Oil Rents and Patronage:

The Fiscal Effects of Oil Booms in the Argentine Provinces

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Oil rents turn democratic governments into authoritarian governments. They also help to consolidate and sustain authoritarian rule once in place. These are the claims several authors make connecting the rents from oil with the emergence and consolidation of authoritarian rule.[1] One of the most important causal connectors between large oil revenues and authoritarian rule is the way in which governments spend these rents from the oil sector. Some authors claim that rentier governments spend oil money to expand their political machines through patronage and clientelism, to buy off political loyalties, and to enlarge the repressive apparatus to suppress discontent. Several of these scholars argue that rentier theories adjust well to most countries in the Middle East (e.g., Saudi Arabia, United Arab Emirates, Qatar, and Iran), as well as to others in Africa (Nigeria, Angola, Algeria, and Libya), Southeast Asia (Indonesia and Malaysia), Latin America (Venezuela, Ecuador, and Mexico), and even Europe (Russia and Azerbaijan). Oil-dependent governments can also spend revenue from oil booms on public goods, such as public infrastructure or social services, which appeal to a larger portion of citizens and may broaden the support base of their electorate. Norway is the quintessential case, an oil state in which there seems to be no rentier effect, as well as Canada, Australia, and the United Kingdom. When do oil-dependent governments decide to spend oil rents to expand their political machines through patronage, clientelism, and an enlarged repressive apparatus and when do they decide to provide better public services to their citizens to expand the support base of their electorate? This article analyzes the conditions under which large increases in oil rents produce more patronage and clientelism versus more spending in public services.

In opposition to conventional rentier theories, this study argues that patronage spending tends to increase when oil rents decline in contexts of job destruction in the oil sector. Under those circumstances, incumbents use patronage to contain social discontent and secure their core voters. On the contrary, an increase in rents in contexts of job creation in the oil sector tends to increase capital investment. Under

those conditions, the public sector cannot compete with the salaries of the expanding oil sector (for both unskilled and skilled workers) and has to cope with its demands for better infrastructure and more social services for their employees. Incumbents also use capital spending to target broader constituencies and potentially increase their political returns.

A key contribution of this study is that it uses indicators measured at the subnational instead of the aggregate national level. The Argentine provinces are particularly valuable to the study of the impact of oil rents. First, oil prices increased substantially between 2000 and 2008, generating a huge exogenous revenue shock for oil-producing provinces.[2] Revenue from the oil and mineral sector more than tripled in the six most important oil-dependent provinces, skyrocketing from 11 percent of the provincial budget in 1998 to 36 percent in 2002. Oil rents escalated from 25 percent in 1999 in Neuquén, one of the most important oil-producing provinces, to 65 percent in 2002. This large exogenous shock makes it easier to identify the fiscal, political, and socioeconomic impacts of oil rents. Secondly, there is enormous variation in the percentage of the provincial budget that depends on oil revenue as well as in provincial patronage spending (see Definitions and Data below). This variation allows us to analyze the fiscal effects before, during, and after the last oil boom. Moreover, oil and mineral producing provinces in Argentina decide autonomously (without federal regulations) how to spend their rents. Finally, there are many other variables that can be controlled among provinces, such as national (federal) institutions of government, cultural factors (relevant in other federal countries such as India, South Africa, and Nigeria), and other unobservable, but possibly relevant, explanatory factors that may vary substantially across countries but are often unmeasured or poorly measured in cross-national research.[3]

This article relies on original panel data on oil and mineral rents and provincial revenues and expenditures for the twenty-four subnational units in Argentina in the period between 1983 and 2013. Using descriptive statistics, regression analysis for panel data, and two case studies, it presents and discusses the main findings in the Argentine provinces and explores the theoretical implications for the comparative debate on the political and socioeconomic effects of oil rents.

Oil and Mineral Rents: Curse or Blessing?

The original works on "rentier states" defined them as "countries that receive on a regular basis substantial amounts of external rent"[4] or "those in which natural resources rents provide a significant share of the government's revenue."[5] A growing body of literature is concerned with the political, economic, and social consequences of large amounts of external rents from oil and minerals. While some of the literature on the political effects of oil rents empirically associates them with authoritarian rule,[6] several studies openly challenge this relation.[7] Others, still, argue that both negative and positive effects can take place depending on the context, but that these effects cannot be

generalized.[8] Some studies find that oil revenues only help autocracies to survive,[9] but others show that oil wealth helps to sustain and consolidate democracies.[10]

Many of those who claim that large amounts of external rents from oil and minerals lead to authoritarian rule connect the two variables through three main effects: taxation, spending, and repression.[11] The "taxation effect" connects states' reliance on large oil rents with a decline in taxes, which in turn produces a reduction in popular pressure for government accountability. Several authors find empirical evidence for the relationship between a larger dependence on external rents and a reduction in other more-difficult-to-collect forms of revenue, such as income taxation;[12] however, other authors have challenged these findings, even for the same cases.[13] Changes in societal accountability have been elusive and hard to observe and measure, especially in developing countries. The "spending effect" refers to the role exogenous shocks of rents play in fueling patronage and clientelism to buy off political loyalties, generate an electoral advantage for the incumbents to remain in power, and in the end consolidate authoritarian governments.[14]

One of the most important causal connectors between large oil rents and authoritarian rule is the way in which governments spend this revenue from the oil sector. Governments can spend it in expanding their political machines through patronage and clientelism, as well as enlarging their repressive apparatus through larger defense and security spending. Or they can spend revenue from oil booms on public goods, such as public infrastructure and better social services, such as health, education, or housing. This article analyzes the spending patterns in oil-producing districts to disentangle whether large increases in rents produce the effects that part of the literature sees as linked to authoritarian rule. It tests the spending effect for two main reasons. First, there is inconclusive empirical evidence and intense theoretical discussion on whether oil rents increase patronage and clientelism. Without having precise empirical evidence on the spending effect, it is difficult to analyze the impact of oil and mineral rents on a political regime. Second, the Argentine provinces are particularly appropriate to test the spending effect, as increases in oil rents are fundamentally exogenous, several variables are controlled, many others are subject to wide variation across districts, and it is possible to expand the number of cases as well as increase variability among them.[15]

The "repression effect" indicates that oil and mineral revenue allow rentier states to boost their funding for internal security and to build up the armed forces to better prepare themselves against popular pressures, repress dissent, and hamper democratic demands.[16] There are some difficulties in testing the "repression effect" at the subnational level. First, it is hard to sustain that subnational units are separated "regimes" from the national polity. Second, while one can test whether oil rents produce an increase in security spending, which may be a proxy for repression but not a direct measure of it,[17] it is not possible to test the repression effect through the role of the armed forces because provinces do not have authority over them. In any case, this study concentrates on the fiscal impact of oil rents, considering that there are limits in the capacity of subnational units to repress dissent and popular pressures through their security apparatuses. Thus, it focuses on the impact of oil rents on the fiscal decisions

politicians make in relation to their budget and not on how those decisions affect the characteristics of the political regime. Future studies can further explore the connection between those fiscal policies and the political regime.

Rents, Patronage, and Social Spending

This study introduces a structural conditional effect between oil booms and government spending.[18] This structural factor refers to the characteristics of the labor market in the district. The main working hypothesis is that patronage spending will increase when rents decline in contexts of job destruction in the oil sector in oil provinces. Under those conditions, provincial incumbents behave counter-cyclically and use patronage to contain social discontent and secure their core voters. Provincial government spending thus serves an insurance function. In contrast, an increase in rents in contexts of job creation in the oil sector in the district will increase capital investment, which incumbents will use to target broader constituencies and potentially increase their electoral returns (See Figure 1).

