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A Study of the Efficiency, Effectiveness, and Regional Equity of the IEDC

STATISTICAL APPENDIX

The models we employ to test the impact of general business expenditures take the specific form:

$$Y_{i,t} = c + c_i + \theta_1 X_i + \theta_2 \tilde{W_i} X_j$$
$$+ \rho T + \rho \delta_t + \varepsilon_{i,t}$$

...where the impacted variable Y (such as new jobs, or new businesses) is measured in year t and in state i for each model, and is a function of a common and state-specific intercept (c and c_i), the effect of specific expenditure category X in state i, the spatial variable (the weighted average of X in adjacent states), a time trend T, a first-order (one-year) autoregressive element δ_t and a white noise error for each year and state $\varepsilon_{i,t}$.

The dependent variable is corrected for spatial dependence using a technique proposed by Pesaran (2006), in which the value of each Y in each time (t) is demeaned. The standard errors are corrected using White's (1980) heteroskedasticity invariant and variance-covariance matrix, and all estimation is a generalized least squares estimate. In cases in which there were significant discontinuities between years, the AR(1) term was dropped for technical reasons. These are short time periods, so we do not test for stationarity of variables individually, but only for those with a common unit root.

The data are adjusted into real terms using the CPI-U, with a base year of 2011. The data on employment, income, labor force, and population are from the Department of Commerce's Bureau of Economic Analysis's regional economic information system. The data on exports were derived from the Commerce Department's International Trade Administration. Data on the number of businesses by type are from the U.S. Census County Business Patterns. Data on expenditures by category are from C2ER, and data on the openings and closings of Indiana's foreign offices were received from IEDC. *Site Selection Magazine* provided annual jobs reported data from their publications.

THE CONTRIBUTION OF STATE SPENDING TO ECONOMIC DEVELOPMENT

TABLE A1: DEPENDENT VARIABLE: TOTAL ESTABLISHMENTS (N = 240)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-1137.670	426.6849	-2.666300	0.0083
BUSINESS FINANCE	θ_1	6.44E-06	3.25E-06	1.982607	0.0489
ADJACENT BUSINESS FINANCE	$\theta_2 \hat{W}_i$	-4.68E-06	3.37E-06	-1.388201	0.1667
TREND	ρT	249.8265	81.56030	3.063089	0.0025
AR(1)	$\rho \delta_t$	0.598146	0.032298	18.51934	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	2713.793				
F-STATISTIC	23828.15				
DURBIN-WATSON STAT	1.39				
PROB(F-STATISTIC)	0.000000				

STRATEGIC BUSINESS ATTRACTION FUND

TABLE A2: DEPENDENT VARIABLE: JOBS REPORTED BY *SITE SELECTION MAGAZINE* (N = 328)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
INTERCEPT	C	-844.8932	140.7601	-6.002361	0.0000
BUSINESS ATTRACTION	θ_1	8.66E-06	7.35E-06	1.178519	0.2396
ADJACENT BUSINESS ATTRACTION	$\theta_2 \hat{W}_i$	3.44E-05	9.14E-06	3.763892	0.0002
TREND	ρT				
ADJUSTED R-SQUARED	0.85				
S.E. OF REGRESSION	3528.705				
F-STATISTIC	40.51684				
DURBIN-WATSON STAT	1.79				
PROB(F-STATISTIC)	0.000000				

TABLE A3 DEPENDENT VARIABLE: TOTAL BUSINESS ESTABLISHMENTS (N = 288)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-15037.77	9786.757	-1.536542	0.1257
BUSINESS ATTRACTION	θ_1	0.000134	6.43E-05	2.081214	0.0385
ADJACENT BUSINESS ATTRACTION	$\theta_2 \hat{W}_i$	0.000146	7.73E-05	1.887720	0.0603
TREND	ρT	2355.046	1697.559	1.387313	0.1667
AR(1)	$\rho \delta_t$	0.614866	0.036072	17.04540	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	74436.94				
F-STATISTIC	26227.72				
DURBIN-WATSON STAT	1.63				
PROB(F-STATISTIC)	0.000000				

