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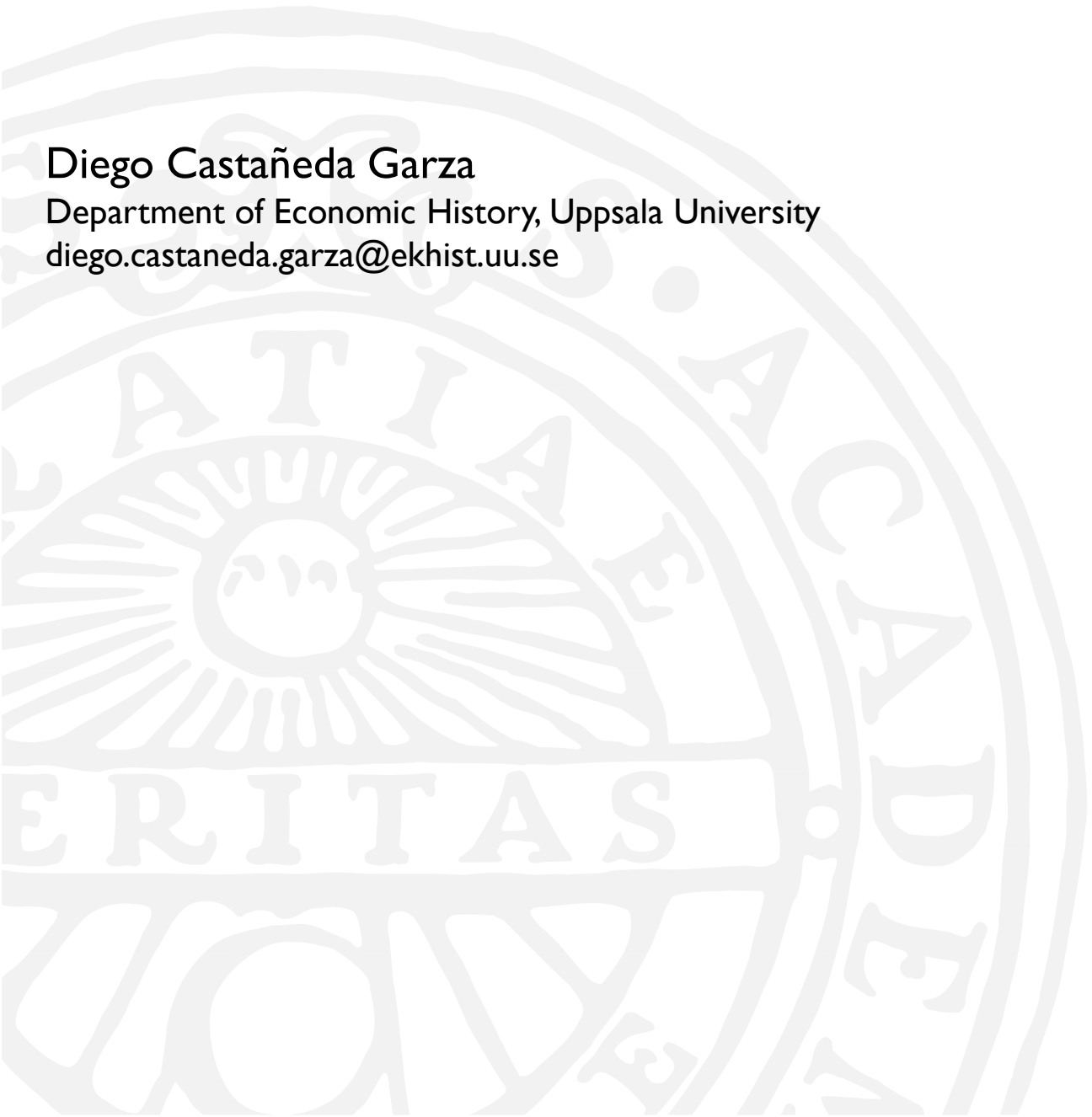
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A Wicked War: War and the Wealth Inequality – Public Debt Nexus

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Keywords: Wealth Inequality, Mexican-American War, Public Debt, Fiscal Military State

JEL: N33, D31, I32, N43, H20

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Diego Castañeda Garza*

June 2022

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As war is an eminently political event, the impact of wars on inequality can be seen as an expression of the politics in society. This paper engages with the ongoing literature relating warfare to wealth inequality dynamics in a pre-industrial world. It employs an unbalanced panel of wills in a combined event study and instrument variables research designs to explore the wealth inequality dynamics in Mexico during the Mexican-American War of 1846-1848. The findings suggest that weak public finances and financial crisis led to increasing wealth inequality through military expenditures and national debt. However, the formation of a regressive fiscal-military state and a levelling effect of warfare can coexist. Inequality depends on how war is financed and how destructive to capital and wealth the war is.

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"I do not think there was ever a more wicked war than that waged by the United States on Mexico. I thought so at the time, when I was a youngster, only I had not moral courage enough to resign."

Ulysses S. Grant – quoted by John Russell Young (1879)

"Sir, our militia and volunteers, if a tenth of what is said be true, have committed atrocities – horrors – in Mexico, sufficient to make Heaven weep, and every American, of Christian morals, blush for his country. Murder, robbery – rape on mothers and daughters, in the presence of the tied-up males of the families, have been common all along the Rio Grande. I was agonized with what I heard – not from Mexicans and regulars alone; but from respectable individual volunteers – from the masters and hands of our steamers."

General Winfield Scott – letter to the Secretary of War, William Marcy (1847)

I. Introduction

All political decisions entail winners and losers, and wars are the best example. From the late 1830s, Mexico faced growing tensions with its northern neighbour regarding the long-coveted former northern territories of the decaying Spanish Empire. The inner tensions between the Northern and Southern states of the United States regarding slavery and its geopolitical consequences in the Caribbean spilt into Texas after the Mexican abolition of slavery. Slavery was a key motivation for Texas independence during the Jacksonian democracy era (Bulmer-Thomas 2018). As argued by Lorenzo Meyer (1990, p.254), after failing to extinguish the Texan rebellion (1835-1836), Mexico faced a choice, either to encourage the new Republic of Texas to become a strong independent nation and a buffer to the United States or not to recognise it and let the seed of conflict sprout.

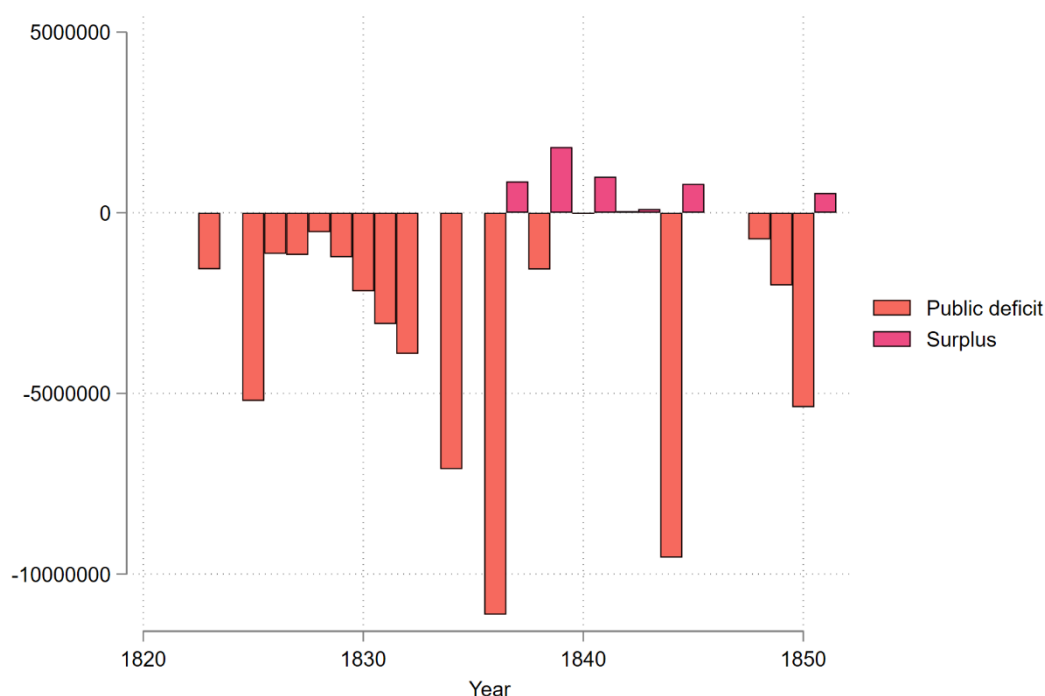
The choice was to be a fateful one. Soon after, tensions rose between Mexico and Texas over border disputes, and after the annexation of Texas by the United States in 1845, Mexico found itself in a conflict with its northern neighbour. As Salvucci (1991 p.714) succinctly explains, the territorial ambitions of the U.S. and the Mexican nationalism were irreconcilable, the clash of eagles was inevitable. After its independence in 1821, Mexico inherited a vast territory of close to 5 thousand square kilometres, north to south from northern California to Guatemala, west to east from the Philippines to Yucatán. However, the weakness of the state, its financial disorder and political instability would make that territory hard to retain. In 1845 the US moved its army to the Mexican frontier and occupied Mexican territory, and in 1846 the border disputes between Mexico and the United States erupted into a full-fledged war. The unresolved conflict, combined with U.S. President Polk's "Manifest Destiny"¹ ideas, would precipitate an invasion of Mexico, a blockade of its main ports, and by 1848, the seizure of close to 55% of its national territory.

The Mexican-American war proved a success for the American imperialist ambitions. The war announced the first signs of a rising new great power, although it would come at a huge cost for its winner, when soon after the southern expansion became a trigger for the American civil war (Guardino 2017). On the other side, the war would mean continuous disaster for Mexico, as it magnified the national conflicts within Mexican society. The country was bankrupt leading to fiscal and debt crises and constant political changes. Losing the war exacerbated those tensions, eventually leading to more civil wars. The local population endured hardships and largely contributed in every possible way to the war effort, but it was not sufficient. The country could not muster the resources nor the political stability to emerge victorious during the war. The defeat was partially caused by the political instability and the weak state of Mexican public finances (Meyer 1990, Martínez Carmona 2015, Herrera Serna 1997). Since independence, Mexico's deficits (see Figure 1) consistently signalled financial trouble (*Memorias de la Hacienda Nacional 1822-1868*, Coatsworth 1989, Marichal and Jáuregui 2009). Moreover, the country was unable to pay the army or even for ammunition:

¹ Manifest Destiny was a doctrine that proposed that the US was destined and favoured by God to expand its territory and spread republican democracy, capitalism and its religious point of view to the entire American continent.

“If we had any munitions, you would not be here”, claimed the famous General Pedro Maria Anaya to General Twiggs at the end of the Battle of Churubusco toward the end of the war.

Figure 1: Deficits and surpluses in the Mexican Republic (thousand current pesos)



Source: Memorias de la Hacienda Nacional 1822-1868.

Wars are generally thought of as great levellers (van Zanden 1995, Scheidel 2016, Piketty 2014, Milanovic 2018). The mechanisms behind this assumption are intuitive: wars destroy vast amounts of wealth and capital – both of which tend to be concentrated in few hands. Wars also tend to lead to increased taxation and resource mobilisation to finance them. Both mechanisms can have a distributional impact that takes inequality on a downward path.

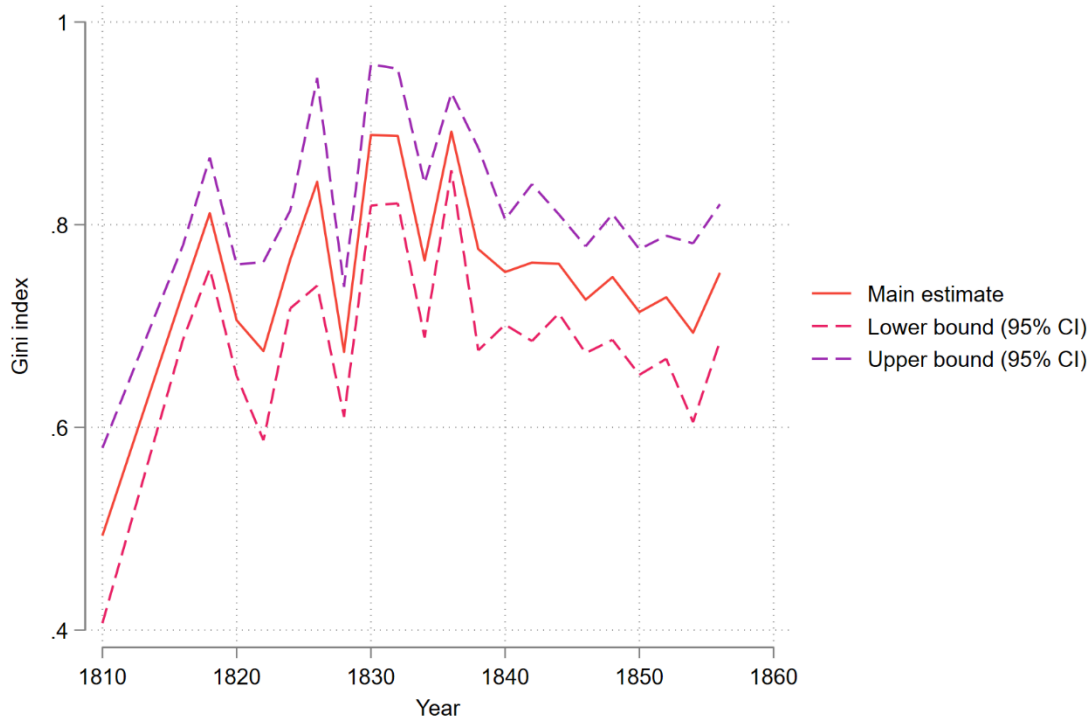
However, wars can also have the reverse effect. Warfare entails resource extraction, capital, wealth and human losses, and depending on the political situation, redistribution in the form of compensatory mechanisms towards the population, especially those that endured the greatest sacrifices and can articulate political demands (Scheve and Stasavage 2016). For example, Alfani and Di Tullio (2019) and Schaff (2020) argue that the formation of the fiscal-military state can lead to rising inequality as the way to finance a war can be regressive and fall on the poor. Meanwhile, credit markets and loans to the warring parties can increase the

lenders' wealth, usually local elites. This mechanism is also known as the "transfer effect" (Melon de Pradou 1734, Samuelson 1967, Stiglitz 1999, p.783-784). Considering both points of view – wars as great levellers and the fiscal-military state or the "Military Revolution" as a regressive force – leads us to the logical conclusion that the distributional impact of wars depends on two prominent mechanisms: how destructive the war is and how the war is financed.