In oil-dependent economies, where oil is by far the most important source of revenue and also one of the main employers in the local labor market, booms drive most workers into the oil sector. Research shows that, typically, in rentier states, only a few people are engaged in the generation of oil rent, while the majority is involved in the distribution or utilization of it.[19] The data reveal that a large share of GDP, 23 percent on average, depends on the oil sector in the Argentine oil-producing provinces, reaching up to 70 percent of GDP in Neuquén (in 1999). More importantly, the oil sector also employs a substantial share of the labor market of these provinces, averaging 7.5 percent in the six main oil-dependent provinces, but reaching 21.3 percent in cases such as Santa Cruz (in 2014).[20]

When the price of oil is high, and the oil sector is booming and demands workers, the public sector cannot compete with the salaries the oil economy can offer, both for unskilled and highly trained workers.[21] Governments in oil-producing districts also have to cope with this sector's demands for better infrastructure (roads, bridges, communications) and more social services (ranging from health, sanitation, and housing to education) for their employees and their families. The oil sector generates strong deficits in the coverage of these services and in basic infrastructure due to the significant increases in population in oil-producing areas. The main effect on government spending is that provincial governments will be more likely to reduce personnel spending (or at least maintain it) and funnel the increasing revenue from oil into capital spending (Figure 1; Cell A).

During contractions in the oil market, however, the local economy will not have the capacity to employ all those workers laid off by the oil sector, especially in oil-dependent and less diversified economies. Thus, provincial (and local) governments will receive more pressures from the unemployed.[22] Discontent, demonstrations, strikes, and protests are likely to mount during such periods. Under these conditions, provincial (and

local) politicians will be more likely to increase personnel spending and reduce capital spending (Figure 1; Cell D). This increase in public employment is not the consequence of authoritarian-prone politicians trying to buy off political loyalties and repress discontent, as claimed by some authors. Rather, it is the result of layoffs in the volatile oil economy and the role the provincial public sector plays in easing the social tensions that result from large scale unemployment and social unrest. In complex and diversified economies, other sectors of the economy tend to absorb (at least in part) those unemployed by the oil sector. Therefore, oil booms have a weaker spending effect in economically complex and more diversified hydrocarbon economies than in typically oil-dependent provinces. When oil booms generate high rents but in contexts of little job creation in the oil sector,[23] we could expect patronage spending to increase because salaries would not rise as dramatically as when demand for jobs in this economic sector is high (Figure 1; Cell B).

The main difference between the two previous scenarios (Cells B and D in Figure 1) is the fiscal capacity of the public sector. Under conditions of low oil revenue and weak demands for jobs in the oil economy, governments would face more limits in their capacity to increase patronage, so social mobilization, protests, and popular discontent will be more likely to rise. When falls in the price of oil occur in contexts of oil job creation (this could happen when oil companies are expecting improvements in prices in the medium or longer terms and decide to invest in exploration and drilling and, hence, employ more labor[24]), capital spending will be more likely to increase marginally (Figure 1; Cell C). This is a marginal improvement because of the limited fiscal capacity of the provincial government to expand its budget due to lower oil revenue.

In sum, sharp increases in oil rents could be associated with decreases in patronage spending, rather than the opposite. Higher oil prices and more activity in the oil sector allow decompressing pressures for employment in the public sector. Increasing oil rents and falling personnel spending could lead provincial governments to intensify capital investment to cope with the demands of public services and infrastructure from the oil

Figure 1 Theoretical Expectations. Structural Conditional Effects

	Structural Conditional Effects	
	High Oil Employment	**Low Oil Employment**
High Oil Rents	A) Highest capital spending	B) Highest patronage spending
Low Oil Rents	C) Some capital spending (low fiscal capacity)	D) Some patronage spending

sector. Capital investment can target broader constituencies and potentially increase the electoral returns of the incumbent. On the contrary, lower activity in the oil sector increases pressures for employment in other sectors of the economy. In oil-dependent provinces, these workers are mainly absorbed by the public sector. During periods of crisis in the oil sector, provincial governments will be more likely to increase public employment especially targeted to their core constituents as a way to increase their electoral security and ease social tensions.

Definitions and Data

"Rentier provinces" are those in which rents from oil and minerals provide a significant share of the government's revenue (borrowing Dunning's definition for rentier states).[25] To operationalize rentierism, this study classifies provinces by how significant oil and mineral rents are as a percentage of the total provincial revenue. For Herb, natural resource dependency and rentierism are not equivalent concepts and should not be operationalized in the same way. The former is measured as the share of natural exports as a percentage of GDP, while the latter is measured as the percentage of rents in government revenues.[26] Several authors recommend using mineral-based revenues as a share of state revenue as an ideal measure to capture the impact of oil and mineral rents on the public budget.[27] This study reports the dependent variable as the share of the total budget and does not work with its yearly change. The main reason is that the Fisher-type unit-root test is significantly less than zero ($p<0.0000$), so we can reject the null hypothesis of a unit-root in favor of the alternative that the dependent variable is stationary.

Some authors recognize that cross-national research has problems using this measure as data are only available for a handful of states over irregular periods of time.[28] Reliable provincial budget data for the Argentine provinces are available for a relatively long time series (1983–2013) and are comparable. The data are measured in the same way across provinces, collected, and provided by the federal Ministry of Economy. This study also relies on data from the statistics offices of oil-producing provinces. These data were collected during fieldwork conducted between 2016 and 2017 (See Table 2A, Online Appendix for data sources and years).

There is enormous variation in the main independent variable: the overall average of the provincial budget that depends on oil rents is 6 percent, but it ranges from 0 to almost 65 percent of the provincial budget (the standard deviation is high at 12 percent). Provinces can be divided among those that are "oil-dependent provinces," which generate substantial revenue from oil, gas, and minerals as a share of their total budget (above the mean value) for the period; and "oil-producing provinces," which are those that generate some revenue from oil, gas, and minerals (below the mean). According to this classification, six provinces are oil-dependent provinces: Neuquén (the yearly average is 38 percent, with the highest value of 65 percent), Santa Cruz (29 and 55 percent, respectively), Chubut (27 and 52), Tierra del Fuego (20 and 52), Río Negro (11 and 23), and Mendoza (11 and 22). Oil-producing provinces can be divided into two

more groups. Sizeable oil producers, which are those that generate at least 2 percent of their revenue from oil on average: Salta and La Pampa. And minor oil and mineral producers, which generate less than 2 percent of their revenue on average: Catamarca, Entre Ríos, Formosa, San Juan, Corrientes, and Jujuy. The rest of the provinces do not receive revenue from oil and mineral rents (See Figure 1A, Online Appendix).[29]

The other key independent variable is the size and relevance of the oil sector in the district, which is captured by employment in the oil and mining sectors as a share of the total employment in the province. The oil sector employs a substantial share of labor in oil-dependent provinces, averaging 7.5 percent, but ranging from 21.3 percent of the labor force in Santa Cruz, 15 percent in Neuquén, and 12.5 percent in Chubut (data for 2014), to values between 4 and 2.3 percent average in provinces such as Tierra del Fuego, Mendoza, and Río Negro (data from INDEC for the years 1996–2014).[30]

Provincial spending is divided into two main dependent variables: patronage (i.e., personnel spending or public employment; these labels are used interchangeably), which is spending on private goods; and capital spending (i.e., schools, housing and urban development, health infrastructure, and roads), which is spending on public goods.[31] The years covered are 1983–2013 and the source of the data is the Ministry of Economy. Patronage spending varies widely among districts. The average is almost half of the total provincial budget (48 percent), but it ranges between very low (13 percent) and very high values (70 percent; the standard deviation is almost 8 percent). Variation in capital spending is also large. The average is 19 percent of the total provincial budget, ranging between very low values, close to 1 percent, to very high values, close to 68 percent of the budget (the standard deviation is also high at 10 percent).

