TEXAS CITIES AND THE ECONOMIC DEVELOPMENT SALES TAX

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Competition to lure corporations has become an enormous issue between states. Smaller communities feel unable to participate in economic development opportunities since their budgets do not provide the necessary funding.

In 1979, the Texas state legislature passed the Development Corporation Act in an attempt to aid the smaller communities' quest for economic development. The Act allowed for the creation of local development corporations; however, it did not provide a sufficient funding source to assist the corporations. Therefore two local sales options were established.

This paper reports the findings of an analysis of per capita income and employment changes after the adoption of an economic development sales tax. The analysis showed no statistically significant impacts on cities adopting an economic development sales tax when compared with non-adopting cities.

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CHAPTER 1

INTRODUCTION

Based on the behavior of many states, it is apparent that there has been, and still is, an increasing battle to attract corporate business development. With the offering of incentives such as tax abatements, grants, and direct loans, the competition between states and cities to lure corporations has become increasingly intense. In addition, budgets are more strained, and local governments find themselves managing the responsibility of economic development promotion. This situation presents serious barriers to smaller communities that do not have the funding capabilities required to compete with large urban areas for corporate site locations.

In an effort to help smaller cities and communities to promote economic development in Texas, the state legislature passed the Development Corporation Act (DCA) of 1979. This act allowed municipalities the right to create local economic development corporations (EDC). Then, in 1987, a major advance was made toward the task of providing funding for economic development when voters approved a constitutional amendment that made economic development a public purpose. The amendment reads:

> Notwithstanding any other provision of this constitution, the legislature may provide for the creation of programs and the making of loans and grants of public money . . . for the public purposes of development and diversification of the economy of the state. (Texas Constitution, 1987, §52-a)

Unfortunately, the DCA did not provide an adequate funding mechanism for the EDCs, and the state constitution did not allow for the use of public monies to support private enterprises. After voters approved the referenced constitutional amendment in 1987, the legislature addressed this oversight by amending the DCA and giving cities of certain size the option to adopt a sales and use tax to fund development projects.

The first local sales tax option was established in 1989, when the Texas Legislature amended the Development Corporation Act and added Section 4A. This type of sales tax must be approved by the voters and is available:

1) to any city that is located within a county that has a population of less than 500,000; or
2) to any city whose population is less than 50,000 and is located within two or more counties with one of those counties being Bexar, Dallas, El Paso, Harris, Tarrant, or Travis; or
3) to any city whose population is less than 50,000 and is located within the San Antonio or Dallas Rapid Transit Authority territory limits, with the stipulation is that the city must not be a part of the transit authority[1].

The tax can be adopted at any rate between one-eighth and one-half of one percent in one-eighth percent increments[2]. Table 1 lists some of the allowable uses for Section 4A taxes.

[1] A city's participation in a rapid transit authority does not automatically disqualify efforts to adopt Section 4A tax as long as the city remains within the statutory cap of the local sales tax rate.

[2] There is a maximum local sales tax rate of 2%. This includes the economic development sales tax.

Table 1

Partial Listing of Allowable Uses for Section 4A Tax Revenue
Business airports
Port-related facilities
Manufacturing and industrial facilities[3]
Recycling facilities
Distribution centers
Small warehouse facilities
Closed or realigned military bases[4]
Facilities related to the above

Then, in 1991, the Texas Legislature again amended the Development Corporation Act and added an additional method for cities to acquire funds to support economic development efforts. Known as the Section 4B sales tax, this type of tax also requires voter approval. Cities are eligible to adopt the Section 4B sales tax if:

1) the city is eligible to adopt the Section 4A sales tax; or

2) the city's population is 750,000 or more and the combined rate of sales tax is not greater than 7.25% at the time the Section 4B tax is anticipated; or

[3] The Attorney General, in Opinion DM-80 (1992), concluded that a for-profit hospital was not considered a "manufacturing or industrial facility" that could be funded under Section 4A.

[4] The military base must have been closed or realigned pursuant to the recommendation of the Defense Closure and Realignment Commission.

3) the city is located in a county with more than 1,100,000 people and greater than 29 incorporated municipalities, and combined rate of sales tax is not greater than 7.75% at the time the Section 4B tax is anticipated; or

4) the population of the city is 400,000 people or more and is located in more than one county, and the combined local and state rate of sales tax is not greater than 8.25%.