State formation, wars and taxation appear to be historically and theoretically connected (Tilly 1990, Hoffman 2015, Besley and Persson 2009, 2010). The traditional or bellicist argument is that wars lead to higher taxes, higher taxes to improving fiscal infrastructure, and fiscal infrastructure to increased state capacity (i.e., higher revenue) and to lower wealth concentration. This chain of thoughts leads to the assumption of wars as great levellers. However, wars can also lower tax revenue, for instance if the state lacks legitimacy or if it can fall back on alternative methods to obtain resources, like debt. In summary, war financing unleashes different distributional dynamics that might produce unpredictable distributional outcomes.

This paper studies the Mexican-American War - the "wicked war" as described by U.S. President Ulysses S. Grant (1879) - employing a uniquely assembled dataset of 5 thousand individual wills that cover the 1820-1856 period (Castañeda Garza 2022a). It will use an event study design (Freyaldenhoven, Hansen, Pérez and Shapiro 2021; Clarke and Tapia Schythe 2021; Freyaldenhoven, Hansen, and Shapiro 2019a) and an instrument variable identification strategy (Angrist and Pischke 2009) to disentangle the impact of the war on Mexico's wealth distribution. It will show how the weak public finances of the young Mexican Republic was one of the primary mechanisms behind its high levels of wealth inequality (around 0.80 in the Gini index in the middle of the 1830s), and how the wicked war had a strong but brief reducing effect on inequality (around 0.74 in the Gini index in 1850s), and further how, after the war, inequality quickly returned to pre-war levels.

Figure 2: The evolution of wealth inequality in Mexico, 1810-1857



Source: Castañeda Garza (2022a)

For Mexico, the Wealth Inequality-Public Debt nexus is clear. The financial weakness and the failure of successive Mexican governments to renegotiate the foreign debt led the state into the hands of the “*agiotistas*” (usurers), the private money lenders that captured the state (Tanenbaum 1985, Hernández Jaimes 2013, Martínez Carmona 2015), increasing their fortunes, thus increasing inequality. To finance the war, the church, the military leaders and politicians, all part of the economic elite, were forced to contribute to the war effort from their own pockets through expropriation of property, by mortgaging property and/or by repudiation of debts, with the aggregate effect of reducing inequality. The regressiveness of the public expenditures also played its part. The military absorbed the largest share of the country’s budget, driving inequality up. However, after the war, the *agiotistas* strategy to convert national debt to foreign debt via diplomatic channels (Marichal and Jáuregui 2009) reintroduced the rising inequality dynamic and eventually wreaked havoc in the country over the next ten years of civil war and foreign intervention. The wars and the wealth inequality –

public debt nexus is a prominent political economy decision, and therefore its distributional consequences are politically decided.

By showing the distributional impact of public debt and the war, this paper will highlight how the fiscal-military state regressiveness in pre-industrial times and the notion of wars as great levellers can coexist simultaneously, leading to short-term distributive changes and rapid reversals. As stated by van Bavel (2020) for pre-industrial Europe, wars have simultaneous multidirectional effects on inequality and differentiated effects over short and medium time horizons. Taxation and public finances can increase inequality if taxes and expenditures are regressive and the state is captured by its creditors. At the same time, wars can level off inequality by destroying wealth and capital and by imposing contributions, debt repudiations, mortgages and expropriations to finance the state's survival. The results depend upon which forces dominate.

The rest of the paper is divided in the following way: Section II presents data, methods and results. Section III presents an account of the historiographical evidence and the historical discussion of the mechanisms in play. Section IV presents conclusions and extensions. Section V presents references and section VI appendixes.

II. Data and methods

The study of wealth inequality in pre-industrial times is a time-intensive and cumbersome task. Few works employ Mexican wills or probates to study wealth (Chowning 1999, Levy 2016, Castañeda Garza and Krozer 2022). For this study, the extensive work done in Castañeda Garza (2022a) to construct a large dataset of wills from Mexico is used to create an unbalanced panel for 26 of the 32 Mexican states for which wills are available. The panel comprises 3,255 wills from 1820 to 1856, from independence to the year before the 1857 constitution and the eruption of the War of the Reform². The panel is particularly dense for Mexico City and the states of Sonora, Michoacán, Mexico and Hidalgo and at a regional level for most of the central Mexican states. This geographical coverage ensures that the regions

² In 1857 a new liberal constitution was introduced. Among the more important features is the separation of the State and the Church, the mandate to disincorporate the assets of corporations (the Church), among others. The approval of the 1857 Constitution led to the War of the Reform, a civil war between conservatives who opposed the constitution and liberals who supported it.

where more than 90% of the Mexican population lived are included. Therefore, the lack of 6 states and the lower density of observations for some states, particularly in north-eastern Mexico, should not bias the wealth inequality estimates.

The choice of the period is a conscious one; to study the effects of war on wealth inequality it is necessary to have data of what was happening before and after the conflict. This time reference is essential for an event study design. The Mexican-American War falls just in the middle of the range of the dataset: it is far enough removed from the years of the Independence War (1810-1821) and the conflicts of the War of the Reform and the French Intervention that would engulf the country from 1857 to 1867.

The reconstruction of the levels of wealth inequality from 1810 to 1900 in Castañeda Garza (2022a), are presented at the national level after a careful rebalancing of the wills to account for the biases towards older and wealthier populations, following Castañeda Garza and Krozer (2022), Bengtsson et al. (2017), Bengtsson et al. (2018) and Lindert (1981).

With the 3,255 observations, it was possible to estimate state-level Gini coefficients for Mexico City, Estado de Mexico, Sonora, Michoacán and Hidalgo. In order to have regional variation in the instrumental variable setting, all the observations were pooled together (100% of the sample) to construct a “national” Gini value that could be used for all states different from Mexico City. For Mexico City, we calculated a separate Gini measurement employing 58% of the observations. Exploiting the density of data for Mexico City and the capacity to pool data for a national estimate enriches the analysis.

Figure 3: The geographical coverage of the panel.



Source: data from Castañeda Garza (2022a).

Note: The higher density of wills is in Mexico City, followed by the states of Sonora, Yucatán, Estado de México, Michoacán, Hidalgo, Guanajuato, Puebla and Morelos. These states account for over 90% of the population at the time (Estadísticas Históricas de México). Therefore, synthetic inequality indexes (Gini, Theil, etc.) estimated from the aggregation of the state observations can be regarded as a good approximation to the national level of wealth inequality.

Dummy variables were created for states that saw battles, sieges, blockades or occupations during the war (wardummy), for the time before, during and after the war started (timedummy) and gender (gender). Additionally, an interaction term (wickedwar) is included for the duration of the war on the states with battles, sieges and blockades; the lags and leads years; a dummy for gender (gender). and a state number variable (statenumber) to distinguish among the 26 states. The ratio of foreign debt to revenue (fdebrev) and foreign debt (fdeb) are taken from *Estadísticas Históricas de México*, Reinhart and Rogoff (2009) and the *Memorias de la Hacienda Nacional*. The variable ‘revenuecide’ was taken from the *Laboratorio Nacional de Políticas Públicas* from CIDE³ to control for the government revenue. To account for the nomads raids in northern Mexico the dummy variable (nomads) was created using data from DeLay (2008). The Gini coefficients were multiplied by 100 to facilitate interpretation. The CPI from Challú and Gómez Galvarriato (2015) is employed to transform wealth to real wealth. Then, real wealth is normalised using the inverse sine hyperbolic transformation⁴ to generate the normalised wealth (normalwealth) variable. To capture state capacity, the variable ‘statecap’ was taken from O’Reilly and Murphy (2022).

i. Event Study

The event study is a common research design within empirical economics. The method tries to observe the dynamic effect of a policy (or event) on specific outcomes in a constructed panel with periods in consecutive order (Freyaldenhoven, Hansen, Pérez and Shapiro 2021). Event studies are among the more powerful techniques to establish a degree of causality between the variables of interest (see Ashenfelter 1978). The basic logic of the event study is to slice time in periods before and after an event, employ different types of fixed-effects and control variables to “absorb” the possible impact of omitted variables and other sources of variation that can be correlated to the outcome variable, and in that way isolate the dynamic effect that the event has on the outcome over time. The technique works to establish a causal

³ <http://datos.cide.edu/handle/10089/17754>

⁴ $\ln(x + ((x^2) + 1)^{1/2})$. The inverse sine hyperbolic transformation is a useful tool for normalising variables that do not originally conform to the normal distribution and, therefore, to linear regression analysis assumptions. It is more useful than the natural logarithm transformation in two ways: 1) it can handle the value of 0, therefore, saving us from the “sinful” practice of imputing 1s to those observations. 2) it often produces a more compact distribution that more closely resembles the normal distribution.

direction if there are no other events of great relevance and similar nature occurring at the same time. For that reason, the selection of the period of the analysis is critical.

The typical event study takes the following mathematical expression:

$$y_{it} = \alpha_i + \gamma_t + q'_{it}\varphi + \sum_{m=-G}^M \beta_m Z_{i,t-m} + C_{it} + \epsilon_{it} \quad (1)$$

Where: α_i refers to fixed-effect at a geographical level at unit i , γ_t to a time fixed-effect at time t , and $q'_{it}\varphi$ to a vector of control variables. C_{it} controls for a potential omitted variable; $\sum_{m=-G}^M \beta_m Z_{i,t-m}$ refers to the dynamic effects in the policy or event of interest at time periods $M \geq 0$ before the event and $G \geq 0$ periods after the event; β_m is the coefficient that measures the dynamic effect of the event in the outcome; finally, ϵ_{it} is the error term.

The event study is constructed in such a way that the outcome at the time of interest is only affected by the event after time 0 (the occurrence of the event).

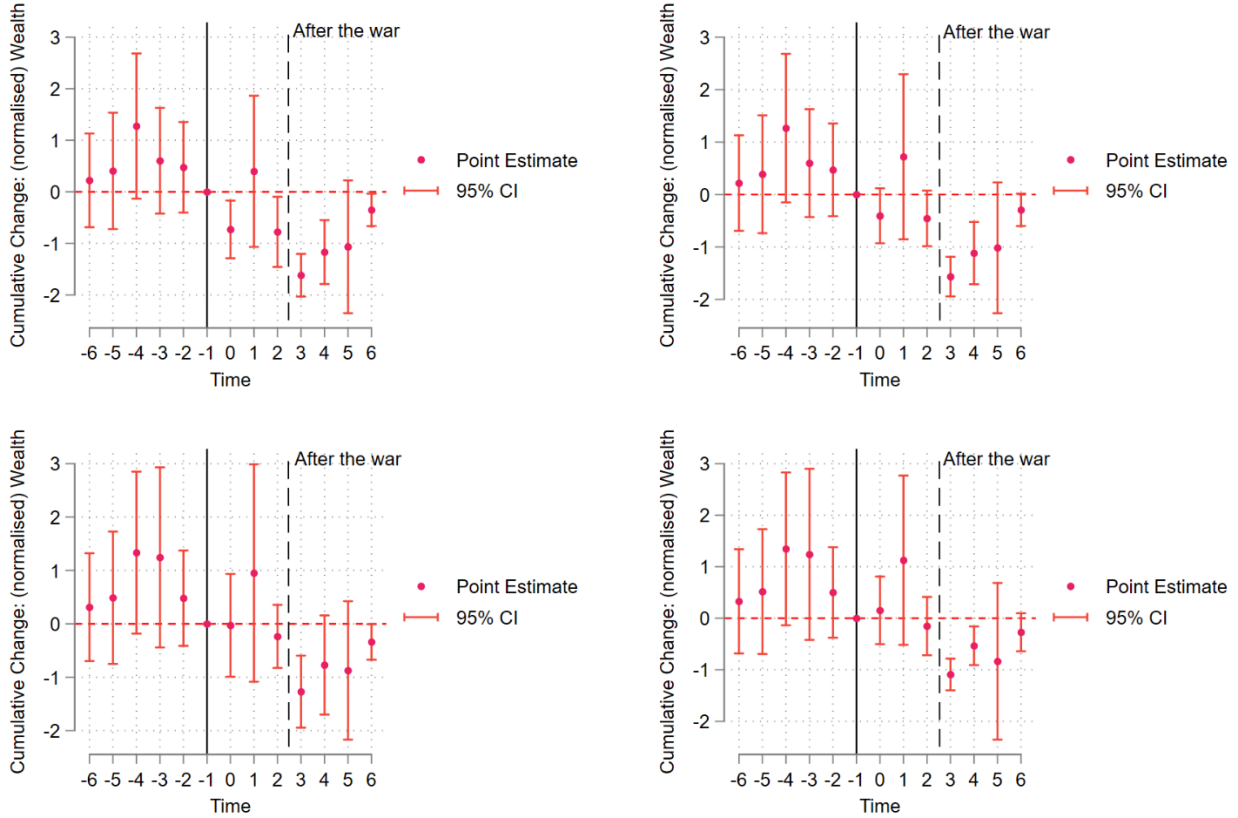
For the Mexican-American War the event study is implemented following the next general specification⁵:

$$\begin{aligned} \text{Wealth}_{it} = & \alpha + \beta_{26}(\text{Lag10})_{it} + \dots + \beta_2(\text{Lag2})_{it} + \gamma_0(\text{Lead0})_{it} + \dots \\ & + \gamma_{27}(\text{Lead26})_{it} + X'_{it}\Gamma + \mu_i + \lambda_t + \epsilon_{it} \quad (2) \end{aligned}$$

