

RESOURCE RIVALRIES, THE INDUSTRIAL ORGANIZATION OF TAXATION AND TRADE, COMPETITION AND CONFLICT: ECONOMIC ORIGINS OF LATIN AMERICA'S PLATE BASIN WARS¹

RIVALIDADES POR LOS RECURSOS, ORGANIZACIÓN INDUSTRIAL DE LA TRIBUTACIÓN Y EL COMERCIO, COMPETENCIA Y CONFLICTO: LOS ORÍGENES ECONÓMICOS DE LAS GUERRAS EN LA CUENCA DEL PLATA DE AMÉRICA LATINA

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Abstract

We argue here that previously ignored economic and strategic rivalries played a role in the onset of Latin America's two costliest interstate armed conflicts to date in terms of casualties, as well as in that of a lesser preceding war. The conceptual economic framework from which we proceed, inspired in the stylized facts of the empirical record as well as on relevant classical and modern insights, allows discussion of the state and of inter-state conflicts. Smith's distinction between European states according to whether they finance themselves "from a special fund" or "from the revenue of the people" facilitates analysis of the differential political nature and capacity of the South American states involved. His remark that the lower Danube states used their power to obstruct the trade of the upper country with the Black Sea applies as well to the subequatorial states of the Plate river basin emptying in the Atlantic at issue, which governed over resource-abundant export economies. While comparative advantage trade between individuals has been shown to be negatively related to conflict between trading partners, we posit that states ruling over competing resource abundant economies may be comparatively more likely to conflict with one another as compared to with those of differently endowed trading partners. Conflicts between these states may be exacerbated by their different political nature and public finance institutions. Absolute political rulers who derive revenues from "a special fund" may be more likely to finance themselves through vertically integrated state monopolies, and to curtail foreign competition for their monopolies by embarking on wars. Like some earlier researcher, we find no persuasive evidence that, as has been argued, these particular wars were imperialist proxy wars, though some of the absolute rulers involved seemed to have had imperial ambitions over territories they captured. World trade fluctuations may also have been of import. Implications arise.

Keywords: armed conflict, trading partners, state financing, South America

JEL codes: N16, N46, N76

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Resumen

Argüimos aquí que rivalidades económicas y estratégicas antes ignoradas jugaron un papel en el surgimiento de los dos conflictos armados interestatales en términos de bajas más costosas de América Latina hasta la fecha, así como también en el de otro menor precedente. El marco conceptual desde el que procedemos está inspirado en los hechos estilizados de la crónica factual relevante y en contribuciones económicas clásicas y modernas que permiten discusión del estado y de conflictos entre ellos. La distinción de A. Smith entre estados europeos según se financien «de un fondo especial» o «de los ingresos del pueblo» facilita el análisis de la naturaleza política y la capacidad de los estados involucrados. La observación de Smith que los estados del bajo Danubio usaban su poder para obstruir el comercio de los del alto Danubio con el Mar Negro tiene también relevancia para estos estados de la subecuatorial Cuenca del Río de la Plata que vacía en el Atlántico Sur, que gobernaban economías exportadoras abundantes en recursos naturales. Aunque se ha demostrado que el comercio internacional basado en las ventajas comparativas está negativamente correlacionado con el conflicto entre socios comerciales, nosotros postulamos que los estados que gobiernan economías ricas en recursos que comercian poco o nada entre sí y que, en cambio, compiten por fuentes de insumos, mercados y rutas de transporte, pueden ser comparativamente más proclives a entrar en conflicto entre sí que con los de socios comerciales de diferente dotación. Sostenemos, asimismo, que la distinta naturaleza política y de las finanzas públicas de estos estados, así como la competencia externa para sus empresas estatales, pueden exacerbar los conflictos internacionales. Los gobernantes absolutistas que se financien «de fondos especiales» pueden ser más propensos a recurrir a monopolios estatales verticalmente integrados así como también a limitar la competencia extranjera para dichos monopolios por la fuerza de las armas. Al igual que otros investigadores anteriores, no encontramos evidencia que estas guerras hayan sido guerras imperialistas libradas por «proxy», aunque existe evidencia que algunos gobernantes parecieron tener ambiciones imperialistas sobre los territorios que capturaron. Las fluctuaciones del comercio mundial también pueden haber incido. Implicancias emergen.

Palabras clave: conflicto armado, socios comerciales, financiación estado, América del Sur

Códigos JEL: N16, N46, N76

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Introduction

What is the role of force in voluntary exchange and open access social orders? As violence is costly and conflict is at best a zero-sum game, why do individuals and states fight? Scholars have been devoting increasing attention to questions of this nature as they pertain to different areas of the world⁴. Much of the recent work on Latin America has been done by sociologists or political scientists interested in Tilly's hypothesis that "war makes the state and the state makes war" such as Centeno (2002) and López-Alves (2020), or Schenoni (2021, 2024), as well as by others who hold different views of what makes the state, such as Thiess (2005) and Mazzuca (2021), rivalries and trade, respectively.

From our perspective as economists, we hypothesize here, based on evidence in the record, that previously ignored economic rivalries may have contributed to the onset of Latin America's two major armed conflicts between states to date by Richardson's logarithmic index of total casualties, as well as to the onset of lesser wars that preceded them (Richardson, 1960; Hayes, 2002).

All of these armed conflicts took place in South America's subequatorial Plate River Basin emptying in the Atlantic, the lesser and preceding wars in the lower basin, the two major and later ones in the upper basin. At different times, they involved all the states that divide the basin up among themselves, Brazil, Bolivia, Paraguay, Argentina and Uruguay. All these wars were watershed conflicts politically. The lesser ones resulted in political changes in the Lower Plate basin that just after mid nineteenth century opened up to free international navigation and trade two of the basin's major rivers, the Paraná and Uruguay

⁴ For a recent, wide-ranging discussion of the issues involved see Blattman (2022); North et al. (2009). Also, Hoffman and Rosenthal (1997).

rivers. The Paraguay River, however, was excluded from that decision, which was left up to the governments of Brazil and Paraguay. In the Upper Plate, the first of the two major wars, fought from 1864 to 1870, in part to establish free navigation and trade over the Paraguay River, ended dynastic rule and introduced Republican rule, as well as abolished slavery where they still subsisted in the second half of the nineteenth century, that is, in Paraguay and Brazil, respectively.⁵ The second major war, fought from 1932 to 1935, ended Liberal Rule and initiated military rule in the belligerents, leading to the Civil War of 1947 in Paraguay and to the Revolution of 1954 in Bolivia.

To accomplish the stated objective, we have organized the paper as follows. In Section One we discuss the conceptual economic framework from which we approach the empirical record. The framework allows for states and for conflicts between them, and also captures the stylized facts of the manner in which these states financed themselves as well as the strategic reasons for their conflicts. Basic to the conceptual framework is a fundamental distinction Adam Smith made between European states according to whether they financed themselves “from a special fund” which could consist of lands or from the “revenue of the people”, as well as an observation of a strategic nature Smith made that states along the Danube may “use their power to obstruct the trade” between the upper country and the Black Sea (Smith, 1976, p. 25). Both statements by Smith are applicable to the states and conflicts between them of interest here.

In addition, while the modern trade and conflict literature leads us to expect trade between individuals of resource intensive goods for goods intensive in other factors to be negatively related to conflict between trading partners, their states included, we argue that no such relation may be expected to exist between the individuals ruled by states of neighboring resource abundant economies that trade little if at all with one another and compete for input sources, markets for resource intensive exports, and water transport lanes linking them together and with overseas trading partners. This discussion is relevant here as the states involved in the conflicts at issue governed over Latin America’s resource abundant export economies of the subequatorial Atlantic watershed that generally traded comparatively less if at all with one another than they did with Europe. We argue this competition may render these states comparatively more likely to conflict with one another rather than with those of differently endowed European trading partners, an implication of the framework that runs counter to the notion that the wars states in the region fought among themselves were regional proxy wars fought for European imperial powers. Furthermore, absolute political rulers of resource abundant export economies financing themselves in greater proportion from a special fund consisting of lands and forests as opposed to from the revenue of the people may be more likely to resort to state monopolies, as well as to embark on wars to reduce foreign competition for the products of their monopoly state enterprises. We will contend that differential public finance institutions and competition for state enterprises over input sources and product markets, as well as over transportation routes exacerbated these conflicts. We also discuss world trade fluctuations⁶.

Section Two begins by further describing the La Plata basin’s political geography. It then considers the region immediately before and following the rise of home rule after independence from Spain, in the later eighteenth and early nineteenth centuries, respectively. In the first connection we consider a vertically integrated public finance structure of Bourbonic origins, Spain’s Royal tobacco monopoly, bequeathed to their successors as home rule arose, or reinstated in some of them. In the second connection we consider the political fragmentation and the break-up of the colonial economy that followed the collapse of the Spanish Empire, without which it would not be possible to conceive of the conflicts of interest between the

5 For the contrast with the abolition of slavery in the United States, see Izecksohn (2014).

6 We would argue that the conceptual framework applies as well, *mutatis mutandis*, to the third worst Latin American war, the “War of the Pacific” so called (1879–83), which Chile fought with Bolivia and Perú for nitrogen rich mineral deposits used in the production of fertilizer exported to Europe. However, because this war has been discussed often in the past, including relatively recently by Acemoglu et al (2012), who built a dynamic theory of resource wars, we do not consider here this third worst subequatorial conflict, though not before pointing out that it deprived Bolivia of the coast it had had on the Pacific ocean and thus helped set the stage for the Chaco war between landlocked Bolivia and Paraguay in the 1930s.

subsequent independent states, the nature of the states that divided political sovereignty over the region, and the export economies of different degrees of openness they governed over until the early 1860s.

In subsequent Sections we turn to accounting for the onset of the wars of interest. In Section Three we discuss the lesser wars that preceded the major wars of interest and, like them, involved trade and the obstruction of trade between the upcountry and the sea. The most important of these was the so-called Platine war that the Empire of Brazil, allied with the governments of Argentine interior provinces and Uruguay fought against the Argentine Confederation's contention that the Paraná River was an interior river closed to international navigation, not the interior sea that the Brazilian government contended it was (Mazzuca, 2021; Gomes da Silva, 1999).

In Section Four we focus on the first of the two major wars of concern here, a category 6 conflict by Richardson's index, which was fought relatively early in the long nineteenth century world trade expansion, following the United States Civil War with whose end it overlapped. It involved the governments of coastal Brazil, Argentina, and Uruguay, as well as that of landlocked Paraguay, between 1864 and 1870. Much as the U.S. Civil War brought about the end of slavery in the Union, this war led to the abolition of slavery in Paraguay and Brazil in 1870 and 1887, respectively, as well as to radical political change in both. In Paraguay, it ended the governing dynasty of absolute early national rulers and began Constitutional, Republican rule. In Brazil, it led to the end of the Empire and beginning of the Republic, thus setting the stage in both for the expansion of trade and liberal rule that stretched to the First World War⁷.

In Section Five we consider the second worst war, a category 5 conflict by Richardson's index, fought during the twentieth century contraction of world trade subsequent to the Great Depression but prior to World War Two, between 1932 and 1935 to be precise, by what by then were both landlocked countries, Bolivia and Paraguay, the latter aided by non-combatant belligerent Argentina, over the "Chaco" region (Chaco, from the kéchua, "chucú," for hunting grounds) lying between all three of them. The Great Depression and ensuing political changes in Argentina, the end of elected civilian rule and rise of military rule more specifically, preceded the war between Bolivia and Paraguay, after which the Liberal political regimes that had ruled in both countries until the end of the Chaco War were deposed by military rulers, which in the case of Paraguay remained in power until 1989. There have been no wars in the region since then.

