Characterizing U.S. Dairy Farm Wealth and Income Distributions

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Abstract

Income and wealth inequality of U.S. dairy farms was estimated via the adjusted-gini coefficient using data from the 2005 and 2010 ARMS dairy costs and returns Phase III survey data. Results at the sample level demonstrate income and wealth inequality exists. A sample level quantile regression was estimated at decile (10%) increments to determine the factors that caused this inequality using net farm income per cwt of milk sold and net worth per cwt of milk sold and income and wealth measures, respectively. Results indicated that organic producers had higher income and wealth levels than conventional producers for both measures while life cycle effects were only present for the wealth measure.

Keywords: dairy, gini-coefficients, quantile regression

Introduction

Income and wealth distributions are common topics within agricultural policy debates regarding the economic well-being of agricultural producers. The central themes of these discussions include how income or wealth inequality is distributed across regions as well as the factors that affect these variations. Inequality of these distributions is traditionally estimated using the Gini coefficient (Pyatt, 1980; Ahearn, Johnson, Strickland, 1985; Katchova, 2008; El-Osta, Mishra, and Morehart, 2007' Mishra, El-Osta, Gillespie, 2009). The Gini coefficient allows us to evaluate the relationship between the cumulative percent of the total income of one producer to the cumulative percent of the population when individuals are ranked in ascending order of income.

Much of the earlier work estimated the Gini coefficients across all farms. Production practices within an agricultural industry vary substantially, therefore it is beneficial to complete this analysis on one industry. Specifically, we estimate the Gini coefficient for the dairy industry. The dairy industry was chosen for a few reasons. First, dairy is one of the few agricultural production systems that have a continuous cash flow over the calendar year unlike other livestock operations that have "lumpy" cash flows (e.g. cow-calf operations, grains, etc.). Second, production characteristics vary substantially across the U.S. This provides a unique variability within the data that is not present within other sectors. Finally, the dairy industry has a strong presence in the organic sector. This study seeks to understand if there are differences in dairy farm income and wealth across regions and over time. This study also considers factors that affect dairy income inequality.

Gini Coefficient Estimation

The standard Gini coefficient does not account for negative incomes (or wealth), which occurs with some regularity on farm households. The adjusted Gini coefficient developed by Chen, Tsaur, and Rhai (1982) normalizes the standard Gini coefficient to consider negative income levels while normalizing the upper bound to unit one. Following Chen, Tsaur, and Rhai (1982) the adjusted Gini coefficient was calculated as:

$$(1)\ G = \frac{\frac{2}{n}\sum_{j=1}^{n} jy_j - \left(\frac{n+1}{n}\right)}{\left[1+\left(\frac{2}{n}\right)\sum_{j=1}^{m} jy_j\right] + \frac{1}{n}\sum_{j=1}^{m} y_j \left[\frac{\sum_{j=1}^{m} y_j}{y_{m+1}} - (1+2m)\right]},$$

where $y_j = \frac{Y_j}{n\bar{Y}}$ and $\bar{Y} = \frac{\sum_{j=1}^{n} Y_j}{n} > 0.$

The number of dairy farms in the sample is represented by n while y_j is the weighted income share of the *jth* farm. Y_j is the household's total income where $Y_1 \leq \ldots. \leq Y_n$ with some Y_j less than zero, m is determined where the sum of incomes over the first m farms is negative and the first $m+1$ household is positive. Adjusted-Gini coefficient estimates are bounded by 0 and 1.

The adjusted Gini coefficient has two major limitations: (1) it does not allow for the decomposition of income and (2) the marginal effects must be estimated via simulation. Since, neither of these items are needed for this analysis, we will proceed using the adjusted Gini coefficient as presented in equation (1).

Agricultural Resource Management Survey (ARMS) Dairy costs and returns survey data were used to estimate income and wealth inequality among U.S. dairy farms. The ARMS data set is collected via a national survey conducted by the USDA Economic Research Service and National Agricultural Statistics Service. We have defined two inequality measures for this analysis. Income inequality is measured using the net farm income (NFI) variable presented in the 2005 and 2010 USDA–ARMS Phase III costs and returns data set while net worth was used to evaluate wealth inequality.