⁵ See the appendices for alternative model specifications.

ii. Results from the event study

Figure 4: The Mexican-American War effect on wealth



Note: The vertical reference solid line is positioned at 1 year before the event (1845), following the visual presentation recommendations of Freyaldenhoven, Hansen, Pérez and Shapiro 2021. The dashed line signals the end of the war (1848).

Figure 4 shows the event plots of the Mexican-American War. It displays the cumulative change in wealth before and after year 0 (1846). The vertical reference line signals one year before the warfare activities begun; where the change is below 0, inequality descends. The level above or below 0 indicates the magnitude of the change. The 95% confidence intervals indicate the likely range of the point estimate. If the estimates do not cross the zero line, they are statistically significant.⁶ Figure 4 signals that the war destroyed wealth and had a potential levelling effect; however, the levelling was probably short-lived.

⁶ The non-significant coefficients for the lead years (pre-time 0) indicates that the pre-event parallel trend assumption holds, therefore the event study fulfils the identifying assumptions for causal inference.

The results⁷ in Table 1 confirm the hypotheses for the different mechanisms behind the evolution of wealth during the war. The wardummy variable is significant at the 99% level and positively correlated to wealth, implying that the places that saw military action were wealthier, arguably because they included the largest cities and ports, and that the levelling occurred as a result of the economic collapse as captured by the GDP variable sign. However, the wardummy displays a contradictory swing, pointing towards increasing wealth. The event study presents an apparently ambiguous result. The interaction term wickedwar, that captures the duration of the war in the states that saw military actions (1846-1848), displays a negative sign and is significant at the 95% and 99% level. These results point towards a short-lived levelling effect.

⁷ The event plots for the different specifications are presented in the appendix

Table 1: The event study regression results for different specifications

Event-Study Variables	(1)	(2)	(3)	(4)
Dependent variable: normalwealth	Base model	+second interaction	+fdeb	+gender
gdp	-0.00143 (0.00238)	-0.00196 (0.00236)	-0.0230* (0.0115)	-0.0235** (0.0113)
wickedwar	-0.751** (0.308)	-1.073*** (0.324)	-0.966** (0.392)	-1.141*** (0.337)
1.timedummy	1.810*** (0.632)	1.426** (0.575)	1.450*** (0.509)	1.315** (0.613)
1.wardummy	0.601*** (0.119)	0.528*** (0.131)	0.570*** (0.139)	0.610*** (0.153)
1.timedummy#1.wardummy		0.388 (0.240)	0.362 (0.333)	0.479 (0.281)
fdeb			-0.0360* (0.0182)	-0.0356* (0.0179)
lead7	(0.544) -0.184 (0.551)	(0.544) -0.211 (0.548)	(0.628) -0.0693 (0.617)	(0.622) -0.0424 (0.612)
lead6	0.223 (0.441)	0.218 (0.442)	0.312 (0.490)	0.328 (0.491)
lead5	0.406 (0.547)	0.387 (0.545)	0.489 (0.602)	0.517 (0.588)
lead4	1.276* (0.683)	1.266* (0.687)	1.333* (0.736)	1.347* (0.720)
lead3	0.604 (0.498)	0.599 (0.499)	1.244 (0.819)	1.239 (0.806)
lead2	0.475 (0.426)	0.470 (0.429)	0.480 (0.434)	0.501 (0.426)
lag0	-0.728** (0.271)	-0.406 (0.254)	-0.0281 (0.467)	0.153 (0.319)
lag1	0.398 (0.712)	0.720 (0.764)	0.952 (0.989)	1.126 (0.798)
lag2	-0.776** (0.330)	-0.455* (0.257)	-0.235 (0.287)	-0.152 (0.275)
lag3	-1.617*** (0.201)	-1.565*** (0.183)	-1.270*** (0.327)	-1.091*** (0.149)
lag4	-1.167*** (0.301)	-1.117*** (0.288)	-0.771* (0.451)	-0.534*** (0.182)
lag5	-1.065 (0.625)	-1.015 (0.606)	-0.873 (0.630)	-0.837 (0.738)
lag6	-0.350** (0.152)	-0.293* (0.150)	-0.339** (0.162)	-0.271 (0.179)
gender				-0.421*** (0.146)
Constant	8.674*** (2.819)	9.309*** (2.843)	32.97** (12.29)	33.47** (12.08)
Observations	3,099	3,099	2,590	2,571
R-squared	0.052	0.053	0.046	0.047
Number of statenumber	26	26	26	26

State clustered standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Foreign debt (*fdeb*) is also statistically significant at the 90% level and negatively related to wealth inequality. This result could imply two possible channels for levelling: first, that as the Mexican government could access the international credit markets, it was freer from the influence of the money lenders (*agiotistas*) that exercised substantial influence over the government, even capturing it. As Tanenbaum (1985), Hernández Jaimes (2013) and Martínez Carmona (2015) eloquently describe, the money lenders enriched themselves by controlling the public debt, getting concessions to collect taxes (tobacco and salt) and no tariffs for their imports as ways to secure repayment. Their arrangements effectively deprived the government of revenue, leading to more debt, and for them, higher earnings. The mechanism described here is the (in)famous “transfer effect” (Melon de Pradou 1734, Samuelson 1967, Stiglitz 1999). Second, as revenue falls the government was forced to engage in less regressive expenditures, for example, stop paying interests to the *agiotistas* or waging wars, as the Alfani and Di Tullio (2019) fiscal-military state hypothesis suggests.

Both mechanisms will be tested in an instrument variable regression setting in the next subsection, instrumenting the foreign debt to revenue ratio (*fdebrev*) and introducing the natural logarithm of military expenditure (*lnwarnavy*). If the *lnwarnavy* variable shows a positive statistically significant coefficient, it would suggest that military expenditure was regressive. These results would support the fiscal-military state hypothesis by Alfani and Di Tullio (2019) and Schaff (2020).

Gender is significant at the 99% level and associated with lower wealth, this points out to a gender component to inequality, as less wealth in hands of women implies a more unequal society. Although the available data makes difficult to test the relation of wealth inequality and gender; the changes in inheritance laws that permitted more women to hold wealth over time (Castañeda and Krozer 2022) should in principle be associated with lower levels of wealth inequality.

Since the parallel trends assumption can be verified by the non-significant coefficients at the 95% level for the lead years (Freyaldenhoven, Hansen, and Shapiro, 2019a), these results lead us to believe that the war had an ambiguous effect on wealth, it led to wealth destruction through its impact in economic activity and government bankruptcy, but also to some gains to the *agiotistas* that were able to keep lending and were back to business as usual not long

after the signature of the Guadalupe-Hidalgo Treaty in 1848. Thus, although the changes to the distribution of wealth necessarily have an impact on wealth inequality, the event study offers only partial evidence to the direction of these changes as the return to *status quo* was relatively fast.

Mechanism one and two can be tested in the instrument variable regression setting to see if the effect of the debt through the *agiotistas* and the regressive expenditure were crucial drivers behind wealth inequality. More details on the historical explanation and mechanisms that account for these changes in the wealth distribution will be presented in section III.

iii. From wealth destruction to wealth inequality an instrumental variable approach.

Instrumental variables are a powerful tool in empirical research to address issues arising from endogenous variables, such as omitted variables bias and reverse causality (Angrist and Pischke 2008, pp.113-218). For our case of interest, the effect of the mechanisms proposed in the previous subsection, it is possible to use an instrument to discount the omitted variable bias present in any long-term analysis.

The results show a strong association between the military expenditure (*warnavy*), a dummy for the length of the war (*war*), the presence of nomad raids (*nomads*), the “Comanche wave” of 1845-1848, and the ratio of foreign debt to revenue (*fdebrev*) to the levels of inequality at the *state* level. The two-stage strategy shows the strong association between state capacity (the instrument) and the foreign debt to revenue ratio (the first stage regression). Then state capacity is used as an instrument for the foreign debt to revenue ratio, ruling out the endogenous components of government expenditures. Then the variables *lagconter*⁸ and *lagheads* that captures the lag in state authority over its territory and the lag of the number of head of state changes are added as controls to ensure the conditional IV independence. More importantly, this strategy allows the possibility of testing the effects of military expenditure and foreign debt to disentangle the possible causal mechanisms behind the Mexican-American War’s impact on wealth inequality. The results show that the military expenditure

⁸ The variable *lagconter* is lagged to ensure that the conditional IV independence holds. The variable *lagconter* was constructed from the “*v2svsterr*” variable in the V-Dem dataset <https://www.v-dem.net/>

was regressive, foreign debt negatively affected wealth inequality, and the war had a levelling effect. These results strengthen the case for mechanisms proposed in the previous subsection.

State capacity is strongly related to the opportunities of a state to participate in global markets, mainly to carry and honour debt (DiGiuseppe, Barry and Frank 2012). States with less capacity cannot control their territory, tax the inhabitants, and suffer from constant conflict; the combination of these factors tends to exclude them from financial markets. In 19th century's Mexico, the lack of state capacity is associated with access to credit markets. During the turmoil between independence and the *Porfiriato*, Mexico was almost totally excluded from credit markets (see section IV for a detailed explanation).

It is of great relevance to the identification strategy that Mexico was an extremely disconnected country. The regions were often left on their own and regularly experienced different institutional settings and different treats, for example, the Comanche's raids through the country (Coatsworth 1981, 1989; Voss 1982; DeLay 2008). During this period, this characteristic of the country makes the government decisions from the centre hard to enforce. Therefore, the mechanisms through which a more modern country could impact the distribution of wealth by developing more state capacity are not available, for example, providing free education, taxing income and wealth, or delivering public goods.

México was in constant social and political conflict, and its financial weakness was *inherited* from the Spanish colonial governments (Marichal 1999, Sánchez Santiró 2011) and the War of Independence; it was not a *choice*. Finally, the decision by the government to contract debt and spend it in the army was a *forced* one; it had to defend itself after independence since Spain did not immediately recognise the country as sovereign. The country was bankrupt, debt was the only source to finance expenditures and the motivation to use it was either to wage wars or to prevent coup attempts, not wealth redistribution. The index of state capacity⁹ does not change much over time. It has a median value of -1.6 with a standard deviation of 0.15 throughout the period. In practical terms, the Mexican state

⁹ State capacity, as measured by O'Reilly and Murphy (2022), use the first principal component factor of the following variables: the rule of law, the authority of the state over its territory, the impartiality of the government, expenditures in public goods, the modernity of sources of revenue and universal education.

existed only in name. For these reasons, it is possible to think of state capacity in our period as exogenous and almost fixed during the late 1830-1840s. To ensure the instrument exogeneity, conditional IV independence and increase precision, the different specifications introduce the lagconter and lagheads control variables.

The literature of instrument variables applied to economic history is vast, for example, Acemoglu, Robinson and Johnson (2001), Nunn (2008), Acemoglu et al. (2011). The conditions for a good instrument are that it should fulfil the exclusion restriction, that is: it should not be related to the outcome variable but strongly correlated to the explanatory variable of our interest.¹⁰ Second, to be relevant it should not be a weak instrument. Table 2 and 3 present the first and second stage regressions; the F-test value >10 confirms the instrument relevance (Sanderson and Windmeijer 2016). Table 2 presents an exactly identified equation (specs 1-5 and 7-8), thus it is not possible to formally test for the endogeneity of the instrument (test for over identifying restrictions, Stock and Watson 2020, pp. 448). For this reason, to test the endogeneity of the instruments a second two-stage least square regression is specified. Table 4 presents the overidentified equation with 2 instruments (statecap and lagstatecap). The p-values from the J-Test enables the rejection of the null hypothesis that the instruments are endogenous; these results are consistent and provide evidence that the exclusion restriction holds.