The main socioeconomic control variable is provincial poverty (number of people or families below poverty line or with unsatisfied basic needs; 1983–2013). We can expect personnel spending to increase when social conditions deteriorate, as the public sector would try to absorb workers to limit these negative social effects.

The main fiscal control is (the natural logarithm of) per capita federal transfers. Including this variable is important to account for transfers (legally mandated and discretionary) as well as grants that the federal government allocates in each district. In terms of the expected effects, one possibility is that federal transfers would generate more capital spending, as provincial governments can save and invest more. Another option is that federal transfers may lead to more patronage spending as provincial politicians may use them to expand clientelism.

Other structural control variables are national GDP growth (data for 1990–2013) and state population (1983–2013). We can expect provincial capital spending to increase when the economy is expanding, and more personnel spending when the economy is contracting. This is so because the public sector would absorb workers to limit the negative effects of a contracting economy. We may also expect more personnel spending when the state population is larger, as provincial bureaucracies should be larger and more complex in larger states. The analysis utilizes the natural logarithm of the main variables to normalize the data (histograms show a more normal distribution when the natural logarithm is used for the selected variables).

Method

This work explores the relationships among variables using regression analysis for panel data. The Breusch-Pagan/Cook-Weisberg test and a scatterplot for the error term in the main models indicate that there is heteroskedasticity in the error term and the Wooldridge test reports autocorrelation in the panel data. A conventional way to test the different models would be using ordinary least squares regression with panel corrected standard errors (PCSE), to compute the variance-covariance estimates and the standard errors assuming that the disturbances are heteroskedastic and correlated across panels.[32]

The p-value for the Hausman test indicates that the difference in the coefficients using random and fixed effects is 0.03. Although this value is close to the 0.05 limit, this work reports fixed effects models by including regional dummies in the main models. The fixed effects approach can address the omitted variable bias induced by relevant time invariant differences between subnational units. Underlying geographic and administrative differences between subnational units are probably correlated with the presence, sophistication, and value associated with the oil industry. Therefore, regional dummies are included for the most relevant regions in the country: Patagonia, Pampas, Littoral, Northwest, and Cuyo. These dummies serve the purpose of capturing relevant geographic, historic, and political factors, and they are even a good proxy for administrative differences among provinces. The twenty-four provincial dummies are not included in the models because there are relatively few observations on each unit (the average is 12) and because including such a large number of dummies in a relatively small number of cases generates collinearity with some independent variables (especially those that change little over time, such as population), eliminates much cross sectional variance, and tends to over-fit the models.

Results of the Wald test to decide whether the models require time fixed effects indicate that we fail to reject the null hypothesis that all years' coefficients are jointly equal to zero, therefore no time fixed effects are required. A lagged dependent variable is not included either because the dependent variable changes substantially over time and because including it distorts results, inflating the explanatory power of the lagged variable and improperly under-estimating or suppressing the explanatory power of other independent variables or reversing the signs of the coefficients.[33] The limited number of years in the dataset and some sporadic missing values for some states, including a lagged dependent variable, will also seriously diminish the number of observations.[34]

Empirical Analysis

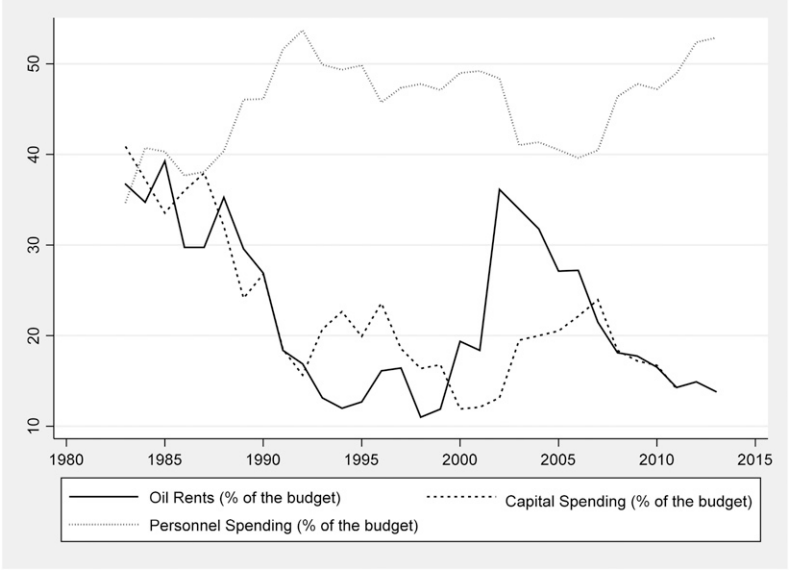
Basic pairwise correlations between oil rents and personnel as well as capital spending seem to support the main theoretical expectations. Both correlations are relatively robust

and statistically significant, but the one between oil rents and personnel spending is negative (-0.31), while the other one, between rents and capital spending, is positive (0.34). These results are even more robust if we select only the six oil-dependent provinces. The correlation coefficient between rents and personnel spending is negative and larger than the previous (it increased from -0.31 to -0.55), while the one between rents and capital spending is positive and larger (it augmented from 0.34 to 0.57) (See Table 1A, Online Appendix).

Figure 2 supports these findings and reports the trends over time of the three main variables. The 2000–2009 oil boom reveals the sharp increase in oil and mineral rents, with its associated decrease in current spending and the increase in capital spending. This can also be identified in other periods of time (See Figure 2).

Despite this general trend, there are noteworthy differences among oil-dependent provinces. The negative correlation between oil rents and personnel spending is particularly strong in Tierra del Fuego (-0.86) and Neuquén (-0.55), followed by Chubut (-0.46) and Río Negro (-0.31). All these coefficients are statistically significant. This correlation is less robust in Mendoza (-0.26) and Santa Cruz (-0.14), and loses statistical significance for these two cases. Public employment in Santa Cruz is very stable and

Figure 2 Oil Rents, Personnel, and Capital Spending as a Share of the Total Provincial Budget of Oil Dependent Provinces (1983–2013)



Source: Ministry of Economy and Public Finance (See Table 2A, Online Appendix).

Mendoza's economy is the most complex and diversified of the six oil provinces (See Figure 2A, Online Appendix).

Regression Analysis

Table 1 reports the results of the main regression models. They provide support for the main theoretical expectations. The structural model reveals that, ceteris paribus, a rise in oil rents produces a reduction in current spending when employment in the oil sector increases. When the oil economy employs a large portion of workers, pressures for personnel spending in the provincial public sector diminish. Local politicians invest oil rents in capital spending to cope with the infrastructure demands of the sector as well as target broader constituencies and have a larger electoral impact. In contrast, diminishing oil rents and lower employment in the oil sector mean more pressures for increased personnel spending in the provincial government. Provincial leaders use this as a political counter-cyclical strategy to contain social tensions resulting from unemployment and secure core voters.

Table 1 PCSE Results, Main Models

Variables	Model 1: Patronage Spending	Model 2: Capital Spending
Oil Rents * Employment	-0.022***	0.065***
in the Oil Sector (nat. log.)	(0.003)	(0.019)
Oil Rents (nat. log.)	0.016**	-0.033
	(0.007)	(0.032)
Employment in the Oil Sector	-0.011	0.197***
(nat. log.)	(0.014)	(0.072)
Provincial Poverty (nat. log.)	0.012	0.310***
	(0.037)	(0.114)
Total Federal Transfers,	-0.014	0.114*
per capita (nat. log.)	(0.024)	(0.058)
National GDP Growth (nat. log.)	-0.021	0.083**
	(0.017)	(0.037)
Provincial Population (nat. log.)	-0.017	0.080
	(0.020)	(0.061)
	Regional Dummies Omitted	
Constant	4.208***	1.153
	(0.352)	(1.025)
Observations	202	202
R2	0.26	0.20
Cross-sectional units	17	17

Dependent variables: Patronage spending (share of the provincial budget) for Model 1, and capital spending (share of the provincial budget) for Model 2. Unstandardized regression coefficients. Standard Errors reported in parenthesis. * $p<0.100$; ** $p<0.050$; *** $p<0.010$.