In Section Six we conclude. We argue that underlying all of these conflicts was the issue of freedom of navigation and trade over the Plate Basin's Lower and Upper waterways. In addition, underlying the worst war were rivalries over renewable natural resources, while underlying the second worst war was rivalry between Argentina and Bolivia over a non-renewable resource not found in Paraguay, oil. As one would expect if economic rivalries did in fact underlay the onset of these conflicts, rather than those to which they have been more generally attributed, the analytic narrative we propose to account for the onset of these two major wars differs from alternative narratives previously provided in the literature.

1. The Conceptual Economic Framework

Fundamental to the proposed conceptual economic framework are two notions from Adam Smith. The first is Smith's distinction between European states according to the manner of their financing. Smith distinguished between states according to whether they financed their expenditures "from a special fund" that may include land as opposed to "from the revenue of the people," a distinction that facilitates analysis of the differential political nature and capacity of the states involved in the wars at issue⁸. The second is Smith's remark that lower Danube states could use their power to obstruct the commerce of the upper country with the sea, that is, about strategic interaction between the states of the lower and upper

7 For Paraguay, see Lewis (1993), for Brazil, Bethell (2018).

8 "The revenue which must defray, not only the expense of defending the society and of supporting the dignity of the chief magistrate, but all the other necessary expenses of government, for which the constitution of the state has not provided any particular revenue may be drawn, either, first, from some fund which peculiarly belongs to the sovereign or commonwealth, and which is independent of the revenue of the people; or, secondly, from the revenue of the people" (Smith, 1976, Book V, Ch. 2, p. 341).

Danube –before the 1815 Congress of Vienna, article 15 of whose final Act established freedom of navigation of interior rivers (Johnson, 1964; Moniz Bandeira, 1985, p.13).

Financing states from a special fund as opposed to from the revenue of the people may be reasonable in an economy in which resources are abundant relative to the population and trade between individuals is relatively restricted. However, where commercial transactions have become more widespread, it may be less costly to tax the revenues of the people than to derive monetary revenues from a special fund consisting of lands.

In addition, Smith's remark that states along the Danube may use their power to obstruct the trade between the upper country and the sea introduces strategic issues into the discussion and applies to the wars at issue, which it will soon become clear were fought for similar reasons on the subequatorial Plate Basin emptying in the South Atlantic, though by governments ruling over resource abundant export economies that traded relatively little with one another and comparatively more with Europe, in the case of coastal countries, directly, or in the case of Upper Plate landlocked countries, that wished to do so.

In addition, one would expect lower Danube polities to be more open to trade and their public finances to be more reliant on import and export taxes as compared to land taxes than upper Danube ones, and the same goes for the Lower and Upper Plate. Furthermore, as transportation costs are equivalent to taxes on foreign trade, by virtue of their position relative to the sea one could consider upper Danube and Upper Plate economies to be comparatively more heavily taxed than coastal ones, all else equal, as well as to desire territory that by virtue of their position are in effect less highly taxed.

The modern trade and conflict literature leads us to expect that trade between individuals of resource intensive goods for goods intensive in other factors will create real income and will be negatively related to conflict between trading partners. This desire to preserve the real income gained from trade would lead us to expect governments of resource intensive export economies not to conflict with the governments of differently endowed overseas economies with which they trade. However, no such relation may be expected to exist between the states of neighboring resource abundant economies that trade little if at all with one another but, instead, compete for input sources, markets for resource intensive exports, and water transport lanes linking them with one another and with overseas trading partners, as the gains from trade with one another theoretically do not exist. We argue this competition may render these regional states comparatively more likely to conflict with one another than with those of differently endowed European trading partners.

In addition, political rulers financing themselves from a special fund as opposed to from the revenue of the people levied with their consent may be more likely to possess state monopolies over the land and its produce, to vertically integrate input monopsonies and export monopolies, and to embark on these wars to reduce foreign competition for their export monopolies. Differential public finance institutions that give different roles to state enterprises and competition for state enterprises over input sources and product markets, as well as for transportation routes may exacerbate these regional conflicts. World trade fluctuations and favorable terms of trade may also be of import as they may result in unexpected wealth effects arising from higher prices of intensive inputs.

The proposed conceptual perspective is rooted in Adam Smith's view that the extent of the market (that is, trade in general) limits the division and specialization of labor to which the greater part of the wealth of nations may be attributed; that trade is costly, as the transaction costs of attaining the double coincidence required by barter may be reduced by money and credit. Trade being costly, transaction costs may be economized by means of institutions (rules such as those of property rights which are public goods that individuals undersupply relative to the state, a specialist with a comparative advantage in the provision of enforcement). In turn, the enforcement capacity of a state is a function of its ability to raise revenue from "a special fund" that may include the state's land holdings or from the domestic and foreign trade of its subjects, and to spend the revenue for defense and other purposes. The productivity of labor in both revenue raising and enforcement capacity may be seen as subject to the division and specialization of labor within government between tax collection and defense. We augment this framework with our own analysis of the industrial organization of a public revenue raising structure of Bourbonic extraction

involving a domestic monopsony and a monopoly of resource intensive exports. We do this mathematically in the appendix, which some readers may want to inspect before proceeding.

2. Political geography before and after home rule

Much as the Danube originates in Bavaria and empties in the Black Sea after coursing through several upper and lower basin states, the Plate basin rivers Uruguay, Paraná, and Paraguay rivers originate in sub-equatorial Brazil's Southeastern and Central states, respectively, and then course through the territories of several lower basin states, more specifically, those of Uruguay, Paraguay, Bolivia and Argentina before ultimately emptying in the Atlantic, dividing the states in question from one another as well as connecting them with each other and largely determining the region's political geography.

The economic, public finance and political architectures of these states differed in part because of their location relative to the sea and one another, which may be seen to have been at the heart of their rivalries. In fact, just as coastal Brazil, Uruguay, and Argentina may be said to have stood on the way of landlocked Bolivia and Paraguay's access to the sea by land and by river, as well as the implied gains from trade, landlocked countries may also be said to have stood in the way of coastal countries access to their interior provinces, Paraguay in the case of Brazil and, in the case of Argentina, what it thought should be an interior province (Bolivia's Santa Cruz de la Sierra). Thus, once steam navigation of interior rivers was introduced, the cost of connecting Brazil's capital of Rio de Janeiro on the Atlantic to its central Mato Grosso province by the round-about way of the rivers of the Plate River basin fell significantly relative to the cost of overland options.

In addition, much as Smith had observed the Lower Danube states would obstruct the trade of the Upper Country with the Black Sea, the Lower Plate River states could also obstruct the trade of Upper Plate River states with the Atlantic. Thus, before the Argentine Confederation was unified in 1861, the Province of Buenos Aires could –and did– obstruct both the trade of the Argentine interior provinces, as well as that of Paraguay and of Brazil as, in fact, it did in alliance with the Uruguayan Blanco government of Oribe between 1835 and 1852. On the other hand, should Buenos Aires obstruct free navigation of the Parana, France and England, as well as Brazil from its capital of Rio de Janeiro, could blockade the Argentine port of Buenos Aires and wage war on Argentina as well as, if necessary, on Paraguay, to open the Paraná and Paraguay rivers so as to access Central Brazil's interior provinces by steamship navigation⁹. Paraguay, in turn, could obstruct communication and transportation of the central Brazilian province of Mato Grosso with ports on the Atlantic, Montevideo in Uruguay, and Rio de Janeiro in Brazil itself. In fact, it was the capture by the Paraguayan navy of a Brazilian trade vessel travelling the Upper Paraguay to Mato Grosso, without a prior declaration of war on Brazil, that started the war between Paraguay and Brazil, which in turn was followed by Paraguay's war on Argentina and on Uruguay (Box, 1927, pp. 70–71; Scheina, 1987, p. 18).

At stake underlying demands for free international navigation were prospective gains from trade as well as their denial in those cases in which the granting of free navigation was resisted. One might therefore have expected coastal Atlantic Brazil to have wanted to secure navigation rights over the Plate basin rivers from Argentina, the Argentine interior provinces of the Paraná littoral and Paraguay, if nec-

⁹ That the autocratic Paraguayan government did interpret the combined Anglo–French expedition of 1845 and its September blockade of Buenos Aires as a harbinger of increased trade and higher land prices is clear from an article titled “*La navegación del Río Paraná y sus afluentes*” published in Paraguay's government newspaper. See *El Paraguayo Independiente* N.32, Saturday 13 December 1845, pp. 1–5. After their victory at the battle of Vuelta de Obligado in January of 1846, the combined Anglo–French forces broke the chains that Rosas had stretched across the Parana River to prevent interior river navigation and sailed upriver. *El Paraguayo Independiente* N.40, of Saturday, 7 February 1846, pp. 1–5 reported the Battle of Vuelta de Obligado and its outcome by reprinting an article from *Comercio del Plata* N.52 titled “*Destrucción de las baterías de La Vuelta de Obligado*.” The similarity between the combined Anglo–French expedition and Commodore Perry's attempt to lower Japanese barriers to trade is striking. For the process by which the government of early national Paraguay became an autocracy see Pastore (1994b) and for evidence that the export led growth that took place after 1852 did not result in a so-called state-led industrialization see Pastore (1994a).

essary, by force, the costs of which the prospective gains from trade would presumably exceed. We do, in fact, observe Brazil allied with the Argentine Confederation's interior provinces and Uruguay's Colorados waging victorious war against Rosas, the head of the Argentine Confederation, and in 1851, after Rosas imposed his *Reglamento de Aduanas* in 1835, soon after he came to power following the Cisplatine War, in which British pressure led to the creation of the state of Uruguay in 1828. Given that at stake underlying demands for free international navigation were the prospective gains from interior trade, that is, economic incentives, one might have expected coastal Atlantic Brazil to have wanted to secure navigation rights over the Plate River from Argentina and Paraguay, if necessary by force, should the prospective gains from trade appear to exceed the costs of forceful action. In fact, as already noted, we do observe Brazil allied with the Argentine Confederation's interior provinces and Uruguay waging victorious war against the Argentine Confederation in 1851, after the latter designated the Paraná River an interior river, as a result of which new governments in Buenos Aires and Montevideo opened navigation of the Paraná and Uruguay rivers, though not of the Paraguay River, an issue that was left up to Brazil and Paraguay to settle.

One might have expected Brazil to have taken on Paraguay next. In fact, there is evidence Brazil sought an Alliance with the Argentine confederation to the effect of jointly forcing the government of Paraguay to free navigation of the Paraguay River. However, though Argentina's envoys to these meetings agreed that Brazil could pass its troops through unpopulated Argentine territory, it was "not yet in agreement on the hypothesis of the resort to war" or to contribute troops to a military effort against the well defended government of Paraguay (Moniz Bandeira, 1985, p. 196–197; Brezzo, 1997, p. 161).