Addressing possible concerns for endogeneity, a further test can be performed. Introducing a lead of the instrument (leadstatecap) in different specifications (5, 6, 8 and 9) in tables 2 and 4, two full and two restricted. The test evaluates if the instrument is orthogonal to the outcome variable, as a future value of the instrument should not be able to predict a past outcome. In Table 2 the coefficient of the lead in three out of four specifications confirms the orthogonality. In Table 4, the results repeat except for specification 8. The combination of all results signals a strong relationship between wealth inequality and the war, its financing and the military expenditure. Table 5 presents a simple set of OLS regressions as a robustness check. The coefficient of the variables of interests are stable in both the IVs and the OLS,

¹⁰ Formally: $E(U_i|Z_{i1}, Z_{i2}, W_i) = E(U_i|W_i)$ that is, the instrument is exogenous as long as its not correlated with the error term of the regression, conditioning on the controls.

with the expected higher values in the OLS coefficients. This confirms that the IV strategy worked to correct the OLS bias, strengthening the credibility of the results. However, the restricted specifications are a cause of possible concern as in small samples the instrumental variables results are biased towards OLS (Angrist and Pischke 2008, pp. 205-215).

iv. Results from the IV regression

Table 2: IV Results

Second Stage Variables	(1) Base model	(2) War + Nomads	(3) Military Expen.	(4) FE-Controls	(5) FE-Controls +leadstatecap	(6) +RevenueCide	(7) Restricted 1836-1856	(8) Restricted 1836- 1856 +leadstatecap	(9) Restricted 1836- 1856 +leadstatecap +revenuecide
Dependent Variable: Gini									
fdebrev	-3.504*** (0.420)	-2.584*** (0.304)	-2.568*** (0.337)	-2.599*** (0.775)	-2.636*** (0.524)	-2.909*** (0.717)	-3.322*** (0.452)	-2.713*** (0.887)	-3.095*** (0.981)
1.nomads		1.678** (0.763)	1.399** (0.644)	11.58*** (0.364)	9.668*** (1.341)	5.765*** (0.923)	10.39*** (0.846)	11.61*** (1.349)	
1.wickedwar		-6.193*** (0.623)	-7.048*** (0.614)	-4.798*** (1.318)	-5.481*** (1.141)	-1.228 (2.251)	-5.499*** (0.669)	-6.163*** (0.841)	-4.640** (2.299)
lnwarnavy			3.040*** (0.965)	3.991 (2.584)	5.300*** (1.870)	4.881*** (1.764)	6.017*** (2.249)	6.356** (2.675)	5.745** (2.818)
lagconter				0.255 (0.191)	0.281* (0.158)	0.209 (0.218)	0.512*** (0.108)	0.469*** (0.113)	0.461** (0.200)
lagheads				-1.163 (0.824)	-1.183 (0.798)	-1.788** (0.765)	-0.272 (0.837)	-0.182 (0.862)	-1.202 (0.847)
leadstatecap					1.608 (3.800)	-13.37* (7.371)		6.469 (3.989)	-1.530 (7.518)
ingresoscide						0.00699 (0.204)			-0.173 (0.240)
Constant	85.79*** (1.025)	84.03*** (0.875)	37.39** (15.63)	-4.215 (49.63)	-24.56 (35.48)	-33.09 (42.76)	-54.6.t82 (37.69)	-47.67 (48.27)	
State F.E.	NO	NO	NO	YES	YES	YES	YES	YES	YES
Decade F.E	NO	NO	NO	YES	YES	YES	NO	YES	YES
Observations	311	311	279	197	160	139	114	91	70
R-squared	0.262	0.309	0.397	0.560	0.568	0.534	0.860	0.852	0.600
First Stage F-Test	113.6	168.2	143.6	13.81	28.16	20.40	21.65	7.521	27.29
J-Test (p-value)	NA	NA	NA	NA	NA	0.5145	NA	NA	0.3138

Robust standard errors in parentheses. State clustered standard errors specs 4-9. *** p<0.01, ** p<0.05, * p<0.1

Specs 6 and 9 introduce the lag of state capacity (lagstatecap) as a second instrument to enable the test for overidentifying restrictions (J or Sargan Test).

Table 3: First Stage

First Stage Variables	(1) Base model	(2) War + Nomads	(3) Military Expen.	(4) FE-Controls	(5) FE-Controls +leadstatecap	(6) +RevenueCide	(7) Restricted 1836-1856	(8) Restricted 1836-1856 +leadstatecap	(9) Restricted 1836-1856 +leadstatecap +revenuecide
Dependent Variable: fdebrev									
statecap	-4.456*** (0.418)	-5.165*** (0.398)	-5.516*** (0.460)	-5.583*** (0.303)	-3.737*** (0.291)	-3.225*** (0.251)	-7.312*** (0.248)	-4.148*** (0.382)	-3.598*** (0.294)
1.nomads		-0.0516 (0.100)	-0.0381 (0.100)	-0.244*** (0.0435)	0.300*** (0.0377)	0 (0)	-0.0395 (0.0571)	0.363*** (0.0596)	-0 (0)
1.wickedwar		-1.056*** (0.0938)	-1.005*** (0.0927)	-1.413*** (0.0726)	-0.481*** (0.108)	-0.218 (0.169)	-1.336*** (0.100)	-0.633*** (0.0970)	-0.0867 (0.111)
lnwarnavy			0.330** (0.136)	0.287*** (0.0954)	0.0755 (0.0693)	-0.0220 (0.102)	0.384* (0.211)	0.602*** (0.105)	-0.170 (0.201)
lagconter				0.000577 (0.0121)	0.0265** (0.0103)	0.0405*** (0.00837)	-0.0728*** (0.0195)	-0.00151 (0.0201)	-0.00235 (0.00997)
lagheads				0.145*** (0.0406)	-0.00816 (0.0503)	-0.144*** (0.0386)	-0.00272 (0.0780)	-0.00362 (0.103)	-0.625*** (0.0472)
leadstatecap					-3.628*** (0.218)	-4.219*** (0.359)		-3.887*** (0.202)	-4.915*** (0.221)
revenuecide						-0.0456*** (0.00469)			-0.102*** (0.0119)
Constant	-5.065*** (0.656)	-6.120*** (0.623)	-11.95*** (2.694)	-11.26*** (1.695)	-12.65*** (1.239)	-11.64*** (1.321)	-9.987** (3.837)	-20.53*** (2.164)	-7.497** (2.779)
State F.E.	NO	NO	NO	YES	YES	YES	YES	YES	YES
Decade F.E.	NO	NO	NO	YES	YES	YES	NO	YES	YES
Observations	311	311	279	197	160	139	114	91	70
R-squared	0.417	0.506	0.546	0.732	0.779	0.847	0.718	0.811	0.927

Robust standard errors in parentheses. State clustered standard errors specs 4-9.

*** p<0.01, ** p<0.05, * p<0.10

Table 4: Robustness check, over identified equation.

Second Stage Variables	(1) Base model	(2) War + Nomads	(3) Military Expen.	(4) FE-Controls	(5) FE-Controls +leadstatecap	(6) +RevenueCide	(7) Restricted 1836-1856	(8) Restricted 1836- 1856 +leadstatecap	(9) Restricted 1836- 1856 +leadstatecap +revenuecide
Dependent Variable: Gini									
fdebrev	-3.402*** (0.485)	-2.588*** (0.332)	-2.212*** (0.414)	-2.613*** (0.571)	-2.636*** (0.524)	-2.909*** (0.717)	-3.051*** (0.464)	-2.253*** (0.511)	-3.095*** (0.981)
1.nomads		1.930** (0.978)	2.091** (0.842)	11.57*** (0.247)	9.668*** (1.341)	5.765*** (0.923)	10.65*** (0.893)	11.54*** (1.266)	7.251 (2.299)
1.wickedwar		-6.176*** (0.818)	-6.814*** (0.811)	-4.813*** (1.080)	-5.481*** (1.141)	-1.228 (2.251)	-5.458*** (0.636)	-6.276*** (0.909)	-4.640** (2.299)
lnwarnavy			3.853*** (1.302)	3.991 (2.583)	5.300*** (1.870)	4.881*** (1.764)	6.332*** (2.323)	6.267** (2.652)	5.745** (2.818)
lagconter				0.256 (0.178)	0.281* (0.158)	0.209 (0.218)	0.491*** (0.103)	0.430*** (0.0612)	0.461** (0.200)
lagheads				-1.160 (0.776)	-1.183 (0.798)	-1.788** (0.765)	-0.297 (0.782)	-0.181 (0.789)	-1.202 (0.847)
leadstatecap					1.608 (3.800)	-13.37* (7.371)		9.357*** (3.174)	-1.530 (7.518)
revenuescide						0.00699 (0.204)			-0.173 (0.240)
Constant	85.30*** (1.164)	83.71*** (0.965)	23.35 (20.98)	-4.270 (49.31)	-24.56 (35.48)	-33.09 (42.76)	-58.63 (38.93)	-39.24 (44.56)	-46.87 (52.44)
State F.E.	NO	NO	NO	YES	YES	YES	YES	YES	YES
Decade F.E.	NO	NO	NO	YES	YES	YES	NO	YES	YES
Observations	218	218	197	197	160	139	114	91	70
R-squared	0.225	0.281	0.360	0.560	0.568	0.534	0.860	0.853	0.855
First Stage F-Test	63.41	148.5	101	33.76	28.16	20.40	41.80	53.26	27.29
J-Test (p-value)	0.6950	0.3253	0.6350	0.9705	0.8244	0.5145	0.2181	0.5329	0.3138

Robust standard errors in parentheses. State clustered standard errors specs 4-9. *** p<0.01, ** p<0.05, * p<0.10

Table 5: Robustness check, OLS regression.

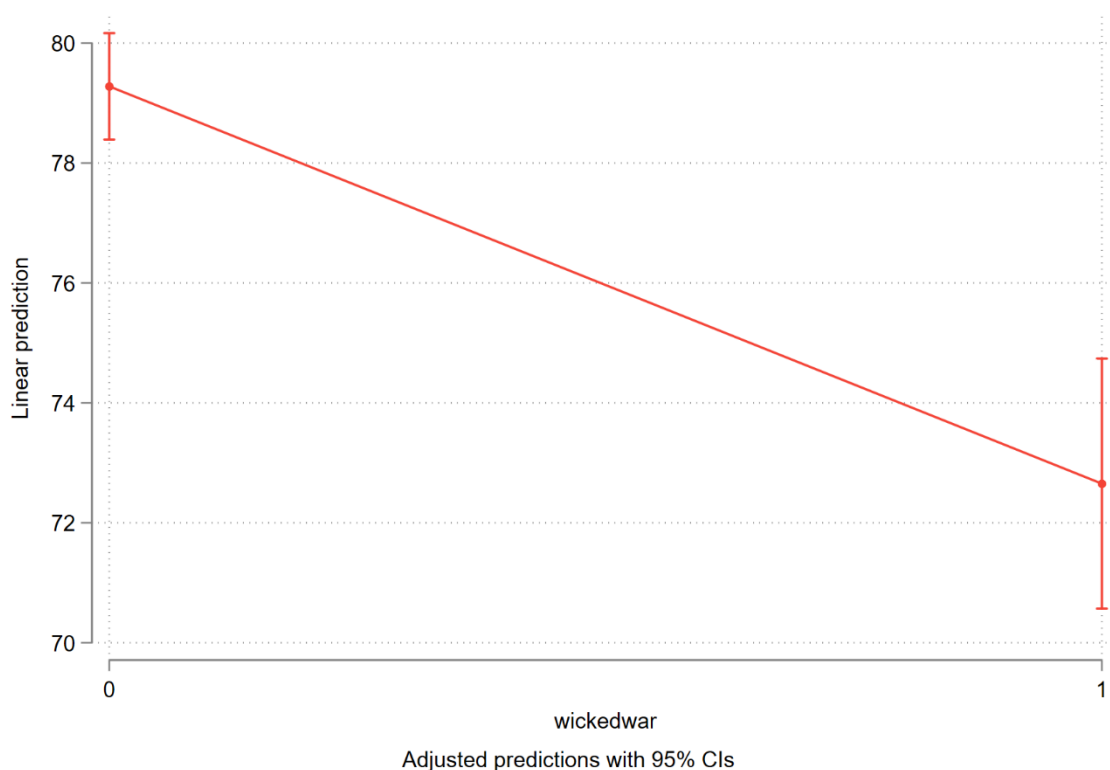
OLS Variables	(1) Base model	(2) War + nomads	(3) Military Expen.	(4) FE-Controls	(5) FE-Controls +leadstatecap	(6) +RevenueCide	(7) Restricted 1836-1856	(8) Restricted 1836-1856 +leadstatecap	(9) Restricted 1836-1856 +leadstatecap +revenuecide
Dependent Variable: Gini									
fdebrev	-3.752*** (0.301)	-3.875*** (0.290)	-3.278*** (0.209)	-3.078*** (0.278)	-3.132*** (0.567)	-4.261*** (0.634)	-3.174*** (0.218)	-2.416*** (0.455)	-3.602*** (0.610)
1.nomads		1.621** (0.753)	1.383** (0.639)	11.25*** (2.480)	9.718*** (1.424)	5.765*** (1.744)	10.54*** (1.518)	11.56*** (1.415)	7.251*** (1.516)
1.wickedwar		-6.497*** (0.614)	-7.232*** (0.599)	-5.309*** (0.700)	-5.311*** (0.913)	-0.617 (2.370)	-5.477*** (0.529)	-6.236*** (0.690)	-4.423** (1.697)
lnwarnavy			2.591*** (0.913)	3.989** (1.779)	5.246** (2.096)	4.645** (2.266)	6.189*** (1.436)	6.299*** (1.834)	5.446*** (1.780)
lagconter				0.288*** (0.105)	0.322*** (0.120)	0.346** (0.161)	0.500*** (0.0648)	0.444*** (0.0707)	0.506*** (0.136)
lagheads				-1.084* (0.573)	-1.238* (0.655)	-2.146** (0.856)	-0.286 (0.492)	-0.181 (0.567)	-1.565** (0.753)
leadstatecap					-1.438 (4.764)	-21.97*** (7.649)		8.332** (3.176)	-4.721 (5.467)
revenuecide						-0.0919 (0.158)			-0.243 (0.163)
Constant	86.32*** (0.708)	86.83*** (0.707)	45.96*** (14.55)	-6.046 (29.63)	-30.77 (35.72)	-49.60 (41.08)	-56.90** (23.29)	-42.23 (31.10)	-49.05 (31.12)
Observations	311	311	279	197	160	139	114	91	70
R-squared	0.263	0.340	0.408	0.563	0.569	0.543	0.860	0.853	0.857