The interaction term between oil rents and employment in the oil and mineral sectors indicates that, controlling for third variables in the model, a one percent increase in rents and employment decreases current spending by 0.02 percent of the budget (Model 1) and increases capital spending by 0.23 percent of the budget (Model 2).[35] Both interaction terms are statistically significant at less than 0.001 percent. If revenue from oil for all provinces tripled between 1999 and 2002, it means that patronage diminished 6 percent and infrastructure spending skyrocketed 69 percent, on average. This effect is moderated by the milder average increase in oil employment. In fact, Figures 3A and 4A show the interaction plots and report the predicted average marginal effect (with confidence intervals) of the previously fit models (1 and 2). Controlling for the main third variables, we can see a negative marginal effect of increasing oil rents on provincial patronage spending when employment in the oil sector also augments (Figure 3A, Online Appendix) and a positive marginal effect of the same independent variable (and controls) on capital spending when oil employment increases (Figure 4A, Online Appendix).

Fiscal and socioeconomic controls seem to be less relevant than the variables in the main models. In particular, the results reveal that poorer districts tend to allocate more capital spending as a share of the budget, but not more current spending. Holding the other variables constant, a one percent rise in provincial poverty increases capital spending 0.3 percent (Model 2), but it is not statistically related to changes in current spending (Model 1). Federal transfers are not statistically related to personnel spending, and they are positively related to capital spending, although close to the 0.1 limit of statistical significance (and above the 0.05 threshold). Population is not statistically related to the outcome variables either. The coefficients for this variable do not reach the standard values of statistical significance in either of the models.

The R-Squares oscillate between 20 and 26 percent. They indicate that about three quarters of the variation in the dependent variables is left unexplained and that we need better models to account for changes in patronage and infrastructure spending beyond oil rents and the controls variables used in the models. Case studies, particularly in oil provinces, may contribute to a better understanding of the mechanisms linking the variables and the idiosyncratic factors involved in the process.

The Cases of Neuquén and Mendoza

In this section, the study examines the cases of Neuquén and Mendoza to illuminate the interaction of the main variables and detail some of the main mechanisms that lead to the observable effects. These cases were selected because they are very different and show large variation both in their dependent and independent variables.

Neuquén is an oil-dependent economy with a dominant ruling party. If one wanted to argue that oil rents fuel executive dominance, Neuquén would be the quintessential rentier province.[36] The Movimiento Popular Neuquino (MPN) has been uninterruptedly in power in the provincial government since the transition to democracy (and even

before, as it won all provincial democratic elections since 1962).[37] Oil rents represent almost 40 percent of the total provincial budget on average for the series (it reached 65 percent in 2002), the largest share among oil-dependent provinces. If rentier theories were correct in relation to the expected fiscal impact of oil rents, patronage spending should augment and public infrastructure diminish when oil rents soar. However, the results are exactly the opposite: when the oil sector expanded (especially between 1999 and 2005), it put heavy pressures on the public sector to cope with basic infrastructure and social services, ranging from roads to hospitals, schools, and housing for workers. These pressures were dramatic all across the province, but particularly in oil-producing towns, such as Añelo, which more than tripled its population during the shale oil boom (its population skyrocketed from 1,742 inhabitants in 2001 to 6,000 in 2015) and has only a primary health care service and no hospital; or Rincón de Los Sauces, where the local hospital has only thirty-eight beds for 26,353 inhabitants (its population was 10,129 in 2001).[38] In relation to housing, the oil sector generated a deficit of 16,614 homes in the province during the last oil boom.[39] As we expected, and in part due to the significant increases in population due to the jobs created in the hydrocarbons economy, the oil sector generated strong deficits in the coverage of basic social services (e.g., education and health) and basic infrastructure (e.g., roads and housing), which added up to the existing ones of such services.[40]

These figures could explain why the 278 percent increase in oil rents between 1995 and 2002 (from 23.2 percent of the provincial budget in 1995 to 64.5 percent in 2002) led to a sudden and quick 237 percent rise in capital spending in only three years (it increased from 8.1 in 2000 to 19.2 in 2003) (see Figure 2A, Online Appendix).[41] These short-term changes reveal that provincial policies are not very "sticky" or difficult to change over time. The most important public works were roads, public housing, hospitals, and schools. These public works were mainly located in the oil-producing areas.[42]

Another effect of an expanding oil economy is that the public sector in Neuquén had to cope with enormous difficulties to hire and even retain skilled workers. Such workers (especially in the management and technical levels) prefer to work in the oil sector because salaries are much higher than in the provincial bureaucracy.[43] However, the public sector in Neuquén had also problems hiring and retaining employees in the health and security sectors (physicians, nurses, and policemen), as well as workers in basic administrative functions of the provincial bureaucracy (lawyers and accountants).[44]

While capital spending as a share of the provincial budget increased, personnel spending, on the contrary, diminished during the oil boom, from 51.34 percent of the budget in 2001 to 37.5 in 2004, and 34.5 in 2006. Public employment as a share of the total private employment diminished almost 16 percentage points during the oil boom, from 65.4 percent in 2000 to 49.6 in 2007. Even the number of public employees in the core of the provincial administration remained practically unchanged and did not expand, as rentier theories would predict: it increased 1.7 percent yearly between 1999 and 2002, the key four years of the oil boom, while oil rents increased an average of 39.7 percent each year between 1995 and 2002.[45] Despite this marginal global rise, the

number of public employees in the area of economic affairs (i.e., services to the industrial sector) diminished 24.6 percent (from 4,207 in 1999 to 3,171 in 2006), while it increased 5 percent on average each year in the area of social services (e.g., health, education, and housing; from 22,820 in 1999 to 32,039 in 2007). These figures reflect the struggles in the provincial administration to retain skilled workers in the area of economic services and the demands from the oil sector to hire them and its pressures on provincial social services.

When the oil economy began to contract, especially after 2009, the public sector faced weaker pressures for public infrastructure from the oil sector but tougher partisan demands to increase public employment and social programs to cope with the weaker needs of workers of the oil sector.[46] As an indication of that, the budget share of capital spending decreased more than 10 points (from 19.2 in 2003 to 8.9 in 2012), while personnel spending, on the contrary, increased almost 16 points (from 34.5 percent of the budget in 2006 to 50.4 in 2012),[47] and social spending rose from 18 percent of the total budget in 2000 to 21.9 percent in 2009. These results reveal a clear counter-cyclical behavior in the provincial government.

In 2009, Neuquén was the province with the largest number of protests (316), followed by the city of Buenos Aires and its suburban area. That same year, according to the Labor Undersecretary of Neuquén, there was a strike every two days. In 2015, the number of protests in Neuquén increased to 352.[48] The incumbent MPN used patronage and current spending to contain social discontent and secure their core voters during the period of economic hardship in the oil sector. While oil rents may have helped the MPN to remain in power since 1962, the empirical evidence seems to show it was not through the fiscal effect some rentier theories proclaim. Although more research is needed to conclude whether oil rents created an electoral advantage for the incumbents, it may well be hypothesized that larger capital investment increased their electoral base and support from voters.

Mendoza is a more complex and diversified economy. It also has a very competitive party system: four Radical and five Peronist governors have alternated in office since 1983. Reelection is banned. Under these conditions, rentier theories would not expect the fiscal effects of oil rents to take place (or at least they should be milder), but the opposite occurred in this case too.

Oil is an increasingly important sector in the province: it represents 11 percent average of the global provincial GDP, but it increased from 9.3 percent in 1996 to 14.9 percent in 2009. More significantly, oil rents increased over 500 percent during the oil boom, from 4.04 percent of the provincial budget in 1995 to 21.6 percent in 2002.

