo, A.C.

#### 2. Land Distribution

We measure land distribution as the physical area of land transferred, measured in hectares. Data are from Mexico’s Padrón e Historial de Núcleos Agrarios of the Registro Agrario Nacional. This is the most reliable and detailed data on land reform in Mexico. It conforms very closely to Walsh Sandersons (1984) data, which is the most comprehensive independent statistical reconstruction of land reform data.

There are two main variables constructed from land distribution data: log(Land Distribution), and Land Distribution (% Area), the latter of which divides land distribution by state land area. These variables are based on active land transfers through the land reform program. The year of the transfer is taken as the year of publication in the national register, and if that date is missing, the year of administrative execution. The actions are as follows, of which the first four are the main modes of transfers (see e.g. Walsh Sanderson 1984, 58; 73; 160):

- Outrights grants (*dotación*)
- Property amplifications (*ampliación*)
- Land restitution for displaced communities (*restitución*)
- New population centers (*nuevo centro de población, nuevo centro de población ejidal, nuevo centro de población agrícola, nuevo centro de población ganadero*; NCP/NCPE/NCPA/NCPG)
- Property additions and complements (*suma, complemento*)
- Land incorporations (*incorporación [de tierras] al régimen ejidal*; IRE/ITRE)

This definition does not include the recognition or confirmation of communities that already have de facto, relatively autonomous control of their property (*reconocimiento o confirmación y titulación de bienes comunales*; RTBC/CTBC/CBC). Therefore, its primary focus is on *ejidos*. However, it does capture new land transfers to both *ejidos* and traditional communities (*comunidades*). The definition excludes *permutas*, which are procedures by which *ejidos* or *ejidatarios* exchange goods or rights, including land. It excludes expropriations (*expropiaciones*), which served neither to consti-

tute or add land area to *ejidos/comunidades*. It also excludes land divisions (*división*) within or to split communities as well as the granting of ownership rights over plots within *ejidos* or *comunidades* (*dominio pleno*). Finally, procedures that took place following the end of land reform in 1992 (e.g. PROCEDE, *constituciones*) are not included.

### 3. Gross Domestic Product Per Capita

This variable measures real state-level GDP (*producto interno bruto*) in millions of constant 1993 pesos. Data from 1940-1992 are from: Germán-Soto, Vicente, 2005, “Generación del producto interno bruto mexicano por entidad federativa, 1940-1992,” *El Trimestre Económico* 72(3): 617-53. Data from 1993-1994 are from the Instituto Nacional de Estadística y Geografía (INEGI), System of National Accounts.

### 4. Economic Growth Rate

Economic growth data are calculated as the rate of change of  $\log(\text{GDP})$ , using the GDP data detailed above.

### 5. Total Population

Population is measured as the total number of inhabitants in a state. Data are from INEGI, *Censos de Población y Vivienda, 1895-2010*.

### 6. Percent Urban Population

This variable captures the percentage of the total number of inhabitants living in localities larger than 2,500 individuals. Data are from INEGI, *Estadísticas Históricas de México* for 1950-1995, and from the *Censo General de Población* for previous years. Prior to 1950, data are counted incorrectly in the *Estadísticas Históricas de México*: urban and rural population was instead counted by municipalities for earlier years, which did not include unincorporated small towns. The correct earlier data are nonetheless recorded in the population censuses.

### 7. Rural Population Density

Population density is measured as the number of rural inhabitants per square kilometer, with population data detailed above.

### 8. Net Migration

The variable records the annual average net migration per state over 10-year censal periods. For 1930-1970, the figures are calculated based on inter-censal indices of survival and changes in population figures. Figures from 1930-1960 are taken from *Dinámica de la Población de México*, México: El Colegio de México, 1981. Figures for 1960-1970 are taken from INEGI, *Censos Generales de Población y Vivienda* and calculated in Ordorica, M., 1976, *Migración Interna en México*, México. For 1980-1995, figures are based on changes in reported migration rates between censuses. Yearly migration figures for the period 1970-1980 are extended from migration figures from 1960-1970.

### 9. Illiteracy Rate

Illiteracy is measured as the percentage of the population over age 10 that is illiterate. Data are taken from INEGI, *Estadísticas Históricas de México*. The definition of illiteracy changes for selected years. In 1940 and 1950, statistics refer to the population six years of age and older that is illiterate. For 1980 and 1995, statistics refer to the illiterate population 15 years and older.

#### 10. Agricultural Production

This variable is measured as the net value of agricultural, animal and forest production in constant 1970 pesos. Data from 1930-1960 are taken from various years of the *Censo Agrícola-Ganadero y Ejidal*, with production figures adjusted using an implicit GDP deflator. Data from 1970-1993 are taken from National Accounts figures, with production figures adjusted using an implicit GDP deflator. The implicit GDP deflator is calculated from real and nominal GDP, with data taken from the OXLAD database.

#### 11. Land Pressure

We calculate land pressure by creating a proxy for latent pressure from below by rural workers. This variable is measured as the log of the net value of agricultural, animal and forest production in constant 1970 pesos divided by the number of rural inhabitants. Agricultural production data are detailed above, and rural population figures are from INEGI (see description of population data above). This measure is lower when the amount of land and the value of agriculture are high relative to the size of the rural population. We invert this measure to ease interpretation so that higher values correspond to greater latent land pressure.

