

Visual Artists and Economic Development in Hawaii

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Abstract

This paper investigates the correlation between the businesses conducted by the visual artists and the economy in Hawaii. Using data on individual artists in Hawaii provided by the Volcano Art Center and Hawaii Island Network of Artists administrators and data on the Hawaiian economy from several websites, the paper perform estimations on two models: one is a single equation model with per capita income of the towns in question as dependent variable, and the other is a system of equation to account for feedback effect between house hold incomes of the artists and household income of the towns. We then analyze the results and offer policy implications to improve the lives of the Hawaiian artists who have made positive and significant contributions to the Hawaiian economy.

Key Words: visual artists, household income, per capita income, employment

JEL Classification: O2, F5

Note: The data for this paper will remain the property of the Volcano Art Center and will not be transferred to a third party or made public. Researchers who are interested in the data should contact the Volcano Art Center.

1. Introduction

Visual artists usually take a back seat in any economy. In the Big Island of Hawaii, it is even more so because the Music Festivals in Kona and Hilo have been attracting a large turnout of tourist arrivals and the subsequent economic development in the Island of Hawaii. Visual artists, who quietly and diligently work on their various media, hardly catch attention of the Hawaiian residents. This paper sets out to fill this gap.

Using a cross-sectional dataset on 315 visual artists provided by the Volcano Art Center Hawaii Island Network of Artists administrators, we perform data analyses on two econometric models. The first model is a single equation with the per capita income of the towns in questions as the dependent variable, which is regressed against the ratio of the artists' years of residency in Hawaii to the artists' years in business, the average household income of the artists, and the ratio of the number of artists in each district to the population of the respective district. The second model is a system of equation that accounts for the feedback effect between the average household income of the towns and that of the artists. The results show that Hawaiian visual artists make positive contributions to the living standard of the Hawaiian residents. On the reverse causality, we find that the effect of the Hawaiian economy on the living standard of the artists is positive but not statistically significant.

2. Methodology and Data

To perform data analysis, two econometric models are introduced. The first model consists of a single equation:

$$\ln PERCAR_i = \alpha_1 + \alpha_2 RESIDN_i + \alpha_3 \ln ARTHHI_i + \alpha_4 APRATIO + \alpha_5 CON_i + e_i, \quad (1)$$

where *PERCAR* is per capita income of the towns in questions, *RESIDN* is the ratio of the artists' years of residency in Hawaii to the artists' years in business, *ARTHHI* the average household income of the artists, *APRATIO* the ratio of the number of artists in each district to the population of the respective district, and *CON* is a vector of control variables that might affect the dependent variables. The prefix "ln" denotes any variable in logarithmic form.

The second model comprises a system of equation:

$$\ln HHINC_i = \beta_1 + \beta_2 \ln ARTHHI_i + \beta_3 \ln APRATIO_i + \beta_4 \ln PERCAR + \beta_5 CON1_i + u_i \quad (2.1)$$

$$\ln ARTHHI_i = \gamma_1 + \gamma_2 \ln HHINC_i + \gamma_3 \ln APRATIO_i + \gamma_4 \ln PERCAR + \gamma_5 CON2_i + v_i \quad (2.2)$$

Where *HHINC* is average household income of each town in question, *CON1* is a vector of control variables that might affect the dependent variable in Equation (2.1), and *CON2* a vector of control variables that might affect the dependent variable in Equation (2.2).

The first dataset in this article is on 315 visual artists and is provided by the Volcano Art Center for the first two quarters of 2013. The variables used in this paper include the artists' years of residency in Hawaii, the artists' years in business, the number of artists in each of the nine districts in the big island of Hawaii and household income of each artist. There are only a handful of artists from Honolulu, so these data points are removed from the dataset so that the paper can focus on the big island of Hawaii. Several artists reported their years in Hawaii as "a

whole life,” which is not considered a data point for regression because there is no way we can determine the number of years the artists mean by “a whole life,” and so was eliminated.

The second dataset consists of average household income and per capita income of each town in question, as well as county data on tourism, government investment on capital projects, and average household income of each town. This dataset is collected by the author from the Department of Business, Economic Development & Tourism website as well as the zip-code.com home page. Data on other variables are only available to 2010, so data on individual artists are subtracted by 2.5 years to bring all data back to the 2010 values. This necessitates the removal of any artists that resides in Hawaii less than 2.5 years. Hence, the final sample has 262 observations.

3. Results

Performing a VIF test as discussed in Kennedy (2008), we eliminate the high correlated variables. The regression of Equation (1) is performed with the “robust” command to control for the White heteroskedastic problem. The results for the benchmark variables in the first model are reported in Table 1. From this table, one percent increase in the proportion of artists’ residence in Hawaii to the artists’ years in business raises average per capita income of the towns in questions by 0.0064%. The second benchmark variable reveals that one percent increase in the artist household income raises average per capita income of each town by 0.000124%. Additionally, the third benchmark variable shows that one percent increase in the proportion of artist population to the district population raises average per capita income of each town by 0.008%. Considering that the proportion of artists in each town is small, this

implies a substantial contribution of the visual artists to the economic development Hawaii. Comparing to our preliminary results in an earlier paper, where only the ratio of the artists’ residence in Hawaii to the artists’ years in business as the sole benchmark variable in addition to the control variables, the new results imply that the visual artists in Hawaii have made positive contributions to the economic development of Hawaii in many ways.