In addition, the tax can be adopted at any rate between one-eighth and one-half of one percent in one-eighth percent increments[5]. In addition to the uses allowed for 4A monies, 4B revenue can be used:

- To support the promotion of manufacturing and industrial facilities, recycling facilities, distribution centers, small warehouses, storage facilities, air or water pollution control facilities, development or redevelopment of closed military bases, and facilities related to these projects;
- For land, buildings, equipment, and improvements;
- For athletic facilities, parks and related public space improvements;
- For tourism and entertainment facilities;
- For commercial facilities, transportation, infrastructure, and other business-related improvements;
- For affordable housing; and

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[5] A city's participation in a rapid transit authority does not automatically disqualify efforts to adopt Section 4B tax as long as the city remains within the statutory cap of the local sales tax rate.

- For certain public facility improvements such as public safety facilities that will promote new or expanded business enterprises.

In 1992, Shelton and Barlow surveyed communities that had adopted an economic development sales tax. The expenditure category that received the greatest funding was business incentives. In particular, these incentives included revolving loan funds, loan guarantees, grants, loan or interest forgiveness or write-down, incentives for prison or correctional facilities, business incubator programs, assistance in the establishment of enterprise zones, rent subsidies, and incentives for correctional and prison facilities. The category receiving the second largest funding amount is the acquisition of land and building expansion or rehabilitation.

The south Texas City of Harlingen has adopted an economic development sales tax and has used it for lease/mortgage assistance paid on facilities, equipment relocation, job creation credits, and an interest rebate program that reimburses for interest paid on financing at the end of the year. And, the Austin suburb of Cedar Park has used its economic development sales tax to fund a sports and entertainment complex. The complex will serve as a sports venue as well as an amphitheater, and it is anticipated that it will host 32 concerts, 44 minor league hockey games, two major three-day figure skating competitions, and rotating three-day state hockey championship games per year.

With all of this economic development sales tax discussion, what is the primary goal of the program? Is it for the purpose of economic development or economic growth? Is there really even a difference between the two? Vaughan and Bearse (1991) suggest that economic development involves a qualitative change such as behavior, technology, institution modernization, and changes in economic structure. On the other hand, economic growth involves a quantitative change in the economy, such as investment, income, output, and consumption. That being said, economic development and growth can be pictured as two different concepts. Development seems to be both a precondition and a result of growth. Growth will hopefully support development changes and as these changes carry on so will growth since growth cannot persist for long without structural changes in development.

There is still a lot of debate concerning the economic development sales tax, but those in favor of the tax stated that their objectives were primarily concentrated on job creation and retention, increases in income, expanded tax base, infrastructure enhancement, and increased tourism opportunities. Three other goals mentioned were overall business climate, the poverty rate, and competitiveness (U.S. Department of Commerce Economic Development Administration).

CHAPTER 2

LITERATURE REVIEW

With so much focus on cities offering incentive packages to businesses in an attempt to entice them to relocate, it seems reasonable that there should be extraordinary benefits. For example, in addition to direct local job gains, maybe the company's presence would draw other companies to the area, thus multiplying the effects of having the original company locate in the community.

There have been numerous studies conducted that analyzed the role of incentives in local economic development and most have differing results. Bartik (1991) suggested that areas under economic distress would probably show more benefit with the use of economic development incentives than other areas that are not in great need. Bartik (2003) also suggested that tax revenue would increase with the use of incentives due to new jobs, sales, and property values. On the other hand, Peters and Fisher (1998) concluded that there is insufficient support for the premise that high-unemployment areas have a greater tendency to receive additional benefits from tax incentive programs than low-unemployment areas. Brace and Mucciaroni (1990) found that neither specific subsidies nor locational incentives have shown to be significant variables on the impact of economic development incentives.

Although there is no definite conclusion as to whether or not incentives play a large role in the economic development of a community, there have been some studies that indicated a positive correlation. The Texas Economic Development Council (2003) made mention of three Texas cities that were indeed benefiting from the passing of either the 4A or 4B economic development sales tax. The cities of New Braunfels, Victoria, Taylor primarily used economic development tax revenues to provide incentives to new and existing businesses and to purchase capital assets such as industrial parks and land. The positive results from these tax revenues stem around quality of life and infrastructure issues that are considered important to individuals when living in a community. Maybe there is a correlation between economic development incentives and quality of life issues such as healthcare and education.