However, given the differences between Argentina and Brazil *vis-à-vis* the use of force against Paraguay, as well as the population and territorial extension of the economies and states in question, one would not have expected the government of landlocked Paraguay, as it in fact did, to have initiated and waged the first major war against those of coastal Brazil, Argentina and Uruguay, independently and in succession at first, and then predictably allied together by the May 1st, 1865 treaty of the Alliance. Correspondingly, in Brazil, Argentina and Uruguay, this war is known as the "war of Paraguay", whereas in Paraguay it is known as the war of the "Triple Alliance" so-called. To avoid confusion, we distinguish the war of Paraguay against its neighbors from 1864 to 1869, that is, until the appointment under ally occupation of a provisional Paraguayan government, from the encompassed war of the Triple Alliance fought from 1865 to 1870 by the Allies against the retreating army of the government that had ruled Paraguay at the onset of the war. Although the signing of the Alliance left little doubt as to the eventual outcome of such an unequal contest, the war continued. At their meeting in Yataity Corá, the head of the Paraguayan government would not agree to peace in the terms stipulated by the Treaty of Alliance and continued what has been called his suicidal struggle against Allied forces until the final defeat of the Paraguayan Army and his death in March 1870¹⁰.

The Paraguayan war began with the Paraguayan military's capture of a Brazilian merchant vessel, the later invasion of Brazil's Mato Grosso in November 1864, that of Argentine Corrientes in early 1865 and thereafter, the threatened invasion of Uruguay, in retaliation for Brazil's invasion of Uruguay earlier in 1864 (the Uruguayan question so-called), which the Paraguayan government considered would break the region's "equilibrium" and had therefore warned that of Brazil against, albeit not in the clear language one would expect of an "ultimatum."

Following the Triple Alliance treaty, the Paraguayan offensive turned into a defensive struggle. For the Allies, on the contrary, the struggle went from defensive to offensive, until its end in March 1870 on the north east of Paraguay's Easter region.

¹⁰ Many analysts have characterized Francisco Solano López's unwillingness to surrender unconditionally to the Allies as suicidal, the most recent of them being Mazzuca (2021). The treaty of Alliance would have partitioned Paraguay among the Allies. After the war ended, however, Argentina drastically limited its claims to the Chaco. The part of its Chaco territory that Paraguay eventually had to cede to Argentina was reduced even more as result of U.S. President Rutherford B. Hayes' arbitration, to the area between the Bermejo and the Pilcomayo rivers (Cardozo, 1987, Ch. 8, especially pp.266–67, 272–75, and 280–1).

Though in his study of the diplomacy of this war, Box noticed in passing that it may have involved economic rivalries, this line of inquiry has not been pursued except by some who have argued that behind the Triple Alliance was Britain, the so-called fourth ally. The Paraguayan war is thus generally considered by historians to have broken out over border disputes and navigation rights over a river considered an international river by Brazil, an interior river by Paraguay. Herken Krauer and Giménez (1983) showed that it was not an imperialist war Britain fought through the allied countries to obliterate Paraguayan competition for British manufactures and, more recently, Nickson (2024) debunked the Fourth Ally thesis as well. However, the economic rivalries underlying both sets of disputes have not been brought to light.

The second worst war was fought between the Great Depression and World War II (WWII) by the governments of landlocked Bolivia and Paraguay, with that of Argentina a non-combatant belligerent siding with Paraguay, over the Chaco region between all three. It has been suggested in the literature, however, that this war was fought over oil found on the eastern slopes of the Andes in the 1920s in Argentina and Bolivia, by Seiferheld (1983) and, more recently by Cote (2013). Acemoglu et al. (2012), however, have recently pointed out that oil was not found in the Chaco region after the war, which questions the notion that this was also a resource war fought over a non-renewable resource. The question then arises whether economic rivalries involving natural resources may not have undergird both the war of Paraguay-Triple Alliance as well as the Chaco war, as it has convincingly been argued for the War of the Pacific by the aforementioned authors.

Further research on the Paraguayan war and the border and navigation disputes to which it is attributed reveals that underlying this war was a natural resource, albeit a renewable rather than a non-renewable one, more precisely, forests of hardwoods and mate, if not the cedar forests Acemoglu et al argued underlay the Lebanon wars they considered, and user rights over a common property, indivisible resource, water. In addition, relative recent research findings suggest that there was competition for the trade of the Upper Plate between the merchant marines of Brazil and Paraguay, both of which were, if not state enterprises, subsidized by their respective governments. Finally, readily available evidence suggests that, in fact, even if no oil was found in the Chaco region after the conflict, the war over the Chaco did involve oil, which had been found in South America along the eastern slopes of the Andes from Venezuela to south eastern Bolivia and Argentina (Solberg, 1979; Cote, 2013; Figallo, 2019).

Given that resource abundant economies may be expected to have a comparative advantage in the export of resource intensive goods, and that export price fluctuations may be expected to similarly affect the price of natural resource inputs used intensively in the production of exports and of their stocks, one would expect alternative delineations of property rights over resources between government and individuals to differently affect their respective incomes and wealth. One would also expect the choice of whether to exploit these resources by state or private enterprises to be a function of the relative capacity of the government to directly exploit resources and export natural resource intensive goods as opposed to privatizing the resource and taxing the proceeds of the economic activity of their subjects. Furthermore, whether resources are directly exploited by a state enterprise or by individuals subsequently taxed by the government, could itself conceivably affect the probability of military conflict between states, as in the first case the income of government is directly involved, while in the second it is only indirectly involved and may furthermore be subject to differential protection by constitutional limitations over the sovereign's power.

Observing the location and relative frequency of these conflicts, it would appear that differential location relative to oceans, that is, whether a country has a coast on the ocean or not seems to have affected the probability of a country's belligerence. More specifically, landlocked countries or that became landlocked were more likely to be belligerents relative to coastal countries or ones that were closer to coastal countries, as one would expect given that natural resource abundant open economies have a comparative advantage in exporting natural resource intensive goods, that resource intensive landlocked countries face higher costs of transportation to export markets than do coastal countries and that they are more vulnerable to tariff and non-tariff export barriers imposed by rival downstream coastal countries, even

if they themselves may be located downstream the interior rivers of a coastal country, as Paraguay is relative to Brazil and Bolivia.

We argue here that regional inter-state economic rivalries over natural resource supply sources, the industrial organization of markets for resource intensive exports, and the free use of indivisible water means of transportation and communication, as opposed to rivalries of a different nature, helped provoke the Western Hemisphere's two worst international wars to date by Richardson's ranking. In this sense, both of these subequatorial state conflicts were resource wars. Contrary to what has been asserted, that extra-regional states were belligerents in these conflicts, more recent research suggests they were not, though they may have traded with the belligerents.

3. The Lower Plate Wars

Home rule in the region dates back to the local reaction to the 1806–1808 British invasions of Buenos Aires, the capital of the Spanish–American Viceroyalty of the River Plate (VRRP), and the Portuguese Court's evacuation to Brazil (March 7 1808). The Spanish American VRRP was succeeded by the *Provincias Unidas del Río de la Plata* in 1810, which could not prevent the secession of the Province of Paraguay, that of the Audiencia de Charcas (Highland Peru) under the VRRP's control or Brazil's invasion and annexation of the Eastern Band of the Uruguay River as its Cisplatine Province (today's Uruguay). In Brazil, the return of the Portuguese court to the Peninsula was followed by the creation of the Brazilian Empire, which like the British American continental colonies remained as a political unit by quelling the separatist attempts that politically fragmented the VRRP and Spanish America more generally.

The collapse of the Spanish empire, the political fragmentation of the Viceroyalty of the River Plate and the post Napoleonic war world trade contraction broke the links that had tied together the late colonial economy, though the terms of trade facing the region remained favorable at least until the early 1830s (Newland 1998, Table 2, p. 412). To prevent contagion from the Argentine and Uruguayan civil wars Paraguay closed itself off to trade with Plate River markets and ceased to supply the region with yerba mate from 1820 on. From then on regional mate markets were supplied by mate exports from the Brazilian empire province of Rio Grande do Sul, an issue that in time became one of contention between the Paraguayan and the Brazilian government, as we shall see. Terms of trade of Brazil and the River Plate region with Europe continued to improve after world trade growth resumed in the 1840s.

The introduction of the steam engine into overseas, riverine and overland transportation technologies in the nineteenth century, by reducing time and costs of transportation expanded the regional market, made the hinterlands more valuable both for private entrepreneurs and the governments of the Plate River basin, and pushed the frontier outward. Reduction of transportation times and costs facilitated interpersonal trade between the countries of the lower Plate River basin by way of the Paraná and Uruguay rivers as well as between the Upper Plate basin Argentine province of Corrientes, Paraguay, and Central Brazil's Mato Grosso. Most important for our discussion, steam-ship transportation by way of the Paraná and Paraguay Rivers facilitated contact between the Brazilian Atlantic coast and Brazil's hinterland, in particular, Brazil's "interior sea," the Pantanal (Silva, 1999).

Following Brazil's victory in the Cisplatine war against the *Provincias Unidas del Río de la Plata*, the latter were succeeded by the Argentine Confederation, with the head of the Buenos Aires province, Juan Manuel de Rosas, in charge of managing international affairs (1835–52). In 1835, Rosas reimposed protectionism in Argentina by adopting *the Reglamento de Aduanas* which required foreign imports to pay taxes at the Buenos Aires Customs House rather than along river ports. *The Reglamento de Aduanas* hindered the trade of the Argentine Confederation's interior provinces as well as that of Paraguay and Brazil, causing differences between both countries and the Argentine Confederation. It also obstructed the trade of Britain and France, particularly after Rosas stretched a chain across the Parana River at Vuelta de Obligado.

The breaking of the chains at Vuelta de Obligado by the Anglo–French fleet raised the expectations of the government in Asunción that international trade in the Parana and Uruguay rivers would soon open. Although the Anglo Trade blockade was lifted after five years, international navigation of the Paraná and

Uruguay rivers of the Plate basin was not freed by the Argentine and Uruguayan governments until they were defeated by an alliance of Brazil and interior Argentine provinces (without help from the Paraguayan government) that installed new governments of Argentina and Uruguay. The agreement, however, left it up to the governments of Brazil and Paraguay to resolve the issue of international navigation of the Paraguay River. However, while the Brazilian government considered navigation and trade over the Plate River Basin to be free internationally, the government of Paraguay considered the Paraguay River an interior river, much as the government of Rosas had considered the Parana River, and disputed Brazilian claim to border lands containing forests from which the famed Paraguayan tea consumed regionally had been extracted until the country closed itself off to foreign trade in 1820. This allowed Brazil's southern provinces to become the main suppliers of tea to the river Plate region and beyond. Correspondingly, the Brazilian government approached that of Argentina in 1858 with a proposal to jointly force the Paraguayan government to free navigation of the Paraguayan government, a proposal to which the Argentine government responded that it was not yet in agreement with the Brazilian government to do so.

Historians have often separately discussed the two major and lesser preceding wars we have selected. As a region of war, however, they have been largely ignored or overlooked by social scientists save for an early study by Burr (1955). Political scientists and sociologists have also considered these wars both separately (Abente, 1987) and as a region (Centeno, 2002; Weisiger, 2017). Economists, however, have largely ignored the problem, save for early studies by Herken Krauer (1986) of Great Britain and the Paraguayan war by Pastore (2002).

Taken chronologically, the worst of these wars took place in the second half of the nineteenth century, the second worst in the first third of the twentieth century. Both brewed, and the first of them took place during a long wave of world trade expansion and of terms of trade improvement stretching from the mid nineteenth century to the late 1920s, while the second was fought immediately after the Great Depression and during the world trade contraction that followed it.

More specifically, we refer in the first case to the so-called "Paraguayan" war, which began in 1864 and encompassed but cannot be equated with the subsequent war of the Triple Alliance of Brazil, Argentina and Uruguay against the invading Paraguayan forces, fought between 1865 and 1869. In the second case we refer to the war over the Chaco region between Bolivia and Paraguay, fought in the first half of the 1930s, with Argentina being a non-combatant belligerent siding with Paraguay.