Adjusted-Gini coefficients were estimated for seven NASS agricultural production regions: Region 1: Northeast (CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT), Region 2: Lake States (MI, MN, WI), Region 3: Corn Belt (IL, IN, IA, MO, OH), Region 6: Southeast (AL, FL, GA, SC), Region 8: Southern Plains (OK, TX), Region 9: Mountain (AZ, CO, ID, MT, NV, NM, UT, WY), and Region 10: Pacific (CA, OR, WA). These seven regions include the top 15 milk producing states in the U.S. The sample-level Gini coefficients across the 7 regions for 2005 and 2010 are presented in Table 1. As the Gini-coefficient approaches 1, the income inequality is the greatest. Based on the sample-level results estimated, there is a large income inequality across regions for net farm income. Net worth inequality is present as well with values ranging from 0.28 to 0.62, with the least amount of income inequality present in the Corn Belt. The results from this analysis validate our hypothesis that income and wealth inequality is present across the U.S. The next stage of this analysis is to determine the factors that affect income and wealth accumulation on dairy farms across the U.S.

Quantile Regression

Quantile regression analysis and data from the Agricultural Resource Management Surveys (ARMS) have been used to examine several topics in agricultural economics including the effects of change in somatic cell count standards (Dong, and Hennessy, 2012), farmland values (Uematsu, Khanal, and Mishra, 2013), and marketing strategies (Uematsu, and Mishra, 2011; Hennings, and Katchova, 2005). Previous work has also focused on assets for farm and nonfarm households (Katchova, 2007), self-employed incomes (Willis et al., 2012), and operator household income (El-Osta, H., 2011). Quantile regressions are used in this research to test how different characteristics affect income and wealth distributions of dairy farms in several U.S. regions.

Quantile regressions were designed to determine what happens to the τ^{th} quantile of a distribution when a conditional variable (x) changes. A linear quantile regression is similar to an **OLS** regression in that both models minimize weighted sums of residuals, but differ in their specification of weighting schemes. Quantile regression minimizes the sum of absolute residuals rather than the sum of squared residuals as in OLS regression. Koenker and Bassett (1978) show that the τ^{th} regression quantile can be written as:

$$y = x'\beta(\tau) + \varepsilon(\tau) \quad \text{with Quantile}(\tau)(y|X = x) = x\beta(\tau) \quad \tau \in (0,1) \tag{2}$$

where x is a vector of regressors and $\beta(\tau)$ is a vector of coefficients. The first quantile is obtained by setting $\tau = 0.05$ and so on. As one increases τ from 0 to 1, one traces the entire distribution of *y*, conditional on *x*. Standard errors or confidence intervals can be obtainable by bootstrap methods.

Empirical Model

Consider the following empirical specification for factors affecting income and wealth performance:

$$Y_i = \alpha_0 + \sum_{j=1}^{J} \beta_j FARM_{ij} + \sum_{k=1}^{K} \gamma_k AGE_{ik} + \sum_{l=1}^{L} \delta_l REGIONAL_{il} \tag{3}$$

$$+\sum_{m=1}^{M}\theta_m EDUCATION_{im} + \varepsilon_i$$

where Y_i is a measure of income or wealth accumulation for the *i*th operation; the intercept is represented as α_0; *FARM* is the *j*th farm characteristic for the *i*th operation; *AGE* is the *k*th age category for the *i*th operation; *REGIONAL* is the *l*th regional indicator for the *i*th operation; *EDUCATION* is the *m*th higher education level achieved indicator for the *i*th operation; β_j, γ_k, δ_l, and θ_m are parameters to be estimated; and ε_i is a white noise error term.

Using this empirical model allows us to test if there are farm-level, regional and educational differences in income and wealth levels reported on dairy farms in the U.S. Secondly, equation (3) allows us to determine if life-cycle effects are present.

Survey Data

Data from the 2005 and 2010 USDA–ARMS Phase III dairy surveys were used to determine the factors affecting income and wealth distributions as well as if life-cycle effects were present. ARMS survey results provided comprehensive data on a nationally representative sample of dairy farms in the United States. Dairy producers from 26 states completed the questionnaire that asked about farm and operator characteristics, costs, returns, production and marketing practices, and management decisions.[1] Using the ARMS data allowed us to capture industry-wide variations which are difficult to capture with single-site survey data.