Despite the sharp increase in oil rents, this sector did not demand more workers during the oil boom. Employment in the oil and mining sector as a share of total employment has been particularly stable in Mendoza: the mean value is 1.9 percent and the standard deviation 0.2, marginally decreasing from 2.3 percent in 1996 to 1.8 in 2014. The number of workers in the oil and mining sector has also remained very steady during the entire period, marginally increasing from 4,000 in 2006 to 4,300 in 2009.

This situation may be partially the consequence of other sectors demanding skilled workers with competitive salaries: the service sector represents 40 percent on average of the total employment in the province and the industrial sector about 21 percent (1996–2014). The share of the service sector has increased over time, while the share of the industrial sector has been quite stable. Given the context of weak demand for workers, there was nothing similar to Neuquén's population booms in oil-producing areas, such as Añelo or Rincón. Hence, necessities and pressures for public infrastructure from the oil sector were more diluted. As a result of weaker pressures, oil rents were not fundamentally invested in public infrastructure, as in Neuquén. In fact, capital spending was cut in almost 50 percent, decreasing from 8.7 percent of the budget in 1997 to 4.8 in 2002 (these shares are very low compared to Neuquén's). Revenue from the oil boom was mainly allocated to hire more workers in the public administration. The total number of public employees increased a noteworthy 35 percent during the oil bonanza: from 67,600 in 2006 to 91,600 in 2014. Provincial personnel spending remained high during the entire period (See Figure 2A, Online Appendix), increasing even more during the years of the oil boom (from 45.2 percent in 2005 to 50.3 in 2009). When the oil sector contracted after the oil booms, layoffs did not spark protests and mobilizations as in Neuquén. This was partially the result of other sectors of the economy being able to absorb part of those unemployed by the oil economy: the service and industrial sectors as well as commerce increased their share of total employment after the oil boom ended in 2009. Pressures on the public sector to hire the layoffs were also weaker than in Neuquén.

Conclusion

Some rentier theories contend that patronage and clientelism are the critical link between large oil rents and authoritarian rule. Without the social accountability taxes generate, politicians spend the windfall of oil rents on patronage and clientelism to buy off political loyalties, repress dissent, and remain in power. Rents turn democratic governments into authoritarian regimes. This article contests the linear relationship between rents and patronage and provides evidence related to spending policies, indicating that the fiscal connection in rentier theories is conditional: the large N empirical analysis and the case studies explored in this article show that oil rents are associated with more patronage only when the oil sector lays off workers and provincial governments have to ease social tensions and secure core voters. The results provide evidence of counter-cyclical behavior where state spending increases in times of crises, sustaining employment and fending some of the effects of the crisis.[49] When the oil economy expands and hires new workers, the public sector cannot compete with its salaries and has to cope with its strong demands for better infrastructure and social services. Hence, governments tend to invest more in public goods, such as schools, hospitals, or road infrastructure. Under these conditions, and as a consequence of

provincial governors behaving counter-cyclically, oil booms may expand infrastructure investment.

This research raises some implications for the comparative debate. The oil-dependent provinces analyzed here are similar to some oil states in certain periods of time. For instance, the main variables in the case of Neuquén had similar values as Venezuela did during the 1970s and 1980s. Venezuela nationalized its oil in 1976 after a massive increase in oil prices in 1973, which led to an unprecedented boost in revenues (10 billion USD during the 1973–1974 oil boom) and the hiring of a large share of workers (up to 6 percent of the total labor force in 1989, including 3 million Colombians who had moved to Venezuela).[50] As in Neuquén during the oil boom, patronage spending was moderate while investment in infrastructure through large capital-intensive development projects was immense: the average capital investment in Venezuela during the 1970s was 38 percent of the budget (with a peak of 60 percent during the oil boom in 1974) and 24 percent in the 1980s.[51] Between 1958 and 1980, inflation-adjusted spending on education increased more than twenty times, while spending on health increased five times. The education budget rose from 6 to nearly 19 percent of total government spending over the same period.[52]

When the oil economy shrank, layoffs skyrocketed (informal jobs increased from 35 percent in 1980 to 53 percent in 1999) and protests exploded during the late 1980s (leading to the riots in which hundreds were killed during the 1989 Caracazo); more than 5,000 protests occurred between 1989 and 1992.[53] As a result, capital spending sank (the average for the 1990s was 13 percent, with the lowest value of 9.7 percent in 1994) and patronage spending skyrocketed (the average for the 1990s was 78 percent of the budget, with a peak of 84.3 precisely in 1999[54]) as oil rents were used to contain social conflicts and secure core voters. The fiscal effect of oil rents worked in line with the expectations of rentier theories as the capacity of the oil sector to generate jobs plummeted, especially in the oil company PDVSA.

One of the key questions in the literature on the effects of oil rents is how can we account for the variation in outcomes in cases as different as Norway or Canada from Iran, Nigeria, or Venezuela. This study explored the Argentine provinces because they are an exceptional setting to study the empirical implications of rentier theories. It suggests that political scientists should consider structural variables to mediate the fiscal impact of oil rents. More work at the subnational level can further illuminate the comparative research agenda on the fiscal as well as socioeconomic and political effects of oil booms.

NOTES

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1. Lisa Anderson, "The State in the Middle East and North Africa," *Comparative Politics*, 20 (January 1987), 1–18; Hazem Beblawi, "The Rentier State in the Arab World," in Hazem Beblawi and Giacomo Luciani, eds., *The Rentier State: Nation, State, and Integration in the Arab World* (New York: Routledge, 2nd Edition, 2016), 49–62; Michael Ross, "Does Oil Hinder Democracy?" *World Politics*, 53 (April 2001), 325–61; Michael Ross, *The Oil Curse: How Petroleum Wealth Shapes the Development of Nations* (Princeton: Princeton University Press, 2012).

2. Argentina has minimal, if any, influence over international oil prices. Domestic oil and gas prices are fixed by the National Secretary of Energy. The Federal Congress, through specific laws, regulates the oil royalties that companies have to pay to provinces. The total amount of rents is 12 percent of the amount of liquid hydrocarbons or gas extracted at the wellhead (Hydrocarbons Law 17,319; and its 2014 amendment, Law 27,007). Provinces have no formal authority over either oil prices or the regulation of royalties.

3. Richard Snyder, "Scaling Down: The Subnational Comparative Method," *Studies in Comparative International Development*, 36 (January 2001), 93–110; Ellis Goldberg, Erik Wibbels, and Eric Mvukiyehe, "Lessons from Strange Cases: Democracy, Development, and the Resource Curse in the US states," *Comparative Political Studies*, 41 (April 2008), 488; Rebecca Weitz-Shapiro, "What Wins Votes: Why Some Politicians Opt Out of Clientelism," *American Journal of Political Science*, 56 (July 2012), 572.

4. Hossein Mahdavy, "The Patterns and Problems of Economic Development in Rentier States: The Case of Iran," in M. Cook, ed., *Studies in Economic History of the Middle East* (London: Oxford University Press, 1970), 428. See also Beblawi.

5. Thad Dunning, *Crude Democracy: Natural Resource Wealth and Political Regimes* (Cambridge: Cambridge University Press, 2008), 42. For a definition of "rentier provinces," see the Definitions and Data section.

6. Anderson; Beblawi; Ross, 2001, 2012; Nathan Jensen and Leonard Wantchekon, "Resource Wealth and Political Regimes in Africa," *Comparative Political Studies*, 37 (September 2004), 816–41, inter alia.