BUSINESS ASSISTANCE

TABLE A4: DEPENDENT VARIABLE: TOTAL BUSINESS ESTABLISHMENTS (N = 240)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-712.7867	385.7562	-1.847765	0.0662
BUSINESS ASSISTANCE	θ_1	-1.92E-06	6.43E-07	-2.987796	0.0032
ADJACENT BUSINESS ASSISTANCE	$\theta_2 \hat{W}_i$	-7.44E-06	3.82E-06	-1.950080	0.0527
TREND	ρT	208.5260	81.86811	2.547096	0.0117
AR(1)	$\rho\delta_t$	0.629481	0.033675	18.69296	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	2832.349				
F-STATISTIC	41200.80				
DURBIN-WATSON STAT	1.39				
PROB(F-STATISTIC)	0.000000				

TABLE A5: DEPENDENT VARIABLE: TOTAL EMPLOYMENT (N = 288)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-13242.51	9666.926	-1.369878	0.1720
BUSINESS ASSISTANCE	θ_1	7.08E-05	3.42E-05	2.066957	0.0398
ADJACENT BUSINESS ASSISTANCE	$\theta_2 \hat{W}_i$	-9.44E-06	3.42E-05	-0.276508	0.7824
TREND	ρT	2301.056	1609.310	1.429840	0.1541
AR(1)	$\rho\delta_t$	0.622186	0.034980	17.78703	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	73991.98				
F-STATISTIC	28014.61				
DURBIN-WATSON STAT	1.64				
PROB(F-STATISTIC)	0.000000				

DOMESTIC RECRUITMENT

TABLE A6: DEPENDENT VARIABLE: TOTAL BUSINESS ESTABLISHMENTS (N = 240)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-942.3577	378.9188	-2.486965	0.0138
DOMESTIC RECRUITMENT	θ_1	3.20E-05	1.73E-05	1.850796	0.0658
ADJACENT DOMESTIC RECRUITMENT	$\theta_2 \hat{W}_i$	4.91E-05	5.43E-05	0.904458	0.3669
TREND	ρT	193.8750	74.86568	2.589638	0.0104
AR(1)	$\rho \delta_t$	0.609641	0.032540	18.73496	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	2834.620				
F-STATISTIC	33112.83				
DURBIN-WATSON STAT	1.44				
PROB(F-STATISTIC)	0.000000				

TABLE A7: DEPENDENT VARIABLE: REPORTED JOBS FROM *SITE SELECTION MAGAZINE* (N = 278)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	1037.843	238.2609	4.355912	0.0000
DOMESTIC RECRUITMENT	θ_1	-3.92E-05	7.35E-05	-0.534005	0.5939
ADJACENT DOMESTIC RECRUITMENT	$\theta_2 \hat{W}_i$	-0.000112	3.80E-05	-2.938536	0.0036
TREND	ρT	-214.9347	50.03464	-4.295718	0.0000
AR(1)	$\rho \delta_t$	0.112112	0.039818	2.815625	0.0053
ADJUSTED R-SQUARED	0.864537				
S.E. OF REGRESSION	3294.711				
F-STATISTIC	35.66355				
DURBIN-WATSON STAT	2.31				
PROB(F-STATISTIC)	0.000000				

TABLE A8: DEPENDENT VARIABLE: TOTAL EMPLOYMENT (N = 288)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-8265.653	9445.578	-0.875082	0.3824
DOMESTIC RECRUITMENT	θ_1	-0.000133	0.000503	-0.264620	0.7915
ADJACENT DOMESTIC RECRUITMENT	$\theta_2 \hat{W}_i$	-0.003242	0.000860	-3.771312	0.0002
TREND	ρT	2455.780	1642.189	1.495431	0.1361
AR(1)	$\rho \delta_t$	0.628775	0.035445	17.73928	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	74372.97				
F-STATISTIC	26616.10				
DURBIN-WATSON STAT	1.65				
PROB(F-STATISTIC)	0.000000				