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

The impact of foreign debt on wealth inequality, mechanism one, can be answered directly from Table 2: it shows a very consistent and statistically significant effect of reducing wealth inequality between 2.5 and 3.5 Gini coefficient points through the period. Mechanism two, the regressiveness of the military expenditures is also corroborated. The military expenditure was regressive and statistically significant. The war is the stronger factor behind levelling, is statistically significant at the 99% level, reducing inequality between 3 and 6.3 Gini coefficient points. Taking all the evidence together¹¹ points towards the interpretation that wars depending on their size, destructiveness, and financing, can result in different distributional dynamics. The Mexican-American War appears to have produced some, if short-lived, levelling.

Figure 5: Marginal prediction, the effect of warfare in a state



¹¹ In the appendix two different specification with restricted samples are presents as robustness checks.

Figure 5 shows a marginal prediction of the levels of wealth inequality if all other variables in the second-stage third specification are centred at their means. With 95% confidence intervals, it shows the effect of the war (war = 1) compared to the period before the war (war = 0). Without the war the Gini coefficient of wealth would be 79.27; with the war, it is 72.65. The war is associated with an 8.3% reduction of wealth inequality.

It is important to point out that the variable *nomads* controls for the raids from different independent Native American nations in different Mexican states. After independence, with the financial troubles and the lack of experience in government, the Mexican government stopped paying tribute to the Comanche, Apache, Chiricahua and Mescalero nations (DeLay 2008). The nomad raids are an important confounding factor because of the enormous wave of attacks on the Mexican territory during the Mexican-American War. The effect is fascinating; it is consistently significant and strongly impacts wealth inequality by on average 7.3 Gini coefficient points (1.38 to 11.56 range). However, since the regression coefficient shows high volatility, it should be interpreted with caution.

Although explaining the Indian raids is not part of the objectives of this study, it is a result that deserves at least the formulation of a hypothesis. How is it possible to make sense of this effect? The most likely explanation is related to the victims of the raids. The raids were costly, demanding resources for defence and leaving behind stolen and destroyed property. The raids were especially dangerous for people with fewer resources, who lacked the means to defend themselves. Victims often ended as enslaved people for the Comanche and other nations while the ‘lucky’ ones just endured property losses. In those raid-afflicted states that saw military action, the U.S. Army repelled the nomads in an attempt to gain the locals’ support (DeLay 2008, pp.264). This result suggests that small, low-intensity conflicts can often be more regressive than large wars and that studying their combined dynamics could be an important extension to this literature.

IV. The dynamics of the war and the wealth inequality- public debt nexus.

In section II, we stated that our results suggest the following mechanism for wealth inequality dynamics: 1) the fiscal and financial troubles of the young Mexican Republic that were reflected in its indebtedness to the *agiotistas* and thus the transfer of public resources to private hands, 2) the rise of the fiscal-military state that induced regressive expenditures

produced enormous economic gains for the military, 3) the Mexican-American war was an event that intensified the different national crises and nearly produced the collapse of the state. The war forced the hands of government to obtain resources and produced expropriations and forced mortgages, and with that, the bankruptcy of private lenders and capital destruction. In combination, these factors destroyed and redistributed wealth and thereby led to a temporary reduction in inequality. In other words, the fiscal-military state, the debt, and the war all acted simultaneously to influence inequality dynamics.

These mechanisms are sound in theory and in line with literature that seemingly offers contradictory or at least not always consistent accounts of the pre-industrial world (Alfani and Di Tullio 2019; Schaff 2020; Scheidel 2016). So how does our proposed mechanism stand against the historiographic evidence?

Mexico gained its independence with the signature of the Treaties of Córdoba on August 24, 1821, and almost immediately, Spain refused to recognise its legitimacy. As a result, since the first moment of its independence, it was forced to arm a military force to defend the newly achieved national sovereignty (Connaughton, B. 1998). This geopolitical reality forced the Mexican government to seek loans in the international market to finance its growing deficits. New Spain's finances deteriorated from the end of the 18th century due to the increasingly significant demands of money imposed by Spanish wars: the 1779 Anglo-Spanish War in the context of the U.S. Independence War with England and the fight around the world in the Napoleonic Wars (Mikaberidze 2020). The Spanish demands generated growing pressures on the finances of its colonial possessions in the Americas (Serrano and Jáuregui 2010), and after the Mexican War of Independence (1810-1820), they inherited that financial position.

In 1824-1825, just after the collapse of the First Mexican Empire, the first Mexican Federal Republic managed to negotiate two loans in the London market for about 20 million pesos. The purpose of the loans was to cover the growing military expenditure and the fall in government revenue due to tax reductions (the tax on mining was reduced from 10% to 3%¹²) and concessions, especially to the mining sector (Jáuregui and Marichal 2009; Sánchez Santiró 2011). However, just two years later, the Mexican government defaulted on those

¹² See Hernández Jaimes (2013) p.41

loans (Martínez Carmona 2015) and lost its access to international credit markets. Moreover, these developments occurred in a context of substantial political instability as the Mexican government was struggling with the internal fights between the centralist and federalist factions and the Spanish attempts of reconquest. As a result, the Mexican authorities were forced to seek financial support on the national credit market, which was dominated by a small class of merchant-financiers, comprised by 20 to 24 individuals (Martínez Sanchez 2015; Hernández Jaimes 2014, p.243) that were looking for the opportunity to earn high returns from a needy government with few available creditors.

During the 1830s, moreover, the Mexican government changed hands from the federalists to the centralists (25 changes of government occurred between independence and 1845, Meyer 1990, Aquiles Ávila et al. 2013). The military budget exploded during this period. The growing pressures of the Texan rebellion, the inner fights and the fear of coups unless the military was paid handsomely took the military expenditure to levels between 60 and 80% of the total budget (*Memorias de la Hacienda Pública* 1828-1868, Hernández Jaimes 2013). It was an excellent period for the merchant-financiers, the *agiotistas*. For example, the famous Lizardi family lent the young Mexican Republic \$149,206 pesos and in six months got a return of \$400,000. Salvucci and Salvucci (2016, p. 770) estimate an annual return of 325%.

The Lizardi brothers¹³ are the most famous *agiotistas* that illustrate the internal debt mechanism towards higher wealth inequality. These merchant-financier's business model hinged on political connections. For example, famously, the parole paid by President Santa Anna to Sam Houston after his capture during the Texas rebellion was financed by the Lizardi family, who profited immensely from their relation and the control over the tobacco taxes and the *libranzas* (debt certificates) issued against the payments of tariffs (Salvucci 2009). Other prominent examples are Manuel Villa y Cosío, Juan Vitalba, Juan Bautista Lobo, Eduardo Wilson and Roberto Manning, all among the governments' preferred lenders and who appear in the Notarial archives holding vast amounts of debts receivable, *libranzas* and

¹³ See document #33576 in the Archivo Histórico de Notarias for an example of Julian Lizardi bond holding in the name of Santa Anna in 1848.

high value property such as haciendas (see documents #103271, #79634, #98859, #46524 and #73751 respectively, Archivo Histórico de Notarias).

Corruption and state capture are important aspects of this story, one clear example is in 1834, the appointment of Antonio de Garay by Valentin Gómez Farias as the minister of finance. Garay was one of the principal *agiotistas* to lend money to the government; his economic influence allowed him to gain political influence in government policies towards the interests of the merchant and financial elites (Hernández Jaimes 2013, pp. 371).

An important point that deserves attention before moving to the outbreak of the war is the inner conflict between centralist and federalist factions. Mexico was advancing in the nation-building process in the middle of a political and ideological confrontation between two visions: one hierarchical and traditionalist that saw centralisation and a class-based society as the way to move the country forward. The other, more liberal, saw the building of a federal republic as the way forward to countervail the political power of the elites at the capital with the power from the states and the general public. This dynamic conflict led to significant strife that found among its many expressions the refusal of some regions to contribute with taxes. For example, some states took advantage of the lack of state capacity to engage in contraband of U.S. goods in the north and bypass the high tariffs (Morado Macías 2003). On the other hand, some states were fiercely federalist and refused to contribute or were concerned with internal conflicts like Yucatán (Herrera 1997).

At the same time, when the country was federalist, the institutional design of taxation was detrimental to the public finances, as states had the capacity to tax but the obligation to finance the army and the navy was entirely placed on the Federal government (Hernández Jaimes 2013, pp.69-122). Thus, as Erfurth (2021) highlights in the context of Italy and Germany over the 19th century, the choice between federalist and centralist systems impacts inequality as it changes the balance of power between different national and local elites. Thus, this movement from centralist to federalist republic and back, with all its tensions, served to amplify the different national crises and strengthened the regressive mechanisms behind its high inequality.

Just after the U.S. annexation of Texas and before the outbreak of the war, Mexico was attempting to renegotiate its foreign debt in London to regain the market's trust. President Herrera replaced the Lizardi trading house as the government's financial agent with the Schneider and Co. and Manning and Mackintosh trading houses. The negotiation advanced even though, at the same time, General Paredes y Arrillaga deposed Herrera and installed himself as the new head of government. However, as the first shots were fired in 1846, Mexico failed to renegotiate its foreign debt (Martínez Carmona 2015) due to the internal fighting between the so-called "*Los Puros*" (The Pure) faction led by Valentin Gómez Farias and the conservative faction of Paredes y Arrillaga. "*Los Puros*" managed to gain power by bringing Santa Anna back to power, this time as a federalist.

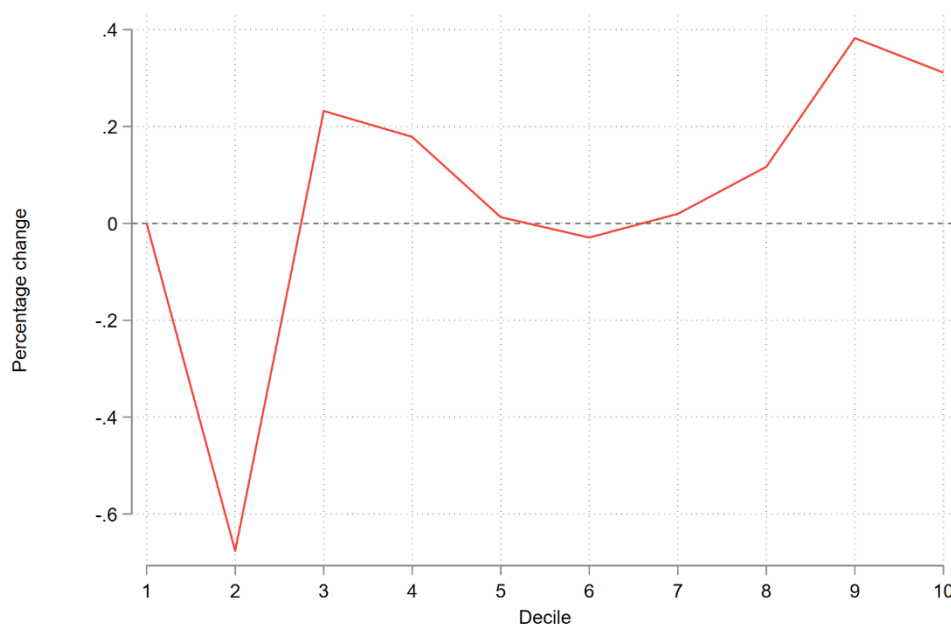
Santa Anna departed to fight the army of the U.S. General Zachary Taylor in northern Mexico, close to the cities of Monterrey and Saltillo. Meanwhile, Gómez Farias, as vice-president, stayed in charge of the government. Gómez Farias decided that the London renegotiation was not a good business for the country and backed down. The decision was a grave mistake, as it effectively cut Mexico off from all chances of access to the international credit market. Instead of paying a 5% annual interest rate to consolidate the Mexican foreign debt at £10,241,560 (Martínez Carmona 2015), the government ended up back in the hands of the *agiotistas* with fewer and fewer resources. Now at open war with the U.S., the Mexican government faced its main ports blockaded, effectively barring the country from access to the maritime customs its major source of revenue, 37% of the total revenue at the time (Sánchez Santiró 2011). The decision meant the return of the Lizardis as the Mexican financial agent, who profited generously.

