Online Appendix for:
The Non-Monotonic Political Effects of Resource Booms

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A Institutional Rules for Mining-Transfer Allocation

A.1 Mining legal framework

Mining is an activity with long tradition in Peru since colonial times. Historically, it has been associated with exploitation and environmental degradation, which explains the negative perception that this activity has in areas where it is performed (World Bank 2005). During the 20th century the most important mines of the country were in foreign hands[1]. The limited regulatory state capacity and the unequal access to key resources like water and land were critical factors in shaping a historical conflictive relationship between mining interest and local communities located in mineral rich areas. In this scenario, the Peruvian state was regularly perceived as a biased actor in favor of mining companies (Gil 2009:31), due to the fact that the mining sector has been historically the most important source of fiscal revenues (Arellano 2011a:620).

During the 90s, mining experienced a significant expansion because of a set of laws and regulations oriented at promoting foreign direct investment in the sector as part of the market reforms introduced under the rule of Alberto Fujimori. These new regulations granted a set of advantages to investors such as legal and tax stability, tax reductions in exchange of infrastructure, freedom of profit remittances, and free availability of foreign currency (Glave y Kuramoto 2002, Dammert and Molinelli 2007, and Gil 2009). In addition, the new legal framework guaranteed the same treatment to foreign and national investors, and property rights restrictions to foreign citizens were removed. Environmental regulations were relaxed and land expropriation was allowed in favor of mining in-

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[1]The exception was the period 1968-1980 under the military government, in which there was a process of nationalization of the mining industry. Originally the military tried to expand production through the exploitation of new deposits (Cerro Verde, Santa Rosa, Tintaya, Antamina, Bambas Quellaveco, to name a few) for which the country took loans. The absence of adequate cost planning caused the process to fail and just a couple of mining projects (Tintaya and Cerro Verde) were finally implemented.

vestors when original land owners were not willing to sell their properties after negotiation[2]. Along the same lines, restrictions to sell communal lands were eliminated[3].

Due to this new regulatory framework, mining investment experienced an important increase. For example, by 1996, US$ 387 million were invested in the sector (MEM 2005), while in 2001 this figure reached US$ 1.595 billion (MEM 2012). As a consequence, mineral production grew at an average rate of 7.2% between 1992 and 2000 while the average GDP did so at a rate of 4.8%. This growth was mainly driven by the start of new large scale operations in copper, gold and silver production. A larger fraction of the territory of the country has been devoted to the mining activity, from 2'258,000 hectares in 1991 (Glave and Kuramoto 2002: 532) to 14'418,227 hectares in 2011 (MEM 2012: 10). Today, mining covers 13.6% of the country and Peru is one of the most important producers of minerals in the world.

A.2 Allocation rules

Along with the legal framework for promoting mining activity, the central government established the first Mining Canon framework in 1992 (DS 014-92-EM), under which 20% of the corporate income tax generated by mining companies was allocated to the areas where the profits originated. Oil Canon, established in 1976 after the discovery of oil fields in the jungle, was an institutional antecedent but is a separate fiscal category and is not included in the treatment analyzed in this paper. In 2001, as part of the decentralization process, Law 27506 raised the subnational share of mining corporate income tax to 50%. After subsequent amendments, this amount was distributed among the municipality governing the producing district, municipal governments located elsewhere within the producing province and region, the regional government, and the public universities of that region. The changes specified the allocation criteria within eligible areas rather than creating Mining Canon for the first time[4].

Two institutional characteristics of Mining Canon matter for the empirical analysis. First, distribution follows tax payment with a lag: mining companies pay corporate income taxes for the

[2]In 1995, Article 7 of the Land Law (Law 26505) was amended to facilitate the acquisition of land to holders of mining concessions. The law states that the land owner will receive compensation to be determined by the experts of the Ministry of Energy and Mines and, if there is no agreement between the parties, it would be enough that the holder of the mining concession pays the amount in the Bank of the Nation. This has generated protest among peasant communities who feel that their property rights are threatened. Therefore, this mechanism has not been used in practice by mining companies since they fear that this may affect the sustainability of their projects although it seems to have worked as a bargaining tool (Szablowski 2002). See Glave and Kuramoto (2002: 547) for details.

[3]Since the Constitution of 1920, the territories of the rural communities were protected by explicit prohibitions on the sale and/or lease of land. Article 11 of Law 26505 eliminated this restriction if two thirds of all community members were in agreement in the case of the communities located in the sierra and jungle, and 50% for each case those located in the coast.

[4]The original version of Law 27506 allocated 20% of Mining Canon transfers to municipal governments in the producing province, 20% to the regional government, and 60% to provincial and district municipalities in the producing region. Allocation among municipalities depended on population density. Law 28077 of 2003 shifted resources toward producing districts but excluded them from the province- and region-level distributions. Law 28322 corrected this exclusion in 2004. These changes reflect a tension between redistributive and compensatory objectives; see Barrantes et al. (2010) and Arellano (2011b).

previous fiscal year, and the corresponding Mining Canon is transferred later in the year[5]. Second, Mining Canon transfers are earmarked primarily for public investment projects subject to the rules of the National Public Investment System (SNIP)[6]. Current expenditures, including payroll, are generally prohibited[7].

Mining royalties follow a similar allocation rule, although it has a different tax base[8]. In this case, it is a percentage of the value of mineral production using the international price as a reference. If the output value is less than 60 US$ million, the rate is 1%. For production values between 60 and 120 US$ million, the percentage is 2% while for values above 120 million the percentage is 3%. Table A1 summarizes the legal framework behind the collection and distribution of mining royalties.

[5]The distribution schedule also changed during the sample period. Between 1998 and 2006, Mining Canon was generally distributed in 12 installments beginning in June after the fiscal year. Since 2007, it has been distributed in a single installment in July of the following fiscal year. Between 1992 and 1997, Mining Canon was distributed under ad hoc rules established through specific supreme decrees.

[6]SNIP was designed to improve the quality of public investment. Project evaluation was centralized in the Ministry of Economy and Finance until 2007, when the system was decentralized. This change coincided with the fiscal windfall and a substantial increase in the number of subnational investment projects, exposing limitations in administrative capacity and the system's ability to accommodate local conditions (Arellano 2011b).

[7]During the second government of Alan García (2006–2011), annual budget laws allowed up to 5% of Mining Canon transfers to finance the design of public-investment projects and up to 20% to finance infrastructure maintenance.

[8]Mining royalty was regulated in December 2004 by Supreme Decree 157-2004-EF. The royalty is understood as compensation to the State for the use of extracted natural resources (Arellano 2011b) and applies only to those mining operations that began in 2005 since all those producers that started before were protected by tax stability agreements.

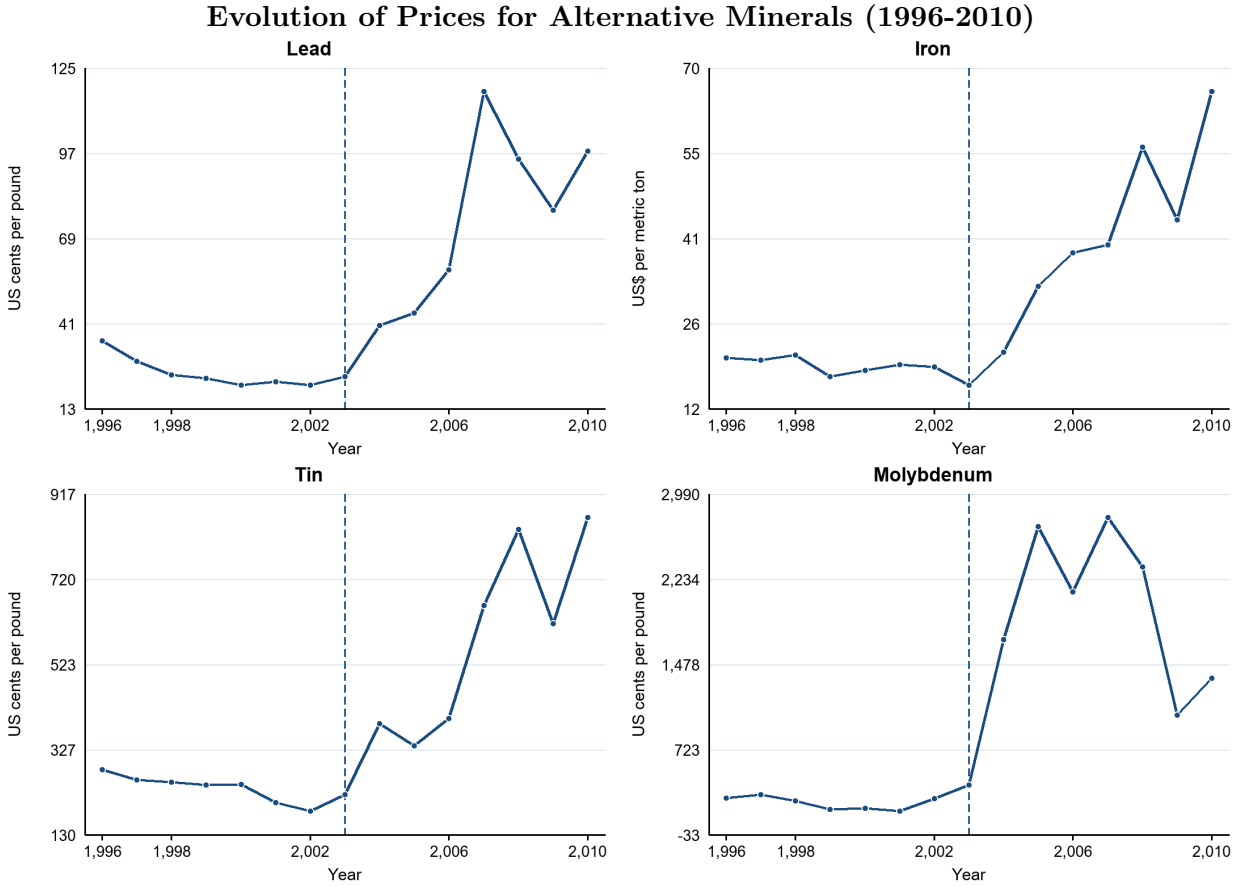


Figure A.1. Author's calculations based on the international benchmark-price series used to value mineral production. The panels report prices for lead, iron, tin, and molybdenum from 1996 through 2010. Lead, tin, and molybdenum are measured in US cents per pound; iron is measured in US dollars per metric ton. The vertical line marks the onset of the price boom in 2003.