WORKFORCE PREPARATION AND DEVELOPMENT

TABLE A9: DEPENDENT VARIABLE: PER CAPITA INCOME (N = 288)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-976.2600	1075.090	-0.908073	0.3648
WORKFORCE EXPENDITURES	θ_1	7.41E-07	1.03E-06	0.719114	0.4728
ADJACENT WORKFORCE EXPENDITURES	$\theta_2\,\hat{W}_i$	1.66E-06	1.49E-06	1.113707	0.2665
TREND	ρT	-43.99411	29.72969	-1.479804	0.1403
AR(1)	$\rho\delta_t$	0.633569	0.032477	19.50846	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	669.8010				
F-STATISTIC	1045.680				
DURBIN-WATSON STAT	2.02				
PROB(F-STATISTIC)	0.000000				

TECHNOLOGY TRANSFER

TABLE A10: DEPENDENT VARIABLE: PATENTS (N = 288)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	81.05370	60.69843	1.335351	0.1830
TECHNOLOGY TRANSFER EXPENDITURES	θ_1	-5.46E-08	2.81E-07	-0.194428	0.8460
ADJACENT TECHNOLOGY TRANSFER EXPENDITURES	$\theta_2\,\hat{W}_i$	7.96E-08	3.85E-07	0.206569	0.8365
TREND	ρT	-17.51231	11.06478	-1.582707	0.1148
AR(1)	$\rho\delta_t$	0.536373	0.045811	11.70849	0.0000
ADJUSTED R-SQUARED	0.979747				
S.E. OF REGRESSION	476.9035				
F-STATISTIC	273.2260				
DURBIN-WATSON STAT	1.986				
PROB(F-STATISTIC)	0.000000				

TABLE A11: DEPENDENT VARIABLE: VENTURE CAPITAL (N = 288)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	-14517131	12286781	-1.181524	0.2386
TECHNOLOGY TRANSFER EXPENDITURES	θ_1	-0.058072	0.230656	-0.251769	0.8014
ADJACENT TECHNOLOGY TRANSFER EXPENDITURES	$\theta_2\,\hat{W}_i$	-0.785892	0.341972	-2.298118	0.0224
TREND	ρT	7940399	2773095	2.863370	0.0046
AR(1)	$\rho\delta_t$	0.075609	0.055369	1.365545	0.1734
ADJUSTED R-SQUARED	0.86				
S.E. OF REGRESSION	3.19E+08				
F-STATISTIC	36.32012				
DURBIN-WATSON STAT	1.95				
PROB(F-STATISTIC)	0.000000				

TOURISM/FILM

TABLE A12: DEPENDENT VARIABLE: FILM RELATED BUSINESS ESTABLISHMENTS (N = 240)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	2.008962	1.917929	1.047464	0.2962
PER CAPITA FILM EXPENDITURES	θ_1	-0.375330	0.118746	-3.160774	0.0018
ADJACENT PER CAPITA FILM EXPENDITURES	$\theta_2 \hat{W}_i$	-0.235542	0.363233	-0.648460	0.5175
TREND	ρT	0.201764	0.369372	0.546235	0.5856
AR(1)	$\rho \delta_t$	0.203203	0.038643	5.258461	0.0000
ADJUSTED R-SQUARED	0.99				
S.E. OF REGRESSION	24.09507				
F-STATISTIC	6979.756				
DURBIN-WATSON STAT	2.55				
PROB(F-STATISTIC)	0.00				

INTERNATIONAL TRADE

TABLE A13: DEPENDENT VARIABLE: EXPORTS (N = 2,712; NATIONS INCLUDED = 226)

VARIABLE		COEFFICIENT	STD. ERROR	T-STATISTIC	PROBABILITY
C	C	2.008962	1.917929	1.047464	0.2962
? IEDC OFFICE	θ_1	-0.375330	0.118746	-3.160774	0.0018
TREND	$\theta_2 \hat{W}_i$	-0.235542	0.363233	-0.648460	0.5175
RECESSION	ρT	0.201764	0.369372	0.546235	0.5856
AR(1)	$\rho \delta_t$	0.203203	0.038643	5.258461	0.0000
ADJUSTED R-SQUARED	0.98				
S.E. OF REGRESSION	1.82E+08				
SUM SQUARED RESID.	8.19E+19				
LOG LIKELIHOOD	-55303.16				
F-STATISTIC	931.3464				
DURBIN-WATSON STAT	2.35				
PROB(F-STATISTIC)	0.000000				