Even though there have been numerous studies regarding economic development and incentives, there are still researchers who believe that a great deal of the problem involved with trying to measure its effectiveness is that there has been no universal agreement on definitions, differences between economic development and economic growth, or the goals and indicators of such. Eisenschitz (1993) stated that good performance on traditional outcome measures, such as the creation of jobs, might not necessarily correspond with community development as distinct from economic growth. This lack of theory regarding local economic development opens the door for misspecification of the dependent variable (Warner, 1987).

There are no conclusive rules that structure our understanding of what economic development means and that delineate what actions and consequences qualify as valid and appropriate (Beauregard, 1994). Beaumont and Hovey (1985) have asserted that without an economic development blue print, “state and local economic development strategies evolve incrementally without [any] underlying economic theory except that more jobs are good and less jobs are bad" (p. 328). Bingham and Blair (1984) have proposed that much of the urban economic development policy has been piece meal, thus reducing the effects of the use of economic development funds and restricting goal achievement. Kirby (1995) has indicated that there is a universal lack of any type of framework, theory or otherwise, to help guide local policy options with regard to economic development. Herrick and Kindleberger (1983) describe the difference between growth and development using a human organism analogy: "Growth involves changes in overall aggregates such as height or weight, while development includes changes in functional capacities – physical coordination, learning capacity, or ability to adapt to changing circumstances" (p. 21). Bartik (1991) considers economic development policy as being successful if it positively affects business climate, Clarke and Gaile (1992) look to changes in per capita income or employment improves as signs of successful economic development policy, and Friedan and Sagalyn (1989) view economic development policy as successful if projects are indeed completed.

Khan (1991) and Myers (1987) believe that economic development indicators are not always accurate in what they measure but are well known for what they do not measure. For instance, an obscure outcome of economic development that is difficult to capture is quality of life. Community lifestyle, teen pregnancy rate, homeowner percentage, average per capita income, welfare population, and traffic overcrowding are all issues that are considered quality of life issues and currently, research is more concerted on objective measures and not the subjective measures that quality of life issues offer. Reese and Fasenfest (1997) also believe that conventional measures do not accurately reflect broader quality of life concerns. Molotch (1991) would like to see more social criteria in the evaluation of economic development policy. Howes and Markusen (1981) would like to see less focus on politically defined measures such as income and more focus on livelihood factors such as households and neighborhoods. Wiewel, Teitz, and Giloth (1994) sense that a large part of economic development policy involves political power.

Clearly, there has been controversy over what economic development entails. This being the case, how can any one of these studies be considered accurate? Since there are no common or universally accepted definitions or goals regarding economic development and its measurement, it is safe to say that each study conducted is done so under its own guidelines and specifications, which is indicative of the reason why there are so many varying results and inconsistencies.

CHAPTER 3

METHODOLOGY

The quasi-experimental research design for this analysis compares changes in employment and per capita income between cities that have adopted an economic development sales tax versus those that have not. Both a regression model and a multivariate analysis of covariance (MANCOVA) model were specified to test differences in the changes of the variables between adopting cities and non-adopting cities after passage of the economic development sales tax. These analyses were ran using SPSS for Windows, Release Version 11.0, (© SPSS, Inc., 2001, Chicago, IL, www.spss.com). The differences between population, educational attainment (bachelor's degree), and whether or not a city is located in a metropolitan statistical area (MSA) were controlled for. From the list of cities having adopted the 4A, 4B, or both sales tax options, a random a group of non-metropolitan area cities were selected and compared to metropolitan area cities. In this study, a random sample of 145 cities were selected from a population of 384 cities, including 69 adopting and 76 non-adopting cities.

In the regression model, employment and per capita income percentage (difference between years 2000 and 1990) were identified as dependent variables. A dummy variable specifying 4A adopting and non-adopting cities, a second dummy variable specifying 4B adopting and non-adopting cities, and a third dummy variable specifying both 4A and 4B adopting and non-adopting cities as independent variables were identified as independent variables. In addition, cities located within an MSA, population and educational attainment (bachelor’s degree) were identified as independent variables.