As presented in equation 3, explanatory variables were grouped into four general categories: *farm characteristics, age levels, regional indicators,* and *education levels.* Farm characteristics include five variables. Farm experience was not a question included in both years of ARMS dairy cost and returns surveys. Therefore, *farm tenure* was used a proxy to capture the

[1] Arizona, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Massachusetts, Kentucky, Michigan, Minnesota, Missouri, New Mexico, New York, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Washington, and Wisconsin.

amount of time the principal operator began to operate any dairy farm operation. Different production management systems have been found to affect net farm income as well as net worth of a dairy operation. Secondly, some production systems result in a price premium, which is the case for organic production. A dummy variable was included in the analysis to identify those farms that produced and sold *organic* milk (1= organic production, 0 = conventional). It is hypothesized that net farm income and net worth will be higher for organic dairy farms compared to conventional. Ownership structure can influence the type of management control of the operation. The ARMS survey has 5 options for ownership structure. For this analysis, we included a dummy variable to identify those farms who have adopted a *sole proprietorship* coded as 1 while other ownership structures are coded as 0 (partnerships and corporations). The number of *operators* and the number of *milk cows* were also included in the analysis as explanatory variables.

Five age categories were included as explanatory variables to test for life cycle effects across income and wealth distributions. *Age 1* included principal operators who were 34 years old or younger, *Age 2* represented principal operators between 35 and 44 years old, *Age 3* included 45-54 years, *age 4* was 55-64 years, and *Age5* included any principal operator reporting their age 65 years or greater. It was hypothesized that income and wealth accumulation increased until age category 3 or 4 and then we expected these values to decrease as a result of retirement.

Regional differences were included in the analysis with seven dummy variables: *Northeast*, *Lake States*, *Corn Belt*, *Southeast*, *Southern Plains*, *Mountain*, and *Pacific*. The *Lake States* will be used as the base category for these regional differences due to the fact that all three states in the region are traditional, top milk producing states.

Principal farm operator education level has been found to affect net farm income and net worth. Two dummy variables were included to capture two levels of educational achievement: high school education and some college or greater. The educational categories varied between the two sample years (2005 and 2010), but these two groups were the most consistent in both study years.

The net farm income and net worth were both standardized by hundredweight (cwt) of milk sold to adjust for size dynamics. Summary statistics of dependent and independent variables are presented in Table 2. These statistics were further expanded to evaluate how income and wealth accumulation changes across years, as presented in Table 3.

Quantile Results

A simultaneous quantile regression was completed as specified in equation (3) using data collected via the ARMS Phase III Dairy Costs and Returns Survey in 2005 and 2010. The data set was divided into 10 deciles, which resulted in ten simultaneous OLS regressions estimated. This was completed for an income (NFI per cwt of milk sold) and wealth measure (Net worth per cwt of milk sold). To begin, results for the net farm income per cwt of milk sold decile regressions are presented in Table 4.

Net Farm Income per cwt milk sold (NFI)

Net farm income measures the wealth flow on a farm. In 2005, organic producers had an increased NFI per cwt milk sold compared to conventional (non-organic) dairy producers across all quantiles, expect for the lowest quantile (10%). The number of operators on the farm was a significant and negative predictor of NFI for those operations in the 60th and greater decile in 2005. Herd size was found to be a significant and positive predictor of NFI for those operations in the 10th and 30th deciles; however estimated impacts were small. Surprisingly, an education level of college or greater was a negative predictor of NFI per cwt milk sold for the 30th and 70th percentiles. Using the Lake States as the base region, the results demonstrate all regions had a significant and lower NFI per cwt milk sold than the Lake States.

In 2010, being an organic producer was a significant predictor of increased NFI per cwt milk sold across all quantiles. The number of operators significantly decreased NFI per cwt milk sold, but only at the 60% decile. Herd size was a significant and positive predictor for the 10th, 30th, and 50th deciles, again with a small impact. Education was found (high school and college graduates) to have a negative impact on NFI for several deciles. Nearly all region effects were negative predictors of NFI, with the exception of dairy farms in the Corn Belt. Dairy farms in the Corn Belt had increased NFI per cwt milk sold for those producers in the 40th, 50th, and 80th deciles.

In 2005 and 2010, life cycle effects were not found when measuring income flows via NFI per cwt milk sold. Additionally, ownership and farm tenure were not found to be significant predictors of changes in NFI per cwt milk sold across the U.S. in 2005 or 2010.