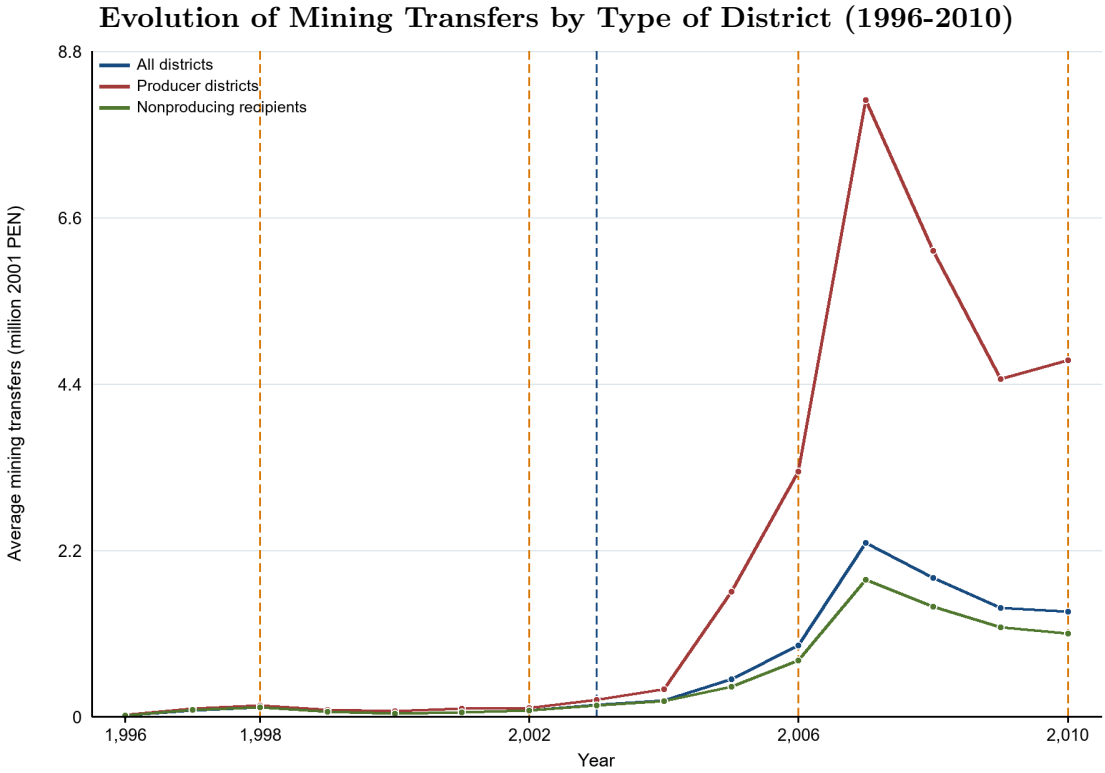


Figure A.2. Author's calculations based on data from the Ministry of Economy and Finance. The figure reports average district-level mining transfers in millions of PEN at 2001 Lima prices. Producer districts have positive physical mineral production in at least one year between 1996 and 2010. Nonproducing recipients have no mineral production but receive positive mining transfers during the period. The blue line marks the onset of the price boom in 2003; the orange lines mark municipal election years.

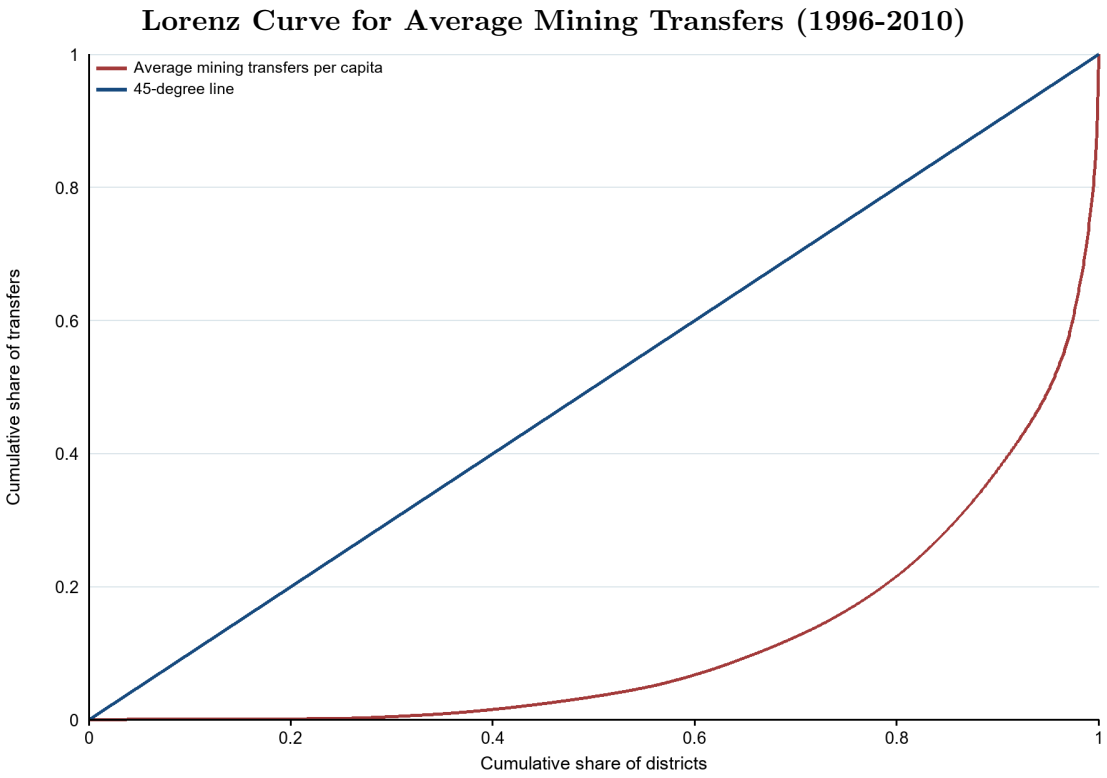


Figure A.3. Author's calculations based on data from the Ministry of Economy and Finance. Districts are ranked by their average annual real mining transfers per capita over 1996–2010. Transfers are measured in PEN at 2001 Lima prices. The corresponding Gini coefficient is 0.767.



Figure A.4. Author's calculations based on data from the Ministry of Energy and Mines. Producer districts have positive physical mineral production in at least one year between 1996 and 2010. District identifiers are harmonized to the 1998 geography used in the empirical analysis.

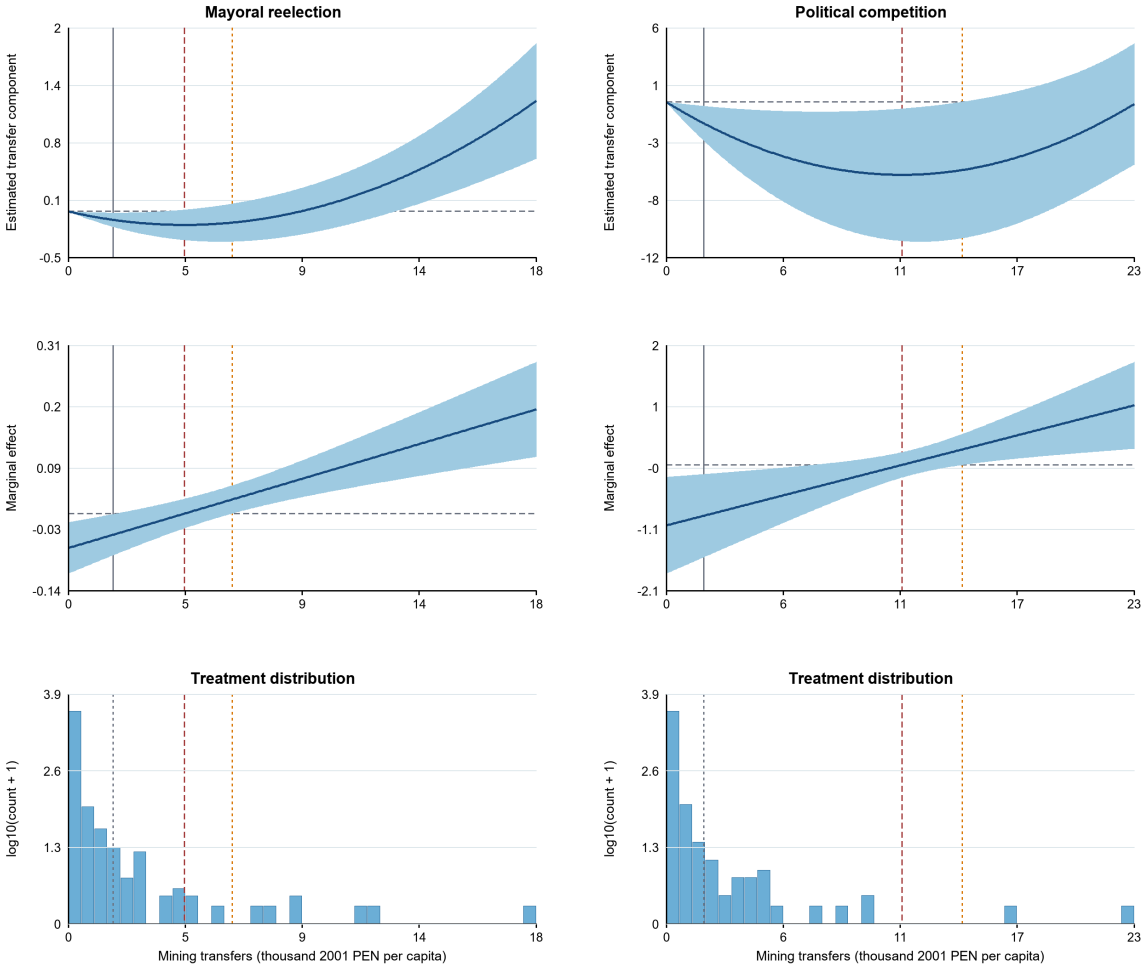


Figure A.5. Author's calculations. The left column uses election-year mining transfers and mayoral reelection; the right column uses average transfers over the electoral cycle and political competition. The upper panels plot the transfer component $\widehat{\beta}_1 R + \widehat{\beta}_2 R^2$ relative to zero transfers, and the middle panels plot $\widehat{\beta}_1 + 2\widehat{\beta}_2 R$. Shaded areas are pointwise 95% confidence intervals computed from the joint district-clustered covariance matrix. Gray vertical lines mark the 99th percentiles, red dashed lines mark the point-estimated turning points, and orange dotted lines mark the transfer levels above which the marginal effects are statistically positive. Those positive regions contain only seven reelection observations from four districts and two political-competition observations from two districts. Histograms use a logarithmic count scale to display the sparse upper tail. Because the reelection model is a linear probability model, the transfer component can leave the probability range in the sparsely populated tail; the full-support curve should therefore not be interpreted as evidence of a broadly supported reversal. Mining transfers are measured in thousands of 2001 PEN per capita.