In the MANCOVA model, employment and per capita income percentage (difference between years 2000 and 1990) were identified as dependent variables. A dummy variable specifying 4A adopting and non-adopting cities, a second dummy variable specifying 4B adopting and non-adopting cities, and a third dummy variable specifying both 4A and 4B adopting and non-adopting cities as independent variables were identified as independent variables. In addition, the effects of educational attainment (bachelor’s degree), population, and whether a city was located within an MSA were partialed out and identified as covariate variables.

CHAPTER 4

FINDINGS AND CONCLUSIONS

MANCOVA was conducted to determine the effect of per capita income and employment percentage as measured by the adoption of an economic development sales tax while controlling for years of education, population, and whether or not a city was located within an MSA. Based on the Wilkes' Lambda testing, the covariate MSA was the only statistically significant variable. (Dependent variables are defined in Table 2.) The MANCOVA results are presented in Table 3.

Next, a standard multiple regression was conducted to determine the accuracy of the independent variables predicting employment and per capita income percentage. A summary of regression coefficients is presented in Tables 4, 5, and 6 and indicates that only cities located within an MSA and years of education contributed to the model.

For MANCOVA, all assumptions were met and preliminary data testing showed that interaction between the factors and covariates was not significant. For regression, all assumptions were met and one case was dropped due to missing data. The residuals of both models were normally distributed and showed no presence of heteroskedasticity.

The research showed that both the regression and MANCOVA analyses had the same results. The adoption of either the 4A sales tax, the 4B sales tax, or a combination of both is not statistically significant. Thus the adoption of an economic development sales tax had no effect on employment, population, or per capita income in the communities examined in this study (see tables below).

There is no evidence of bias in the chosen sample. The same chosen is representative of the population. Both average population and city location of the sample and non-sample cities were similar and shared similar characteristics. The sampling error of the data was ±.064.

Table 2

Dependent Variables Defined

Dependent Variable	Definition
Empchang	Refers to percent employment change from 1990 to 2000
Pcichang	Refers to percent per capita income change from 1990 to 2000
Popchang	Refers to percent population change from 1990 to 2000

Table 3

MANCOVA - Multivariate Tests[b]

Effect	Value	F	Hypothesis degrees freedom	Error degrees freedom	Significance	Partial Eta Squared
Intercept						
Pillai's Trace	.348	24.414[a]	3.000	137.000	.000	.348
Wilks' Lambda	.652	24.414[a]	3.000	137.000	.000	.348
Hotelling's Trace	.535	24.414[a]	3.000	137.000	.000	.348
Roy's Largest Root	.535	24.414[a]	3.000	137.000	.000	.348
Metropolitan Statistical Area						
Pillai's Trace	.068	3.319[a]	3.000	137.000	.022	.068
Wilks' Lambda	.932	3.319[a]	3.000	137.000	.022	.068
Hotelling's Trace	.073	3.319[a]	3.000	137.000	.022	.068
Roy's Largest Root	.073	3.319[a]	3.000	137.000	.022	.068

(table continues)

Table 3 (continued)

Effect	Value	F	Hypothesis degrees freedom	Error degrees freedom	Significance	Partial Eta Squared
Degreepe (educational attainment)						
Pillai's Trace	.189	10.622[a]	3.000	137.000	.000	.189
Wilks' Lambda	.811	10.622[a]	3.000	137.000	.000	.189
Hotelling's Trace	.233	10.622[a]	3.000	137.000	.000	.189
Roy's Largest Root	.233	10.622[a]	3.000	137.000	.000	.189
FourA Sales Tax						
Pillai's Trace	.003	.152[a]	3.000	137.000	.928	.003
Wilks' Lambda	.997	.152[a]	3.000	137.000	.928	.003
Hotelling's Trace	.003	.152[a]	3.000	137.000	.928	.003
Roy's Largest Root	.003	.152[a]	3.000	137.000	.928	.003
FourB Sales Tax						
Pillai's Trace	.013	.594[a]	3.000	137.000	.620	.013
Wilks' Lambda	.987	.594[a]	3.000	137.000	.620	.013
Hotelling's Trace	.013	.594[a]	3.000	137.000	.620	.013
Roy's Largest Root	.013	.594[a]	3.000	137.000	.620	.013
FourA*FourB (Four A and Four B Sales Tax)						
Pillai's Trace	.034	1.607[a]	3.000	137.000	.191	.034
Wilks' Lambda	.966	1.607[a]	3.000	137.000	.191	.034
Hotelling's Trace	.035	1.607[a]	3.000	137.000	.191	.034
Roy's Largest Root	.035	1.607[a]	3.000	137.000	.191	.034

