Economic Analysis of the Real Estate Transfer Tax in North Carolina

A Report Prepared for

North Carolina Association of Realtors®

G. Donald Jud, Ph.D.
Jud & Associates
722 Rollingwood Drive
Greensboro, NC 27410

Phone: (336) 294-3655
E-mail: GDonaldJud@JudAssociates.com

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Executive Summary

This report prepared for the North Carolina Association of Realtors® explores the impact of the real estate transfer tax in North Carolina. A transfer tax is a tax that is paid every time real estate is bought or sold. There currently are six counties in North Carolina that have instituted a 1.0 percent transfer tax: Camden, Chowan, Currituck, Dare, Pasquotank and Perquimans.

In 2007, the General Assembly allowed any county to impose a 0.4 percent transfer tax if approved by county voters. Sixteen counties across the state put the tax issue on their local ballots in November 2007, but the tax was defeated in every case.

Economic analysis provides a means to assess the impact of a transfer tax. A transfer tax raises the price paid by real estate buyers and lowers the price received by real estate sellers. As a result of the tax, the overall level of real estate market activity is reduced. Past studies of the tax in Massachusetts, Texas, Europe, and Canada confirm the negative effects of the tax.

During the five-year period from 2002-03 through 2006-07, data from the NC Department of Revenue indicate that real estate market activity in the average North Carolina county totaled $3,006 million, or $601 million annually. With a 0.4 percent transfer tax, the analysis presented here suggests that the level of annual activity would be reduced by $84.8 million per year, of by 14.1 percent.

The estimated economic impact of the reduction in real estate market activity resulting from a transfer tax is substantial. Imposing a transfer tax is estimated to reduce total output (or total business receipts) by $50.6 million per year for the average county in the state. Value added (equivalent to state gross domestic product) is estimated to fall by $24.4 million. A tax would reduce personal income in the average county by $22.6 million and labor income by $17.0 million.

From 2002 through 2007, the Bureau of Economic Analysis reports that personal income in the average North Carolina county was $2.6 billion and average employment 51,156. The net loss to the average county from the imposition of a real estate transfer tax corresponds to a -0.9 percent decline in personal income and a -1.0 percent drop in employment.

The loss in local and state tax revenue amounts to $2.1 million annually, so revenue losses engendered by the tax are almost as large as the estimated $2.4 million that the average county would collect directly from the tax, making it a very inefficient method of revenue collection.

The economic impact of the transfer tax in any particular county depends on the size of the county's real estate market. Detailed estimates of employment and income losses by county are shown in the Appendix. Counties where the transfer tax results in the largest percentage of losses tend to be on the coast and in the mountains where the second-home market is large. The tax also generates large negative impacts in the rapidly growing metropolitan counties like Mecklenburg and Wake and in metropolitan adjacent counties on the urban fringe of these rapidly growing metro areas.

For the six North Carolina counties that have a transfer tax, revenues from the tax did not keep pace with the growth of population and inflation during 2002-07. As a result, the tax could not fund a constant level of real (inflation-adjusted) expenditures per capita without increasing the tax rate.

In addition, transfer tax revenues are more volatile and thus more difficult to predict than revenue generated by property or sales taxes. Transfer tax revenues in the state have been very unstable, rising 106.5 percent from 2002 to 2005 and falling -44.9 percent thereafter. Thus, reliance on a transfer tax adds to the variability of revenues and increases the difficulty of formulating county budgets.

Lastly, ordinary property and sales taxes are paid by property owners and consumers in a county. In contrast, a transfer tax is paid only by the buyers and sellers of real estate. Since, for most people, the buying and selling of real estate is infrequent, the transfer tax places the burden of funding governmental services consumed by the bulk of the population on only a small subset of citizens. Thus, the transfer tax does not accord with ordinary notions of fairness and burden sharing.