Net worth per cwt milk sold

Net worth measures wealth stock of a dairy farm. Ten decile simultaneous OLS regressions were estimated with results presented in Table 5. In 2005, farm tenure had a negative impact on net worth per cwt sold for the 90th percentile. Over all percentiles, organic producers realized a higher net worth compared to conventional (non-organic) producers. Being organized as a sole proprietorship had a positive effect on net worth per milk sold across most percentiles. As the number of operators increases net worth decreases for dairy producers in the 50th, 70th, and 90th percentiles. Life cycle effects were not present for the top 30% of dairy producers. As the number of milk cows increases in a herd net worth decreases for all percentiles. Again, education (high school and some college) had a negative impact on net worth for several percentiles. Producers in the Lake States region had a higher net worth compared to producers in other U.S. regions.

In 2010, farm tenure had a negative impact on net worth per cwt milk sold while being an organic producer has a positive impact. Being organized as a sole proprietorship also had a positive impact. Again, life cycle effects were not present in the top 30% of dairy producers across the U.S. Producers in most percentiles experience a lower net worth as herd size increases. If significant, education (high school and some college) had a negative impact, except producers in the 90^{th} percentile experienced an increase in net worth. Across all quantiles, producers in the Corn Belt had a higher net worth per cwt milk sold compared to producers in the Lake States. Producers in all other regions had a lower net worth compared to producers in the Lake States.

Conclusions

As the policy debate regarding income and wealth inequality continues to grow, this type of analysis is important to determine if inequality exists and if it does, to identify the main determinants that affect inequality. This preliminary study determined the adjusted Gini coefficients for dairy farms in 2005 and 2010 at the Dairy Costs and Returns ARMS survey sample level. A quantile regression was then estimated to determine the factors that affect income and wealth differences across the same time-frame at a sample level rather than population. Results of this preliminary analysis demonstrated that organic dairy farmers across all quantiles have a larger NFI and net worth per cwt sold compared to conventional producers. Dairy producers in the Corn Belt tended to have higher NFI per cwt sold than producers in the Lake States; however that did not hold for net worth per cwt sold. Life cycle effects were not found in NFI, but were highly significant and present for net worth. The next step of this analysis is to expand the adjusted-Gini coefficients and quantile regression to the population level using the pre-defined ARMS weights to determine how or if population estimates differ from the sample. Estimating these differences at the sample and population level will help guide further discussion regarding income and wealth inequality as it pertains to regional and life cycle effects.

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Table 1. Sample-level Gini-coefficients

	2005		2010	
Region	Net Farm Income	Net Worth	Net Farm Income	Net Worth
Northeast	0.81	0.57	0.80	0.46
Lake States	0.72	0.49	0.75	0.46
Corn Belt	0.79	0.28	0.83	0.46
Southeast	0.88	0.58	0.85	0.57
Southern Plains	0.90	0.42	0.97	NA
Mountain	0.84	0.63	0.89	0.62
Pacific	0.84	0.55	0.92	0.51

*Population weighted Gini-coefficients will be estimated in future work using the ARMS Population weights.

Table 2. Summary statistics of explanatory variables

		2005	2010
Variable	Unit	Mean	Mean
Farm Tenure	Years	28.1026	26.4547
Organic	0/1	0.0165	0.0824
Sole Prop	0/1	0.8157	0.7834
Operators	0/1	1.8549	1.8929
Age1	0/1	0.0545	0.0901
Age2	0/1	0.2154	0.1966
Age3	0/1	0.3710	0.3284
Age4	0/1	0.2399	0.2686
Age5	0/1	0.1192	0.1163
Milk cows	Number	153.2328	172.10
HS	0/1	0.6580	0.4331
College	0/1	0.1607	0.3441
LS: Lake States	0/1	0.3950	0.3762
NE: Northeast	0/1	0.2595	0.2750
CB: Corn Belt	0/1	0.1499	0.1781
SE: Southeast	0/1	0.0083	0.0111
SP: Southern Plains	0/1	0.1490	0.2341
MT: Mountain	0/1	0.0700	0.0182
PA: Pacific	0/1	0.0486	0.0551

*

Table 3. Net farm income and net worth by age.