#### 12. Elections

Election is a dummy variable coded “1” in all presidential and congressional election years and “0” otherwise. We also create two additional, separate dummy variables from this variable: Presidential Election and Midterm Election. Both presidential and midterm elections occurred every six years during the period, and were offset by three years.

#### 13. Land Beneficiaries in the Region

This variable is measured as the number of beneficiaries of land distribution (as defined above) in a state’s surrounding region, with regions defined below.

#### 14. Cumulative Land Beneficiaries in the Region

This variable is measured as the cumulative number of beneficiaries of land distribution (as defined above) since the beginning of land reform in 1917 in a state’s surrounding region, with regions defined below.

#### 15. Arid Land Area

Arid land area is measured as the number of hectares (in millions) of arid land. Data are from INEGI, *Anuario de estadísticas por entidad federativa, 2011*.

## 16. Percent Mountainous Land

This variable is measured as the percentage of total land area in mountainous zones. Data are from Semarnap, 1999, *Inventario Nacional de Suelos*, México.

## 17. Regions

We calculate several variables based on regions, and also include regional fixed effects in several models in the paper. Regions are defined as delimited in the *Plan Nacional de Desarrollo, 2001-2006*. States are classified into the following meso-regions: Northwest, Northeast, Center West, Center, and South.

Figure 1: Land Redistribution in Mexico by State, 1917-1992

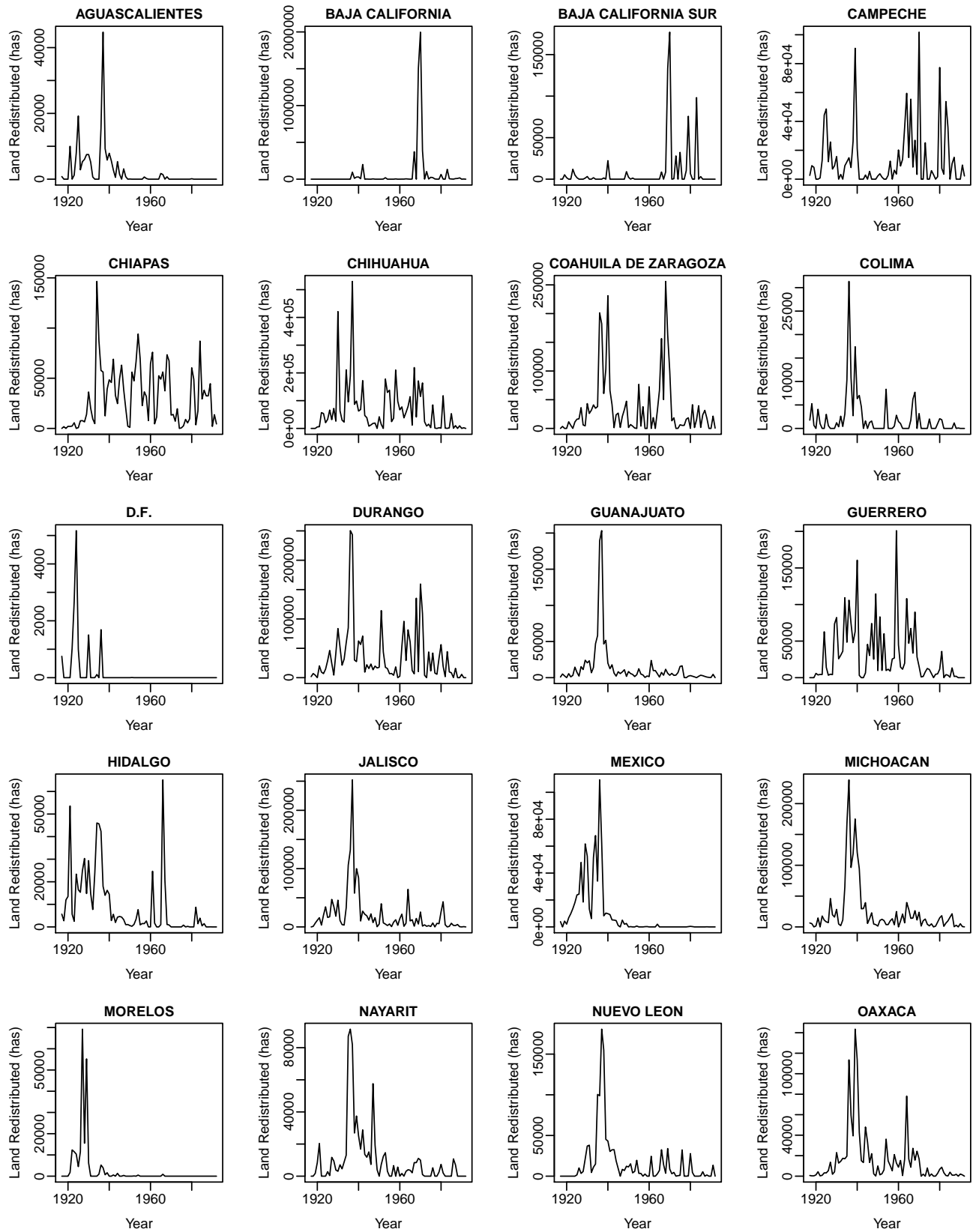


Figure 2: (Figure 1 cont.) Land Redistribution in Mexico by State, 1917-1992