Both of these wars, taken together, involved all five of the countries of the region at different times. The Paraguayan war (1864–1869) initially confronted Paraguay individually with Brazil first, secondly with Argentina, and eventually with both of them allied with one another and with Uruguay. The Chaco war (1932–35) was fought on and over the Chaco lands lying between the Paraguay River and the eastern foothills of the Andes, political sovereignty over which was divided up between Bolivia, Argentina, and Paraguay. The Chaco war directly involved the governments of Bolivia and Paraguay and, indirectly, that of Argentina on Paraguay's side.

That the Paraguayan war involved a renewable natural resource is suggested by the fact that the government of Uruguay, in seeking to prevent invasion of its territory by the Brazilian government to protect Brazilian citizens and their assets, including from taxation by the Uruguayan Government, in exchange for military protection offered that of Paraguay, whose main income derived from a monopsony over export quality extracts from mate woods, a lower import tariff into the Uruguayan market than that it charged imports from Brazil. In the 1840s, the Paraguayan government, negatively affected by the protectionist legislation of the Argentine confederation headed by Rosas, had reserved for itself the foreign trade of export quality yerba mate, which it allowed private entrepreneurs to extract from state forests by permit.

The hypothesis that the Paraguayan war was fought over renewable natural resources is supported by considering first its main dyad, the Brazil–Paraguay dyad, with which the war began and ended. An eighteenth-century treaty between Portugal and Spain, had bequeathed to Brazil its central provinces south of the Amazon. In the nineteenth century, protectionist legislation by the government of the Argentine Confederation led by Rosas resulted in frictions with the Paraguayan government, which to help raise revenue reserved for itself the yerba mate trade. More important, Rosas' *Reglamento de Aduanas*

eventually led the Argentine Confederation to war with Brazil allied with the Argentine provinces of Entre Ríos and Corrientes and the Unitarios. Following Rosas' exile to Britain, an agreement was reached by the new Buenos Aires and Montevideo governments in 1852 that allowed free international navigation of the Parana and Uruguay rivers. The issue of freedom of navigation of the Paraguay River, however, was left up to the Brazilian and Paraguayan governments. Although Brazil and Paraguay signed a treaty in 1856 on navigation of the Paraguay River that flowed through their territories, the government of Paraguay, by constructing the fortress of Humaitá at a bend in the river, also sought to hinder navigation of the Paraguay River capable of keeping out invading fleets like the Brazilian. Thus, though the governments of Brazil and Paraguay had fought the protectionist policies of the government of the Argentine Confederation under Rosas, after its demise the Paraguayan government went the way the Argentine government of Rosas whose protectionist policies it had fought had gone, including by stretching a chain over the Parana at the Fortress of Humaitá. Eventually, it chose to go to war with Brazil, Argentina and Uruguay.

That the war between Bolivia and Paraguay also involved a non-renewable natural resource is suggested by the fact that oil was found in the early twentieth century along the Eastern Andean piedmont in Argentina, whose federal government established a monopoly over the oil fields in the Republic's territories where the subsoil was not under the jurisdiction of provincial governments, as well as in Bolivia in the late 1920s, by Standard Oil acting as an agent under contract of the Bolivian government.

The analysis of the empirical record of the Paraguayan/Triple Alliance and Chaco wars we have carried out suggests that their roots lie in the differential nature of the revenue raising structures by which governments financed themselves and the nature of political rule, more specifically, whether the government partially financed itself by a monopsony over public lands which yielded natural resources used intensively the production of the county's main exports and whether the government was a military dictatorship. As both these wars took place in the Plate basin, the rivers of which serve as means of communication and transportation, the ease or difficulty of their navigation became involved in the rivalries between states over natural resource supplies and markets for resource intensive products.

In the rest of the paper we first consider the conflict between Brazil and Paraguay over navigation of the Paraguay River following the opening of the Parana and Uruguay rivers to international navigation and trade in 1852, akin to that of the Danube after the Treaty of Vienna of 1815. From this discussion it emerges that issues of transportation between input sources and product markets in the region as well as overseas arguably played a part in all three of these wars, as both the governments of Brazil and Paraguay sought to develop merchant fleets in which both states had invested. It also emerges that these conflicts took place following the introduction of innovations in transportation, communication and military technology, which decreased transportation costs and increased proximity, thus making conflict more likely and, arguably, costlier in terms of casualties. As one would have expected, increased trade did result in increased income and increased military spending.

As we have also uncovered evidence that a common factor played a part in bringing about all three wars, to wit, resorting to a monopsony-monopoly revenue raising scheme over natural resources used by the late colonial Bourbonic administration in the Viceroyalties of Peru and the River Plate, we show mathematically in the Appendix that a monopsonist of the country's major export products will prefer to be a monopolist in a foreign product market, as well. Some readers may instead prefer to go directly to Sections 3, 4 and 5 where in terms of the model sketched out in the previous sections and the appendix we successively consider in more detail the Paraguayan war followed by that of the Chaco. From this perspective, the asymmetric war that Paraguay waged first against Brazil, then Argentina and, finally, both allied with Uruguay, is no longer as much of a puzzle as it appears to have been for power transition theory. The framework proposed is also helpful to understand the competition between states for natural resources that underlay the Chaco war, which is seen in a similar light. Though we acknowledge Acemoglu et al. (2012) point that no oil was found in the Chaco, we point out that there was oil along the East Andean foothills of Bolivia and Argentina over which rivalry did exist, though the rivalry over it was between Argentina and Bolivia, not between Bolivia and Paraguay. Interpreted from the conceptual framework proposed, the evidence leads us to conclude that the Chaco war should have been fought between Argentina and Bolivia

but was not because of the power disparity between them. Instead it became a war between Bolivia and Paraguay for passage of oil through the Chaco. In each of these three wars, the strategic use of tariffs clearly emerges as an issue.

4. The Paraguayan cum Triple Alliance War, 1864–1869

The wars of the Paraguayan government of the second of the López dynasty (Francisco Solano) against those of its neighbors individually and in succession, and the Triple Alliance war of the governments of Brazil, Argentina and Uruguay against the Paraguayan military forces that had invaded their territories or were on the brink of doing so are often equated with one another even though they started at different times and in response to different challenges. As the war of Paraguay's government against Brazil's started in August 1864 and that against Argentina's did not start until early 1865 but the governments of Brazil, Argentina and Uruguay did not sign their Treaty of Alliance until May 1st, 1865, it should be clear that the war (or shall we say wars) of Paraguay's government against those of its neighbors preceded that of the Triple Alliance of its neighbors against that of Paraguay. If we disregard the fact that a Provisional government was installed in Paraguay in 1869 to officially replace the one that had started the war against Brazil, Argentina and Uruguay and continued it against the Triple Alliance to the bitter end, it may well be said that the Paraguayan war against its neighbors on the Atlantic encompassed the so-called Triple Alliance war. To clearly distinguish between the two, we consider the war of Paraguay to have been the one the government of the country waged against its coastal neighbors to the North and South/South East, adjacent Brazil and Argentina, as well as non-adjacent Uruguay—individually and in succession, until they signed the Treaty of Alliance, that is, from August 1864 to May 1865. We leave the war of Paraguay insofar as it overlapped with the war of the Triple Alliance, for another venue.

The war of Paraguay against its coastal Atlantic adjacent and non-adjacent neighbors individually and in succession erupted soon after the world trade began to expand in the mid-1840s, partly as the result of the fall in transportation costs stemming from the introduction of steamship navigation in overseas and interior river navigation. It followed the replacement of the protectionist Argentine Confederation government of Rosas by a relatively more liberal government, that in 1852 allowed free international navigation of the Paraná and Uruguay among interior rivers, through which the output of interior regions could reach the Atlantic by way of the ports of Buenos Aires and Montevideo. However, it left the issue of navigation of the Paraguay River to be resolved by Brazil and Paraguay.

In Argentina and Brazil, increased trade appears to have been positively associated with political liberalization. In Paraguay, however, rising exports in the 1850s and early 1860s strengthened the autocracy that had been installed during the preceding decades of world trade contraction and independence, in the mid-1810s to be more precise. The autocratic early national government of independent Paraguay inherited the royal mate and hardwoods forests that the provincial government had administered and, interpreting the 1845 Anglo-French expedition (which sought to lift Rosas' blockade of the Parana River) as a sign that internal river navigation would soon be free, in 1846 reserved for itself the international trade in yerba mate and naval construction woods, the country's most important export products, as has also been noted on footnote 5. That is, it declared a government monopsony on export-quality yerba mate and naval construction woods, and monopolized their export. Private entrepreneurs could export these goods only by express government permission. As a result, the Paraguayan government became the country's main exporter of forest goods after 1852.

Falling prices of European manufactures together with the Paraguayan government's market power in regional markets, improved Paraguay's terms of trade as well. The country's government revenues and military capability also grew rapidly. Government imports of European guns, ships, and military materiel rose. In addition, the government established a military capital goods industry, to make it possible to locally produce military goods and to attempt the construction of a railroad and of ships, all of which would further facilitate increased exports of relatively resource-intensive goods and imports of relatively capital-intensive, labor-saving European manufactures. Since the Brazilian region of Mato Grosso accounted for a comparatively small proportion of total Brazilian exports, free interior river navigation had

a much lesser effect on appreciating Brazil's currency and improving its terms of trade than did coffee. In addition, the government in Brazil, unlike that in Paraguay, had not established a monopsony over either yerba mate or naval construction goods, both of which had, until then, been privately produced.

The Paraguayan war initially involved only the governments of land-locked Paraguay and one of its neighbors on the Atlantic Coast, Brazil. Having warned the government of Brazil not to invade Uruguay in order to seek redress for Brazilian citizens' grievances, as it had long threatened, and having Brazil then invaded Uruguay for that purpose, the Paraguayan government responded by seizing a Brazilian commercial ship making its way up the Paraguay River to Mato Grosso. Shortly thereafter, it sent the Paraguayan Army, it had mobilized earlier that year, to invade and secure the Brazilian state of Mato Grosso, both via the Paraguay River and by land. The bulk of the Paraguayan Navy and army then turned south and, going down the Parana River, invaded Argentine territory as well, capturing the city of Corrientes. Another column then marched down the Uruguay River towards the southern Brazilian province of Rio Grande do Sul and Uruguay, where the Blanco government -friendly to Paraguay- soon fell to its Colorado opponents and Brazilian forces.

The governments of Brazil and Argentina, together with that of Uruguay, then signed an offensive-defensive alliance. Nevertheless, the Paraguayan Army continued down the Uruguay River toward a confrontation with the allied forces, while the Paraguayan Navy, its fleet augmented by captured Brazilian and Argentine merchant ships outfitted for war, went further south down the Parana River to confront the Brazilian Navy, which had by then advanced upriver. In both offensives, the Paraguayan government forces would meet catastrophic defeats. Their offensive advance would turn to a defensive retreat.