a. Exact statistic

b. Design: Intercept + MSA + Degreepe + FourA + FourB + FourA*FourB

Table 4

Regression Coefficients for Dependent Variable Empchang

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Significance
	B	Std. Error	Beta		
(Constant)	.378	.217	.217	1.744	.083
Degreepe	3.623	1.472	-.140	2.461	.015
MSA	-.343	.211	-.114	-1.629	.106
4A	-.262	.229	-.075	-1.148	.253
4B	-.162	.204	.123	-.791	.430
4A & 4B	.459	.420		1.092	.277

Table 5

Regression Coefficients for Dependent Variable Pcichang

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Significance
	B	Std. Error	Beta		
(Constant)	.635	.085	.105	7.493	.000
Degreepe	.675	.576	-.202	1.172	.243
MSA	-.192	.082	.125	-2.322	.022
4A	.111	.089	.045	1.246	.215
4B	3.786E-02	.080	-.090	.473	.637
4A & 4B	-.131	.164		-.794	.428

Table 6

Regression Coefficients for Dependent Variable Popchang

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	Significance
	B	Std. Error	Beta		
(Constant)	-6.00E-02	.094	.446	-.638	.524
Degreepe	3.635	.639	.044	5.684	.000
MSA	5.236E-02	.092	-.124	.572	.568
4A	-.139	.099	-.052	-1.402	.163
4B	-5.45E-02	.089	.178	-.614	.540
4A & 4B	.325	.182		1.780	.077

The research conducted was not inclusive of all measures that may be related to the adoption of a local economic development sales tax. Thus it would be beneficial to continue research studies in this subject to gain additional knowledge. It would also be beneficial to understand any supporting evidence as to why measures that do relate to local economic development sales tax exist. In addition, the results concluded from the analysis might differ if the entire population of cities that have adopted an economic development sales tax were examined.

CHAPTER 5

RECOMMENDATIONS

Even though there are reasons to believe that economic development incentives can be positive, it will be difficult to make progress in this debate until two evident issues are resolved. The first issue concerns establishing a clear distinction between economic development and economic growth. Until this is done, it will continue to be difficult for economic development incentives to be successful. A distinction in these terms will also researchers to better classify specific indicators and to develop tools that will be pertinent in the measurement and evaluation of economic development and economic growth.

The second issue concerns the performance evaluation and reviews of economic development incentives. For example, economic development corporations could develop standard measurement tools to be used when assessing whether or not the use of incentives is beneficial. This will enable the corporations to look back and determine whether or not decisions made were insightful. Economic development corporations could also benefit from sharing ideas with and among each other. For instance, there could be an annual conference of some sort where representatives from various economic development corporations could attend to share ideas. This would benefit all attendees because they could learn what type of incentive programs work versus those that do not. This type of information would assist each economic development corporation in making better decisions.

There are other aspects of the economic development incentive debate that need tweaking as well. But, in order for that to happen, further research must be done to look at these additional aspects. The above-mentioned issues are just two that will pave the way in the future of economic development incentives, especially if they are undertaken first.

While the above issues are being dealt with, the following recommendations would be a good place to begin in determining the efficacy of the economic development sales tax adoption:

1. Reporting: Have a city board evaluate projects and activities that have been pursued by the economic development corporation. The evaluation should be to determine whether stated goals and objectives were pursued.
2. Cost/Benefit Analysis: An evaluation of the return on investment, the cost to fund a project, and the economic impact to the city should all be reviewed before undertaking a project. In addition, communities should also be made aware of what to expect as a return on taxpayer dollars .
3. Annual Strategic Conference: Cities can meet at the annual conference to discuss and share their failures and successes regarding the uses of the economic development sales tax. This session could be informative and helpful in that city representatives would be able to bounce ideas off of one another and brainstorm about future opportunities.