7. Michael Herb, "No Representation without Taxation? Rents, Development, and Democracy," *Comparative Politics*, 37 (April 2005), 297–317; Yusaku Horiuchi and Swarnim Wagle, "100 Years of Oil: Did it Depress Democracy and Sustain Autocracy?," Paper delivered at the Annual Meeting of the American Political Science Association, Boston, Massachusetts, 2008; Mehmet Gurses, "State-Sponsored Development, Oil, and Democratization," *Democratization*, 16 (June 2009), 508–29; Sven Oskarsson and Eric Ottosen, "Does Oil Still Hinder Democracy?," *The Journal of Development Studies*, 46 (July 2010), 1067–83; Stephen Haber and Victor Menaldo, "Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse," *American Political Science Review*, 105 (February 2011), 1–26.

8. Herb; Benjamin Smith and Joseph Kraus, "Democracy Despite Oil: Transition and Consolidation in Latin America and Africa," Unpublished Manuscript, Department of Political Science, University of Florida, 2005; Dunning; Goldberg et al.; Oskarsson and Ottosen; Haber and Menaldo; Benjamin Smith, "Resource Wealth and Political Regimes: How Solid a Link After 40 Years of Research?," *APSA Comparative Democratization Newsletter*, 11 (June 2013), 17–20.

9. Jay Ulfelder, "Natural-Resource Wealth and the Survival of Autocracy," *Comparative Political Studies*, 40 (August 2007), 995–1018.

10. Dunning, 3–4; Goldberg et al., 479.

11. Ross, 2001.

12. Dunning, 46; Kiren Chaudhry, *The Price of Wealth: Economies and Institutions in the Middle East* (Ithaca: Cornell University Press, 1997), 188; see also Mahdavy; Beblawi; Anderson; Terry Lynn Karl, *The Paradox of Plenty: Oil Booms and Petro-States* (Berkeley: University of California Press, 1997); for the Middle East, see John Entelis, "Oil Wealth and the Prospects for Democratization in the Arabian Peninsula: The Case of Saudi Arabia," in Naiem Sherbiny and Mark Tessler, eds., *Arab Oil: Impact on the Arab Countries and Global Implications* (New York: Praeger, 1976), 77–111; Jill Crystal, *Oil and Politics in the Gulf: Rulers and Merchants in Kuwait and Qatar* (Cambridge: Cambridge University Press, 1990); Karl, for Venezuela; and Carlos Gervasoni, "A Rentier Theory of Subnational Regimes: Fiscal Federalism, Democracy, and Authoritarianism in the Argentine Provinces," *World Politics* 62 (April 2010), 302–40, for Argentina. Gervasoni analyzes the effect of federal transfers, which the author considers as external rents for the provinces, on provincial political regimes. For him, resource (oil and mineral) rents do "not have a significant effect on subnational democracy" (Gervasoni, 2010, 321).

13. For the Middle East, see John Waterbury, "Democracy without Democrats? The Potential for Political Liberalization in the Middle East," in Ghassan Salame, ed., *Democracy without Democrats? The Renewal of Politics in the Muslim World* (London: I.B. Tauris, 1994), 23–47.

14. Entelis; Carlos Bazdresch and Santiago Levy, "Populism and Economic Policy in Mexico, 1970–1982," in Sebastian Edwards, ed., *The Macroeconomics of Populism in Latin America* (Chicago: University of Chicago Press, 1991), 223–62; Dirk Vandewalle, *Libya Since Independence: Oil and State-Building* (Ithaca: Cornell University Press, 1998); Timothy Kessler, *Global Capital and National Politics: Reforming Mexico's Financial System* (Westport: Praeger, 1999); Ricky Lam and Leonard Wantchekon, "Dictatorships as a Political Dutch Disease," Manuscript, Department of Political Science, Yale University, 1999; Ross, 2001; Jensen and Wantchekon.

15. Snyder. A recent group of studies apply rentier theories at the subnational level. Several of these works conclude that subnational units that have larger dependence on oil rents tend to be less competitive. See, for instance, Goldberg et al., for an analysis of the U.S. states; Joana Monteiro and Claudio Ferraz, "Does Oil Make Leaders Unaccountable? Evidence from Brazil's Offshore Oil Boom," Unpublished Manuscript, PUC-Rio, 2012, for the Brazilian municipalities; and Gervasoni; Diego Díaz, "Blessing and Curse: Oil and Subnational Politics in Argentine Provinces," *Comparative Political Studies*, 49 (September 2016), 1930–64, for the Argentine provincial governments. Díaz finds evidence to sustain this link only when provincial rent sharing regimes do not distribute rents to municipal governments.

16. Ross, 2001, 328, 335–36.

17. In fact, the correlation between oil rents and security spending, both measured as a share of the total budget, is close to zero 0.08 ($p=0.06$) for all provinces receiving rents, and negative (-0.19; $p=0.03$) in oil-dependent provinces (see definition below).

18. It follows recent works (e.g., Dunning; Díaz) that explore the mediating role of key (institutional) variables between oil rents and socioeconomic or political outcomes.

19. For Beblawi (53), typically "no more than 2 to 3 per cent of the labor force is engaged in the production and distribution of the oil wealth." See also Karl, 47.

20. Data from the National Institute of Statistics and Censuses (INDEC) (See Table 2A, Online Appendix). Due to space constraints, the Appendix is not in the print version of this article. It can be viewed in the online version, at www.ingentaconnect.com/cuny/cp.

21. According to fieldwork interviews, an unskilled worker in the public sector in the provinces of Neuquén or Chubut could earn about 15,000 AR$ (about 940 USD; exchange rate for May 2017). A wellhead operator in the oil sector in these provinces, also a low-skilled job, earns about 5 times the salary in the public sector: a minimum of 70,000 AR$ (or 4,400 USD).

22. This research concentrates the analysis in the provincial government for reasons of simplicity, but recognizes local governments can play an important role in the argument. It also claims that the larger scale of the provincial government in relation to most municipalities makes the analysis of the provincial level more relevant.

23. Oil rents and jobs in the oil sector tend to usually move in the same direction (the correlation between per capita oil rents and total employment in the oil sector is 0.74), but this latter situation could take place when high oil prices coincide with a stagnated oil production due to exhaustion of oil reserves or little exploration.

24. This is actually happening in the shale oil market. Investment is planned for a longer term than for conventional oil, so more demand for employment in the oil sector may coincide with periods of relatively low oil prices.

25. Dunning, 42.

26. Herb, 298.

27. See Goldberg et al., 488; Herb, 298.

28. Goldberg et al., 488.

29. Although official data conflate both oil and mineral rents, the most important mining provinces are not oil and gas producers (Catamarca and San Juan), and oil provinces have marginal mining sectors, except from Santa Cruz (where mining represented about 15 percent of total government revenues in 2013, but oil is the most relevant economic activity).

30. The time series for these variables are limited, and this reduces the number of observations in the regression models.

31. *Public goods* are those that potentially increase social welfare, are desired by all in a society, are universal or not excludable, cannot be denied to anyone, and are distributed as the result of the application of codified and universal rules. *Private* or *particularist goods* are, on the contrary, those that benefit a few, are granted only to certain citizens, and are both selective and reversible (Bruce Bueno De Mesquita, James

Morrow, Randolph Siverson, and Alastair Smith, *The Logic of Political Survival* (Cambridge: MIT Press, 2003); Beatriz Magaloni, Alberto Diaz-Cayeros, and Federico Estevez, "Clientelism and Portfolio Diversification: A Model of Electoral Investment with Applications to Mexico," in Herbert Kitschelt and Steven Wilkinson, eds., *Patrons, Clients, and Policies. Patterns of Democratic Accountability and Political Competition* (Cambridge: Cambridge University Press, 2007), 182–205). Some authors define the expenditure on private or particularist goods, especially on personnel or public employment, as *patronage* (James Robinson and Thierry Verdier, "The Political Economy of Clientelism," *The Scandinavian Journal of Economics*, 115 (April 2013), 260–91). Others refer to this type of spending as *clientelism* or *vote buying* (Magaloni et al.; Kitschelt and Wilkinson; Valeria Brusco, Marcelo Nazareno, and Susan Stokes, "Vote Buying in Argentina," *Latin American Research Review* 39 (June 2004), 66–88), which involves the use of public resources (typically public employment) in exchange for electoral support. Due to the complexity in observing the exchanges between politicians handing over public resources and voters supporting them at the polling station, and to avoid the difficulties of measuring clientelism (especially in large N studies), a part of the literature has been trying to define and compare government spending on different goods and services (Weitz-Shapiro, 569). These studies focus on the analysis of the determinants of government spending patterns (before the electoral effects of them). This work follows the same strategy.