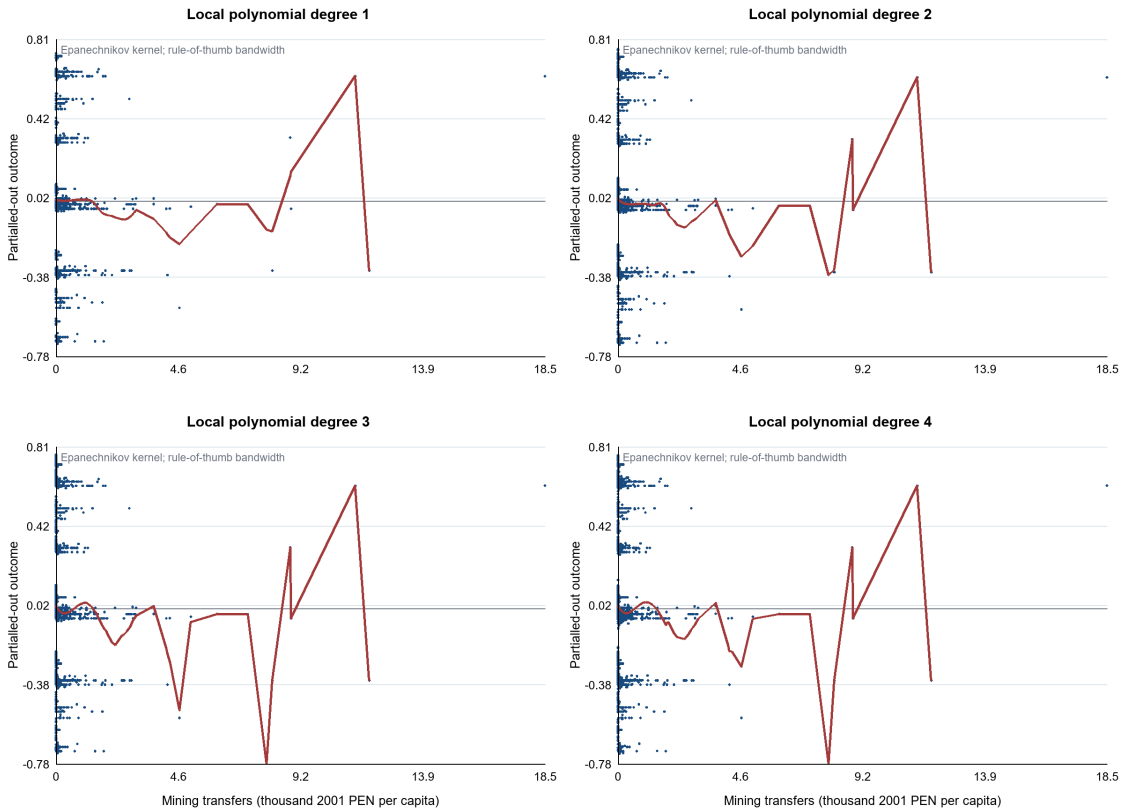


Figure A.6. Author's calculations. The figure reports the nonparametric component of the Baltagi and Li (2002) semiparametric fixed-effects estimator for mayoral reelection. Election-year mining transfers enter nonparametrically, while log real mineral production and election fixed effects enter parametrically. The four panels use local polynomial degrees one through four and an Epanechnikov kernel. The dots report partialled-out residuals, and the red line reports the estimated nonparametric component. The estimator uses 2,832 observations from 1,588 districts, and standard errors for the parametric component are clustered by district. Mining transfers are measured in thousands of 2001 PEN per capita. Support thins sharply above approximately 2 thousand PEN per capita, so movements in the fitted curves at higher values should not be interpreted as precisely estimated reversals.

Baltagi–Li Semiparametric Estimates for Political Competition (2002–2010)

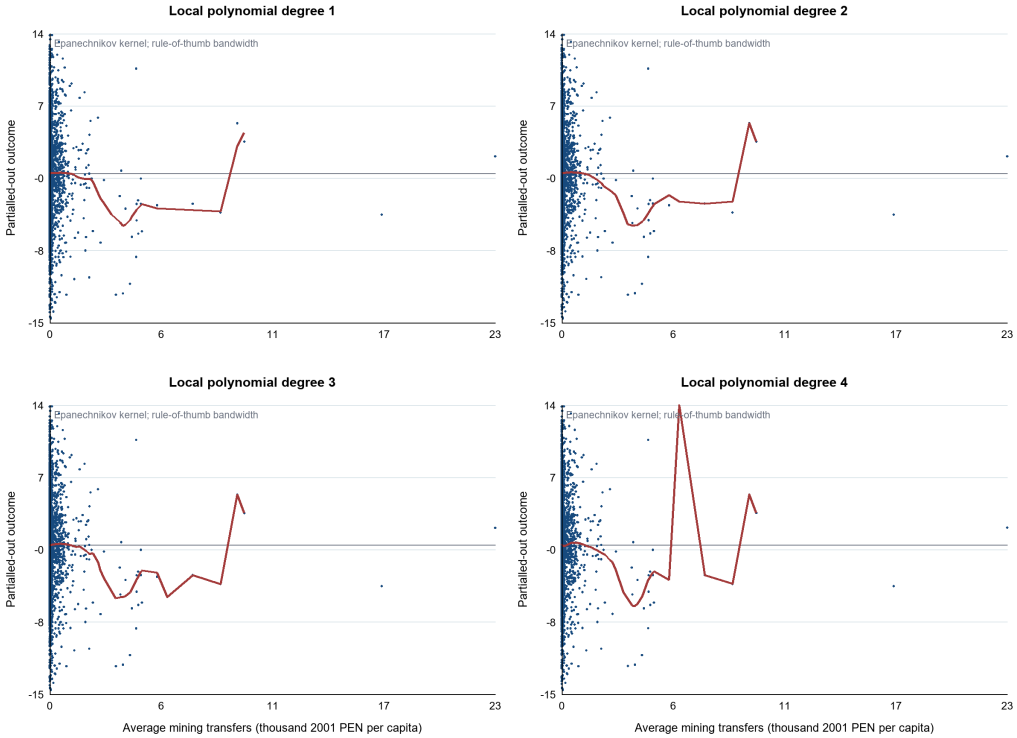


Figure A.7. Author's calculations. The figure reports the nonparametric component of the Baltagi and Li (2002) semiparametric fixed-effects estimator for political competition. Average mining transfers over the electoral cycle enter nonparametrically, while log real mineral production and election fixed effects enter parametrically. The four panels use local polynomial degrees one through four and an Epanechnikov kernel. The dots report partialled-out residuals, and the red line reports the estimated nonparametric component. The estimator uses 2,345 observations from 1,608 districts, and standard errors for the parametric component are clustered by district. Mining transfers are measured in thousands of 2001 PEN per capita. Support thins sharply above approximately 2 thousand PEN per capita, so movements in the fitted curves at higher values should not be interpreted as precisely estimated reversals.

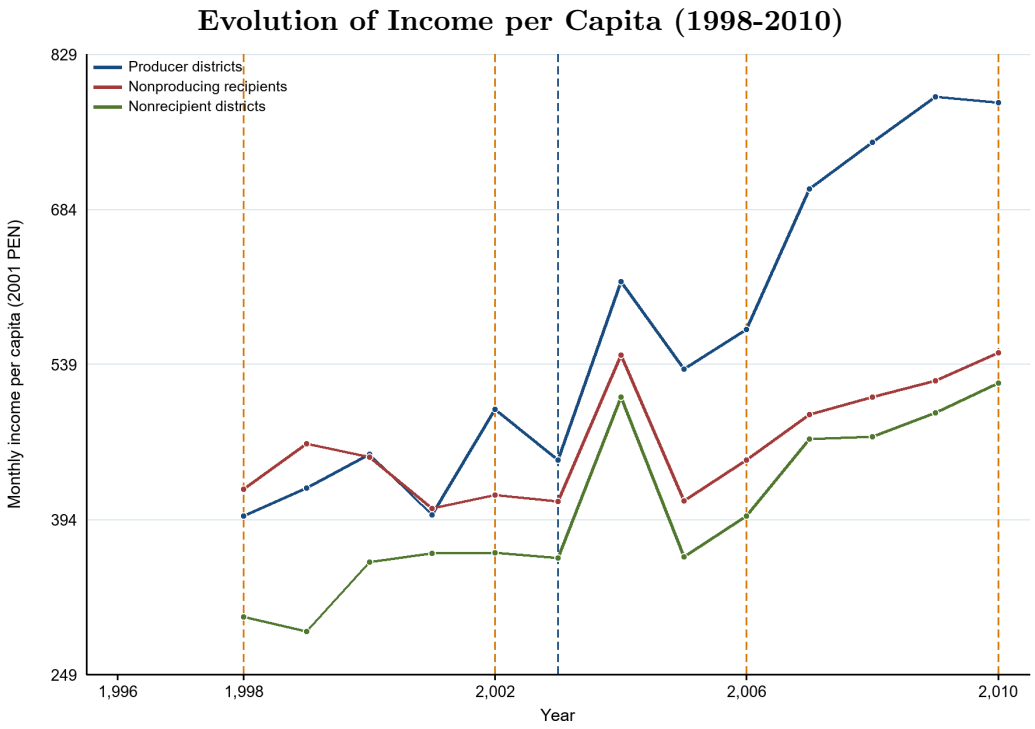


Figure A.8. Author's calculations based on ENAHO. The figure reports unweighted mean monthly household income per capita by district type, measured in PEN at 2001 Lima prices. Producer status is defined over 1996–2010; nonproducing recipients are districts in producing regions, and nonrecipient districts are outside producing regions. The blue line marks the onset of the price boom in 2003; the orange lines mark municipal election years.

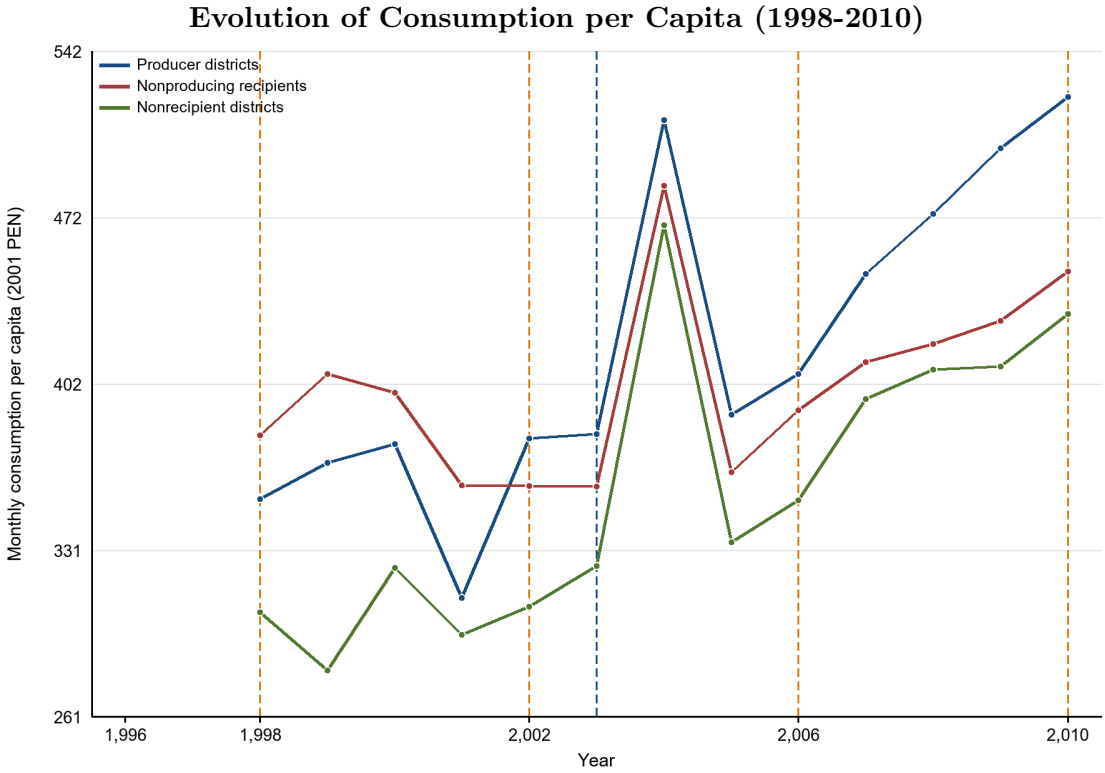


Figure A.9. Author's calculations based on ENAHO. The figure reports unweighted mean monthly household consumption per capita by district type, measured in PEN at 2001 Lima prices. Producer status is defined over 1996–2010; nonproducing recipients are districts in producing regions, and nonrecipient districts are outside producing regions. The blue line marks the onset of the price boom in 2003; the orange lines mark municipal election years.