Introduction

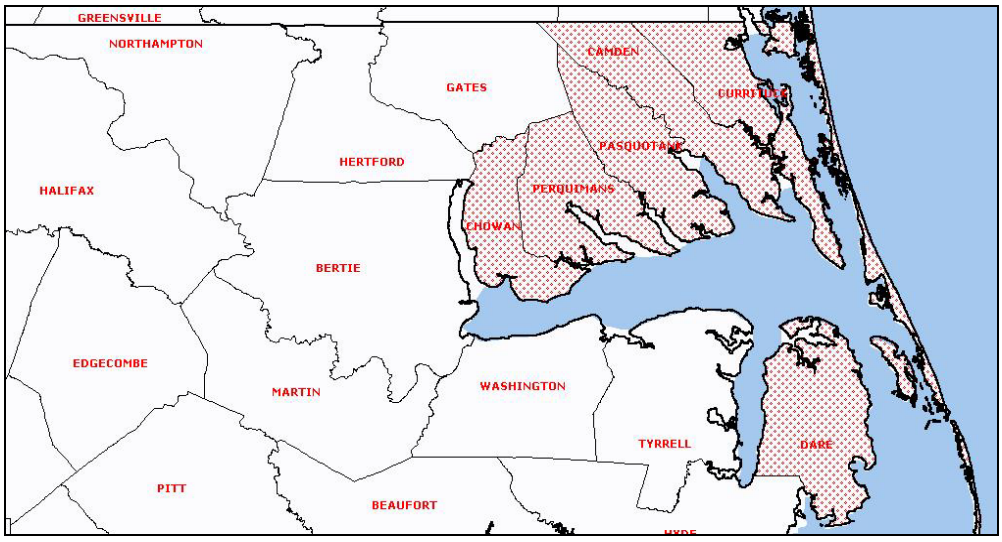
A real estate transfer tax is a tax that is paid every time real estate is bought or sold. It is based on the value of the property and assessed on both residential and commercial property. For a number of years, North Carolina has imposed an excise stamp tax on all real estate conveyances. The tax is collected at the county register of deeds office every time a deed or interest in real estate is recorded. The tax is set at $1.00 per every $500 of real estate value (or 0.2 percent).[1]

In 1985, the North Carolina General Assembly granted Currituck and Dare counties the right to impose an additional transfer tax if approved by the county commissioners.[2] In 1986, the same authority was granted to Camden and Chowan counties.[3] Then in 1989, authority was given to Pasquotank, Perquimans, and Washington counties, but in this case, the tax required voter approval through referendum.[4] The tax was approved in Pasquotank and Perquimans but not in Washington.

In 2007, the General Assembly allowed any county to impose an additional 0.4 percent transfer tax if approved by county voters.[5] In November 2007, 16 counties across the state put the tax issue on their local ballots, but the tax was defeated in every case.

There currently are six counties in North Carolina that have instituted a transfer tax: Camden, Chowan, Currituck, Dare, Pasquotank and Perquimans. All of the transfer tax counties are situated on the coast in the north east section of the state (Figure 1). In all cases, the tax is set at $1.00 per $100 valuation (1 percent) on instruments conveying interests in real estate. The enabling legislation enacted by the General Assemble requires that revenues from the tax can be spent only for capital expenditures.

Figure 1: Transfer Tax Counties



[1] North Carolina Department of Revenue, *NC Biennial Tax Expenditure Report, 2007* (November 2007), p. 108. and Patrick K. Hetrick and Larry A. Outlaw, *North Carolina Real Estate, for Brokers and Salesmen* (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1994), pp. 141-143.

[2] Session Law 1985, Chapters 670 and 525.

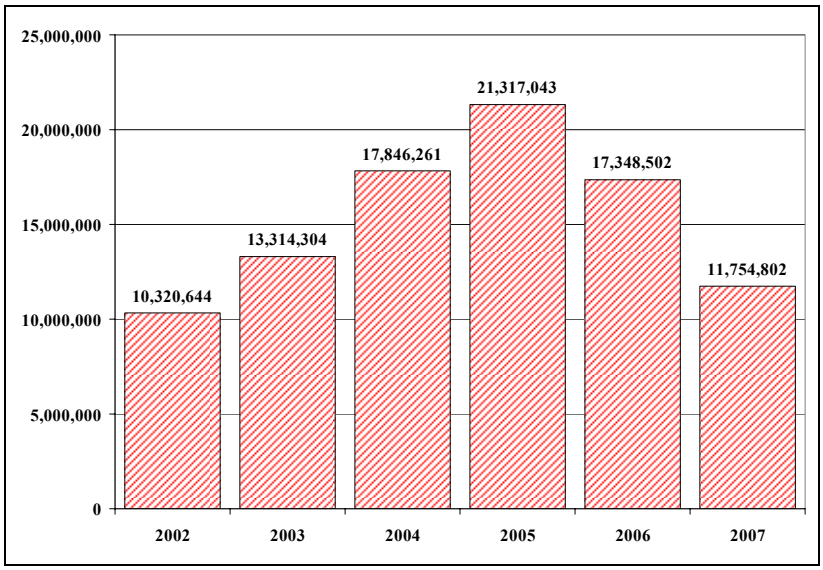
[3] Session Law 1986, Chapters 954 and 881.