	Operator Age (years)	Obs	Mean	Std.	Obs	Mean	Std.
Net Farm Income							
Age1	< 34	147	148,849	429,255	105	546,172	2,233,817
Age2	35-44	345	198,546	911,264	368	237,337	679,171
Age3	45-54	650	247,887	1,296,193	671	229,033	807,848
Age4	55-64	530	195,925	1,001,402	447	218,474	613,030
Age5	>65	243	132,789	650,893	223	220,141	586,766
Net Farm Income per cwt sold							
Age1	< 34	147	6.93	11.69	105	4.83	5.55
Age2	35-44	345	6.97	13.47	368	4.14	9.25
Age3	45-54	650	5.69	9.46	671	4.13	6.54
Age4	55-64	530	5.05	8.63	447	3.96	6.47
Age5	>65	243	3.06	9.25	223	2.88	8.37
Net Worth							
Age1	< 34	147	1,142,702	1,965,486	105	2,411,707	6,147,183
Age2	35-44	345	1,826,378	2,894,732	368	2,578,623	5,104,285
Age3	45-54	650	2,133,341	3,301,384	671	2,442,514	3,524,472
Age4	55-64	530	2,467,548	4,396,449	447	2,973,044	5,699,824
Age5	>65	243	2,881,137	3,357,730	223	3,535,988	5,756,102
Net Worth per cwt sold							
Age1	< 34	147	108.67	177.48	105	105.00	63.92
Age2	35-44	345	123.99	141.41	368	368.00	86.43
Age3	45-54	650	139.24	170.48	671	671.00	103.06
Age4	55-64	530	144.73	217.87	447	447.00	103.00
Age5	>65	243	135.11	129.43	223	223.00	121.55

Table 4. Regression results for Net farm income per cwt sold, by 10%, 30%, 50%, 70%, and 90% decile[1,2]

	2005					2010				
Variable	0.1	0.3	0.5	0.7	0.9	0.1	0.3	0.5	0.7	0.9
Farm Tenure	0.0003	0.0014	0.0011	0.0006	0.0025	-0.0018	-0.0236	0.0183	0.0250	0.0162
Organic	-0.1647	1.1201 **	3.0651 ***	4.2915 ***	6.1769 ***	1.5479 **	3.5243 ***	4.6643 ***	6.0155 ***	7.2581 ***
Sole Prop	-0.3512	0.4117	0.1933	0.0782	0.3012	-0.2807	-0.2704	-0.1256	0.0401	0.3949
Operators	0.0701	-0.0789	-0.1249	-0.2621 ***	-0.4167 ***	-0.1554	-0.1003	-0.1642	-0.1721	-0.0734
age2	0.3600	0.1497	0.0048	0.5972	1.3818	0.6505	0.2614	0.4720	0.4484	0.9322
age3	1.1447	0.0041	-0.3452	-0.1357	0.8231	-0.8556	-0.6203	0.0287	0.0782	1.0629
age4	-0.3895	-0.2208	-0.1374	0.1452	1.3753	-0.0496	-0.7997	0.3481	0.6447	0.7994
age5	-1.0391	-0.4907	-0.6547	-0.3647	1.9733	-1.1909	-1.8050	-0.6484	-0.4867	-0.5582
Milk Cows	0.0009 ***	0.0005 **	0.0001	-0.0001	-0.0004	0.0007 **	0.0004 **	0.0004 ***	0.0002	-0.0002
High School	-0.5337	-0.5310	0.0585	-0.4173	-0.8531	-0.6218	-0.9913 **	-1.1463 **	-1.3938 ***	-0.7267
College	-0.7059	-1.1570 ***	-0.7095	-1.2553 **	-0.7711	-1.7965 *	-1.4155 ***	-1.7272 ***	-1.7799 ***	-1.4029 *
NE	-0.2573	-0.6262 **	-0.8808 ***	-1.0384 ***	-2.3902 ***	-1.4326 *	-1.0680 ***	-1.3367 ***	-1.8958 ***	-1.1316
CB	0.0151	-0.2236	0.0738	0.6468	1.1522	-0.4647	0.4265	0.9372 **	0.5096	2.0402
SE	-0.4992	-1.9198 ***	-2.1366 ***	-1.9825 ***	-3.0677 ***	-0.8605	-0.5846	-0.3262	-1.6018 **	-0.1401
SP	-0.4343	-2.0342 ***	-1.8374 ***	-2.0854 ***	-3.5079 ***	-7.0311 ***	-4.7001 ***	-3.3575 ***	-1.7853	-2.2595
MT	-2.2113 *	-1.6564 ***	-1.0227 **	-1.0402 *	-2.5951 ***	-1.7669	-2.5212 ***	-2.2974 ***	-3.0118 ***	-2.4076 *
PA	-0.2892	-1.6722 **	-2.3753 ***	-2.6088 ***	-3.3555 ***	-2.9478 **	-2.2426 ***	-2.3954 ***	-3.4585 ***	-4.8780 ***
Constant	-2.3795	0.0947	2.5212	5.9677	5.7697	3.4849	50.7106	-30.7837	-41.2647	-20.8141