APPENDIX

General Linear Model

Between-Subjects Factors

		N
4A	0	109
	1	36
4B	0	101
	1	44

Descriptive Statistics

	4A	4B	Mean	Std. Deviation	N
EMPCHANG	0	0	.4518	1.3176	76
		1	.2472	.3454	33
		Total	.3899	1.1180	109
	1	0	.1280	.2319	25
		1	.6221	.6005	11
		Total	.2789	.4395	36
	Total	0	.3717	1.1553	101
		1	.3409	.4468	44
		Total	.3623	.9933	145
PCICHANG	0	0	.5482	.2090	76
		1	.5666	.2263	33
		Total	.5538	.2135	109
	1	0	.6621	.8108	25
		1	.5886	.1993	11
		Total	.6396	.6807	36
	Total	0	.5764	.4393	101
		1	.5721	.2178	44
		Total	.5751	.3849	145
POPCHANG	0	0	.3275	.5709	76
		1	.2655	.3196	33
		Total	.3087	.5074	109
	1	0	8.311E-02	.1045	25
		1	.6059	.6053	11
		Total	.2429	.4145	36
	Total	0	.2670	.5083	101
		1	.3506	.4283	44
		Total	.2924	.4855	145

Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.348	24.414[a]	3.000	137.000	.000	.348
	Wilks' Lambda	.652	24.414[a]	3.000	137.000	.000	.348
	Hotelling's Trace	.535	24.414[a]	3.000	137.000	.000	.348
	Roy's Largest Root	.535	24.414[a]	3.000	137.000	.000	.348
MSA	Pillai's Trace	.068	3.319[a]	3.000	137.000	.022	.068
	Wilks' Lambda	.932	3.319[a]	3.000	137.000	.022	.068
	Hotelling's Trace	.073	3.319[a]	3.000	137.000	.022	.068
	Roy's Largest Root	.073	3.319[a]	3.000	137.000	.022	.068
DEGREEPE	Pillai's Trace	.189	10.622[a]	3.000	137.000	.000	.189
	Wilks' Lambda	.811	10.622[a]	3.000	137.000	.000	.189
	Hotelling's Trace	.233	10.622[a]	3.000	137.000	.000	.189
	Roy's Largest Root	.233	10.622[a]	3.000	137.000	.000	.189
FOURA	Pillai's Trace	.003	.152[a]	3.000	137.000	.928	.003
	Wilks' Lambda	.997	.152[a]	3.000	137.000	.928	.003
	Hotelling's Trace	.003	.152[a]	3.000	137.000	.928	.003
	Roy's Largest Root	.003	.152[a]	3.000	137.000	.928	.003
FOURB	Pillai's Trace	.013	.594[a]	3.000	137.000	.620	.013
	Wilks' Lambda	.987	.594[a]	3.000	137.000	.620	.013
	Hotelling's Trace	.013	.594[a]	3.000	137.000	.620	.013
	Roy's Largest Root	.013	.594[a]	3.000	137.000	.620	.013
FOURA * FOURB	Pillai's Trace	.034	1.607[a]	3.000	137.000	.191	.034
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	Roy's Largest Root	.035	1.607[a]	3.000	137.000	.191	.034