32. Nathaniel Beck and Jonathan Katz, "What to Do (and Not to Do) with Time-Series Cross-Section Data," *American Political Science Review*, 89 (September 1995), 634–47.

33. Christopher Achen, "Why Lagged Dependent Variables Can Suppress the Explanatory Power of other Independent Variables," Paper prepared for the 2000 Annual Meeting of the Society for Political Methodology, 2000.

34. R. Douglass Hecock, "Electoral Competition, Globalization, and Subnational Education Spending in Mexico, 1999–2004," *American Journal of Political Science*, 50 (October 2006), 956.

35. These values are the results of the summing up the coefficients for the interaction term and the ones for (the logs of) oil rents and employment in the oil and mineral sectors.

36. Equivalent to Louisiana in Goldberg et al., 503.

37. Despite this, the MPN was close to lose gubernatorial elections several times, and the province is very competitive at the local level and in national elections.

38. COPADE (Consejo de Planificación y Acción para el Desarrollo), "Estudios Estratégicos para el Desarrollo Territorial de la Región Vaca Muerta," Gobierno de Neuquén, 2015, 126.

39. COPADE, 119, 235.

40. COPADE, 172, 173. According to official estimations, these pressures will deepen as the oil expansion continues: the oil sector will demand public investment for a total of 5.9 billion USD over the next decade (of which 807 million USD correspond to investment in housing, 505 million in public education, 387 million in healthcare, 2.2 billion in roads and railways, and 1.9 billion in urban development) (COPADE, Appendix, 12).

41. In absolute current values, capital sending increased 372 percent, from 82 million AR$ in 2000 to 305 million AR$ in 2003 (221 percent in constant values, or from 167 to 369 million AR$).

42. Cuenta de Inversión, Gobierno de Neuquén, 2005–2014.

43. COPADE, 173; Marilina Esquivel, "Trabajo en Vaca Muerta," Instituto Argentino del Petróleo y el Gas, July 2016.

44. COPADE, 183.

45. In 1999, the number of total public employees in the provincial bureaucracy was 34,119. It marginally increased to 35,210 in 2002, during the peak of the oil boom, and 36,477 the year after.

46. The oil sector laid off 16,500 jobs across the country between 2009 and 2016 (Ministry of Labor, Observatorio de Empleo y Dinámica Empresarial, 2016). Buyouts have been quite extended in Neuquén, and about 1,200 workers were suspended from duties in 2016, under a transitory scheme negotiated with unions to prevent layoffs (Diario Río Negro, "El sector petrolero perdió 3.200 empleos en el último año," May 5, 2016).

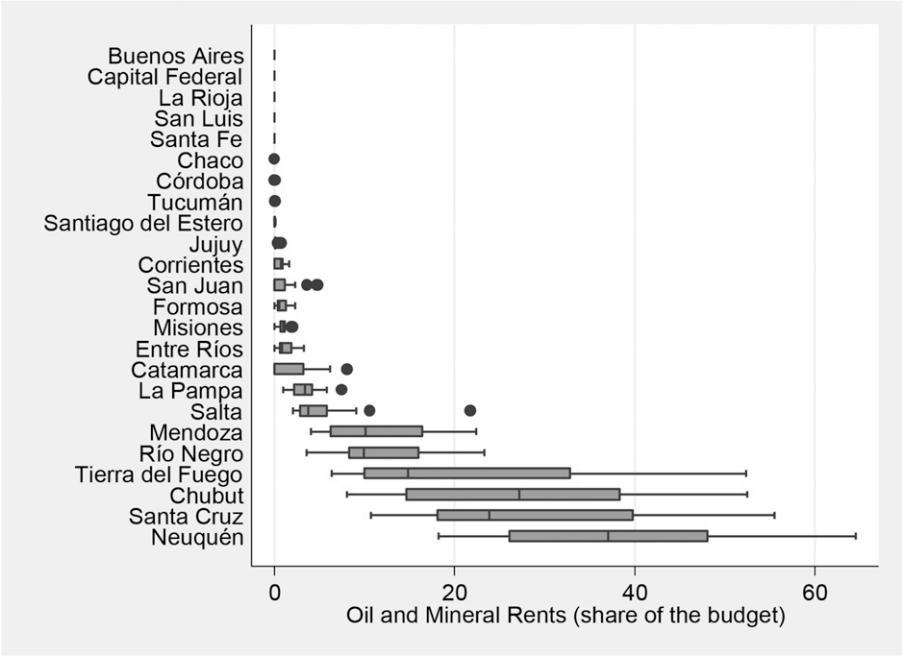
47. Public employment as a share of the total private employment augmented almost 7 points during the years of contraction in the oil sector, from 49 percent in 2006 to 57 percent in 2012. The total number of public employees augmented from 38,499 in 2006 to 52,411 in 2014, a total increase of 36 percent. The rise in the area of economic affairs was sharp: 64.4 percent (from 3,171 in 2006 to 5,212 in 2012). In social services, the increase was more modest, 12.1 percent (from 32,039 in 2007 to 35,915 in 2012).

48. Observatorio Económico ACIPAN, "Informe de Conflictividad Social de la Provincia de Neuquén," N° 04, 2016, 1; Diario Río Negro, "Neuquén, entre las de mayor conflictividad social," Sep. 22, 2013.

49. Sweden has generally pursued similar policies (with the result of having very large public sectors during protracted crises). I owe this comment to one of the reviewers.
50. Karl, 27, 71.
51. Data from Karl, 125, 165.
52. Dunning, 163.
53. Ibid., 169.
54. CEPALSTATS Statistics and Indicators. Retrieved from http://estadisticas.cepal.org/.

APPENDIX

Figure 1A Oil and Mineral Rents as a Share of the Total Provincial Budget (1983–2013)



Source: Ministry of Economy and Public Finance (See Table 2A, Online Appendix).

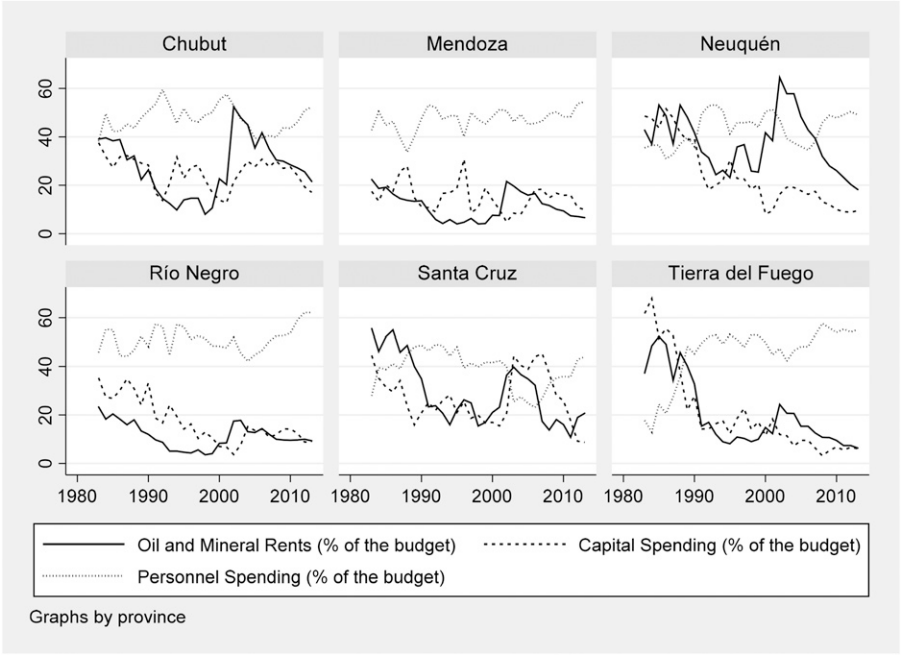
Table 1A Pairwise Correlations between Oil Rents and Personnel and Capital Spending (1983–2013)

