

**Agricultural Development and the Industry Life Cycle
on the Brazilian Frontier**

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APPENDIX

Table A1. *Welfare and income indicators for Rondônia and other Amazonian States, Census Data*

	Literacy Rate ^a			Household Monthly Income (Nominal Reais) ^b			Gini Index ^c			Cattle Herd ^d		
	1991	2000	2010	1991	2000	2010	1991	2000	2010	1991	2000	2010
<i>Acre</i>	0.59	0.71	0.81	49.62	835.73	1676.15	0.61	0.59	0.55	404,434	1,033,311	2,578,460
<i>Amapá</i>	0.73	0.82	0.88	76.05	1084.37	2133.59	0.57	0.58	0.55	70,875	82,822	114,773
<i>Amazonas</i>	0.67	0.78	0.86	67.49	953.40	1838.29	0.62	0.60	0.56	647,714	843,254	1,360,800
<i>Maranhão</i>	0.53	0.68	0.77	29.18	540.03	1172.70	0.60	0.61	0.55	3,948,710	4,093,563	6,979,844
<i>Mato Grosso</i>	0.77	0.85	0.90	64.49	1158.25	2059.78	0.60	0.60	0.50	9,890,510	18,924,532	28,757,438
<i>Pará</i>	0.67	0.77	0.85	53.20	842.64	1458.36	0.60	0.58	0.50	6,626,179	10,271,409	17,633,339
<i>Rondônia</i>	0.76	0.84	0.90	49.55	975.47	1850.05	0.62	0.56	0.55	2,826,403	5,664,320	11,842,073
<i>Roraima</i>	0.72	0.82	0.87	70.58	1079.32	1927.59	0.60	0.60	0.54	345,650	480,400	577,050
<i>Tocantins</i>	0.63	0.78	0.85	43.85	766.58	1690.02	0.63	0.60	0.54	4,440,540	6,142,096	7,994,200
Brasil	0.76	0.83	0.89	69.76	1172.10	2127.33	0.64	0.60	0.54	152,135,505	169,875,524	209,541,109

^a Source: IBGE; <http://www.sidra.ibge.gov.br/> “Banco do Dados, Tables 141, 1519, 3176; ^b Source: IBGE; <http://www.sidra.ibge.gov.br/> “Banco do Dados, Tables 190, 241, 2411, 3168; authors’ calculations; ^c Source: IBGE; <http://www.sidra.ibge.gov.br/> “Banco do Dados, Tables 155, ^d Source: IBGE; <http://www.sidra.ibge.gov.br/> “Banco do Dados, Table 33

Table A2: *Descriptive statistics for landowners interviewed in 2009, standard deviation in parentheses*

		Households in Original Sample (n=116)	Households Added Since 1996 (n=407)	t-stat
<i>Household Characteristics</i>				
Age	average age of the household heads, years	55.76 (14.25)	49.94 (13.85)	3.95***
Education	average education level of the household heads, years	3.13 (2.73)	3.82 (3.05)	-1.98**
Family	Number of household members living on the property	5.72 (3.81)	4.99 (3.17)	1.69*
Southern Origin	=1 if the origin of the household head is the south or southeast census regions of Brazil; 0 otherwise	0.70 (0.46)	0.59 (0.49)	1.61
Year Migrate	Year the household migrated to Rondônia	1980 (7.21)	1981 (6.94)	-0.67
Owner Type	=0 if the owner lives on and uses property for production; 1 if an absentee owner	0.18 (0.39)	0.25 (0.44)	-2.01**
<i>Wealth and Welfare Measurements</i>				
Cattle	Number of cattle owned, head	159.03 (181.28)	140.55 (247.77)	-0.75
Cattle per Hectare	Number of cattle owned per hectare of pasture, head	2.68 (1.85)	2.76 (2.75)	0.34
Income	Revenues from annual and perennial crops, milk, off farm labor and livestock (2000 reais; \$1=R\$1)	18,925 (16,947)	16,674 (21,880)	0.86
Durables [¶]	Count of all durable assets	7.33 (4.47)	5.89 (3.2)	3.62***
Annual Milk	Number of liters of milk produced in a year	40,052 (36,190)	31,900 (30,311)	2.08**
<i>Market Prices (inflation adjusted)</i>				
Price of milk	Price for gate pick up, in inflation adjusted reais/liter (2000 reais; \$1=R\$1)	0.26 (0.04)	0.27 (0.03)	-2.49***
Price of beef	Price per head cattle, in inflation adjusted reais (2000 reais; \$1=R\$1)	447.46 (167.75)	454.8 (187.41)	-0.42
Price of calves	Price per head calf, in inflation adjusted reais (2000 reais; \$1=R\$1)	183.08 (73.93)	180.6 (70.85)	0.12
<i>Property Ownership and Merger</i>				
Properties	Number of Rural Properties Owned	1.38 (0.67)	1.41 (0.84)	-0.49
Property Size	Total Rural Property Owned (hectares)	98.48 (99.99)	86.27 (149.86)	0.79

[¶] Durable goods include appliances, bicycles, phones, vehicles and satellite dishes.