a. Exact statistic

b. Design: Intercept+MSA+DEGREEPE+FOURA+FOURB+FOURA * FOURB

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	EMPCHANG	9.841[a]	5	1.968	2.069	.073	.069
	PCICHANG	1.078[b]	5	.216	1.479	.200	.051
	POPCHANG	8.993[c]	5	1.799	10.023	.000	.265
Intercept	EMPCHANG	1.643	1	1.643	1.727	.191	.012
	PCICHANG	9.582	1	9.582	65.741	.000	.321
	POPCHANG	.120	1	.120	.668	.415	.005
MSA	EMPCHANG	2.524	1	2.524	2.653	.106	.019
	PCICHANG	.786	1	.786	5.391	.022	.037
	POPCHANG	5.875E-02	1	5.875E-02	.327	.568	.002
DEGREEPE	EMPCHANG	5.760	1	5.760	6.054	.015	.042
	PCICHANG	.200	1	.200	1.374	.243	.010
	POPCHANG	5.798	1	5.798	32.308	.000	.189
FOURA	EMPCHANG	2.458E-02	1	2.458E-02	.026	.873	.000
	PCICHANG	4.821E-02	1	4.821E-02	.331	.566	.002
	POPCHANG	1.206E-02	1	1.206E-02	.067	.796	.000
FOURB	EMPCHANG	9.948E-02	1	9.948E-02	.105	.747	.001
	PCICHANG	1.637E-02	1	1.637E-02	.112	.738	.001
	POPCHANG	.253	1	.253	1.411	.237	.010
FOURA * FOURB	EMPCHANG	1.135	1	1.135	1.193	.277	.009
	PCICHANG	9.194E-02	1	9.194E-02	.631	.428	.005
	POPCHANG	.568	1	.568	3.167	.077	.022
Error	EMPCHANG	132.247	139	.951			
	PCICHANG	20.260	139	.146			
	POPCHANG	24.943	139	.179			
Total	EMPCHANG	161.124	145				
	PCICHANG	69.291	145				
	POPCHANG	46.330	145				
Corrected Total	EMPCHANG	142.088	144				
	PCICHANG	21.338	144				
	POPCHANG	33.936	144				

a. R Squared = .069 (Adjusted R Squared = .036)

b. R Squared = .051 (Adjusted R Squared = .016)

c. R Squared = .265 (Adjusted R Squared = .239)

Estimated Marginal Means
1. 4A

Estimates

Dependent Variable	4A	Mean	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
EMPCHANG	0	.361[a]	.102	.159	.563
	1	.328[a]	.177	-2.279E-02	.679
PCICHANG	0	.565[a]	.040	.486	.644
	1	.611[a]	.069	.474	.748
POPCHANG	0	.292[a]	.044	.204	.379
	1	.315[a]	.077	.162	.467

a. Evaluated at covariates appeared in the model: MSA = .79, DEGREEPE = 9.280E-02.

Pairwise Comparisons

Dependent Variable	(I) 4A	(J) 4A	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a] Lower Bound	Upper Bound
EMPCHANG	0	1	3.297E-02	.205	.873	-.373	.438
	1	0	-3.297E-02	.205	.873	-.438	.373
PCICHANG	0	1	-4.617E-02	.080	.566	-.205	.113
	1	0	4.617E-02	.080	.566	-.113	.205
POPCHANG	0	1	-2.309E-02	.089	.796	-.199	.153
	1	0	2.309E-02	.089	.796	-.153	.199

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's trace	.003	.152[a]	3.000	137.000	.928	.003
Wilks' lambda	.997	.152[a]	3.000	137.000	.928	.003
Hotelling's trace	.003	.152[a]	3.000	137.000	.928	.003
Roy's largest root	.003	.152[a]	3.000	137.000	.928	.003

Each F tests the multivariate effect of 4A. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
EMPCHANG	Contrast	2.458E-02	1	2.458E-02	.026	.873	.000
	Error	132.247	139	.951			
PCICHANG	Contrast	4.821E-02	1	4.821E-02	.331	.566	.002
	Error	20.260	139	.146			
POPCHANG	Contrast	1.206E-02	1	1.206E-02	.067	.796	.000
	Error	24.943	139	.179			

The F tests the effect of 4A. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

2. 4B

Estimates

Dependent Variable	4B	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
EMPCHANG	0	.311[a]	.114	8.555E-02	.536
	1	.378[a]	.172	3.737E-02	.719
PCICHANG	0	.602[a]	.045	.513	.690
	1	.574[a]	.067	.441	.708
POPCHANG	0	.249[a]	.049	.152	.347
	1	.357[a]	.075	.209	.505

a. Evaluated at covariates appeared in the model: MSA = .79, DEGREEPE = 9.280E-02.