Variables (24 provinces)	**Oil and Mineral Rents (share of the provincial budget)**
Personnel Spending	-0.3142
(share of the provincial budget)	0.0000
Capital Spending	0.3417
(share of the provincial budget)	0.0000

Variables (oil provinces)	**Oil and Mineral Rents (share of the provincial budget)**
Personnel Spending	-0.5535
(share of the provincial budget)	0.0000
Capital Spending	0.5730
(share of the provincial budget)	0.0000

Note: The correlation coefficient is in the first line; the probability p is in the second.

Figure 2A Oil Rents, Personnel, and Capital Spending as a Share of the Total Provincial Budget of Oil Dependent Provinces (1983–2013)



Source: Ministry of Economy and Public Finance (See Table 2A, Online Appendix).

Figure 3A Average Marginal Effect of Oil Rents on Patronage Spending, When Oil Employment Increases

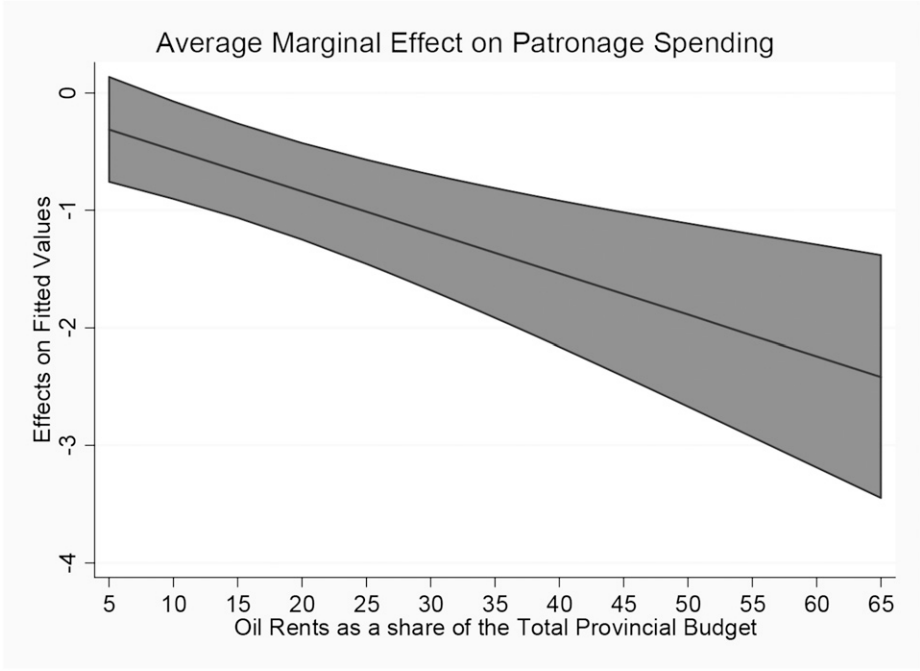


Figure 4A Average Marginal Effect of Oil Rents on Capital Spending, When Oil Employment Increases

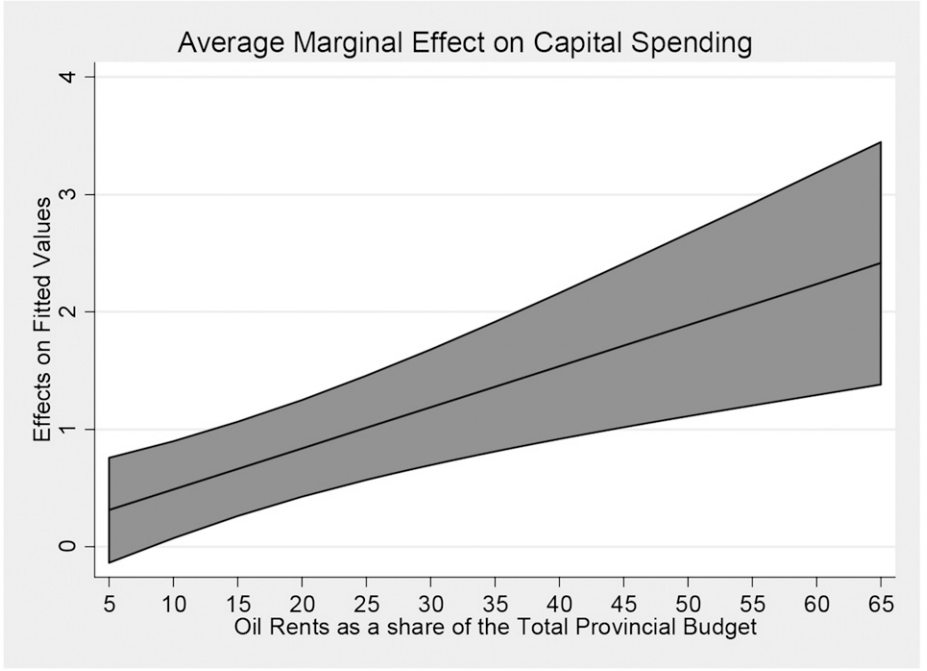


Table 2A Variables and Data Sources

Variables	Description	Source	Years
Oil and Mineral Rents	Oil and gas rents are 12 percent of the total production. Mineral rents are 3 percent.	National Direction for Fiscal Coordination with the Provinces, Undersecretariat for Provincial Relations, Secretary of Finance, Ministry of Economy and Public Finance.	1983-2013
Provincial Personnel and Capital Spending	*Personnel spending* (public employment or patronage; these labels are used interchangeably) is spending in private goods. *Capital spending* (i.e., schools, hospitals, housing and urban development, health infrastructure, and roads) is spending in public goods.	Directorate for the Analysis of Public Expenditure and Social Programs, Secretary of Economic Policy, Ministry of Economy and Public Finance.	1983-2013
Provincial Party System Fragmentation	Effective number of parties (ENP) in terms of votes and seats in each province.	Laakso and Tagepeera's (1979) formula.	1983-2011
Size and relevance of the oil and mining sectors	Employment in the oil and mining sectors as a share of the total employment in the province.	National Institute of Statistics and Censuses (INDEC).	1996-2013
Gross Industrial Product	Gross geographic (provincial) industry output. Constant 1993 million AR$ (producers' price).	INDEC.	1993-2008
National GDP growth	Annual percentage change in GDP	World Bank.	1990-2013

(*Continued*)

Table 2A (continued)

Variables	Description	Source	Years
State Population	Provincial total population. Census Data (extrapolated for the series).	INDEC.	1980, 1991, 2001.
State Gross Geographic Product (GGP)	Natural logarithm of gross geographic product Constant 1993 AR$.	1983-1992, CFI; 1993-1997: SAREP, INDEC. 1998-2009: National Accounts, Ministry of Economy.	1983-2009
Provincial poverty	Percentage of Households with Basic Needs Unsatisfied. Census Data (extrapolated for the series).	INDEC.	1980, 1991, 2001.
Federal Transfers	Total Federal Transfers, per capita (nat. log.).	National Direction for Fiscal Coordination with the Provinces, Undersecretariat for Provincial Relations, Secretary of Finance, Ministry of Economy and Public Finance.	1983-2013