The Paraguayan government's war against that of Brazil broke out after Brazil's constitutional monarchy, led by a liberal cabinet, invaded Uruguay to help depose its conservative Blanco government, engaged at the time in a civil war against its liberal Colorado opponents, who also enjoyed the support of the liberal government of Argentina- Brazil's traditional rival in the region. The momentary coincidence of Brazilian and Argentinian interests and their joint support for the Colorados made a Blanco defeat in Uruguay certain. The Brazilian invasion did not threaten Uruguay's existence as a separate political entity, since the latter had been established as a result of the late 1820s Cisplatine War between Brazil and Argentina, had been preserved with the help of Britain, and served as a buffer between Argentina and Brazil conflicts. Yet, arguing that Brazil's invasion of Uruguay had altered the region's equilibrium, the Paraguayan government seized the Brazilian merchant steamship *Marqués de Olinda*. Its navy and Army made their way to Brazil's central south state of Mato Grosso, in effect, though not formally, declaring war on Brazil. Shortly thereafter, the Paraguayan government invaded the Brazilian province of Mato Grosso, lying to the North, taking control of Brazilian yerba mate forests whose products could be exported, or not, to markets downriver in Uruguay and Argentina, competing with South-east Brazil producers of the same goods.

Once in control of Mato Grosso, and to engage the Brazilian troops that had invaded Uruguay, the Paraguayan government attempted to march its troops through Argentine territory, which had remained neutral until then. When the Argentine government refused to allow the passage of belligerents through its territory, Paraguay declared war on Argentina as well. It then proceeded to cross the Paraná River and march down the Uruguay River, passing through ports -Itatí, in particular - where Brazilian exports of yerba mate, which competed with those of Paraguay, left for regional markets. These exports could be interdicted, thereby raising their prices.

In Uruguay, the Colorados had by then displaced the Blanco party from power as well, and Argentina and Uruguay joined Brazil in the war against Paraguay. In May 1865, the three countries signed the Treaty of the Triple Alliance, through which Brazil secured Argentina's participation in the war by secretly agreeing to partition Paraguay in a manner very favorable to Argentina. Brazil would take the disputed territory to the east and northeast of Paraguay; Argentina, on the other hand, would take the territories to Paraguay's southeast, as well as the entire Chaco region. Though that clause of the treaty was supposed to be kept secret, it was published by Great Britain's government in the early 1866.

As the Paraguayan war pitted belligerents of vastly different capacities against one another- capacities that increased both individually and collectively as the conflict progressed, it stands one of the so-

called asymmetric wars that the power transition theory of international conflict would have predicted that it would not occur. It is interesting on this account as well. How have social scientists previously attempted to account for this conflict? After a critical survey of previous accounts of this war, Abente (1987) found that neither balance-of-power or imperialist theories of war fared well. He also found that the power-transition model did not account for the Paraguay–Brazil dyad, the most important of the war, or for the Paraguay–Uruguay dyad. He concluded, though, that a modified power transition model did account for the Paraguay–Argentina dyad. However, the modified power transition model by which Abente proposed to account for the Paraguay–Argentina dyad incorporated parts of the imperialist theory of war that he had previously rejected. In particular, he suggested that the Argentine government was interested in a long war against Paraguay as a means to another end: quelling the provincial opposition to centralized rule from Buenos Aires. Yet, it is not evident why the Buenos Aires government would not seek to attain this end directly rather than indirectly, by engaging in a costly war with Paraguay that appears to have had exactly the opposite effects of what –according to Abente – the government of Argentina wanted to achieve.

Given Brazil’s vast superiority over Paraguay, and the even greater superiority of the Allies made possible by borrowing abroad, the Paraguayan/Triple Alliance war must be regarded as an asymmetric conflict. This would lead us to expect that Paraguay would not have waged war, either against Brazil or, even less, against the still more powerful Triple Alliance. Nevertheless, the war did take place. Why would the Paraguayan government be willing to go to war not only against Brazil, but ultimately against Argentina and Uruguay as well, merely to assure that the Uruguayan Blanco government would remain in power?

We suggest that there may well have been good economic reasons for the Paraguayan government to prefer a Blanco government in Uruguay, as well as to view with hostility Brazil and Argentina’s imposition of a Colorado government there. These reasons may be found by first looking at the similarities in the relative factor endowments of Brazil and Paraguay, as well as their competition over regional yerba mate supply sources, export markets, and transportation routes – both between them, between the Paraguayan state and the Brazilian private entrepreneurs, individually and with the Brazilian state support.

Attention must also be paid to the Paraguayan government’s long nursed plans to form a federation with the similarly conservative government of Uruguay and with the Littoral provinces of Argentina that lay between them. These federative plans were consistent with the Paraguayan government plan to exclude Brazilian competition in downriver markets while also securing unimpeded navigation of the Parana and Uruguay rivers, a deep-water port at Montevideo, and access to the Atlantic. An early version of this federation had included Bolivia, which as Alto Perú, had been the most important market for Paraguayan yerba mate during the late colonial period and where similar political conditions as in Paraguay existed in the 1860s. Furthermore, there are indications that López’s version of these federative plans could conceivably have included Bolivia as well.¹¹ In that case, the federation would have stretched from the Atlantic to the Pacific. Such a federation, given its negative implications for Argentine territorial integrity, its political nature contrary to those of the governments of Argentina and Brazil, and the economic and military power that it could muster, would clearly have threatened Argentina, as well as Brazil, and would have met with their opposition.

Let us now look at these issues in more detail, beginning with the reason why the Paraguayan government might regard a Colorado government in Uruguay with hostility. Prior to the Brazilian invasion, the Blanco government in Uruguay, besieged by its own political opponents, had asked Paraguay for military protection, offering in exchange to reduce the duties on Paraguayan exports to Uruguay relative to those on competing Brazilian imports (Herrera, 1908: pp. 444–448). Assuming a similar structure of production costs in Brazil and Paraguay, such a differential tariff would have allowed the Paraguayan government to

¹¹ Uruguayan diplomatic envoy to Paraguay Juan José de Herrera, reporting to his Minister of Foreign Relations, says: “En el fondo de tan patrióticas gestiones palpita el ensueño federal de Artigas. Nuestra diplomacia bosquejaba, en 1863, la alianza contra enemigos comunes del Uruguay, Paraguay, Entre Ríos y Corrientes, constituídos en Liga del litoral. Esa misma diplomacia en 1846 había proyectado idéntica fórmula, *ampliada con el apoyo de Bolivia*. Todos los fragmentos territoriales del antiguo virreinato, unificados por el mismo peligro” (emphasis added; Herrera, 1908, p. 348).

increase the quantity of yerba mate it sold in Uruguay until it displaced all Brazilian yerba mate sold at the pre-differential tariff price. The Paraguayan government would be better off because its exports would increase and its terms of trade would improve. Uruguay would be better off because the government would have protection at no expense other than the tariff revenues forgone from Brazil and Paraguay, while Uruguayan consumers would be better off since the same amount of yerba mate would be available to them at a lower price. Such a tariff reduction would help the Paraguayan government earn greater revenues from its forest exports. Paraguay would thus recover some of the regional market share in forest products it had had in the late eighteenth century that had lost to Brazil in the early nineteenth, after the Spanish empire's Viceroyalty of the River Plate fragmented into independent, warring province-states that hindered each other's trade.¹² Without a relatively lower tariff on Paraguayan yerba mate exported to Uruguay, the Paraguayan government's monopsony on export quality yerba mate, declared in 1846, would have been of little use. However, López was aware of the implications of the fact that the most favored nation clause implied that the Uruguayan offer could only be temporary and, in fact, rejected it, which suggests that his Uruguay River campaign may have had a different aim.

Consider now the spark that ignited the war: the capture, on López's orders, by the Paraguayan Navy of the *Marqués de Olinda*, a steamship belonging to the fleet of the Brazilian *Companhia da Navegação do Alto Paraguai*. This company had operated since it was founded in 1858 with a subsidy of the Brazilian Emperor to connect Río de Janeiro and Cuiabá by way of the Parana and Paraguay River (Arruda 2014), which until then could only be reached by land.

That the Paraguayan government was in fact concerned with Brazilian competition in the yerba mate markets downriver is suggested by the fact that after opening hostilities with Brazil in 1864, its first military move was to seize the Brazilian province of Mato Grosso, situated directly North of Paraguay. The Mato Grosso invasion has often been regarded by military tacticians as a Paraguayan mistake, because Mato Grosso was not a military threat to Paraguay's rearguard. Furthermore, the invasion of Mato Grosso kept López from attaining his main objective: that is, confronting Brazilian forces and preventing the fall of the Blancos in Uruguay, which would have implied moving forces to the Southeast, instead. However, Mato Grosso did contain most of the yerba mate forests from which Brazilian entrepreneurs extracted the product that competed with the yerba mate exported by the Paraguayan government to downriver markets. Therefore, by taking Mato Grosso the Paraguayan government increased the stock of yerba mate forests under its control, while at the same time depriving the competition of sources of inputs, that is, moved towards acquiring the position of monopoly supplier that would make it better off. Since the Paraguayan government was not then at war with Uruguay or Argentina, its objective in seizing Mato Grosso was clearly consistent with the aim of increasing Paraguayan supply of yerba mate to regional downriver markets while reducing the Brazilian supply. In other words, Paraguay's objective in seizing Mato Grosso, as well as in moving early the following year across Argentine Misiones and down the Uruguay river towards south east Brazil and Uruguay, may well have been economic rather than military or, at worst, from our point of view, both military and economic.

Furthermore, the record suggests that Paraguay sought to include Argentina's littoral provinces and, possibly, Bolivia as well, while simultaneously trying to remain in good terms with the Argentine government. That the Paraguayan government sought an alliance with the Argentine littoral provinces has been pointed out before, as such an alliance would also have assured Paraguay free passage on the Parana River. However, not enough attention has been devoted to the possibility that López may also have envisioned including Bolivia in the federation. Incentives clearly existed, for Paraguay as well as for Bolivia, to seek some sort of mutually beneficial arrangement. López was clearly vulnerable to a blockade of the Parana River, which would have forced him to go through Bolivia to obtain supplies by way of the Pacific

¹² Pastore (1994b) and Lynch (1958) who state that "(Cevallos) was named ...Viceroy of Buenos Aires, with jurisdiction over the territories of the Audiencia de Charcas". As pointed out by an anonymous referee, it was the Audiencias that tended to fragment into independent states elsewhere in the Spanish American Empire.

Ocean, whether from Europe, the United States, or elsewhere, so we would have expected to see some attempt on his part to establish links with Bolivia.