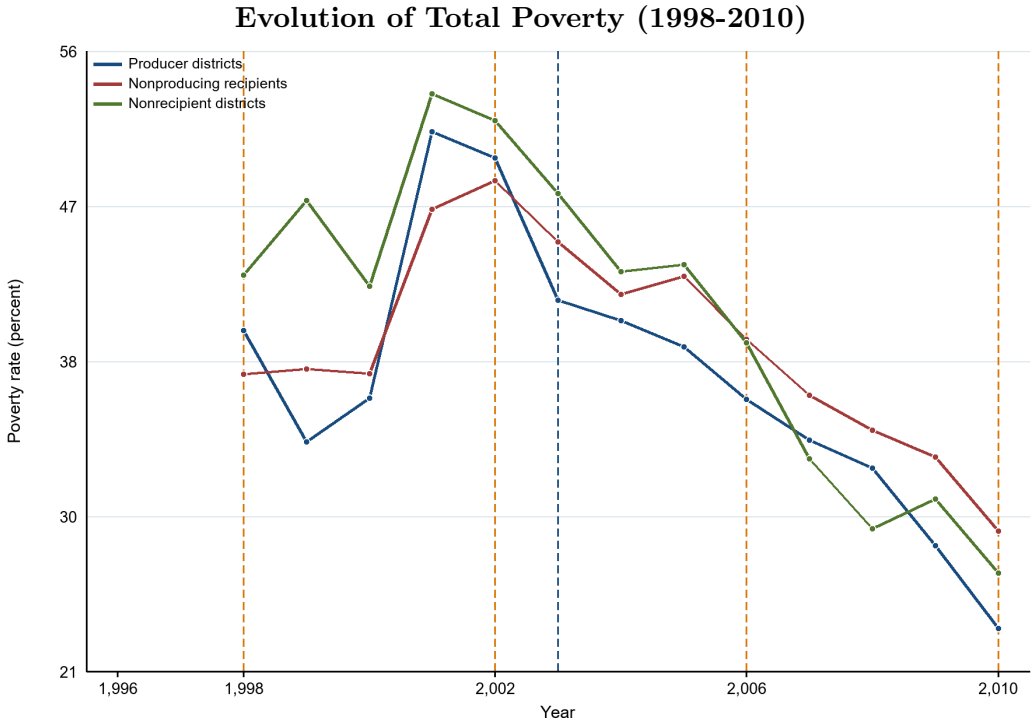


Figure A.10. Author's calculations based on ENAHO. The figure reports unweighted household poverty headcount rates by district type. Producer status is defined over 1996–2010; nonproducing recipients are districts in producing regions, and nonrecipient districts are outside producing regions. The blue line marks the onset of the price boom in 2003; the orange lines mark municipal election years.

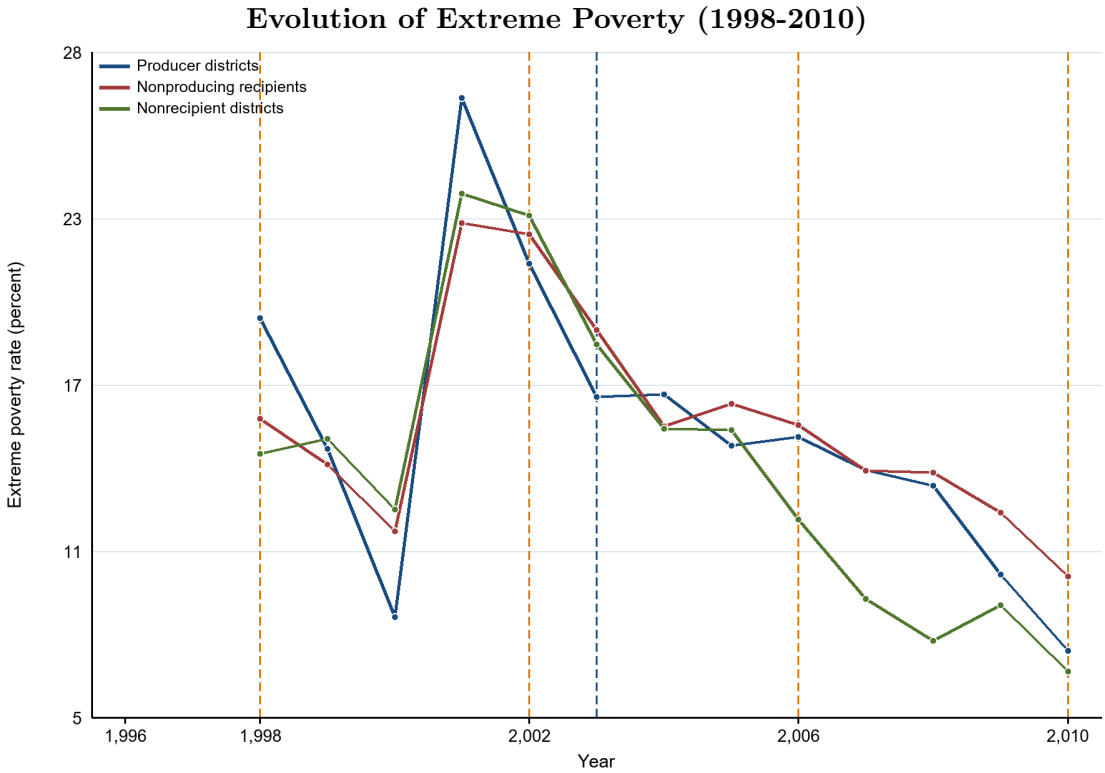


Figure A.11. Author's calculations based on ENAHO. The figure reports unweighted household extreme-poverty headcount rates by district type. Producer status is defined over 1996–2010; nonproducing recipients are districts in producing regions, and nonrecipient districts are outside producing regions. The blue line marks the onset of the price boom in 2003; the orange lines mark municipal election years.

Table A1. Canon and Mining Royalties Allocation Rules

Transfer	Use	Constitutition base	Form of Allocation	Legal Base
Canon	Public Investment	50% Income Tax	10% to the municipality governing the producing district. 25% to municipal governments in the producing province. 40% to municipal governments in the producing region. 25% to regional government (80% CR and 20% for universities)	Constitution of Peru (Article 77). Law 27,506, Canon Law (10 July 2001). Supreme Decree 005-2002-EF, Canon regulation. Law 28,077 (September 26, 2003) and Law 28,322 (10 August 2004). Regulated by Supreme Decrees 029-2004-EF and EF-187-2004.
Mining Royalty	Public Investment	% on the Value	20% to the municipality where the mining concession is located. 20% to the municipalities of the province where the mining concession is located. 40% to the municipalities of the region where the mining concession is located. 15% to the Regional Government. 5% to the universities.	Law 28258, Law of Mining Exemption (24 of June of 2004). Law 28323, Law that modifies the Law of Mining Royalty (10 of August of 2004). Supreme decree 157-2004-EF, Regulation of the Law of Mining Exemption (15 of November of 2004). Supreme decree 018-2005-EF (29 of January of 2004). Ministerial resolution 163-2006-EF-15 (22 of March of 2006).

1. It includes mining, oil, hydro-power, fishing, forest and gas canon.
2. Valid for all type of Canon, except Oil canon, in which case the following rule applies: in Loreto, Ucayali and Huánuco until a 20% can be for current cost. In Piura and Tumbes the 100% for cost of investment.
3. Some variants for the cases of the oil, gas and fishing canon also exist. The details are described in the Ministry of Economics and Finance's website.

Table A2. Composition of Total Mining Transfers in Election Years

Election year	Total mining transfers	Mining Canon	Mining royalties	Canon share (%)	Royalty share (%)
1998	214.9	214.9	0.0	100.0	0.0
2002	125.7	125.7	0.0	100.0	0.0
2006	1604.7	1297.0	307.8	80.8	19.2
2010	2485.7	2063.2	422.6	83.0	17.0

Notes: Total mining transfers equal Mining Canon plus mining royalties. Oil Canon and all other canon categories are excluded. Amounts are sums across the fixed 1998 district geography in election years and are expressed in million real 2001 Lima PEN. Mining Canon and royalties are separately identifiable from 2001 onward; the inherited 1998 zeros are retained for historical comparability and should not be read as independently observed components. The component identity holds within numerical precision.

Table A3. Canonical Geographic Spine and Main Estimation Samples

	Records	Districts	Records by election year
Panel A: Canonical geographic spine			
Balanced district-election panel	7,168	1,792	1998: 1,792; 2002: 1,792; 2006: 1,792; 2010: 1,792
Elections for which immediate reelection is defined	5,376	1,792	2002, 2006, 2010
Panel B: Complete-case samples for the preferred quadratic specifications			
Reelection, cycle-average transfers	4,092	1,575	2002: 1,300; 2006: 1,279; 2010: 1,513
Reelection, election-year transfers	4,487	1,588	2002: 1,397; 2006: 1,503; 2010: 1,587
Political competition, cycle-average transfers	4,149	1,595	2002: 1,318; 2006: 1,298; 2010: 1,533
Political competition, election-year transfers	4,545	1,608	2002: 1,415; 2006: 1,523; 2010: 1,607

Notes: The analysis uses a fixed 1998 geography with 1,792 district units. The canonical district-election panel is balanced over four ordinary elections. The 1998 election supplies the baseline incumbent and electoral-cycle information but has no immediate-reelection outcome. Preferred regression samples are unbalanced only because an outcome or a required four-year cycle measure is unavailable. Provinces and regions define statutory allocation areas and sample restrictions; they are not additional estimation observations.