[1]Simultaneous deciles regressions were completed at the 10, 20, 30, 40, 50, 60, 70, 80, and 90% decile, however not all results are presented due to space limitations.
[2]Significance at the 1% (***), 5% (**), and 10% (*) level

Table 5. Regression results for Net Worth per cwt sold, by 10%, 30%, 50%, 70%, and 90% quantile[1,2]

	2005					2010				
Variables	0.1	0.3	0.5	0.7	0.9	0.1	0.3	0.5	0.7	0.9
Farm Tenure	-0.0007	-0.0307	-0.1336	-0.1216	-0.0772 *	-0.4356 ***	-0.8513 ***	-0.8968 ***	-0.9140 ***	-1.3228 *
Organic	12.9423 ***	33.3435 ***	47.9356 ***	76.2459 ***	112.5210 ***	24.6528 ***	45.5321 ***	65.3885 ***	77.6604 ***	100.8430 ***
Sole Prop	7.1146 ***	6.2294 *	7.0657 *	12.8519 ***	11.1092	7.3713 ***	11.0449 ***	14.6352 ***	27.1396 ***	52.0484 ***
Operators	0.6279	-1.3009	-3.7290 *	-4.4832 ***	-6.6077 ***	-0.3094	-0.4054	0.6384	2.7928	-0.7448
age2	13.7813 ***	8.3981	9.4721 *	13.5681	8.6397	18.1738 ***	25.0892 ***	24.3687 ***	14.4078	7.9821
age3	17.2421 ***	14.9915 ***	18.1348 ***	21.4716 ***	22.4663	20.3099 ***	23.5124 ***	25.1194 ***	21.6027 *	11.2193
age4	19.7828 ***	23.0357 ***	28.9384 ***	33.8877 ***	45.5433	22.7778 ***	25.4501 ***	24.4902 ***	26.2383 ***	17.5429
age5	26.2005 ***	30.1271 ***	38.1342 ***	51.7702 ***	82.8383 *	24.5177 ***	23.0664 ***	24.8043 ***	27.7275 ***	32.0507
Milk Cows	-0.0105 ***	-0.0126 ***	-0.0144 ***	-0.0155 ***	-0.0190 ***	-0.0075 ***	-0.0054	-0.0078 ***	-0.0082 ***	-0.0139 ***
High School	-3.0339	-4.6051 *	-3.4734	-6.9140	-47.2396 ***	-8.1343	-8.0618	-17.4229 ***	-13.7796	43.2546 *
College	-5.5050 ***	-7.5975 ***	-7.7806	-6.1310	-63.9350 ***	-10.6445 ***	-12.1604 ***	-21.7734 ***	-16.7399	43.5414 ***
NE	-2.8570	-11.3311 ***	-16.8577 ***	-18.7735 ***	-37.5756 ***	-2.9900	-5.3283	-6.0687	-17.2463 ***	-9.3865 ***
CB	-1.6867	-5.2028	-1.1059	9.5076	-0.9635	9.6240 ***	14.7874 ***	32.3842 ***	46.2781 ***	88.0105 ***
SE	-6.1063 *	-12.9894 ***	-15.0137 ***	-25.0475 ***	-40.1589	-11.5967 ***	-16.8230 ***	-26.8846 ***	-44.7774 ***	-92.6756 ***
SP	-7.3178 ***	-23.6695 ***	-31.4904 ***	-45.6028 ***	-104.5164 *	-11.4859 ***	-24.4929 ***	-30.6576 ***	-44.9788 ***	-89.0321 ***
MT	-6.1829 ***	-18.0884 ***	-26.6317 ***	-36.7466 ***	-36.8194	-11.8667 ***	-28.8458 ***	-30.7403 ***	-43.3731 ***	-50.4582 ***
PA	-9.1565 ***	-24.5012 ***	-33.1985 ***	-48.3933 ***	-94.8507 ***	-13.8422 ***	-30.3637 ***	-35.1015 ***	-61.1509 ***	-111.0695 ***
_cons	9.2369	100.8540	327.4540	329.1110	372.8416	876.5074 ***	1723.2620 ***	1841.8210 ***	1904.4990 ***	2773.8280 *

[1]Simultaneous decile regressions were completed at the 10, 20, 30, 40, 50, 60, 70, 80, and 90% decile, however not all results are presented due to space limitations.
[2]Significance at the 1% (***), 5% (**), and 10% (*) level