In much the same way as the possibility of a federation between Paraguay and Uruguay would have disappeared had the Littoral provinces remained Argentine – which would have led us to expect López to seek to woo the leader of the Argentine Littoral provinces, Urquiza, as he in fact did – the possibility of a Bolivia–Paraguay federation would likewise have disappeared if Argentina’s demand that the entire Chaco become hers had been satisfied after the war. In that case, we would have expected Paraguay and Bolivia to oppose Argentina on this issue. In fact, López did instruct his agent in Europe, Cándido Bareiro, to seek a £5,000,000 loan in the British capital market to build a railroad through the Chaco westward to Bolivia (Bonilla, 1987, p. 263). Also, aware that the war could have negative implications for Bolivia’s claims on the Chaco, President Melgarejo pressed his country’s claims to the territory before the Allies. Furthermore, Melgarejo wrote to López in August 1866 noticing Chilean, Peruvian, Bolivian and Colombian protests against the Triple Alliance and offering to contribute with 12,000 men to López’s Army. Had a federation between Uruguay, the Argentine littoral provinces, Paraguay and Bolivia jelled it would clearly have extended the market for the Paraguayan state’s yerba mate, which could now buy yerba mate domestically at monopsonistic (lower) prices and sell it at monopoly prices in Uruguay, the Littoral provinces, and Bolivia, which at the time had a coast on the Pacific Ocean and claimed to have territorial rights over the Chaco region, stretching from the foothills of the Andes to the Paraguay River – which divided its territory from that of Brazil. With such a federation, Paraguay’s chances of victory in a war would also have improved, for not only would Paraguay be able to resupply itself if the rivers were blockaded, but the federation’s resources would be much larger than those of Paraguay alone or in combination with Uruguay, the Argentine Littoral Provinces, or both. In fact, after the Triple Alliance Treaty was signed and the Allies blockaded Paraguay, López used the Bolivia connection to trade through Corumbá and the Pacific for goods that Paraguay could no longer obtain through its customary southern and southeastern trade routes. Despite Melgarejo’s offer of help, Bolivia did not enter the Triple Alliance war because Melgarejo was deposed and assassinated (Cardozo, 1987).¹³

Finally, events following the Paraguayan government’s invasion of Mato Grosso suggest that the Paraguayan government initially sought to remain in good terms with Argentina’s federal government to prevent Argentina from entering the war on Brazil’s side – an outcome that Argentina also initially tried to avoid. With his troops now on Paraguay’s southern border facing the strip of Argentine territory separating Paraguay from Brazil, López asked the Argentine government for permission to cross that strip to reach Uruguay. Until then, the Argentine government had remained neutral in the Brazil–Paraguay conflict, and assured free navigation of the Parana River to both. But while Argentina could allow navigation of international waterways by both belligerents, it could not allow one or the other to cross its land mass, for that would have belied its neutrality. Thus, Argentina refused López’s request. That López should have asked for permission suggests that he did not want a quarrel with Argentina in addition to the one he already had with the much larger Brazil. Argentina was not only Paraguay’s major trading partner, but could also hinder Paraguay’s resupply attempts via the Parana River and the Atlantic Ocean. On the other hand, abiding Argentina’s denial would have certainly meant that the Colorados would irremediably replace the Blancos in Uruguay, and that Paraguayan plans to build a federation –already weakened by the lack of support for them on the part of Littoral caudillos– would collapse. In turn, that would have meant the loss of any chance at a tariff on Brazilian yerba in Uruguay and the Littoral or, equivalently, that Paraguayan yerba mate would have had to freely compete with Brazilian yerba mate in Uruguay, as well as elsewhere in the regional market. Consequently, the Paraguayan government could expect much lower profits from its yerba mate exports. Unless the cost of producing Paraguayan yerba mate was lower than the cost of producing Brazilian or Argentinian yerba mate, the Paraguayan government could derive only minimal rents from yerba mate, since its price in a competitive regional market was unlikely to deviate much from cost plus transportation. This would have hurt the Paraguayan government’s ability to gather revenues,

13 The statement is based on Melgarejo to López, La Paz, 30th August, 866, in Centurión (1894–1901), Vol. II, p. 376–377.

which in turn would have impaired its ability to finance the army that supported it. The decreased importance of the government yerba mate monopoly would also have favored the Paraguayan private sector, which in the presence of a weaker army could more likely challenge the regime's monopsony domestically. Clearly, Rosas' fall had not occurred so long ago that López would have forgotten it.

The Argentine government, therefore, by merely asking that Paraguayan troops not cross Argentine territory, could assure a regime change in Uruguay, make markets for yerba mate competitive (which was also in the interest of Argentine consumers), raising the likelihood that López's government would collapse and that a regime change would take place in Paraguay as well.¹⁴ The fall of López and of his state monopolies would also mean, furthermore, unimpeded access to Brazil's own yerba mate and hardwood forests in Mato Grosso through the Parana-Paraguay Rivers and that foreign entrepreneurs would have access to Paraguayan yerba mate and hardwood forests, as was in fact the case after the war. One can conclude, therefore, that neither Brazil nor Argentina had many incentives to go to war with Paraguay, for by merely keeping López north of the Parana River –where he was well entrenched anyway– they could achieve most of their objectives and have a chance that liberal rule would emerge in Paraguay as well. Had López heeded Argentine warnings not to cross, the war would have remained one between Paraguay and Brazil. However, López ordered Paraguayan troops to cross Argentine territory anyway and to march down the Uruguay River, so that Paraguay's war against Brazil and Argentina individually and independently became a war against three allies, Brazil, Argentina and Uruguay. Responsibility for launching the war with Brazil, and widening it to include Argentina and Uruguay, therefore, clearly falls on López's shoulders.

Furthermore, in crossing Argentine territory, López did not proceed directly to Uruguay. He divided his army in two columns. The first column went down the Parana River and attacked the Argentine city of Corrientes, which confirmed speculation regarding López's designs over the Argentine Littoral Provinces. The second column proceeded along the right bank of the Uruguay River and then divided in two wings, one of which remained on the right bank of the Uruguay River, while the other crossed to the left bank. Both engaged Brazilian forces on Argentine and Brazilian territory. In the face of this aggression, the damage to life and property of the citizens of Corrientes, and the threat to its own territorial integrity, Argentina's government had no choice but to declare war on Paraguay and, later, joined Brazil and the Uruguayan Colorados in the defensive-offensive Triple Alliance Treaty against López. If the outcome of the war was in any doubt until this point, once Argentina entered it on Brazil's side it became pretty obvious, for López then faced even greater forces and was isolated to the point of not being able to resupply himself other than through Bolivia and the Pacific. Furthermore, since Paraguay forced war upon Brazil, Uruguay and Argentina, they would have the right to request compensation for the costs of the war imposed on them by the government of Paraguay. If Paraguay could not pay but with land, territorial annexation might be required. Therefore, the annexation of valuable Paraguayan territory, whether previously in dispute or not, was now an issue. The Triple Alliance treaty established how this partition would be carried out.

López's fate was certain after he experienced three major reverses in quick succession at Riachuelo, Yataí, and Uruguaiana. His fleet of wooden hulled, paddle-wheeled steamers, which he sent down river from Corrientes to take the ironclad, screw-driven Brazilian fleet by surprise at Riachuelo, was sunk on June 11. Even worse, in July the core of the nearly 30,000 strong army with which he crossed the Parana was lost at Yataí and Uruguaiana. At Yataí, more than seven hundred men died and fifteen hundred were made prisoners, and at Uruguaiana, more than six thousand men surrendered after a brief siege. All told, "as many as eighteen thousand troops, largely regular units, had been lost; half their number surrendered" (Williams, 1979, pp. 208–209).

Several other questions need to be considered, although lack of space restricts us from considering them in detail. For example, why did the war not stop at the López-Mitre Conference of Yataití Corá? And

¹⁴ Paraguayans exiled to Argentina by López had long been clamoring for such a regime change and were in fact instrumental in effecting it during and after the war (Lewis, 1993, pp. 19–31). This policy of the liberal government of Argentina was in striking contrast with that pursued by the conservative government of Rosas, which sought to bring Paraguay to heel by blockading it and reducing its foreign trade (Cardozo, 1987, pp. 95–120).

why did it stretch so long afterwards?¹⁵ Did the Allies really aim at reducing Paraguay's so-called state-socialism to rubble and destroying popular support for the nationalist rulers who sought to bring that dream into being by pursuing a genocidal war? Or was the social revolution, agrarian reform, and "spectacular" state-led industrialization attempt of which this state socialism was said to consist, and the asserted genocidal character of the war, exaggerations, if not inventions, of twentieth century historians? Given its implications for post war economic development, these are important questions to elucidate. Research by Pastore (1994a) suggests that there is no evidence of a social revolution, state-led agrarian reform, or industrialization attempt, spectacular or otherwise. Furthermore, the most recent and careful study of the demographic consequences of the Triple Alliance War finds that the Paraguayan population was reduced by between 8.5% and 18.5%, which is not necessarily low but which is substantially below more sanguine estimates of 50%, 75% or even 90%. Thus, it is clear that there could have been no attempt to destroy a social revolution, agrarian reform, or industrialization through a genocidal war, and that the losses attributable to the war were in fact within the range of war losses elsewhere.¹⁶

The previous discussion strongly suggests that competition by private Brazilian yerba mate entrepreneurs as well as by the Brazilian Companhia da Navegacao do Alto Paraguai for the Paraguayan government monopoly over yerba mate and the Paraguayan government merchant marine led the autocratic government of Paraguay to attempt to exclude the government of Brazil from the yerba mate trade and navigation of the Paraguay River by force. The implication of this suggestion is that the war would have been much less likely, and may not have occurred at all, had the Paraguayan government found other ways of financing its expenditures than through the monopoly it imposed in the late 1840s over yerba mate and hardwoods. That it should have preferred this monopoly to other methods of raising revenue and that it should have been able to impose it suggests, first, that there was a relative paucity of personnel with which to form a civil bureaucracy to collect taxes as contrasted with staffing an army capable of supporting itself from state ranches and, second, that the government's army and landholdings were relatively greater than those of private agents (Batchelder and Freudenberger, 1983). These, in turn, can be traced to the trade contraction of the early nineteenth century, the resulting alteration in the political coalition dominant until then, by the break-up of the Viceroyalty of the River Plate and the emergence of its component provinces as the independent province-states (if not yet nation-states) of Argentina, Uruguay, Paraguay, and Bolivia each of which required an army to defend borders that before independence did not need to be defended.

Originally, Brazil, Argentina, and Uruguay signed a treaty of Alliance motivated by the invasion of Brazilian and Argentine territory and the threatened invasion of Uruguayan territory by Paraguayan troops. As part of the indemnity the Allies sought from the Paraguayan government, the treaty foresaw the annexation of the Chaco by Argentina during the second phase of the Paraguayan war. However, following the war, the Chaco was not annexed to Argentina but remained in the hands of the Paraguayan government. In the mid-1880s, the Paraguayan government sold state lands there to foreign entrepreneurs, many of whom –though not all– were of Argentine origin.

In the decade following the end of the war of Paraguay/Triple Alliance, the War of the Pacific broke out between Chile and Bolivia, joined by Perú by virtue of a defensive-offensive secret treaty that committed the latter to come to Bolivia's defense in case of attack. The war deprived Bolivia of its coast and ports on the Pacific coast, turning it into a landlocked country, as Paraguay had been since the onset of home rule. Bolivia's loss of its Pacific coast put a premium on it being able to access the Atlantic by the Paraguay and Parana rivers. But though border disagreements caused frictions between Bolivia and Paraguay, the Chaco war did not begin to brew in earnest until oil was discovered in Argentina and Bolivia, in the late 1910s and 1920s. It broke out shortly after the bottom fell out of the world tin market following the Crash of 1929,

15 The Allies entered Asunción on January 1, 1869. They caught up with López and killed him on March 1st. 1870 (Lewis, 1993 p. 15).

16 For a dissenting opinion see Whigham and Potthast (1990). Geyer and Bright (1996), p.628, in footnote 28, consider Reber's (1999) "battle related casualties far too low, although her overall assessment remains valid".

and the military in Argentina seized political power. Both the Paraguayan war and the war of the Pacific between Chile, Bolivia and Perú may be said to have set the stage for the Chaco War.

5. The Chaco War

The war between Bolivia and Paraguay over the Chaco Region located between them and Argentina erupted following WWI and the Great Depression, the domestic contraction, fiscal crises, and coalitional changes the latter induced, and in the context of the rivalry between Argentina and the United States. It is often said to have been a war over oil, waged by the governments of Bolivia and Paraguay acting as proxies for the Standard Oil of New Jersey and the Royal Dutch Shell Oil Company, respectively.¹⁷

From our preceding analysis of the Triple Alliance and the fact that the Chaco War is said to have been fought over oil, we would have expected this second major South American conflict to have involved similarly endowed countries and to have been waged over oil-rich regions and markets for petroleum distillates, all the more so if the resource was an important source of government revenues and the state was directly involved in producing and selling the resource domestically and abroad, as was the case of yerba mate in 19th Century Paraguay.

