Supplementary Materials

The Philippines' Roll-on/Roll-off Policy and Its Impact on Household Income

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The internal validity of our difference-in-differences (DID) model is guaranteed through the fulfillment of the parallel trend assumption, which requires that in the absence of the Ro-Ro policy, the average differences in household income between our treatment and control groups are constant over time. Ideally, this can be shown by utilizing FIES data prior to 2003, and showing the trends of household income for both groups. However, the 2000 FIES and later data do not include specifications at the municipality level –the administrative division we used in identifying the locations of the ports and the households. Thus, we are unable to construct the same data we have for 2003, 2006 and 2009. As an alternative, we utilized the Statement of Income and Expenditures data of local government units sourced from the Bureau of Local Government Finance. We used local government expenditure and income from taxes as proxies for household income.

Supplementary Figure 1 shows the trends for local government per capita expenditure, per capita income from business tax, per capita income from real estate tax, per capita income from economic enterprises, per capita income from fees and fines, and per capita income from other activities. The red, dashed line marks the baseline year 2003. For ease of comparison, we normalized the values for our treatment and control group to their respective means in 2003. This implies that if trends are indeed parallel, our graphs for our two groups should be overlapping. All six panels in our figure suggest that the parallel trend assumption is satisfied.

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Supplementary Figure 1. Trends of Per Capita Local Income or Expenditure (2003=1)

Source of data: Philippines' Bureau of Local Government Finance

Additionally, we construct a placebo test for years prior to 2003 (pre-Ro-Ro policy) using the following model:

$$y_{it} = \alpha + \delta_t (year_t * RoRo_{i,2009}) + year_t + RoRo_{i,2009} + \varepsilon_{it}$$

where y_{it} denotes the expenditure or income variable for municipality *i* in year *t*; *year*_t represents the years prior to 2003; and $RoRo_{i,2009}$ is the treatment assignment for municipality *i* in 2009. Our DID estimator in the above equation is δ_t . It does not make sense to observe significant coefficients δ_t for years prior to 2003. We then construct a joint-significance test for all resulting beta coefficients from our

DID models using our six outcome variables. The results of the F-tests are shown in Supplementary Table 1, confirming that all beta coefficients are jointly equal to zero.

Outcome variable	F	Prob > F
Expenditure	F(10, 5239) = 1.22	0.27
Income: Business Tax	F(10, 5205) = 1.19	0.29
Income: Real Estate Tax	F(10, 5236) = 1.36	0.19
Income: Economic Enterprises	F(10, 4975) = 0.86	0.57
Income: Fees & Fines	F(10, 5175) = 0.43	0.94
Income: Other Activities	F(10, 3945) = 1.15	0.32

Supplementary Table 1. F-test Results for Joint Significance

Supplementary Table 2. Summary Statistics of Outcomes and Control Variables at Baseline Year

2003

Variables	Con	trol	Treat	ment	T-Test	
Outcomes:	Mean	s.d.	Mean	s.d.	Difference	t
Log (Total Income)	6.7976	0.8499	6.5891	0.8473	0.2084	7.2803 ***
Log (Total Income from Agriculture)	3.0351	2.5990	3.5559	2.3013	-0.5208	-6.0375 ***
Log (Total Income from Nonagriculture)	6.2444	1.4765	6.0030	1.4309	0.2413	4.8703 ***
Log (Salaries and Wages from Employment)	4.4539	2.8870	4.3722	2.6235	0.0817	0.8499
Log (Net Share of Crops, Fruits and Vegetables)	0.3296	1.1165	0.4654	1.2917	-0.1358	-3.5257 ***
Log (Other Sources of Income)	5.1507	1.2962	5.0709	1.1829	0.0798	1.8482 *
Log (Income from Other Receipts)	6.8584	0.8550	6.6562	0.8683	0.2022	7.0018 ***
Log (Income from Entrepreneurial Activities)	3.7117	2.7831	3.8635	2.5523	-0.1519	-1.6371
Log (Assistance from Abroad)	1.1778	2.3526	0.9451	2.1502	0.2327	2.9689 ***
Log (Assistance from Domestic Source)	1.4722	1.9518	1.7383	2.0276	-0.2661	-4.0227 ***
Log (Rentals from Properties)	0.2066	1.0154	0.1986	1.0060	0.0080	0.2352
Log (Interest)	0.0852	0.5602	0.0854	0.5282	-0.0002	-0.0083
Log (Social Security Benefits)	0.3705	1.4023	0.3249	1.3241	0.0456	0.9714
Log (Dividends from Investment)	0.0182	0.2821	0.0189	0.2674	-0.0007	-0.0741
Log (Other Sources of Income NEC)	0.0412	0.3837	0.0053	0.0842	0.0359	2.9839 ***
Controls:						
Log(distance from nearest Ro-Ro port)	8.6620	7.6319	10.7319	0.8009	-2.0699	-8.6665 ***
Sex (Household Head)	0.8355	0.3708	0.8338	0.3724	0.0016	0.1319
Age (Household Head)	45.7006	14.1867	47.0704	13.9632	-1.3698	-2.8712 ***
Years of Education (Household Head)	8.6367	3.9974	8.4252	3.9968	0.2115	1.5700
Household Labor Force	3.0352	1.5051	3.0733	1.4810	-0.0382	-0.7539