Pairwise Comparisons

Dependent Variable	(I) 4B	(J) 4B	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
						Lower Bound	Upper Bound
EMPCHANG	0	1	-6.756E-02	.209	.747	-.481	.346
	1	0	6.756E-02	.209	.747	-.346	.481
PCICHANG	0	1	2.740E-02	.082	.738	-.134	.189
	1	0	-2.740E-02	.082	.738	-.189	.134
POPCHANG	0	1	-.108	.091	.237	-.287	7.161E-02
	1	0	.108	.091	.237	-7.161E-02	.287

Based on estimated marginal means

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Pillai's trace	.013	.594[a]	3.000	137.000	.620	.013
Wilks' lambda	.987	.594[a]	3.000	137.000	.620	.013
Hotelling's trace	.013	.594[a]	3.000	137.000	.620	.013
Roy's largest root	.013	.594[a]	3.000	137.000	.620	.013

Each F tests the multivariate effect of 4B. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
EMPCHANG	Contrast	9.948E-02	1	9.948E-02	.105	.747	.001
	Error	132.247	139	.951			
PCICHANG	Contrast	1.637E-02	1	1.637E-02	.112	.738	.001
	Error	20.260	139	.146			
POPCHANG	Contrast	.253	1	.253	1.411	.237	.010
	Error	24.943	139	.179			

The F tests the effect of 4B. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

3. 4A * 4B

Dependent Variable	4A	4B	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
EMPCHANG	0	0	.442[a]	.112	.220	.663
		1	.280[a]	.171	-5.770E-02	.618
	1	0	.179[a]	.199	-.213	.572
		1	.476[a]	.300	-.118	1.070
PCICHANG	0	0	.546[a]	.044	.459	.632
		1	.584[a]	.067	.452	.716
	1	0	.657[a]	.078	.503	.811
		1	.565[a]	.118	.332	.797
POPCHANG	0	0	.319[a]	.049	.223	.415
		1	.264[a]	.074	.118	.411
	1	0	.180[a]	.086	9.028E-03	.350
		1	.450[a]	.130	.192	.708

a. Evaluated at covariates appeared in the model: MSA = .79, DEGREEPE = 9.280E-02.

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	4A & 4B, MSA, DEGREEPE, 4B, 4A[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: EMPCHANG

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.263[a]	.069	.036	.9754

a. Predictors: (Constant), 4A & 4B, MSA, DEGREEPE, 4B, 4A

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.841	5	1.968	2.069	.073[a]
	Residual	132.247	139	.951		
	Total	142.088	144			

a. Predictors: (Constant), 4A & 4B, MSA, DEGREEPE, 4B, 4A

b. Dependent Variable: EMPCHANG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.378	.217		1.744	.083
	DEGREEPE	3.623	1.472	.217	2.461	.015
	MSA	-.343	.211	-.140	-1.629	.106
	4A	-.262	.229	-.114	-1.148	.253
	4B	-.162	.204	-.075	-.791	.430
	4A & 4B	.459	.420	.123	1.092	.277

a. Dependent Variable: EMPCHANG

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	4A & 4B, MSA, DEGREEPE, 4B, 4A[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: PCICHANG

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.225[a]	.051	.016	.3818

a. Predictors: (Constant), 4A & 4B, MSA, DEGREEPE, 4B, 4A

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.078	5	.216	1.479	.200[a]
	Residual	20.260	139	.146		
	Total	21.338	144			

a. Predictors: (Constant), 4A & 4B, MSA, DEGREEPE, 4B, 4A

b. Dependent Variable: PCICHANG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.635	.085		7.493	.000
	DEGREEPE	.675	.576	.105	1.172	.243
	MSA	-.192	.082	-.202	-2.322	.022
	4A	.111	.089	.125	1.246	.215
	4B	3.786E-02	.080	.045	.473	.637
	4A & 4B	-.131	.164	-.090	-.794	.428

a. Dependent Variable: PCICHANG

Regression

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	4A & 4B, MSA, DEGREEPE, 4B, 4A[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: POPCHANG

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.515[a]	.265	.239	.4236

a. Predictors: (Constant), 4A & 4B, MSA, DEGREEPE, 4B, 4A

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.993	5	1.799	10.023	.000[a]
	Residual	24.943	139	.179		
	Total	33.936	144			

a. Predictors: (Constant), 4A & 4B, MSA, DEGREEPE, 4B, 4A

b. Dependent Variable: POPCHANG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-6.00E-02	.094		-.638	.524
	DEGREEPE	3.635	.639	.446	5.684	.000
	MSA	5.236E-02	.092	.044	.572	.568
	4A	-.139	.099	-.124	-1.402	.163
	4B	-5.45E-02	.089	-.052	-.614	.540
	4A & 4B	.325	.182	.178	1.780	.077

a. Dependent Variable: POPCHANG

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