From this perspective, however, we would have expected the Chaco War to have erupted not between Bolivia and Paraguay, the second of which still has no proven oil reserves, but between Bolivia and Argentina, both of which have adjoining oil-rich areas in southeast Bolivia and north east Argentina, respectively. Following the end of WWI, the ensuing contraction of world trade and, in particular, the Great Depression, but before the Chaco war, economic and political changes took place in Argentina and Bolivia, though not in Paraguay, that in greater or lesser measure steered these countries away from the laissez faire policies and parliamentary government that characterized them before the end of WWI. In particular, in Argentina it led in the 1920's to the creation of a state oil company under military management (*Yacimientos Petrolíferos Fiscales*, YPF), as well as to a 1930 military coup and later military governments.

In Bolivia, the crisis of 1920 caused a political and revenue crisis that brought the conservative "reivindicationists" to power. During the "mad rush" for oil reserves that followed the end of WWI, the reivindicationists' search for revenues led them to grant preferential concessions to the Standard Oil of Bolivia, a subsidiary of the Standard Oil of New Jersey. However, finding oil turned out to be easier than getting it to market. The western route over the Andes to the Pacific was too costly. Therefore, in the twenties, first Standard Oil (as early as 1922 and certainly by 1925), and later the Bolivian government itself, asked the Argentine government for permission to build a pipeline through Argentine territory to a deep-water port on the Parana River near Campana, where Standard Oil had built refining capacity (Solberg, 1979, p. 148).

Argentina, however, although also an oil producer, was a net importer of fuels. Following the crisis of 1920, the Argentine military increased pressures on the Yrigoyen & Alvear governments to become generally more self-sufficient through the imposition of protectionist measures to support the development of national industries owned either by the state or privately. Military pressure for the creation of industries was particularly acute in sectors the military considered strategic, like oil. As a result, Argentina's federal government in the early 1920s had established *Yacimientos Petrolíferos Fiscales* (YPF), a state oil agency that hoped to produce increasing quantities of oil from fields in the Comodoro Rivadavia territory and correspondingly reduce Argentina's reliance on imported coal and oil. This measure was supported by Argentine industrialists, who also favored protection and, in some cases, benefited from the subsidized oil with which YPF provided them.

The creation of YPF would not only lead to collusion between the military and industrialists, but would also involve the federal government in increased conflicts at home and abroad. Internal conflicts arose from the fact that jurisdiction over the subsoil was divided between the federal and the provincial governments. The federal government had jurisdiction over the subsoil only in the territories; Provincial governments had jurisdiction over their own subsoil; they could make arrangements for the subsoil's exploitation with foreign corporations independently of the federal government.

17 See Seiferheld (1986) and Cote (2013).

Under General Mosconi's direction, YPF pushed for a new mining law that essentially proposed to vest jurisdiction over the subsoil of the provinces in the federal government alone, which therefore met with much opposition from provincial representatives in Congress, as well as from liberal representatives generally. Provincial representatives opposed the proposed federal mining law because they would lose an important source of revenue. Liberal representatives generally were concerned that by allowing a state enterprise to produce oil a dangerous precedent might be set. Alvear's government, therefore, was characterized by recurrent conflicts between the federal and provincial governments. The new law did not get through Congress in the 1920s, but the importance of YPF increased throughout that decade (Solberg, 1979, pp. 51, 82–94).

Internationally, YPF led the Argentine federal government to conflict with the government of Bolivia. When the Bolivian government presented its 1929 request to build a pipeline through Argentina, the head of YPF, General Mosconi, rejected the idea in December 1929, and Argentina's federal government denied the request. Instead, it readily offered Bolivia the option of transporting its oil through existing Argentine government facilities, railroads and pipelines that would be built if necessary to connect them to the oil fields, and which would be paid by taxes imposed on Bolivian oil exports that passed through Argentine territory on their way to other markets. Bolivia refused the offer¹⁸.

By these measures, the Argentine government may have sought to make Bolivian oil exports to regional markets more expensive than Argentine oil or to force Bolivian oil to be sold more cheaply in the Argentine market alone, i.e., establish an Argentine monopsony over Bolivian oil. Both may have been likely, but given that Argentina was a net importer of oil, the second possibility would appear more likely. By denying Bolivia's request for a pipeline and a sovereign port on the Paraná but allowing Bolivian oil exports to pass through facilities owned by the Argentine government, Argentina in effect would have been able to heavily tax Bolivian oil exports even though it had no political jurisdiction to do so. We would have expected this measure to have caused conflict between Argentina and Bolivia, not between Paraguay and Bolivia, a conflict underlaid by state ownership of natural resources and competition for oil supplies between the state-owned and privately-owned oil companies in Argentina and Bolivia, in a context in which spatial considerations could be important.

Furthermore, Argentina and the United States were both land-abundant countries that competed for some of the same world markets and were therefore generally at odds with one another. These differences were exacerbated by the particular circumstances of the 1920s and the founding of YPF. In the 1920s, Argentina covered its balance of trade deficit with the United States with the balance of trade surplus it enjoyed with Britain. However, with the rise of protectionism in Britain, Argentines anticipated that their trade deficit with the United States could result in balance of payments problems unless alternative markets for its products could be found or an arrangement with the United States could be made. YPF led Argentina into additional conflicts with the United States because it saw itself as inextricably linked with the Argentine federal government and considered its interest and Argentine national interests to be synonymous with one another. It regarded Standard Oil's subsidiaries in Argentina and Bolivia as doing the United States government's bidding and considered them as competitors because they had oil contracts with Argentine provincial governments and the government of Bolivia. YPF's competition with Standard Oil, therefore, was an important problem with implications for relations between Argentina and the United States as well.

If the record reveals substantial reasons for conflict between Argentina and Bolivia over oil, why did the Chaco war take place not between these two-oil producing and exporting countries but, rather,

¹⁸ "Argentina had decided that Bolivian petroleum would be kept off the market until Buenos Aires gained the commanding voice over its marketing and/or transport." Rout (1970 p.58, footnote 43) cites Argentina, Archivo de Relaciones Exteriores. Ministerio de Relaciones Exteriores, Box 20 Estado Mayor General de Marina. *Consideraciones de orden logístico y estratégico que afectan la solución del conflicto boliviano-paraguayo*. pp.19–20 The Argentina report readily admitted that oriente petroleum was of better quality than that found in Argentina. In August 1932, Juan María Zalles, Bolivian Foreign Minister, clear eyed that Argentina's discriminatory practices were guided by the latter's desire to avoid the competition of Bolivian petroleum. (U.S. Dpt. Of State, Foreign Relations 1932, IV, 157).

between Bolivia and Paraguay, when the latter was a net oil importer and could presumably benefit from trading for oil with Bolivia as well as with Argentina? Paraguayan President Eusebio Ayala stated to the U.S. ambassador that he viewed the passing of Bolivian oil through Paraguay as being in his country's interest. However, his private correspondence with his foreign minister in Buenos Aires reveals that he did not regard it in that light. The Paraguayan government would therefore offer its Bolivian counterpart a port on the upper Paraguay River, but it would not be a sovereign or a deepwater port. Finally, the most authoritative study on the role of oil as a cause of the Chaco war quotes Paraguayan President Eusebio Ayala's 1934 statement to Vicente Rivarola that "existe la más fundada sospecha de que la Guerra del Chaco fue causada por la necesidad de dar salida a los productos por un oleoducto exclusivamente controlado por la Standard Oil" (Seiferheld 1983, p 507). That is, the Bolivian government would not agree to export its oil through the Argentine government's railroad to the Paraguay River, as this implied that the Argentine government would be able to, in effect, tax the Bolivian government's exports of oil.

All this suggests that Argentina's government may have given support to –and applied pressure on– that of Paraguay to get it to support Argentine foreign economic policy vis-à-vis Bolivia. In fact, according to Rout (1970), President Eusebio Ayala considered his refusal to allow a river port for Bolivia the prime reason of Argentine support for Paraguay. This is exactly what one would have expected the Argentine government to do if indeed it had aimed at keeping Bolivian oil from being exported anywhere but to Argentina and to sell it only to YPF. Even though passage of Bolivian oil through Paraguay was indeed in Paraguay's interest, the Paraguayan government may have been forced to comply with the wishes of the Argentine government because of the very vulnerable position in which it found itself relative to Buenos Aires, which could use its power to obstruct Paraguay's trade with the sea. In the late 1880s, Argentine companies had bought large expanses of fiscal land in the Chaco, and in subsequent decades had invested heavily there in industrial enterprises that provided employment to Paraguayans, produced a large share of Paraguay's exports to the region and to Europe (tanine extract) and paid revenues to the Paraguayan government. Thanks to the geographic and commodity diversification of its exports, the Paraguayan economy had boomed in the 1910s (Herken Krauer, 1986). These exports reached their regional and European markets through the Paraná River. Had the Argentine government wanted to, therefore, it could easily hinder Paraguay's trade through the Paraná River, and make things very difficult for the Paraguayan government.¹⁹ This was particularly true after 1930, when the Argentine military deposed the Yrigoyen government while a very similar civilian government with effective control over the armed forces remained in power in Paraguay. However, Argentina continued supporting Paraguay in the 30's because it felt that "in a case of a general South American conflagration, Bolivia would naturally side with Brazil (Rout, 1970, p. 60).

Immediately after the Bolivian government signed the first Standard Oil contracts, it borrowed against its prospective future income stream in the London capital market, and as drilling for oil proved successful, borrowed abroad twice more before the end of the twenties. Some of the proceeds of the first loan were used to extend the railroad to the border with Argentina, close to where the first productive oil wells were drilled. The proceeds of the second loan it invested in buying arms, and used those of the third loan partly to refinance the second loan. At the same time, the border question between Bolivia and Paraguay had turned into a territorial dispute involving conflicting claims over the Chaco west of the Paraguay River and north of the Pilcomayo River. Bolivia established at least two *fortines* down the Pilcomayo River earlier in the century, as well as a line of newer ones more recently (Seiferheld, 1983, pp. 69–82) and in response to this build-up as well as to the use of the second Bolivian loan, the Paraguayan government

¹⁹ Not surprisingly, after the Chaco war, Estigarribia sought financial aid in the United States for several projects, among which was the construction of a road that would jut East from Asunción to the border with Brazil and would connect Paraguay to the Brazilian road system. Grow remarks: "...by linking up with the Brazilian highway system, the proposed road would give Paraguay an alternate transportation outlet to the Atlantic, thus breaking the Argentine stranglehold on Paraguay's foreign commerce" through Brazilian territory to the ocean (Pastore, 1986, pp. 113, 115, and 131; Grow, 1981 p.53). The question arises, had a road from Asunción to the Atlantic coast been available in the early 1930s, would Paraguay have fought the Chaco war?

began to secretly buy arms as well (Peña Villamil, 1993, pp. 186, 196, 215–227, especially Eligio Ayala to Eusebio Ayala, August 17. 1926, pp. 220–221).

The crash of 1929 provoked in Bolivia an acute revenue crisis that the government sought to address by joining the International Tin Cartel Agreement (Rout, 1970, p. 53). However, the cartel imposed severe restrictions on Bolivian production and, consequently, lowered government revenues even more. The Tin Cartel reached the point of requiring that Bolivian mines cease production, with the consequently negative effect on employment among miners, and ensuing political problems. In Argentina the crash led the Argentine military to seize power in 1930. In Paraguay, however there was no military coup; the Liberal Party remained in power until 1936, but it was then also deposed by a younger officer in the military (Rafael Franco).