At this point in our story, it is evident that the fiscal weakness of the country, its regressive military expenditure and the transfer effect to the *agiotistas* were powerful forces towards increasing wealth inequality. Our narrative confirms why the foreign debt to revenue ratio was negatively related to wealth inequality and why the military expenditure was positive related. As the government could access foreign credit, for example, through the credit negotiations of 1831, 1837, 1846 and 1851 (Sicotte and Vizcarra 2009, p.253), the grip of the merchant-financier was less strong and the transfer effect less prominent. As the

government needed to spend more money on the military, the wealth of the military increased.¹⁴

If we add to this the fact that taxation was becoming increasingly regressive over time, based more and more on indirect taxes on consumption and with lower tax rates in the mining and textile sectors (Sánchez Santiró 2011), then it is not hard to see why inequality was increasing.

Figure 6: Growth incidence curve for wealth, 1821-1845



Note: The growth incidence curve denotes the winners and losers during the period. If the line is below the 0-reference line it means it has a loss of X% points, if it is above the 0 reference line it means that the decile in question had a gain of X% points.

Figure 6 offers us the big picture behind the wealth inequality dynamics and the mechanism we have proposed for its explanation. The growth incidence curve (Ravallion and Chen 2003) displays winners and losers. The bottom 20% of the population incurred important losses, while the upper 20% gained significantly. The middle part of the distribution – that between deciles 3 and 7 – faced heterogeneous results. Deciles 3 and 4 show some gains, deciles 5

¹⁴ The high-ranking members of the military along with the church are among the most prominent wealth-holders that appear in the wills database, and long known in historiographical sources as the country's political and economic elite (Castañeda Garza 2022a).

and 7 are almost in the same place, decile 6 loses slightly. The overall effect is wealth polarisation, that is, a tendency towards higher levels of wealth inequality.

But then what about the war? How does the levelling occur? As mentioned before, the situation for the Mexican government was desperate after failing in its London renegotiations. Gómez Farias' desperation took the form of the law of "*Bienes de Manos Muertas*" ("dead hand goods" church property). The bill consisted of taking the church's property and mortgage it for a 15,000,000 pesos loan. However, the bill failed after the so-called "*Polkos*" rebellion, which was fought to save the church property (Martínez Carmona 2015).

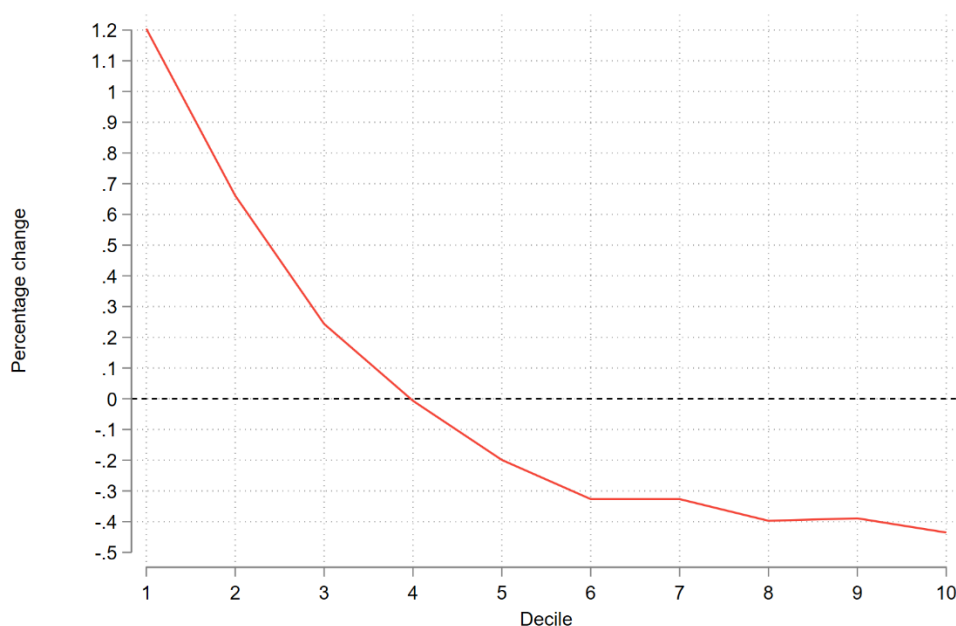
The church played an active role in financing the war; Connaughton (1998) reports that the church often paid for weapons and hospitals and even provided low-interest lending (and forced loans) to the government. As a result, the war cost the church around 20 million pesos in donations, forced donations, expropriations, forced mortgages and war damages. According to Jan Bazant (1977), the church wealth was between 80 and 90 million pesos, or between a fifth and a quarter of national wealth. In that case, the church losses were around 25%. Thus, just looking at the impact on the church's wealth, the war managed to destroy or redistribute around 6% of national wealth.

The church's losses alone should have had a levelling effect, but those were not the only losses. The officials of the army probably had to pay for the rations and equipment of some of their troops as the Mexican government could not provide the resources. The most famous such case is Santa Anna and the army of San Luis that he poorly equipped with \$500,000 pesos from his property and confiscations from the elites in San Luis (Fowler 2007, p.288; Guardino 2017, pp. 113). Trading and hacendado families such as the mighty Sánchez Navarro, owners of latifundia the size of Ireland, often experienced some losses because the government was bankrupt and defaulted on their credit, forcing the selling of property (Harris 1975, p.188). Even if families like that of Sánchez Navarro eventually recovered, other *agiotistas* did not (Hernández Jaimes 2013). Lending to the government remained a risky business, particularly during a war.

Furthermore, there is the patriotic contribution of common people from different states. As magnificently explained by Peter Guardino (2017), the population spilt blood, sweat and tears to help the war effort; and more often than not incurred economic losses or even lost their lives. On the other hand, the American army in the north, plundered every city and town it encountered, stole the property of people, their food, their lumber, and whatever they thought of value.

The historiographic evidence indicates support for examined levelling mechanism. This is why the event study suggests a short-lived levelling effect from the war, the destruction of wealth. In general, the fact is that almost every group lost from the war. The only exception are the poor people that were able to sell some agricultural products to the U.S. army, which had enough money to supply its needs from the Mexican population that had no other option but to sell due to the disruptions of the war in the economy (Guardino 2017, p.10), and the *agiotistas* that got paid with the money from the Guadalupe-Hidalgo Treaty. Figure 10 below displays the growth incidence curve of wealth in 1846-1851. In it, the winners and losers become more evident.

Figure 7: Growth incidence curve for wealth, 1846-1851



In figure 7, we can observe that 60% of the population, deciles 4 to 10, experienced a loss during the war and its aftermath. On the other hand, the bottom 30%, especially the bottom 10%, gained something as they could sell food to the warring armies, especially to the U.S. The distributive effect is evident from the figure. The levelling stems from the huge losses among the upper half of the wealth distribution and in a less significant way from the small gains (huge in proportion) for the bottom.

i. A short-lived levelling

On February 2 of 1848, the Treaty of Guadalupe-Hidalgo was signed, putting a “legal” end to the war. The treaty settled the Mexican claims over Texas, placing the border at the Bravo River instead of the Nueces River. Mexico relinquished 55% of its territory, today’s California, Arizona, New Mexico, Nevada and parts of Utah and Colorado. The country was so bankrupt that it accepted a settlement for 15 million dollars.¹⁵ By the end of the war, public opinion in the U.S. shifted, the loss of more than 13,000 American soldiers and 25,000 Mexican nationals during the conflict made the war a disgusting affair (Guardino 2017, p.6). Politicians such as then-congressman Lincoln actively denounced the war as an act of aggression that was against the core values of the American founders and as a ploy to extend slave owner interests.¹⁶ Cartoonists at the time drew the peace settlement as President Polk ordering Treasury Secretary Walker to fire cannons full of money toward the bankrupted Mexican government as Queen Victoria of England and King Luis Phillipe of France stood by, as envious witnesses.¹⁷

The metaphorical firing of money from the settlement of the Guadalupe-Hidalgo Treaty allowed the Mexican government to survive and the U.S. to eventually withdraw with some resemblance of legality. Nevertheless, the Mexican-American War was to be a poisonous affair for both countries. In the U.S., the newly incorporated territories and riches soon became a source of conflict as the tensions between north and south intensified and

¹⁵ The U.S. dollar to Mexican peso exchange rate during the period was 1:1.

¹⁶ ‘Spot’ Resolutions in the United States House of Representatives. [1847-12-22]. /documents/D200434b. The Papers of Abraham Lincoln Digital Library.

¹⁷ “Mediation and Pacification,” lithograph by H. R. Robinson [Edward Williams Clay, signed on stone], 26.8 x 39.6 cm (New York, 1850)

eventually led to war. Ulysses S. Grant, (2019[1885]), Lincoln's General during the Civil War and then President himself, would write in his memoirs:

The Southern rebellion was largely the outgrowth of the Mexican war. Nations, like Individuals, are punished for their transgressions. We got our punishment in the most sanguinary and expensive war of modern times.

For the Mexican side, a similar fate awaited. After losing the war with the U.S., the general feeling was one of defenceless, weakness, and hurt national pride. Mexico was still to lose, for the last time, some more territory to the U.S. in 1853 after the Gadsden Purchase. However, as Meyer (1990) explains, the U.S. would not stop thinking about taking more Mexican land until the end of the military phase of the Mexican Revolution in the 1920s. The conservative and liberal politicians would struggle in the aftermath of the Mexican-American War around the question of how to modernise Mexico in such a way as to prevent territorial losses from happening again. The conflicts intensified in the form of coups, revolts, and eventually a long civil war, the War of the Reform (1857-1861). Over those years, the political instability prevented Mexico from fixing its structural problems, the fiscal and financial weakness, and led to the reproduction of the same mechanism of war financing, more debt, more defaults and with that, an open invitation for other powers' foreign adventures, such as the French intervention of 1862-1867. These events led to a new cycle of regressive expenditures, huge gains for the financiers and then expropriations to pay for the costs of conflicts. The liberals prevailed in the end and would put Mexico on a path to modernisation designed to make Mexico a capitalist economy. A haven for foreign investment and for the national *hacendado* and business class that would reach its apogee during the *Porfiriato* (Castañeda Garza and Krozer 2022), with inequality rising and then declining to rise again.

The mechanisms studied here clearly point towards an institutionalist interpretation of the dynamics of distributive forces. Corruption, incentives for rulers to engage in conflict without significant risk to their own fortunes, the perverse effect of the military becoming the *de facto* state and the series of coup attempts and rebellions not only explain a great deal of the dynamics before 1846, but these institutional factors also explain a lot of why the levelling of the war evaporated. The same mechanisms were present after the war. In a sense the

dynamics of wealth inequality in Mexico are tied to the swings in the process of state formation and legitimacy since independence.

IV.- Conclusions and extensions

Carl von Clausewitz' genius observation about the nature of war, as described by John Lewis Gaddis, was that "war always reflects policy... It must remain subordinate to politics and therefore to policy, the product of politics" (Lewis Gaddis 2020 p. 197). In that sense, the Mexican conduct over the 1846-1848 war perfectly reflects its fiscal and financial policies. The wealth inequality that resulted from the interplay of the different distributional forces resulted from clear political choices.

In this paper, we have shown that both the fiscal-military state (Alfani and Di Tullio 2019) and the great leveller (Scheidel 2016) arguments can coexist. It is more interesting to see how these often inconsistent or even contradictory mechanisms interact to produce dynamics in pre-industrial societies and even in more modern ones. In the end, it shows that wealth inequality will follow the stronger force prevalent at that moment. Destruction and policies towards raising funds, counter the regressive mechanisms such as the transfer effect or the military expenditure in times of emergency. The modernisation of public finances, pacification and the financialisation of the economy can eventually turn off these mechanisms, allowing for different, more Kuznetsian inequality forces (Kuznets 1955) to be the ones driving the evolution of inequality.

The institutional mechanism is a different story; as North and Weingast (1989) and the modern institutional literature argue, institutional change is a slow process. Even if the economic modernisation entails institutional changes, the political institutions that dominated Mexico were largely the same for most of the nineteenth century. Thus, even if exogenous events like wars did produce different short-term dynamics, the overarching behaviour appears to be dominated by the persistent effect of political institutions. Inequality is after all a distinctive politically determined phenomenon.

Thus, this paper contributes to the ongoing literature by providing an example of such dynamics in a scenery more than ideal to observe the different forces at play. The results align with what the high and constant inequality that the Mexican income inequality literature

suggests (Bleynat, Challú and Segal 2021). The Mexican-American War deserves more attention as a source of valuable lessons of regressive policies and foolish endeavours. It is a foundational event in the modernisation of both the U.S. and Mexican economies and societies that highlights, at least from the perspective of this study, the distributional consequences of bad government.