*, **, *** indicate significance at the 10, 5 and 1 per cent levels respectively

Table A3. *Property and land ownership in the study area*

	1996 (n=171)	2000 (n=170)	2005 (n=371)	2009 (n=608)
<i>Rural Property Ownership- Absolute</i>				
Size of the Rural Property, hectares	70.64 (46.12)	63.49 (34.97)	55.99 (60.59)	61.35 (118.12)
Number of Rural Properties Owned	1.1 (0.63)	1.29 (0.57)	1.34 (0.95)	1.38 (0.79)
Total Rural Property Owned, hectares	83.15 (70.66)	84.81 (69.61)	102.74 (227.23)	97.38 (174.72)
<i>Rural Property Ownership- Monetary Adjusted</i>				
Self-reported Value of the Rural Property, 2000 Reais	27,745 (19004)	71,337 (53597. 63)	134,377 (142952)	128,292 (122843)
Self-reported Per Hectare Value of the Property, 2000 Reais	405 (138)	1,413 (1416)	2,527 (1871)	2,767 (2081)
<i>Urban Property Ownership- Absolute</i>				
Ownership of Urban House/Property	0.05 (0.22)	0.16 (0.37)	0.14 (0.35)	0.19 (0.39)
Total number of Urban Houses/Properties Owned	0.05 (0.22)	0.16 (0.39)	0.20 (0.55)	0.23 (0.52)
<i>Urban Property Ownership- Monetary Adjusted</i>				
Self-reported Value of the all Urban Properties Owned, 2000 Reais	2112.3 2 (8988. 12)	6374.18 (14712. 67)	9012.31 (40147. 25)	7127.25 (28128. 13)

Table A4. *Estimated number of rural property owners by municipality*

	Number of Lots				
	1990	1996	2000	2005	2009
Mirante da Serra	0	1140	1141	1376	1376
Nova União	592	592	1217	1212	1212
Ouro Preto do Oeste	2007	2007	2087	2085	2085
Teixeirópolis	387	387	387	387	387
Urupá	1561	1561	1782	2717	2717
Vale do Paraíso	935	935	937	937	937
<i>Total</i>	<i>5482</i>	<i>6622</i>	<i>7551</i>	<i>8714</i>	<i>8714</i>
	Number of Lot Owners				
	1990	1996	2000	2005	2009
Mirante da Serra	0	973	1043	1134	1079
Nova União	592	572	974	974	948
Ouro Preto do Oeste	2007	1642	1435	1582	1368
Teixeirópolis	387	387	304	274	293
Urupá	1561	1518	1356	2197	1920
Vale do Paraíso	935	935	721	481	570
<i>Total</i>	<i>5482</i>	<i>6027</i>	<i>5832</i>	<i>6642</i>	<i>6178</i>

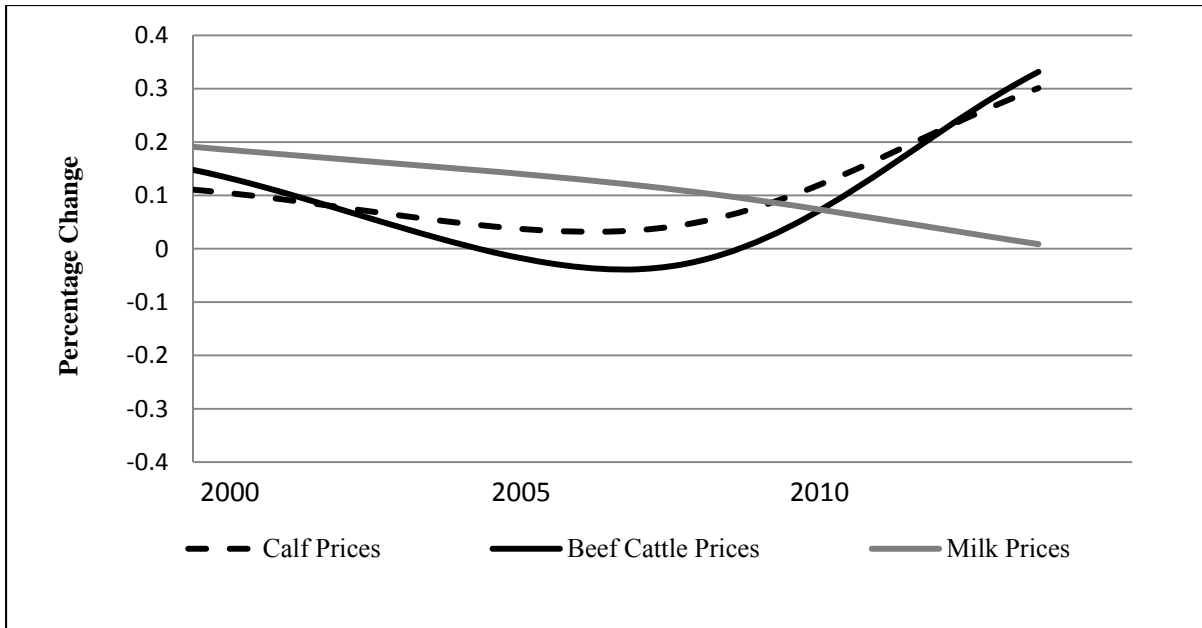


Figure A1. *Rate of change in agricultural prices*