Note: *, **, ***, refer to the significance levels at 10% , 5% and 1%, respectively.

Supplementary Table 3. General Characteristics of Agricultural and Nonagricultural Households

	Non-Agricultural Households			Agricultural Households			All Households		
	Mean	s.d.	Ν	Mean	s.d.	Ν	Mean	s.d.	Ν
Total Income (in PHP real terms)	1,531.55	1,669.54	15,248	571.18	640.07	5,353	1,282.01	1,531.95	20,601
Distance from nearest Ro-Ro port (km)	127.75	87.14	15,248	191.92	128.43	5,353	144.42	103.43	20,601
Distance from nearest non-Ro-Ro port (km)	54.01	53.92	15,248	91.94	81.41	5,353	63.87	64.43	20,601
Sex of Household Head (1-male)	0.78	0.41	15,248	0.92	0.27	5,353	0.82	0.39	20,601
Age of Household Head	48.60	14.32	15,248	46.30	13.12	5,353	48.00	14.05	20,601
Years of Education of Household Head	9.65	3.73	15,248	6.10	3.40	5,353	8.73	3.97	20,601
Household Labor Force	2.89	1.64	15,248	2.83	1.43	5,353	2.88	1.59	20,601

Supplementary Table 4. Results for Components of Other Sources of Income: Agricultural Households

	i	ii	iii	iv	v	vi	vii
2006 x Treatment	0.0611	0.1466	-0.0519 *	0.0393	-0.0278	0.0033	0.0241
	(0.0685)	(0.1791)	(0.0279)	(0.0249)	(0.0267)	(0.0035)	(0.0229)
2009 x Treatment	0.0114	0.7636 ***	-0.0039	-0.0099	-0.0019	0.0014	0.0424
	(0.0822)	(0.1910)	(0.0237)	(0.0232)	(0.0148)	(0.0079)	(0.0362)
2006	0.0314	0.1638 ***	0.0144	-0.0113	0.0040	-0.0038	0.0083
	(0.0423)	(0.0619)	(0.0137)	(0.0085)	(0.0129)	(0.0037)	(0.0093)
2009	0.0253	0.4142 ***	-0.0071	0.0097	-0.0041	0.0037	0.0034
	(0.0543)	(0.0836)	(0.0147)	(0.0127)	(0.0104)	(0.0046)	(0.0122)
Conrols:							
ln(distance from nearest Ro-Ro port)	-0.0023	0.0193	0.0004	-0.0008	0.0134	0.0001	0.0022
	(0.0022)	(0.0150)	(0.0008)	(0.0011)	(0.0122)	(0.0001)	(0.0019)
Sex (Household Head)	0.0123	-0.6877 ***	-0.0087	0.0092	0.0357	0.0028	-0.0666
	(0.1691)	(0.2501)	(0.0074)	(0.0061)	(0.0406)	(0.0021)	(0.0509)
Age (Household Head)	0.0078	0.0024	0.0006	0.0002	0.0004	0.0001	0.0006
	(0.0062)	(0.0094)	(0.0014)	(0.0005)	(0.0007)	(0.0001)	(0.0012)
Years of Education (Household Head)	0.0055	0.0222	0.0040	0.0001	0.0019	0.0003	-0.0025
	(0.0120)	(0.0202)	(0.0028)	(0.0024)	(0.0075)	(0.0002)	(0.0037)
Household Labor Force	0.0316	-0.0149	0.0113 **	-0.0079 *	0.0001	-0.0013	0.0041
	(0.0211)	(0.0333)	(0.0057)	(0.0046)	(0.0084)	(0.0019)	(0.0044)
Number of obs.	5,353	5,353	5,353	5,353	5,353	5,353	5,353
R-squared:							
Within	0.0039	0.0448	0.0033	0.0028	0.0048	0.0019	0.0044
Between	0.0104	0.0185	0.0017	0.0009	0.0001	0.0020	0.0004
Overall	0.0082	0.0298	0.0022	0.0017	0.0001	0.0001	0.0008

Notes: Significance levels at *10%, **5% and ***1%. Standard errors are reported in parentheses; these are heteroskedasticity-robust clustered by households.