A suggestive feature that underlies this study and that deserves its own examination, is the fact that Mexico's state formation process does not conform to the patterns of pre-industrial European countries studied in the inequality literature. Mexico had a "European style" state formation process as a Viceroyalty, but Spain left it incomplete, and after independence with all its conflicts and abuses the state lost legitimacy and the process was interrupted, as Simon Bolivar famously wrote in his Letter from Jamaica (1815):

How different is our situation! We have been harassed by a conduct which has not only deprived us of our rights but has kept us in a sort of permanent infancy with regard to public affairs. If we could at least have managed our domestic affairs and our internal administration, we could have acquainted ourselves with the processes and mechanics of public affairs. We should also have enjoyed a personal consideration, thereby commanding a certain unconscious respect from the people, which is so necessary to preserve amidst revolutions. That is why I say we have even been deprived of an active tyranny, since we have not been permitted to exercise its functions.

Bolivar's arguments are suggestive, because the state formation process in Latin America is very different from the European cases. In the Mexican case, the "long nineteenth century" since independence up to the end of the Mexican Revolution, can be characterised not only as a state of almost permanent warfare, but as an ongoing process oscillating between state reinvention and state decomposition, between acquiring the powers of "effective tyranny" and modernisation. Such erratic development would have played an important role in the long-term dynamics of inequality.

Understanding the sources of rising or declining inequality in the past can give us a better understanding of how to achieve more egalitarian and just societies in the present, at least by highlighting the key differences in time and space, but also by providing valuable examples

that can speak to our current debates. The study of different conflicts in the Mexican context and their relation to distributional issues, the different wars during the nineteenth century, and the Mexican Revolution, are necessary extensions yet to be made to the Mexican economic history literature. Studying these conflicts will add value to the growing world economic history literature of wealth and income inequality that in our time is of great importance, not least to large parts of the developing world.

V.- References

i.- Archival and statistical sources

Archivo Histórico del Estado de Yucatán (AGEY). Fondo Justicia 1821-1913

Bolívar, S. Letter from Jamaica, translated by Lewis Bertrand in *Selected Writings of Bolívar*. The Colonial Press Inc. New York 1951

El Colegio de México. Archivo Histórico de Notarias. Documents #103271, #79634, #98859, #46524 and #73751

El Colegio de Sonora. Testamentos de Sonora. 1786-1910.

Instituto Nacional de Geografía, Estadística e Información (2014). *Estadísticas Históricas de México*. Talleres Gráficos del Instituto Nacional de Geografía, Estadística e Información, Aguascalientes: México.

<https://www.inegi.org.mx/app/biblioteca/ficha.html?upc=702825058203>

Memorias Que el Ministro de Hacienda Presenta al Soberano Congreso Sobre el Estado del Erario, 1822-1868.

‘Spot’ Resolutions in the United States House of Representatives. [1847-12-22]. /documents/D200434b. The Papers of Abraham Lincoln Digital Library.

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Jan Teorell, David Altman, Michael Bernhard, Agnes Cornell, M. Steven Fish, Lisa Gastaldi, Haakon Gjøløw, Adam Glynn, Sandra Grahn, Allen Hicken, Katrin Kinzelbach, Kyle L. Marquardt, Kelly McMann, Valeriya Mechkova, Pamela Paxton, Daniel Pemstein, Johannes von Römer, Brigitte Seim, Rachel Sigman, Svend-Erik Skaaning, Jeffrey Staton, Eitan Tzelgov, Luca Uberti, Yi-ting Wang, Tore Wig, and Daniel Ziblatt. 2022. "V-Dem Codebook v12" Varieties of Democracy (V-Dem) Project.

ii.- Articles and Books

Acemoglu, D., Johnson, S., Robinson, J.A., 2001. The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review* 91, 1369–1401. <https://doi.org/10.1257/aer.91.5.1369>

Acemoglu, D., Cantoni, D., Johnson, S., Robinson, J.A., 2011. The Consequences of Radical Reform: The French Revolution. *American Economic Review* 101, 3286–3307. <https://doi.org/10.1257/aer.101.7.3286>

Alfani, G., Di Tullio, M., 2019. *The Lion's Share: Inequality and the Rise of the Fiscal State in Preindustrial Europe*, 1st ed. Cambridge University Press. <https://doi.org/10.1017/9781108568043>

Angrist, J.D., Pischke, J.-S., 2009. *Mostly harmless econometrics: an empiricist's companion*. Princeton University Press, Princeton.

Ashenfelter, O., 1978. Estimating the Effect of Training Programs on Earnings. *The Review of Economics and Statistics* 60, 47. <https://doi.org/10.2307/1924332>

Ávila, A., Ceja, C., Navarro, P., Rivera, S., Tapia, R., 2013. *De precisos, espurios y parias: 200 años del presidencialismo en México*. 1st ed. Malpaís Ediciones, México.

Baumgartner, A., 2020. *South to freedom: runaway slaves to Mexico and the road to the Civil War*. Basic Books, New York.

Bazant, J., 1977. Los bienes de la iglesia en México, 1856-1875: aspectos económicos y sociales de la revolución liberal, 2nd ed. El Colegio de México. <https://doi.org/10.2307/j.ctv233mr0>

Bengtsson, E., Missiaia, A., Nummela, I., Olsson, M., n.d. Unequal poverty and equal industrialization: Finnish wealth, 1750–1900 28.

Bengtsson, E., Missiaia, A., Olsson, M., Svensson, P., 2018. Wealth inequality in Sweden, 1750-1900†: WEALTH INEQUALITY IN SWEDEN, 1750-1900. *The Economic History Review* 71, 772–794. <https://doi.org/10.1111/ehr.12576>

Besley, T., Persson, T., 2009. The Origins of State Capacity: Property Rights, Taxation, and Politics. *American Economic Review* 99, 1218–1244. <https://doi.org/10.1257/aer.99.4.1218>

Besley, T., Persson, T., 2010. State Capacity, Conflict, and Development, 2010. . *Econometrica* 78, 1–34. <https://doi.org/10.3982/ECTA8073>

Bleynat, I., Challú, A.E., Segal, P., 2021. Inequality, living standards, and growth: two centuries of economic development in Mexico †. *The Economic History Review* 74, 584–610. <https://doi.org/10.1111/ehr.13027>

Bulmer-Thomas, V., 2018. *Empire in retreat: the past, present, and future of the united states*. Yale University Press, New Haven, CT.

Carmagnani, M., 1984. *Estado y sociedad en América latina: 1850-1930, Serie general. Estudios y ensayos*. Editorial Crítica, Barcelona.

Carmona, G.M., 2015. Mexico's Foreign Debt and the War with the United States. *Journal of Military and Strategic Studies* 16, 15.

Castañeda Garza, D., 2022a. Moderate affluence? The evolution of wealth inequality in Mexico 1816-1870. Manuscript in preparation.

Castañeda Garza, D., Krozer, A., 2022. Life on the Edge: Elites, Wealth, and Inequality in Sonora 1871-1910. *Revista de Historia Económica - Journal of Iberian and Latin American Economic History*. <https://doi.org/10.1017/S0212610922000052>

Centeno, M.A., 1997. Blood and Debt: War and Taxation in Nineteenth-Century Latin America. *American Journal of Sociology* 102, 1565–1605. <https://doi.org/10.1086/231127>

Challú, A.E., Gómez-Galvarriato, A., 2015. Mexico's Real Wages in the Age of the Great Divergence, 1730-1930. *Revista de Historia Económica - Journal of Iberian and Latin American Economic History* 33, 83–122. <https://doi.org/10.1017/S021261091500004X>

Chowning, M., 1999. *Wealth and Power in Provincial Mexico Michoacán from the Late Colony to the Revolution*. Stanford: Stanford University Press.

Clarke, D., Schythe, K.T., 2020. Implementing the Panel Event Study. IZA Discussion Paper Series, No. 13524.

COATSWORTH, J., 1981. *Growth against Development: Economic Impact of Railroads in Porfirian Mexico*. De Kalb: Northern Illinois University Press, Illinois. Coatsworth, J.H., 1989. The Decline of the Mexican Economy, 1800-1860. <https://doi.org/10.7916/D8QJ7HG6>

Connaughton, B., 1998. Agio, clero y bancarrota fiscal, 1846-1847. *Mexican Studies/Estudios Mexicanos* 14, 263–285. <https://doi.org/10.2307/1051930>

DeLay, B., 2008. War of a thousand deserts: Indian raids and the U.S.-Mexican War, The Lamar series in western history. Yale University Press ; Published in association with the William P. Clements Center for Southwest Studies, Southern Methodist University, New Haven : [Dallas, TX].

DiGiuseppe, MR., Barry CM., Frank, RW., 2012. Good for the money: International finance, state capacity, and internal armed conflict. *Journal of Peace Research*. 49(3), pp.391-405. <https://doi.org/10.1177/0022343311434239>

Erfurth, P.E., 2021. Unequal Unification? Income Inequality and Unification in 19th Century Italy and Germany (preprint). SocArXiv. <https://doi.org/10.31235/osf.io/2fma9>

Fiebig, D.G., Bartels, R., 1996. The frisch-waugh theorem and generalized least squares. *Econometric Reviews* 15, 431–443. <https://doi.org/10.1080/07474939608800365>

Fowler, W., 2007. *Santa Anna of Mexico*. University of Nebraska Press, Lincoln.

Freyaldenhoven, S., Hansen, C., Pérez, J.P., Shapiro, J., 2021. Visualization, Identification, and Estimation in the Linear Panel Event-Study Design (No. w29170). National Bureau of Economic Research, Cambridge, MA. <https://doi.org/10.3386/w29170>

Freyaldenhoven, S., Hansen, C., Shapiro, J.M., 2019a. Pre-Event Trends in the Panel Event-Study Design. *American Economic Review* 109, 3307–3338. <https://doi.org/10.1257/aer.20180609>

Gaddis, J.L., 2018. *On grand strategy*. Penguin Press, New York.

Galeana de Valadés, P., Ávila Espinosa, F.A., Instituto Nacional de Estudios Históricos de las Revoluciones de México, Mexico, Mexico (Eds.), 2015. *Historia de los ejércitos mexicanos*. Presented at the Coloquio de Historia de los Ejércitos de la Nación Mexicana, Instituto Nacional de Estudios Históricos de las Revoluciones de México, México, D.F.

Grant, U.S., Marszalek, J.F., Nolen, D.S., Gallo, L.P., 2019. *The personal memoirs of Ulysses S. Grant: the complete annotated edition*, First Havard University Press paperback edition. ed. The Belknap Press of Harvard University Press, Cambridge (Mass.).

Greenberg, A.S., 2013. *A wicked war: Polk, Clay, Lincoln, and the 1846 U.S. invasion of Mexico*.

Guardino, P., 2020. *The dead march: a history of the Mexican-American war*.

Harris, C.H., 1975. *A Mexican family empire: the latifundio of the Sánchez Navarros, 1765 - 1867*. Univ. of Texas Press, Austin, Tex.

Hernández Jaimes, J., 2013. *La formación de la hacienda pública mexicana y las tensiones centro-periferia, 1821-1835*, Primera edición. ed. Instituto Mora : Instituto de Investigaciones Históricas, UNAM : El Colegio de México, México, D.F.

Herrera Serna, L. (Ed.), 1997. *México en guerra, 1846-1848: perspectivas regionales*, 1. ed. ed, Regiones. Presented at the Congreso de Historia de las Intervenciones, Consejo Nacional para la Cultura y las Artes : Museo Nacional de las Intervenciones, México, D,F.

Hoffman, P.T., 2015. What Do States Do? Politics and Economic History. *J. Econ. Hist.* Vo. 75, Pp. 303–332. <https://doi.org/10.1017/S0022050715000637>

Levy, J., 2016. A history of institutional function: Mexican notaries and wealth distribution – Yucatan, 1850–1900. *The Journal of Peasant Studies* 43, 1249–1261. <https://doi.org/10.1080/03066150.2016.1215306>

Lindert, P.H., 1981. An Algorithm for Probate Sampling. *Journal of Interdisciplinary History* 11, 649. <https://doi.org/10.2307/203148>

Jáuregui L., Marichal, C., 2009. Paradojas fiscales y financieras de la temprana república mexicana, 1825-1855 in (Eds). Llopis, E., Marichal, C. (Eds.), 2009. *Latinoamérica y España, 1800-1850: un crecimiento económico nada excepcional*. Marcial Pons Historia : Instituto Mora, Madrid.

Kuznets, S., 1955. Economic Growth and Income Inequality. *The American Economic Review*, 45, 1–28. <http://www.jstor.org/stable/1811581>

Marichal, C., 1999. La bancarrota del virreinato, Nueva España y las finanzas del imperio español, 1780-1810, 1. ed. ed, Serie Estudios / Fideicomiso Historia de las Américas. El Colegio de México, Fideicomiso Historia de las Américas : Fondo de Cultura Económica, México, D.F.

Melon de Pradu, J.F., 1734. *Essai politique sur le commerce*.

Mikaberidze, A., 2020. *The Napoleonic Wars: a global history*. Oxford University Press, New York.