Table A4. Summary Statistics for the Main Political Estimation Samples

	Mean	SD	Min.	Median	p90	p99	Max.
Panel A: Reelection — election-year transfers							
Mayor reelected (0/1)	0.182	0.386	0.000	0.000	1.000	1.000	1.000
Mining transfers	0.129	0.552	0.000	0.015	0.290	1.776	18.469
Log(1 + total real production)	0.929	3.899	0.000	0.000	0.000	19.382	22.104
Observations	4,487 district-election observations; 1,588 districts; 2002–2010						
Panel B: Political competition — cycle-average transfers							
Political competition index (0–100)	83.070	7.686	40.603	84.476	91.114	99.531	100.000
Average mining transfers over electoral cycle	0.127	0.627	0.000	0.009	0.290	1.818	22.649
Log(1 + total real production)	0.912	3.875	0.000	0.000	0.000	19.390	22.104
Observations	4,149 district-election observations; 1,595 districts; 2002–2010						

Note: Each panel uses the complete-case sample of the preferred quadratic fixed-effects specification with the production control. Mining transfers are measured in thousands of 2001 PEN per capita. Panel A uses transfers in the election year; Panel B uses average transfers over the preceding electoral cycle. Squared transfer terms are omitted because they are deterministic transformations of the reported treatment variables.

Table A5. Descriptive Statistics: Public Goods and Municipal Employment

Variable	Unit	Mean	SD	Min.	Max.	N	Districts	Period
Panel A: Public-good regressors								
Mining transfers	1,000 real PEN p.c.	0.163	0.827	0.000	34.937	15,162	1,792	2001–2010
Mining Canon	1,000 real PEN p.c.	0.142	0.718	0.000	30.090	15,162	1,792	2001–2010
Log(1 + real mineral production value)	Log real value	0.713	3.357	0.000	20.803	15,162	1,792	2001–2010
Panel B: Public-good outcomes								
Access to water network	Harmonized RENAMU scale	0.873	0.249	0.000	1.000	11,588	1,792	2001–2010
Access to public lighting	Harmonized RENAMU scale	0.927	0.234	0.000	1.000	14,954	1,792	2001–2010
Garbage-collection coverage in district capital	Coverage index	1.274	0.550	0.000	2.000	9,459	1,792	2005–2010
Garbage-collection coverage outside district capital	Coverage index	0.858	0.888	0.000	2.000	9,223	1,792	2005–2010
Access to municipal security services	Harmonized RENAMU scale	0.168	0.374	0.000	1.000	14,999	1,792	2001–2010
Municipal security personnel	Per 1,000 inhabitants	0.245	1.293	0.000	50.346	13,557	1,792	2003–2010
Municipal security stations	Per 1,000 inhabitants	0.078	0.474	0.000	24.320	10,456	1,792	2005–2010
Access to municipal library	Harmonized RENAMU scale	0.441	0.497	0.000	1.000	15,119	1,792	2001–2010
Panel C: Municipal-employment regressors								
Mining transfers	1,000 real PEN p.c.	0.152	0.796	0.000	34.937	16,395	1,792	2001–2010
Mining Canon	1,000 real PEN p.c.	0.132	0.691	0.000	30.090	16,395	1,792	2001–2010
Log(1 + real mineral production value)	Log real value	0.711	3.354	0.000	20.803	16,395	1,792	2001–2010
Panel D: Municipal-employment outcomes								
Municipal officials	Per 1,000 inhabitants	0.596	1.308	0.000	30.802	16,395	1,792	2001–2010
Municipal professionals	Per 1,000 inhabitants	0.915	1.564	0.000	56.407	16,395	1,792	2001–2010
Municipal technicians	Per 1,000 inhabitants	1.294	1.863	0.000	51.483	16,395	1,792	2001–2010
Municipal security workers	Per 1,000 inhabitants	0.250	0.997	0.000	37.037	16,395	1,792	2001–2010
Municipal cleaning workers	Per 1,000 inhabitants	0.689	1.338	0.000	55.085	16,395	1,792	2001–2010

Notes: Outcome rows use the complete samples of their corresponding mining-Canon IV models; regressor rows use the union of complete samples within each outcome block. Squared terms are deterministic transformations and are omitted. Coverage is outcome-specific because RENAMU did not collect every item in every year. Counts and monetary units follow the transformations used in Tables 7–8 and A9–A13.

Table A6. Descriptive Statistics: Municipal Expenditures

Variable	Unit	Mean	SD	Min.	Max.	N	Districts	Period
Panel A: Regressors								
Mining transfers	1,000 real PEN p.c.	0.147	0.782	0.000	34.937	17,031	1,792	2001–2010
Mining Canon	1,000 real PEN p.c.	0.128	0.678	0.000	30.090	17,031	1,792	2001–2010
Log(1 + real mineral production value)	Log real value	0.711	3.352	0.000	20.803	17,031	1,792	2001–2010
Panel B: Expenditure outcomes								
Planning and administration	Real PEN p.c.	165.53	253.08	0.00	13916.64	17,031	1,792	2001–2010
Agriculture	Real PEN p.c.	38.97	190.79	0.00	14033.98	17,031	1,792	2001–2010
Social assistance	Real PEN p.c.	42.93	60.54	0.00	1655.78	17,031	1,792	2001–2010
Education and culture	Real PEN p.c.	58.25	139.19	0.00	5061.14	17,031	1,792	2001–2010
Energy and natural resources	Real PEN p.c.	13.86	49.60	0.00	1500.87	17,031	1,792	2001–2010
Industry, trade, and services	Real PEN p.c.	9.28	44.05	0.00	1727.97	17,031	1,792	2001–2010
Health and sanitation	Real PEN p.c.	66.99	153.08	0.00	4385.82	17,031	1,792	2001–2010
Transport	Real PEN p.c.	68.74	221.10	0.00	14514.40	17,031	1,792	2001–2010
Housing and urban development	Real PEN p.c.	20.40	59.97	0.00	1322.10	17,031	1,792	2001–2010

Notes: The table reports the complete district-year sample used for the municipal-expenditure specifications. Expenditures are executed amounts in real 2001 Lima PEN per capita. Fiscal categories use the common legacy classification through 2010. Squared terms are omitted.

Table A7. Descriptive Statistics: Household Well-being

Variable	Unit	Mean	SD	Min.	Max.	N	Districts	Period
Mining transfers	1,000 real PEN p.c.	0.13	1.00	0.00	34.94	203,117	1,285	1998–2010
Log(1 + real mineral production value)	Log real value	0.90	3.73	0.00	20.80	203,117	1,285	1998–2010
Monthly household income per capita	Real PEN	478.73	701.00	0.00	38267.50	203,117	1,285	1998–2010
Monthly household consumption per capita	Real PEN	401.83	381.02	12.50	14588.34	203,117	1,285	1998–2010

Notes: The unit of observation is the household head-year. The sample uses ENAHO repeated cross-sections from 1998 through 2010 matched to district-year covariates. Income and consumption are monthly values in 2001 Lima prices and divided by household size. The sample is the common complete-case sample for the two outcomes and the preferred quadratic treatment specification; the squared transfer term is omitted from the display.

Table A8. Decomposition of Unconditional Incumbent Outcomes

	Does not run	Runs and loses	Runs and wins
Panel A: Cycle average transfers			
Mining transfers per capita	0.025	0.007	-0.032
	(0.033)	(0.028)	(0.026)
Mining transfers per capita squared	-0.001	0.000	0.001
	(0.002)	(0.001)	(0.001)
Mean of dependent variable	0.432	0.386	0.182
Observations	4,013	4,013	4,013
Districts	1,546	1,546	1,546
Within R-squared	0.032	0.008	0.015
Panel B: Election year transfers			
Mining transfers per capita	0.013	0.050	-0.063***
	(0.032)	(0.033)	(0.024)
Mining transfers per capita squared	-0.004**	-0.003	0.007***
	(0.002)	(0.002)	(0.002)
Mean of dependent variable	0.437	0.382	0.181
Observations	4,400	4,400	4,400
Districts	1,558	1,558	1,558
Within R-squared	0.033	0.008	0.017

Notes: The three dependent variables are mutually exclusive and exhaustive for the full population of incumbents; no regression conditions on the decision to run. The 2002–2010 links use DNI when available and normalized names otherwise. An observed reelection is imposed as a logical indication that the incumbent ran. All models include district and election fixed effects and the production control, with standard errors clustered by district. Transfers are thousands of real 2001 Lima PEN per capita. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9. Alternative Transformations of Real Mineral Production

Production control	Log total production	Log per capita production	IHS per capita production	Level per capita production
Panel A: Mayor reelection — election-year transfers				
Mining transfers per capita	-0.064***	-0.062**	-0.062**	-0.068**
	(0.024)	(0.025)	(0.025)	(0.026)
Mining transfers per capita squared	0.007***	0.007***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)
Production control	-0.001	-0.016	-0.013	0.000
	(0.004)	(0.022)	(0.019)	(0.000)
Implied turning point	4.582	4.479	4.493	4.745
Mean dependent variable	0.182	0.182	0.182	0.182
Observations	4,487	4,487	4,487	4,487
Districts	1,588	1,588	1,588	1,588
Within R-squared	0.017	0.017	0.017	0.017
Panel B: Political competition — cycle-average transfers				
Mining transfers per capita	-1.016**	-1.011**	-1.010**	-1.206***
	(0.414)	(0.414)	(0.414)	(0.418)
Mining transfers per capita squared	0.045***	0.044***	0.044***	0.050***
	(0.017)	(0.017)	(0.017)	(0.017)
Production control	-0.003	-0.065	-0.069	0.008***
	(0.056)	(0.321)	(0.277)	(0.002)
Implied turning point	11.405	11.393	11.393	12.177
Mean dependent variable	83.070	83.070	83.070	83.070
Observations	4,149	4,149	4,149	4,149
Districts	1,595	1,595	1,595	1,595
Within R-squared	0.133	0.133	0.133	0.134

Notes: District and election fixed-effects estimates with standard errors clustered by district. Every column within a panel uses the preferred 2002–2010 sample. Column 1 uses the paper's log total-production control. Columns 2–4 use real production per capita in thousands of 2001-value units before applying the displayed transformation. Turning points are expressed in thousands of real 2001 Lima PEN per capita of mining transfers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10. Candidate Entry Proxy: Number of Mayoral Candidates

	Average transfers all districts	Average transfers never producer	Election-year transfers all districts	Election-year transfers never producer
Panel A: Linear specification				
Mining transfers per capita	0.203**	0.142	0.197**	0.232
	(0.080)	(0.105)	(0.094)	(0.149)
Panel B: Quadratic specification				
Mining transfers per capita	0.343**	0.371***	0.473***	0.510***
	(0.137)	(0.143)	(0.137)	(0.187)
Mining transfers per capita squared	-0.010	-0.024***	-0.027***	-0.048***
	(0.006)	(0.008)	(0.007)	(0.017)
Marginal effect at mean transfers	0.341**	0.366***	0.466***	0.501***
	(0.136)	(0.141)	(0.136)	(0.184)
Implied turning point	17.547	7.881	8.803	5.321
99th percentile of transfers	1.818	1.571	1.775	1.486
Mean dependent variable	7.432	7.408	7.400	7.374
Observations	4,149	3,789	4,545	4,138
Districts	1,595	1,453	1,608	1,464