It was in the post-crash context that the Bolivian government increased its line of *fortines* in the Chaco. It simultaneously abandoned the aim of asserting control over the entire Chaco down to the confluence of the Paraguay and Pilcomayo rivers and concentrated instead on taking the main Paraguayan fort in the Chaco, located at the end of a Paraguayan railroad line that jotted west straight out from a port on the Paraguay river. This port and railroad, coincidentally enough, were located virtually on the same parallel as the southernmost oil area of Bolivia. This would have been the natural terminus for a railroad or pipeline that could be built quickly and that together with the existing railroad could be used to transport crude oil to the port on the Paraguay River, from where it could be carried down the Parana River. Both the railroad and the port, however, belonged to the Casado Company, an Argentine concern that had bought lands in the Chaco from the Paraguayan government during the late 1880s, had established the largest tannin producing factories in the country, and exported most of its output, to Argentina and elsewhere. In addition, though the Paraguay River was freely navigable by international convention, its water depth varied drastically throughout the year, and only a few months every year could the river be relied on to transport oil by means of ocean-going ships. Clearly, even if the Bolivian government could convince the Paraguayan government and Casado to cooperate, taking Bolivian oil out by the Chaco and the Paraguay and Parana rivers would involve transportation costs much higher than taking the oil out by way of a pipeline through Argentine territory. In this case the oil would have to be taken out by way of the sides as opposed to the hypotenuse of the right triangle between southeastern Bolivia, the port on the Paraguay River and Campana on the southern Parana River. The reloading that would be required at the port on the Paraguay River, and the uncertainties of the weather implied even higher costs of transportation through Paraguay than through Argentina. In effect, whether it went through Argentina or through Paraguay, Bolivia's oil would have to face costs that might make it uncompetitive in the regional market, let alone the international market.

In the absence of cooperative governments in Argentina or Paraguay, the Bolivian government could try to get its oil out to the market by resorting to military means. In this respect, it had a choice: it could wage war either on Argentina or on Paraguay. The power transition hypothesis holds that conflict will tend not to occur where there are large power disparities between countries and will instead tend to take place where the power of contenders is in fact more balanced. Bolivia's military power was far inferior to Argentina's, but closer to Paraguay's. Based on power transition theory, therefore, one would expect conflict between Bolivia and Argentina to be less likely than between Bolivia and Paraguay. That Bolivia attacked Paraguay rather than Argentina, therefore, may be accounted for by the disparity of forces between Argentina, Bolivia, and Paraguay. Both the Bolivian Presidents Saavedra and Salamanca believed that Paraguay was relatively weak vis-à-vis Bolivia. This assessment may not have considered the support given to Paraguay, both before and during the war, by Argentine, to which Rout refers as "a carelessly disguised belligerent" (p. 58).²⁰

Why did not Bolivia try to enter into a cartel arrangement with Argentina to exploit and market oil? Why did Argentina not attempt to forcefully annex Bolivia's oil fields? There is clear indication that Argentina was interested in the development of Bolivia's eastern region, the Oriente (Rout, 1970, pp 54–57).

²⁰ See dalla-Corte Caballero (2012).

Bolivia could have entered into an agreement with Argentina that would have allowed YPF to refine Bolivian oil and share the profits from the sale of petroleum distillates in the markets that could be found for them. But this would have been inconsistent with Argentina's aim if –as hypothesized here– the latter was interested in buying Bolivian oil at monopsonistic prices lower than those of the world market. On the other hand, we would have expected the Bolivian government's experience with the International Tin Cartel, which had resulted in the contraction of Bolivian tin output, to have argued against Bolivia forming or joining such a cartel.

In turn, the Argentine government may have thought it unnecessary to forcefully annex Bolivian oil fields because it could attain the same objective by less costly means, that is, by simply denying Bolivia's request to build pipelines, applying taxes on the Bolivian oil that sought to reach world markets through Argentine territory, and putting pressure on the Paraguayan government not to let Bolivian oil through. In addition, Argentine economic policy included the formation of a regional Zollverein (customs union), which the Argentine foreign minister Honorio Pueyrredon presented to the Sixth Pan American Conference, held in Washington in 1928. At the urging of the United States government the proposal was not considered, and the Argentine delegation left the meetings (Rout, 1970, p. 53). But the aim remained²¹. Clearly, plans of a regional Zollverein and conflict with Bolivia were inconsistent with one another. Furthermore, Argentina may have perceived that forceful annexation of Bolivian oil fields could possibly involve it into deeper conflict with the United States. Just as the Argentine government was behind the interests of YPF, it regarded the United States as being behind those of Standard Oil. Argentina, however, was militarily far weaker than the United States. However much the Argentine military may have been feeling its oats, it did not want a conflict with the United States military. This contention is consistent with the power transition hypothesis.

From Argentina's point of view, keeping Bolivian oil off the market was a far better strategy. On the other hand, if the Bolivian government wanted to realize the revenue potential of its oil, for as long as the governments of Argentina and Paraguay denied it free passage, it would have no option but to resort to military means. If Bolivia had to wage war, power transition theory would have led us to expect that it would do so against Paraguay rather than Argentina, as in fact it did.

Conclusion

Much as the Crimean War and the U.S. Civil War resulted in the abolition of serfdom in Russia as well as of African slavery in the United States, respectively, the Paraguayan/Triple Alliance war that followed closely in their heels also led to slavery's abolition in both Paraguay (1870) and Brazil (1887), as well as to the substitution of dynastic rule by Republican government in Paraguay and, eventually, Brazil, and the strengthening of liberal rule and the Belle Epoque in Argentina and Uruguay. After the Great Crash, likewise, military rule displaced civilian rule in Argentina and in Bolivia and Paraguay as well after the Chaco war and preceding the Spanish Civil War (1936–39) and WWII (1941–1945).

The War of the Triple Alliance might have been averted if the agreement reached at the 1815 Treaty of Vienna as it concerned the right of access to freely navigable rivers had spread more rapidly to the Plate Basin states, all the states of the region had sold their public lands as did Argentina beginning in 1835 and they did not establish state monopolies over natural resource intensive exports as did Paraguay in the 1840s. The Chaco war may also have been averted if the Argentine government had recognized Bolivia's petition to allow construction of a pipeline to a deep port on the Paraná River in the same way as domes-

21 The idea of a Customs Union (or Zollverein as it was referred to by its proponents to highlight its German origins) was proposed again in the 1940s and 1950s, but as in the 1920s the proposal met with United States opposition. In fact, the day that Perón was supposed to arrive in Asunción to sign the treaty that joined Argentina and Paraguay into a Zollverein with President Federico Chaves, General Stroessner deposed Chaves (Silva, 1995, p. 168). The period of cooperation with the United State inaugurated by Marshal Estigarribia's election in 1940, but interrupted by his death and the accession to power in Paraguay of a fascist leaning military, was thus resumed, but under the leadership of a military man who, though friendlier to the United States, would become Paraguay's longest ruling dictator.

tic legal codes generally recognize the right of access by land to roads, or if the Bolivian and Paraguayan governments had had alternative revenue sources available to them.

The Platine war, the War of Paraguay/Triple Alliance and the Chaco war jointly defined the region's political geography as it has stood to the present. The region's record with respect to peace since, that is, the fact that the frequency and magnitude of inter-American state conflict as a whole has decreased over time since the 1930s, has clearly to do with the resolution of the rivalries that led to wars of the past.

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Appendix

Conducting war requires resources which a state can acquire by several means. Generally, wars are financed by taxation of present and future generations (the draft, issue of debt and money, etc.). A very effective technique for a government to raise revenues is reducing competition in export markets while simultaneously regulating or expropriating domestic export-producing industries. As an example of the optimality of such a strategy, we show that where the state is the sole buyer of a resource or commodity, i.e., a domestic monopsonist, it will prefer to become a monopolist in foreign markets in which it sells the commodity, since this will lead to an increase in profits and therefore, government revenue. Clearly, the government of one country may not easily become a monopolist in the product market of another country, and the process may lead to conflict. In particular, Paraguay and the Triple Alliance War offers an interesting case study.

Let us investigate why Paraguay or any country with monopsony power in the processing of a commodity or in the labor market would adopt this strategy. Suppose that a monopsonist is initially operating in a competitive world environment purchasing input x (yerba mate, silver or nitrates or oil, in the later exposition) at price p_x , whereas more x is bought, the price of x rises, i.e. It then processes this input for the export market. We assume that the world price for yerba mate is fixed, i.e., he has no control over world price since he is a competitor. If he becomes a monopolist of the output y in the world market, then as he sells more of it the price of it (yerba mate) falls since he faces the world market demand curve. More formally, if p_y is the demand curve, then.

The profit for a monopsonist (M) is

$$\pi^M = p_y y(x) - p_x(x)x \quad (1)$$

with $y=y(x)$ and $y'(x)>0$, i.e., they can sell more of the inputs purchased domestically in the world market. The first-order condition for profit maximization is

$$\frac{d\pi^M}{dx} = p_y \frac{dy}{dx} - \frac{dp_x}{dx} x - p_x = 0 \quad (2)$$

or equivalently,

$$p_y \frac{dy}{dx} = p_x \left(1 + \frac{1}{\varepsilon_{xp_x}} \right) \quad (2')$$

where ε_{xp_x} is the elasticity of demand for the intermediate input, yerba mate x , from the peasants.

For a monopsonist who becomes a monopolist (MM) their profits are:

$$\pi^{MM} = p_y y(x) - p_x(x)x \quad (3)$$

In this case, the first-order condition for profit maximization is

$$\frac{d\pi^{MM}}{dx} = \frac{dp_y}{dy} \frac{dy}{dx} + p_y \frac{dy}{dx} - p_x - \frac{dp_x}{dx} x = 0 \quad (4)$$

Alternatively, it can be expressed as

$$\frac{d\pi^{MM}}{dx} = \left(p_y + \frac{dp_y}{dy} \right) \frac{dy}{dx} = p_x \left(1 + \frac{1}{\varepsilon_{xp_x}} \right) \quad (4')$$

Since the first term on the left-hand side of equation (4') for the monopoly/monopsonist, $p_y + \frac{dp_y}{dy}$ is less than p_y , the left-hand term of equation (2') for the monopoly alone, and since $\frac{dy}{dx} > 0$, it implies that for the monopolist/monopsonist $p_x \left(1 + \frac{1}{\varepsilon_{xp_x}} \right)$ has to be smaller. More specifically, the monopolists pay a lower price for x (assuming the elasticity for yerba mate in the domestic market ε_{xp_x} is the same in either case). This implies that since $\frac{dp_x}{dx} > 0$, a country that can gain monopoly control internationally, will choose a smaller optimal x (to correspond with a lower price of x that they have to pay the peasants). Therefore, they sell less abroad and, since $\frac{dp_x}{dy} \frac{dy}{dx} < 0$, they charge a higher world price and have larger profits since they could always continue to price like a competitive firm.

In summary, if a country's government (Paraguay's, for example) could obtain a monopoly position or at least disrupt the supply of a good to a foreign market sufficiently to give that government an influence over price, then its profits will be higher as it would charge a higher price. In addition, the laborers on State-farms will be paid less than if a competitive environment existed. In other words, monopolization of yerba mate by Paraguay would lead to the greater exploitation of the laborers in that industry.