Table 1. Results for Equation (1): Benchmark Variables

Dependent Variable: Log of Per Capita Income

Linear regression						
lnPERCAR	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
RESIDN	.0064*	.0031	2.18	0.031	.0002	.0004528
lnARTHHI	1.24e-04**	3.9e-05	3.12	0.0002	4.57e-05	2.02e-04
APRATIO	.00804*	.0046	1.98	0.049	.0047633	1.603764

Note: * and ** denotes 5% and 1% statistical significance, respectively.

To justify for using of System (2), we perform an augmented Granger Causality test for the system. The results are reported in Table 2. Note that each lagged values is abbreviated as lag1, lag2, etc. As discussed in Greene (2003) and Wooldridge (2003), an adjusted R-squared in a simultaneous estimation does not have a meaningful interpretation. Instead of an adjusted R-squared, the STATA package we use provides the root mean square error (RMSE) that we report in the table. A small RMSE implies a good fit of the model. From this table, household income of the artists “Granger causes” household income of the towns, that is, Hawaiian artists made contributions to the Hawaiian economy. Also from this table, neither household income nor

per capita income of the towns “Granger causes” household income of the artists, that is, the effects of the Hawaiian economy on the artists are positive but not statistically significant. Hence, using a system of equations is not needed.

Table 2. Granger Causality Test for System (2): Benchmark variables

Equation	Observations	RMSE	chi2	P
lnHHINC	260	1.1769	610.51	0.0086
lnARTHHI	260	2.9786	839.56	0.0000

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lnHHINC						
LAG1	.0477	.1311	.36	0.716	-.2091 .3046	
lnARTHHI	.00004*	.0000	2.02	0.043	1.23e-06 .00008	
LAG2	3.96e-07	2.69e-06	0.15	0.883	5.66e-06 4.87e-06	
lnPERCAR	.6014	.6804	0.88	0.377	1.9349 .7321	
LAG3	.1477	.4313	0.34	0.732	-.6976 .9929	
lnARTHHI						
LAG4	.0088	.0630	0.14	0.889	-.1147 .1324	
lnHHINC	.1879	.2612	0.72	0.472	-.3241 .6998	
LAG5	.1517	.3617	0.42	0.675	-.8607 .5572	
lnPERCAR	.1763	.1812	0.97	0.331	-.1789 .5315	
LAG6	.4402	.1023	-0.43	0.667	-.2445 .1565	

Note: * and ** denotes 5% and 1% statistical significance, respectively.

Based on the Granger causality results in table 2, we proceed to estimate the second model as another single equation:

$$\ln HHINC_i = \beta_1 + \beta_2 \ln ARTHHI_i + \beta_3 \ln APRATIO_i + \beta_4 \ln PERCAR + \beta_5 CON1_i + u_i \quad (3)$$

The results for the bench mark variables for Equation (3) are reported in Table 3. From this table, one percent increase in artists’ household income raises average household income of the towns in questions 0.063%. The second benchmark variable reveals that one percent increase in the proportion of artist population to the district population raises average

household income of each town by 0.007%. Finally, the third benchmark variable shows that one percent increase in overall per capita income raises average household income of each town by 0.56%. This is understandable because this overall increase in per capita income was accounted for by all sectors in Hawaiian economy. The results for the first two benchmark variables in Equation (3) imply great contributions of the visual artists to Hawaiian economy, as the overall household income was only rising at the rate of 3.2% in 2010.

Table 3. Results for Equation (1): Benchmark Variables
 Dependent Variable: Household Income in each Town

Linear regression							Number of obs =	262
							F(11, 250) =	4.81
							Prob > F	= 0.0000
							R-squared	= 0.4746
							Root MSE	= .57167
lnHHINC	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]			
lnARTHHI	.0627**	.0135	3.17	0.002	1.62e-04	6.92e-04		
EPRATIO	.0073*	.0016	2.05	0.041	.00059	.00007		
lnPERCAR	.5568*	.2326	2.39	0.017	.09878	1.0149		

Note: * and ** denotes 5% statistical significance.

4. Conclusions

Although visual artists account for a very small percentage of Hawaiian employed residents, they have made positive and significant contributions to the Hawaiian economy in both household income and per capita income. The results suggest that any support from Hawaiian government to the artists has paid off handsomely in term of improving the Hawaiian economy as a whole. A new and interesting result is that the possible reversed causality, identifying the

effects of various sectors in the Hawaiian economy on the living standard of the artists, is positive but not statistically significant. This implies that any effort by the federal, state, or local government to improve overall economy is not enough to improve the lives of the Hawaiian artists, who have made great contributions to the Hawaiian economy but who will need more attention from the government in their effort to improve their own lives.

Future efforts, including financial aids, business consulting, and management skill training, should be made to help Hawaiian artists organize exhibitions, art fairs, and advertisements in order to attract customers, especially the foreign tourists, and raise their sales in the future, in the mean time making even greater contribution to the economic development of the Hawaiian state in general and to the economy of the big island in particular.

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