Notes: The dependent variable is the number of mayoral candidates, an imperfect proxy for nominal entry rather than a measure of vote-share dispersion or contender strength. Every model uses district-elections for which both the count and the paper's political-competition index are observed. All-district models include the production control; never-producing districts follow the canonical permanent-producer classification. Estimates include district and election fixed effects with standard errors clustered by district. The marginal effect is evaluated at the estimation-sample mean. Transfers and turning points are thousands of real 2001 Lima PEN per capita. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11. Mining Transfers and Political Competition: Non-Producing District Samples

	(1)	(2)	(3)	(4)
Panel A: Average transfers over the electoral cycle				
Average mining transfers per capita	−1.016**	−1.233**	−1.184**	−1.707***
	(0.414)	(0.523)	(0.534)	(0.581)
Average mining transfers per capita squared	0.045***	0.033	0.030	0.061**
	(0.017)	(0.029)	(0.030)	(0.030)
Log(1 + real mineral production)	−0.003			
	(0.056)			
Mean of dependent variable	83.070	83.002	83.689	83.435
Observations	4,149	3,789	3,001	1,577
Districts	1,595	1,453	1,158	606
Within R-squared	0.133	0.124	0.133	0.137
Panel B: Transfers in the election year				
Mining transfers per capita	−0.358	−0.315	−0.258	−1.002
	(0.395)	(0.672)	(0.678)	(0.757)
Mining transfers per capita squared	0.006	−0.064	−0.071	0.002
	(0.022)	(0.064)	(0.065)	(0.068)
Log(1 + real mineral production)	0.003			
	(0.050)			
Mean of dependent variable	83.047	82.958	83.629	83.450
Observations	4,545	4,138	3,285	1,725
Districts	1,608	1,464	1,168	612
Within R-squared	0.132	0.124	0.130	0.132
Production control	Yes	No	No	No
Never-producing districts only	No	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes	Yes

Notes: The dependent variable is the political-competition index. Column 1 reports the all-district benchmark. Columns 2–4 exclude districts with positive physical mineral production during 1996–2010; columns 3 and 4 retain those in producing regions and provinces. Standard errors clustered by district are in parentheses. Mining transfers are thousands of real 2001 Lima PEN per capita. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12. Fiscal Substitution and the Mining-Transfer Boom

	All districts	Never-producing districts
Panel A: Executed FONCOMUN — average over the electoral cycle		
Mining transfers per capita	-0.001	-0.001
	(0.002)	(0.003)
Observations	4,394	4,017
Within R-squared	0.097	0.090
Panel B: Executed FONCOMUN — transfers in the election year		
Mining transfers per capita	-0.005*	-0.008***
	(0.002)	(0.002)
Observations	5,081	4,630
Within R-squared	0.240	0.236
Panel C: Executed municipal budget — average over the electoral cycle		
Mining transfers per capita	2.545***	2.254***
	(0.254)	(0.328)
Observations	4,394	4,017
Within R-squared	0.796	0.648
Panel D: Executed municipal budget — transfers in the election year		
Mining transfers per capita	1.784***	1.453***
	(0.243)	(0.293)
Observations	5,081	4,630
Within R-squared	0.354	0.324
Panel E: Mayor reelection — FONCOMUN sensitivity control		
Mining transfers per capita	-0.067***	-0.128***
	(0.025)	(0.048)
Mining transfers per capita squared	0.007***	0.017***
	(0.002)	(0.005)
Executed FONCOMUN per capita	-0.269	-0.270
	(0.210)	(0.221)
Observations	4,487	4,094
Within R-squared	0.018	0.018

Notes: District and election fixed-effects estimates with standard errors clustered by district. Mining transfers, FONCOMUN, and municipal budgets are measured in thousands of real 2001 Lima PEN per capita. All-district models include the production control; production is zero by construction under the canonical never-producer classification. Panels A–D describe fiscal responses. Panel E is a controlled-direct-effect sensitivity check because FONCOMUN may itself respond to the boom. Fiscal coverage is 2002–2010. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13. Mining Transfers with a Fixed 2001 Population Denominator

	All districts		Never-producing districts	
Population denominator	Current	Fixed in 2001	Current	Fixed in 2001
Panel A: Mayor reelection — election-year transfers				
Mining transfers per capita	-0.064***	-0.077***	-0.124***	-0.115**
	(0.024)	(0.028)	(0.048)	(0.047)
Mining transfers per capita squared	0.007***	0.010***	0.016***	0.015***
	(0.002)	(0.002)	(0.005)	(0.005)
Implied turning point	4.582	3.840	3.801	3.945
99th percentile of transfers	1.776	1.901	1.491	1.610
Mean dependent variable	0.182	0.182	0.180	0.180
Observations	4,487	4,487	4,094	4,094
Districts	1,588	1,588	1,449	1,449
Within R-squared	0.017	0.018	0.016	0.016
Panel B: Political competition — cycle-average transfers				
Mining transfers per capita	-1.016**	-1.055**	-1.233**	-1.185**
	(0.414)	(0.444)	(0.523)	(0.529)
Mining transfers per capita squared	0.045***	0.054**	0.033	0.030
	(0.017)	(0.027)	(0.029)	(0.029)
Implied turning point	11.405	9.772	18.818	19.615
99th percentile of transfers	1.818	1.835	1.571	1.557
Mean dependent variable	83.070	83.070	83.002	83.002
Observations	4,149	4,149	3,789	3,789
Districts	1,595	1,595	1,453	1,453
Within R-squared	0.133	0.132	0.124	0.124

Notes: Current-denominator measures use the annual INEI district population; fixed-denominator measures use the same annual transfer amounts divided by the district's 2001 population before constructing cycle averages through 2010. Every current–fixed pair uses an identical complete-case sample. Never-producing districts follow the canonical permanent-producer classification. All models include district and election fixed effects; all-district columns include the production control. Standard errors are clustered by district. The exercise removes post-boom population changes from the denominator but does not rule out migration channels unrelated to scaling. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14. Alternative Clustering by District and Province

	District	Province
Panel A: Mayor reelection — all districts ($N = 4,487$)		
Mining transfers per capita	-0.0643	-0.0643
	(0.0244)	(0.0244)
	[0.008]	[0.008]
Mining transfers per capita squared	0.0070	0.0070
	(0.0017)	(0.0014)
	[< 0.001]	[< 0.001]
Joint p-value	< 0.001	< 0.001
Panel B: Mayor reelection — never-producing districts ($N = 4,094$)		
Mining transfers per capita	-0.1235	-0.1235
	(0.0476)	(0.0426)
	[0.009]	[0.004]
Mining transfers per capita squared	0.0162	0.0162
	(0.0048)	(0.0045)
	[< 0.001]	[< 0.001]
Joint p-value	0.001	0.001
Panel C: Political competition — all districts ($N = 4,149$)		
Mining transfers per capita	-1.0162	-1.0162
	(0.4138)	(0.3089)
	[0.014]	[0.001]
Mining transfers per capita squared	0.0446	0.0446
	(0.0167)	(0.0138)
	[0.008]	[0.001]
Joint p-value	0.025	0.005
Panel D: Political competition — never-producing districts ($N = 3,789$)		
Mining transfers per capita	-1.2326	-1.2326
	(0.5234)	(0.4634)
	[0.019]	[0.008]
Mining transfers per capita squared	0.0328	0.0328
	(0.0292)	(0.0271)
	[0.262]	[0.227]
Joint p-value	< 0.001	< 0.001

Notes: For each transfer term, the coefficient is followed by its clustered standard error in parentheses and two-sided normal-approximation p-value in brackets. Point estimates and samples are fixed across columns. Joint p-values use the cluster-robust covariance matrix. The district-cluster counts across Panels A–D are 1588, 1449, 1595, 1453; the corresponding province counts are 192, 190, 192, 190. All specifications include district and election fixed effects; all-district models include the production control. Regional clustering is not reported because Peru has only 24 regions. Temporal clustering is not reported because the models have only three post-baseline election periods. Transfers are thousands of real 2001 Lima PEN per capita.

Table A15. Influence of Districts with the Largest Mineral Production

	All districts	Excluding top 1%	Excluding top 5%
Panel A: Mayor reelection — transfers in the election year			
Mining transfers per capita	-0.064***	-0.064**	-0.088**
	(0.024)	(0.027)	(0.039)
Mining transfers per capita squared	0.007***	0.007***	0.013***
	(0.002)	(0.002)	(0.005)
Observations	4,487	4,481	4,469
Districts	1,588	1,586	1,582
Panel B: Political competition — average transfers over the electoral cycle			
Mining transfers per capita	-1.016**	-1.197***	-1.341***
	(0.414)	(0.431)	(0.488)
Mining transfers per capita squared	0.045***	0.050***	0.038
	(0.017)	(0.017)	(0.028)
Observations	4,149	4,143	4,132
Districts	1,595	1,593	1,589

Notes: District and election fixed-effects estimates with standard errors clustered by district. All models include the production control. The 159 districts with positive physical mineral production during 1996–2010 are ranked by their average real production over that period. The top 1% and 5% exclusions remove 2 and 8 districts, respectively. Mining transfers are thousands of real 2001 Lima PEN per capita. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A16. Parametric Functional-Form Robustness for Political Competition

	Quadratic (1)	Cubic (2)	Quartic (3)
Average mining transfers per capita	-1.016^{**}	-1.080^{*}	-0.699
	(0.414)	(0.580)	(0.883)
Average mining transfers per capita squared	0.045^{***}	0.060	-0.104
	(0.017)	(0.108)	(0.305)
Average mining transfers per capita cubed		-0.001	0.016
		(0.004)	(0.027)
Average mining transfers per capita to the fourth			-0.000
			(0.001)
Production control	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes
Observations	4,149	4,149	4,149
Within R-squared	0.133	0.133	0.133
p-value: added terms jointly zero	—	0.887	0.795

Notes: The dependent variable is political competition and the treatment is average mining transfers over the electoral cycle. All specifications include the production control and district and election fixed effects. Standard errors are clustered by district. The sample covers 2002–2010.

Table A17. First-Stage Diagnostics for the Level of Mining Transfers: Reelection

	(1) Mining Canon	(2) $\lambda = .1$	(3) $\lambda = .3$	(4) $\lambda = .5$	(5) $\lambda = .7$	(6) $\lambda = .9$
Mining Canon per capita	1.217***					
	(0.061)					
Mining Canon per capita squared	0.007					
	(0.009)					
V(0.1)		2.617***				
		(0.143)				
V(0.1) squared		0.001				
		(0.002)				
V(0.3)			3.234***			
			(0.215)			
V(0.3) squared			0.002			
			(0.003)			
V(0.5)				4.159***		
				(0.371)		
V(0.5) squared				0.002		
				(0.006)		
V(0.7)					5.355***	
					(0.893)	
V(0.7) squared					0.001	
					(0.008)	
V(0.9)						3.006
						(2.916)
V(0.9) squared						0.002
						(0.029)
Observations	4469	4469	4469	4469	4469	4469
Within R-squared	0.950	0.938	0.901	0.818	0.607	0.150
Joint F statistic	235.51	202.28	142.45	83.15	22.43	2.06

Notes: District and election fixed effects are included. Standard errors are clustered by district. Mining Canon and its square follow the original instrument construction; the alternative predicted-price instrument is not used.