Legend: i -Cash Receipts, Gifts, Support, Relief and Other Forms of Assistance from Abroad; ii -Cash Receipts, Support, Assistance and Relief from Domestic Source; iii -Rentals from Non-agricultural Lands, Buildings, Spaces and Other Properties; iv -Interest; v -Pension and Retirement, Workmen's Compensation and Social Security Benefits; vi -Dividends from Investment; vii -ther Sources of Income Not Elsewhere Classified

Supplementary Table 5. Results for Components of Other Sources of Income: Nonagricultural

	i	ii	iii	iv	v	vi	vii
2006 x Treatment	0.1194	0.0560	0.0365	0.0202	0.1617 **	0.0181	0.0663 ***
	(0.1119)	(0.1226)	(0.0640)	(0.0350)	(0.0679)	(0.0229)	(0.0153)
2009 x Treatment	0.2827 **	0.1788	0.1701 ***	0.0150	0.1208	-0.0240	0.0501 ***
	(0.1389)	(0.1470)	(0.0638)	(0.0331)	(0.0796)	(0.0208)	(0.0139)
2006	-0.0143	0.0119	-0.0210	-0.0394 ***	-0.0417	0.0061	-0.0289 ***
	(0.0480)	(0.0470)	(0.0242)	(0.0134)	(0.0276)	(0.0081)	(0.0090)
2009	0.2044 ***	0.1171 **	0.0031	-0.0156	-0.0130	-0.0017	-0.0384 ***
	(0.0571)	(0.0550)	(0.0285)	(0.0162)	(0.0381)	(0.0083)	(0.0103)
Conrols:							
ln(distance from nearest Ro-Ro port)	-0.0087	0.0041	0.0146 ***	-0.0012	-0.0069	-0.0010	-0.0002
	(0.0088)	(0.0097)	(0.0056)	(0.0041)	(0.0082)	(0.0008)	(0.0004)
Sex (Household Head)	-0.6447 ***	-0.2638 **	-0.1080	0.0258	-0.2007 **	-0.0051	-0.0240
	(0.1281)	(0.1127)	(0.0688)	(0.0330)	(0.0866)	(0.0157)	(0.0236)
Age (Household Head)	-0.0001	0.0025	0.0012	0.0005	0.0262 ***	-0.0003	0.0002
	(0.0053)	(0.0048)	(0.0025)	(0.0014)	(0.0042)	(0.0003)	(0.0010)
Years of Education (Household Head)	0.0160	0.0008	0.0012	0.0041	0.0058	-0.0022	-0.0036
	(0.0171)	(0.0156)	(0.0083)	(0.0042)	(0.0111)	(0.0019)	(0.0026)
Household Labor Force	-0.0142	-0.1265 ***	-0.0104	0.0104 *	-0.0406 ***	-0.0024	0.0038
	(0.0218)	(0.0199)	(0.0119)	(0.0057)	(0.0144)	(0.0035)	(0.0048)
Number of obs.	15,248	15,248	15,248	15,248	15,248	15,248	15,248
R-squared:							
Within	0.0138	0.0106	0.0026	0.0025	0.0235	0.0011	0.0051
Between	0.0630	0.0199	0.0010	0.0064	0.1372	0.0039	0.0001
Overall	0.0472	0.0206	0.0006	0.0046	0.1190	0.0010	0.0007

Households

Notes: Significance levels at *10%, **5% and ***1%. Standard errors are reported in parentheses; these are heteroskedasticity-robust clustered by households.

Legend; i -Cash Receipts, Gifts, Support, Relief and Other Forms of Assistance from Abroad; ii -Cash Receipts, Support, Assistance and Relief from Domestic Source; iii -Rentals from Non-agricultural Lands, Buildings, Spaces and Other Properties; iv -Interest; v -Pension and Retirement, Workmen's Compensation and Social Security Benefits; vi -Dividends from Investment; vii -ther Sources of Income Not Elsewhere Classified