Milanovic, B., 2016. *Global Inequality: A New Approach for the Age of Globalization*. Harvard University Press. <https://doi.org/10.4159/9780674969797>

Morado Macías, C., 2003. Los Aspectos Económicos La Batalla por el Libre Comercio in (Eds). Martínez Cárdenas, L., Morado Macías, C., Avila, J.J., 2003. *La guerra México-Estados Unidos: su impacto en Nuevo León, 1835-1848*, 1a ed. ed, Colección Historia / Senado de la República. Senado de la República, México, D.F. pp. 147-192.

North, D.C., Weingast, B.R., 1989. Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England 31. *The Journal of Economic History*, 49, 803-832.

Nunn, N., 2008. The Long-Term Effects of Africa's Slave Trades. *Quarterly Journal of Economics* 123, 139–176. <https://doi.org/10.1162/qjec.2008.123.1.139>

Piketty, T., 2014. *Capital in the Twenty-First Century*. Harvard University Press. <https://doi.org/10.4159/9780674369542>

Reinhart, C.M., Rogoff, K.S., 2011. *This time is different: eight centuries of financial folly*, First paperback print. ed. Princeton Univ. Press, Princeton, NJ.

Ravallion, M., Chen, S., 2003. Measuring Pro-Poor Growth. *Economics Letters*, 78, 93-99.

Salvucci, L.K., Salvucci, R.J., 2016. The Lizardi Brothers: A Mexican Family Business and the Expansion of New Orleans, 1825–1846. *Journal of Southern History* 82, 759–788. <https://doi.org/10.1353/soh.2016.0243>

Salvucci, R.J., 2009. *Politics, markets, and Mexico's "London debt," 1823-1887*, Cambridge Latin American studies. Cambridge University Press, New York.

Sánchez Santiró, E., 2011. El peso de la fiscalidad sobre la economía mexicana, 1790-1910. *Historia Mexicana* 61, 107–162.

Sanderson, E., Windmeijer, F. (2016). A weak instrument F -test in linear IV models with multiple endogenous variables. *Journal of Econometrics*. 190 (2) , pp. 212-221.

Schaff, F.S.F., 2020. When 'the State Made War', what Happened to Economic Inequality? Evidence from Preindustrial Germany. *Economic History Working Papers* No: 311

Scheidel, W., 2017. *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*. Princeton University Press.
<https://doi.org/10.1515/9781400884605>

Scheve, K.F., Stasavage, D., 2016. *Taxing the rich: a history of fiscal fairness in the United States and Europe*. Princeton University Press, Princeton ; Oxford.

Serrano, J.A., Jáuregui, L., 2010. *La Corona en llamas: conflictos económicos y sociales en la independencia iberoamericana*.

Sicotte, R., Vizcarra, C., 2009. War and Foreign Debt Settlement in Early Republican Spanish America. *Revista de Historia Económica - Journal of Iberian and Latin American Economic History*. 27, 247–289. <https://doi.org/10.1017/S0212610900000768>

Stiglitz, J.E., 1999. *Economics of the public sector*, Third edition. ed. W. W. Norton & Company, Inc, New York.

Stock, J.H., Watson, M.W., 2020. *Introduction to econometrics*, Fourth edition, global edition. ed, The Pearson series in economics. Pearson, London.

Tenenbaum, B.A., 1985. *México en la época de los agiotistas, 1821-1857*, 1a ed. ed, Fondo de Cultura Económica, México.

Tilly, C., 1990. *Coercion, capital, and European states, AD 990-1990*, Studies in social discontinuity. B. Blackwell, Cambridge, Mass., USA.

van Bavel, B., 2020. Looking for the islands of equality in a sea of inequality. Why did some societies in pre-industrial Europe have relatively low levels of wealth inequality?, in: Nigro, G. (Ed.), *Disuguaglianza Economica Nelle Società Preindustriali: Cause Ed Effetti / Economic Inequality in Pre-Industrial Societies: Causes and Effect*. Firenze University Press, Florence, pp. 431–456. <https://doi.org/10.36253/978-88-5518-053-5.27>

van Zanden, J., 1995. Tracing the beginning of the Kuznets Curve: Western Europe during the Early Modern Period. *Economic History Review*. 48, 643-664.

Voss, S.F., 1982. *On the periphery of nineteenth-century Mexico: Sonora and Sinaloa, 1810-1877*. University of Arizona Press, Tucson, Arizona.

Appendix A

Appendix A: TABLE 1: Summary Statistics for the Event Study variables

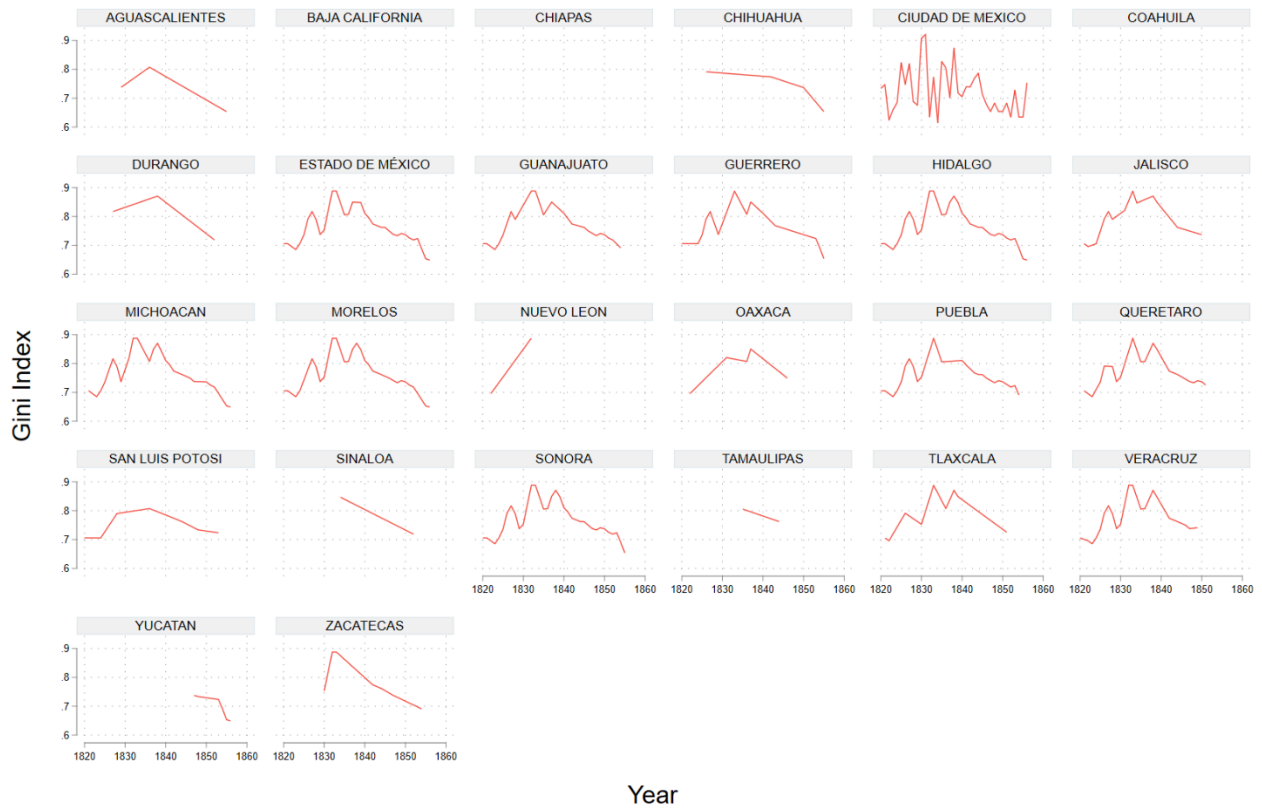
VarName	Obs	Mean	SD	Min	Median	Max
normalwealth	3099	8.61	3.670	0	9.305911	18.41279
gdp	3099	1048.47	22.938	992	1058	1074
wardummy	3099	0.81	0.395	0	1	1
timedummy	3099	0.24	0.428	0	0	1
fdeb	2590	38.96	8.798	26.4	36.992	66.9
gender	3080	0.11	0.309	0	0	1
wickedwar	3099	0.06	0.230	0	0	1
rev	2804	2.00e+07	5.72e+06	1.00e+07	1.80e+07	3.40e+07

Appendix A: TABLE 2: Summary Statistics for the IV Regression variables

VarName	Obs	Mean	SD	Min	Median	Max
gini100	366	77.00	6.933	61.483	75.287	92.126
fdebrev	311	2.15	0.914	1.15	2.05	5.27
statecap	356	-1.64	0.152	-2.043863	-1.603466	-1.498087
lnwarnavy	294	15.74	0.291	15.15051	15.71762	16.64872
statenumber	366	17.66	6.944	1	16	32
leadstatecap	251	-1.64	0.155	-2.043863	-1.589657	-1.498087
lagheads	228	1.54	0.776	1	1	4
lagconter	251	82.15	3.009	75	82.5	85
nomads	366	0.17	0.380	0	0	1
war	366	.0080	0.089	0	0	1

Appendix B

Appendix B: Figure 1: The State variations in wealth inequality



Note: The most densely populated states: Puebla, Guanajuato, Jalisco, Estado de México, Michoacán display similar trends and levels. States like Sonora, with a high density of observations, show similar trends. With a much higher density of observations Mexico City displays a similar trend. For the different states, we observe levels of wealth inequality that fluctuate between the high 60s to the high 80s in the Gini index. Source: Castañeda Garza (2022a).

Appendix C:

Appendix C: TABLE 3: Robustness check, Fixed effects model, before and after the war.

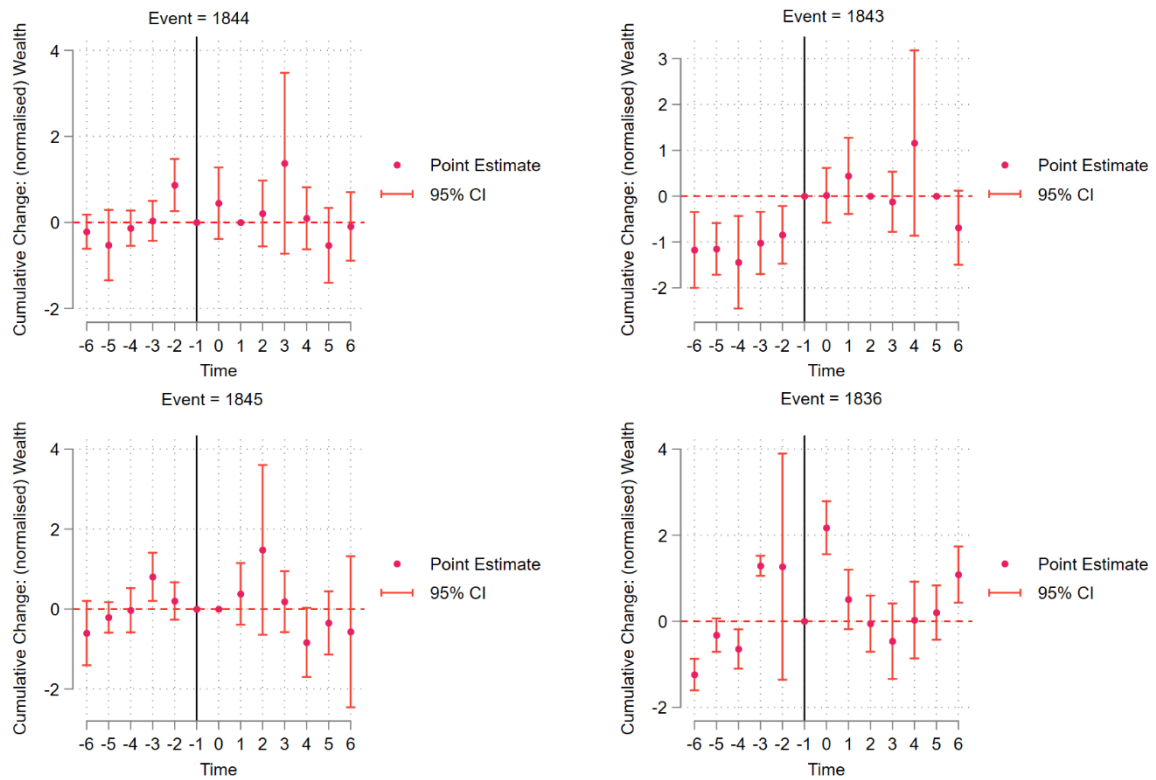
Fixed-Effects Model	(1)	(2)	(3)
Variables	1836-1849	1840-1849	1844-1849
Dependent variable: Gini			
fdebrev	-0.410 (0.447)	-0.385 (0.475)	-0.381 (0.476)
lnwarnavy	-1.334 (1.052)	-1.435 (1.153)	-1.434 (1.148)
1.afterwar	-7.726591*** (2.228)	-7.008*** (0.952)	-12.44*** (1.704)
Constant	102.1*** (16.56)	102.8*** (16.77)	108.2*** (17.43)
Year F.E.	YES	YES	YES
State F.E.	YES	YES	YES
Observations	162	121	84
R-squared	0.948	0.978	0.971
Number of statenumber	21	19	19

Clustered Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Appendix D:

Appendix D: Figure 1: Placebo tests



The placebo test for the event study validates the results, choosing “alternative” dates for the star of the war results in no significant effects (lags being not significant) and in the common or parallel trends assumption to be violated (lags being significant).