Table A18. First-Stage Diagnostics for Squared Mining Transfers: Reelection

	(1) Mining Canon	(2) $\lambda = .1$	(3) $\lambda = .3$	(4) $\lambda = .5$	(5) $\lambda = .7$	(6) $\lambda = .9$
Mining Canon per capita	-1.314					
	(0.855)					
Mining Canon per capita squared	1.927***					
	(0.267)					
V(0.1)		-2.944				
		(2.049)				
V(0.1) squared		0.331***				
		(0.054)				
V(0.3)			-3.722			
			(3.367)			
V(0.3) squared			0.407***			
			(0.096)			
V(0.5)				-3.475		
				(6.144)		
V(0.5) squared				0.495***		
				(0.181)		
V(0.7)					4.328	
					(9.681)	
V(0.7) squared					0.484**	
					(0.244)	
V(0.9)						15.768
						(37.862)
V(0.9) squared						0.053
						(0.422)
Observations	4469	4469	4469	4469	4469	4469
Within R-squared	0.923	0.905	0.847	0.721	0.438	0.031
Joint F statistic	29.03	22.17	13.16	8.64	3.60	1.51

Notes: District and election fixed effects are included. Standard errors are clustered by district. Mining Canon and its square follow the original instrument construction; the alternative predicted-price instrument is not used.

Table A19. First-Stage Diagnostics for Transfer Levels: Political Competition

	(1) Mining Canon	(2) $\lambda = .1$	(3) $\lambda = .3$	(4) $\lambda = .5$	(5) $\lambda = .7$	(6) $\lambda = .9$
Average mining Canon per capita	1.071***					
	(0.037)					
Average mining Canon per capita squared	0.004*					
	(0.002)					
V(0.1)		1.743***				
		(0.065)				
V(0.1) squared		0.000*				
		(0.000)				
V(0.3)			2.064***			
			(0.092)			
V(0.3) squared			0.001			
			(0.000)			
V(0.5)				2.550***		
				(0.142)		
V(0.5) squared				0.001		
				(0.001)		
V(0.7)					3.518***	
					(0.273)	
V(0.7) squared					-0.000	
					(0.002)	
V(0.9)						6.301***
						(0.635)
V(0.9) squared						-0.018***
						(0.007)
Observations	4047	4047	4047	4047	4047	4047
Within R-squared	0.986	0.984	0.977	0.963	0.935	0.906
Joint F statistic	797.24	668.04	446.44	270.19	123.15	102.24

Notes: District and election fixed effects are included. Standard errors are clustered by district. Mining Canon and its square follow the original instrument construction; the alternative predicted-price instrument is not used.

Table A20. First-Stage Diagnostics for Squared Transfers: Political Competition

	(1) Mining Canon	(2) $\lambda = .1$	(3) $\lambda = .3$	(4) $\lambda = .5$	(5) $\lambda = .7$	(6) $\lambda = .9$
Average mining Canon per capita	-1.955**					
	(0.761)					
Average mining Canon per capita squared	1.516***					
	(0.095)					
V(0.1)		-3.497**				
		(1.391)				
V(0.1) squared		0.163***				
		(0.012)				
V(0.3)			-5.057**			
			(2.176)			
V(0.3) squared			0.212***			
			(0.021)			
V(0.5)				-7.258*		
				(3.792)		
V(0.5) squared				0.295***		
				(0.044)		
V(0.7)					-3.616	
					(6.170)	
V(0.7) squared					0.410***	
					(0.100)	
V(0.9)						82.624**
						(41.517)
V(0.9) squared						-0.206
						(0.316)
Observations	4047	4047	4047	4047	4047	4047
Within R-squared	0.984	0.980	0.966	0.930	0.806	0.559
Joint F statistic	173.71	135.13	73.62	32.35	9.93	6.89

Notes: District and election fixed effects are included. Standard errors are clustered by district. Mining Canon and its square follow the original instrument construction; the alternative predicted-price instrument is not used.

Table A21. Mining-Canon IV Estimates and Sensitivity Bounds: Political Competition

	Fixed effects	Mining Canon IV	$\lambda = .1$	$\lambda = .3$	$\lambda = .5$	$\lambda = .7$	$\lambda = .9$
Average mining transfers per capita	−1.016**	−1.020**	−1.023**	−1.034**	−1.062**	−1.167***	−9.224
	(0.414)	(0.426)	(0.427)	(0.428)	(0.430)	(0.437)	(54.327)
Average mining transfers per capita squared	0.045***	0.047***	0.047***	0.048***	0.051***	0.059**	0.657
	(0.017)	(0.018)	(0.018)	(0.018)	(0.019)	(0.024)	(3.944)
Production control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Election fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,149	4,047	4,047	4,047	4,047	4,047	4,047
First-stage F: transfer level	—	797.24	668.04	446.44	270.19	123.15	102.24
First-stage F: transfer square	—	173.71	135.13	73.62	32.35	9.93	6.89

Notes: The dependent variable is political competition. Column 2 instruments total mining transfers and their square with Mining Canon and its square. Columns 3–7 report the sensitivity sequence for the indicated values of λ. All specifications include the production control and district and election fixed effects; standard errors are clustered by district.

Table A22. Public Goods Provision: Mining-Canon IV Estimates

	Water network	Public lighting	Garbage: capital	Garbage: rest	Security service	Security personnel	Security stations	Public library
Mining transfers per capita	0.006	0.026***	0.051**	0.066*	0.057***	0.215***	0.109***	-0.016*
	(0.007)	(0.010)	(0.026)	(0.035)	(0.012)	(0.069)	(0.039)	(0.010)
Mining transfers per capita squared	0.000	-0.001***	-0.002***	-0.002	-0.001***	-0.004**	-0.002*	0.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.000)
Log(1 + real mineral production)	-0.001	0.001	-0.001	0.004	-0.001	-0.008**	0.000	0.004**
	(0.002)	(0.001)	(0.004)	(0.006)	(0.002)	(0.003)	(0.001)	(0.002)
Mean of dependent variable	0.87	0.93	1.27	0.86	0.17	0.24	0.08	0.44
Observations	11,588	14,954	9,459	9,223	14,999	13,557	10,456	15,119
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792

Notes: Each column reports a separate fixed-effects instrumental-variables regression using mining Canon and its square as instruments for the outcome named above. Standard errors are clustered by district. Mining transfers are measured in thousands of real 2001 Lima PEN per capita. Security personnel and stations are measured per 1,000 inhabitants; garbage outcomes are coverage indices; the remaining access outcomes use their harmonized RENAMU scales. Samples are outcome-specific and cover the available RENAMU years through 2010. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A23. Impact of Natural Resource Booms on Local Infrastructure

	Hospitals	Health centers	Polyclinics	Other basic health facilities	Stadiums	Multipurpose fields	Soccer fields	Basketball fields	Volleyball fields	Gymnasiums
Panel A: Fixed-effects estimates										
Mining transfers per capita	0.0001	-0.0030	0.0054	0.0060**	0.0254***	0.0602**	0.0418*	0.0043	-0.0047	0.0001
	(0.0002)	(0.0019)	(0.0038)	(0.0025)	(0.0091)	(0.0242)	(0.0224)	(0.0040)	(0.0050)	(0.0008)
Mining transfers per capita squared	0.0000	0.0001	-0.0002	-0.0002**	-0.0006**	-0.0006	-0.0016**	-0.0002	0.0002	0.0000
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0011)	(0.0007)	(0.0001)	(0.0002)	(0.0000)
Log(1 + real mineral production)	0.0000	0.0001	0.0010*	0.0002	0.0017	0.0041	0.0000	-0.0013*	-0.0011	0.0001
	(0.0000)	(0.0001)	(0.0005)	(0.0006)	(0.0019)	(0.0029)	(0.0033)	(0.0007)	(0.0008)	(0.0001)
Mean of dependent variable	0.00	0.00	0.03	0.00	0.26	0.32	0.18	0.02	0.04	0.00
Observations	13,679	15,115	15,115	15,115	14,788	14,788	14,788	14,788	14,788	14,788
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792
Within R-squared	0.002	0.004	0.011	0.004	0.003	0.008	0.004	0.003	0.001	0.001
Panel B: Mining-Canon IV estimates										
Mining transfers per capita	0.0002	-0.0028	0.0062	0.0065**	0.0220**	0.0512**	0.0262*	0.0038	-0.0052	0.0001
	(0.0002)	(0.0019)	(0.0039)	(0.0027)	(0.0087)	(0.0237)	(0.0140)	(0.0044)	(0.0051)	(0.0008)
Mining transfers per capita squared	0.0000	0.0001	-0.0002	-0.0002**	-0.0005**	-0.0002	-0.0011**	-0.0001	0.0002	0.0000
	(0.0000)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0010)	(0.0005)	(0.0002)	(0.0002)	(0.0000)
Log(1 + real mineral production)	0.0000	0.0001	0.0010*	0.0002	0.0018	0.0042	0.0001	-0.0013*	-0.0011	0.0001
	(0.0000)	(0.0001)	(0.0005)	(0.0006)	(0.0019)	(0.0029)	(0.0032)	(0.0007)	(0.0008)	(0.0001)
Mean of dependent variable	0.00	0.00	0.03	0.00	0.26	0.32	0.18	0.02	0.04	0.00
Observations	13,679	15,115	15,115	15,115	14,788	14,788	14,788	14,788	14,788	14,788
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792

Notes: Outcomes are numbers of facilities per 1,000 inhabitants. Each cell comes from a separate regression with district and year fixed effects; all models include the level and square of mining transfers and the production control. Panel B instruments the two transfer terms with mining Canon and its square. Standard errors are clustered by district. Coverage is outcome-specific through 2010. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A24. Impact of Natural Resource Booms on Road Construction and Investment

	Roads repaired	Roads constructed	Sidewalks repaired	Sidewalks constructed	Rural roads repaired	Rural roads constructed	Cost: roads repaired	Cost: roads constructed	Cost: sidewalks repaired	Cost: sidewalks constructed	Cost: rural repaired	Cost: rural constructed
Panel A: Fixed-effects estimates												
Mining transfers per capita	0.038	0.224**	0.006	0.028	-0.108	0.074	4.445**	34.654***	4.753	4.499**	26.986**	4.649*
	(0.041)	(0.092)	(0.009)	(0.026)	(0.304)	(0.063)	(2.078)	(12.404)	(3.915)	(1.976)	(12.342)	(2.631)
Mining transfers per capita squared	-0.002	0.000	0.000	0.000	0.003	-0.002	-0.220*	-0.791**	-0.160	-0.023	-0.186	-0.145*
	(0.002)	(0.003)	(0.000)	(0.001)	(0.008)	(0.002)	(0.120)	(0.332)	(0.141)	(0.110)	(0.389)	(0.075)
Log(1 + real mineral production)	0.004	0.024	0.001	0.000	-0.006	0.000	0.155	10.549	0.017	-0.058	-0.103	-0.331**
	(0.003)	(0.029)	(0.001)	(0.001)	(0.017)	(0.002)	(0.332)	(9.011)	(0.057)	(0.066)	(0.431)	(0.168)
Mean of dependent variable	0.07	0.20	0.01	0.06	0.26	0.07	2.64	16.00	1.21	4.08	17.46	11.80
Observations	13,599	13,599	13,599	13,599	12,486	13,922	13,599	13,599	13,599	13,599	12,486	13,922
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792
Within R-squared	0.002	0.008	0.001	0.001	0.003	0.002	0.014	0.005	0.002	0.012	0.004	0.004
Panel B: Mining-Canon IV estimates												
Mining transfers per capita	0.042	0.245**	0.008	0.024	-0.090	0.072	4.201*	37.194**	5.834	4.887**	29.627*	5.064*
	(0.050)	(0.102)	(0.010)	(0.031)	(0.292)	(0.061)	(2.478)	(14.662)	(4.806)	(2.162)	(15.754)	(2.707)
Mining transfers per capita squared	-0.002	-0.002	0.000	0.000	0.002	-0.002	-0.219	-0.980**	-0.199	-0.027	-0.287	-0.158**
	(0.003)	(0.003)	(0.000)	(0.001)	(0.008)	(0.002)	(0.138)	(0.417)	(0.175)	(0.121)	(0.503)	(0.077)
Log(1 + real mineral production)	0.004	0.024	0.001	0.000	-0.006	0.000	0.157	10.528	0.008	-0.062	-0.128	-0.334**
	(0.003)	(0.029)	(0.001)	(0.001)	(0.017)	(0.002)	(0.332)	(8.990)	(0.060)	(0.067)	(0.446)	(0.169)
Mean of dependent variable	0.07	0.20	0.01	0.06	0.26	0.07	2.64	16.00	1.21	4.08	17.46	11.80
Observations	13,599	13,599	13,599	13,599	12,486	13,922	13,599	13,599	13,599	13,599	12,486	13,922
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792

Notes: Road and sidewalk quantities are expressed per resident in the units reported by RENAMU; rural-road quantities are likewise converted to per-capita terms. Cost outcomes are real 2001 Lima PEN per capita. All regressions include district and year fixed effects and the production control. Panel B uses mining Canon and its square as instruments. Standard errors are clustered by district, and samples follow outcome-specific coverage through 2010. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A25. Impact of Natural Resource Booms on Municipal Employment by Contract Type

	Appointed: linear	Appointed: quadratic	Appointed: never producer	Contracted: linear	Contracted: quadratic	Contracted: never producer	Temporary: linear	Temporary: quadratic	Temporary: never producer
Panel A: Fixed-effects estimates									
Mining transfers per capita	0.090**	0.189*	0.221	2.125*	2.115*	0.783***	0.547***	1.141***	1.357***
	(0.042)	(0.101)	(0.148)	(1.246)	(1.179)	(0.286)	(0.205)	(0.322)	(0.474)
Mining transfers per capita squared		-0.005	-0.006		0.000	-0.025**		-0.027***	-0.026*
		(0.003)	(0.004)		(0.028)	(0.010)		(0.009)	(0.015)
Log(1 + real mineral production)		0.007			-0.021			-0.025	
		(0.009)			(0.016)			(0.016)	
Mean of dependent variable	1.00	1.00	1.01	1.39	1.39	1.32	2.71	2.71	2.73
Observations	16,395	16,395	14,965	16,395	16,395	14,965	16,395	16,395	14,965
Districts	1,792	1,792	1,633	1,792	1,792	1,633	1,792	1,792	1,633
Within R-squared	0.155	0.157	0.158	0.104	0.104	0.049	0.110	0.114	0.114
Panel B: Mining-Canon IV estimates									
Mining transfers per capita	0.090**	0.183*	0.230	1.829	1.995*	0.730***	0.525***	1.040***	1.306***
	(0.045)	(0.109)	(0.157)	(1.141)	(1.081)	(0.270)	(0.193)	(0.328)	(0.462)
Mining transfers per capita squared		-0.004	-0.006		-0.008	-0.024**		-0.023**	-0.025*
		(0.003)	(0.005)		(0.026)	(0.010)		(0.010)	(0.015)
Log(1 + real mineral production)		0.007			-0.020			-0.025	
		(0.009)			(0.015)			(0.016)	
Mean of dependent variable	1.00	1.00	1.01	1.39	1.39	1.32	2.71	2.71	2.73
Observations	16,395	16,395	14,965	16,395	16,395	14,965	16,395	16,395	14,965
Districts	1,792	1,792	1,633	1,792	1,792	1,633	1,792	1,792	1,633

Notes: Outcomes are employees per 1,000 inhabitants. Within each employment category, the first column is linear, the second adds the squared transfer term and production control, and the third uses the quadratic specification under the canonical never-producer classification. All models include district and year fixed effects; Panel B uses mining Canon and its square as excluded instruments. Standard errors are clustered by district. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A26. Municipal Employment by Occupational Group: Mining-Canon IV Estimates

	Officials	Never producer	Professionals	Never producer	Technicians	Never producer	Security workers	Never producer	Janitors	Never producer
Mining transfers per capita	0.251***	0.329**	0.622***	0.546***	0.424**	0.357***	0.184***	0.188***	0.191***	0.168***
	(0.097)	(0.144)	(0.121)	(0.082)	(0.169)	(0.085)	(0.058)	(0.069)	(0.067)	(0.063)
Mining transfers per capita squared	-0.007***	-0.010**	-0.013***	-0.015***	0.003	-0.008***	-0.006**	-0.007*	-0.006***	-0.006***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.008)	(0.003)	(0.002)	(0.004)	(0.002)	(0.002)
Log(1 + real mineral production)	-0.008*		-0.007		0.002		-0.006*		-0.004	
	(0.004)		(0.006)		(0.006)		(0.003)		(0.005)	
Never-producing districts	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Mean of dependent variable	0.60	0.60	0.92	0.91	1.29	1.30	0.25	0.25	0.69	0.69
Observations	16,395	14,965	16,395	14,965	16,395	14,965	16,395	14,965	16,395	14,965
Districts	1,792	1,633	1,792	1,633	1,792	1,633	1,792	1,633	1,792	1,633

Notes: Outcomes are municipal employees per 1,000 inhabitants. Odd-numbered columns include the production control; even-numbered columns use the canonical never-producer classification. All models include district and year fixed effects and instrument the transfer terms with mining Canon and its square. Standard errors are clustered by district. The RENAMU samples are outcome-specific and extend through 2010. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A27. Impact of Natural Resource Booms on Municipal Expenditures by Economic Classification

	Payroll	Pensions	Goods and services	Other current spending	Investment	Financial investment	Other capital spending	Debt
Panel A: Fixed-effects estimates								
Mining transfers per capita	54.577*	0.283	109.695***	-0.187	850.129***	-0.028*	9.204**	-0.196
	(30.035)	(0.196)	(27.152)	(0.438)	(59.785)	(0.017)	(4.414)	(0.798)
Mining transfers per capita squared	-1.373	-0.014**	-2.397***	0.022	-20.387***	0.001	-0.369**	0.069
	(0.918)	(0.006)	(0.882)	(0.017)	(2.107)	(0.000)	(0.184)	(0.056)
Log(1 + real mineral production)	-0.597	0.000	-0.955	-0.063	1.863	-0.003	0.123	0.224
	(0.396)	(0.052)	(0.615)	(0.060)	(3.595)	(0.003)	(0.170)	(0.160)
Mean of dependent variable	34.14	5.23	97.01	14.22	315.62	0.01	4.44	16.61
Observations	17,031	17,031	17,031	17,031	17,031	17,031	17,031	17,031
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792
Within R-squared	0.119	0.721	0.249	0.042	0.518	0.002	0.022	0.083
Panel B: Mining-Canon IV estimates								
Mining transfers per capita	48.205*	0.259	106.124***	-0.080	833.723***	-0.027	8.051**	-0.171
	(26.953)	(0.186)	(25.168)	(0.402)	(54.027)	(0.017)	(3.616)	(0.802)
Mining transfers per capita squared	-1.224	-0.013**	-2.292***	0.018	-20.390***	0.001	-0.346**	0.067
	(0.847)	(0.006)	(0.868)	(0.016)	(1.922)	(0.000)	(0.171)	(0.061)
Log(1 + real mineral production)	-0.538	0.000	-0.923	-0.064	2.022	-0.003	0.133	0.224
	(0.362)	(0.052)	(0.599)	(0.060)	(3.585)	(0.003)	(0.168)	(0.160)
Mean of dependent variable	34.14	5.23	97.01	14.22	315.62	0.01	4.44	16.61
Observations	17,031	17,031	17,031	17,031	17,031	17,031	17,031	17,031
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792

Notes: Dependent variables are executed municipal expenditures in real 2001 Lima PEN per capita. All models include district and year fixed effects and the production control; Panel B uses mining Canon and its square as excluded instruments. The common economic classification reconciles to total expenditure throughout 2001–2010. Standard errors are clustered by district. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A28. Municipal Expenditures by Function: Mining-Canon IV Estimates

	Planning	Agriculture	Social assistance	Education and culture	Energy and resources	Industry and services	Health and sanitation	Transport	Housing and urban development
Mining transfers per capita	239.587***	153.540***	30.845***	159.081***	13.176***	23.164***	96.657***	248.019***	34.270***
	(41.731)	(25.191)	(3.275)	(15.429)	(2.047)	(4.115)	(19.637)	(49.489)	(4.898)
Mining transfers per capita squared	-5.806***	-3.627***	-0.311**	-4.721***	-0.421***	-0.772***	-1.423	-7.590***	-1.028***
	(1.332)	(0.754)	(0.135)	(0.784)	(0.073)	(0.110)	(1.305)	(1.148)	(0.211)
Log(1 + real mineral production)	-1.567*	0.061	0.137	1.878	-0.371	-0.183	0.870	-1.016	0.258
	(0.897)	(0.824)	(0.363)	(1.664)	(0.304)	(0.290)	(1.194)	(1.399)	(0.342)
Mean of dependent variable	165.53	38.97	42.93	58.25	13.86	9.28	66.99	68.74	20.40
Observations	17,031	17,031	17,031	17,031	17,031	17,031	17,031	17,031	17,031
Districts	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792	1,792

Notes: Dependent variables are executed municipal expenditures in real 2001 Lima PEN per capita. All regressions include district and year fixed effects and the production control, and instrument the transfer terms with mining Canon and its square, with standard errors clustered by district. The sample covers the available fiscal years from 2001 through 2010. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.