[4] Session Law 1989, Chapter 393.

[5] See, http://www.newsobserver.com/politics/politicians/legislature/story/651167.html

Figure 2 shows the total revenue from transfer taxes collected in the six transfer-tax counties, 2002 – 2007. It is apparent from the graph that transfer tax revenues are very volatile, rising 106.5 percent from 2002 to 2005 and falling -44.9 percent thereafter. From 2002 through 2007, transfer tax revenues rose at an average annual rate of 2.6 percent, less than the inflation rate which averaged 2.9 percent.

Figure 2: Transfer Tax Revenues, 2002-2007



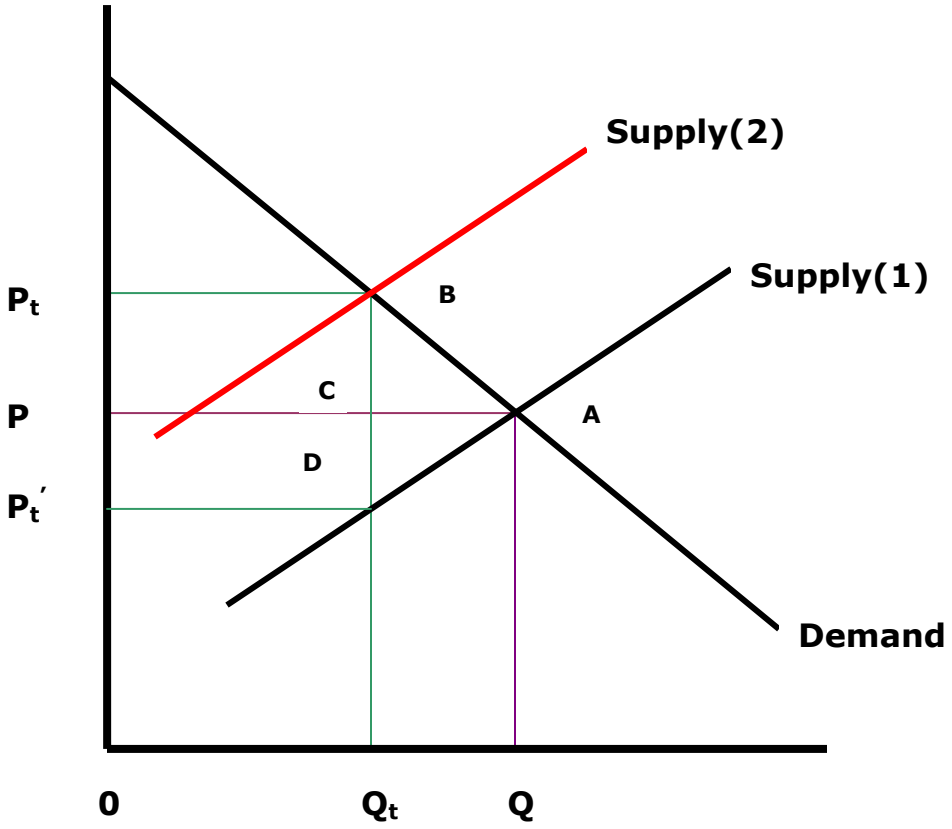
Source: NC Office of the State Treasurer, http://www.nctreasurer.com/lgc/units/unitlistjs.htm

The instability of transfer tax revenues derives from their dependence on the real estate industry which is recognized as a volatile sector in the overall economy. The fluctuations in transfer tax revenues make the tax inappropriate as a funding source of operating expenditures so the General Assembly was prudent to restrict the use of transfer tax revenues only to the funding of capital projects.

Economic Analysis of the Transfer Tax

Economic analysis provides a means to assess the impact of a transfer tax. The effect of the tax is illustrated in Figure 3. In the absence of a tax, the demand and supply of real estate will result in an average market price of **P** and a quantity sold of **Q**. Total sales (or market activity) equals **P** times **Q** and is show as the area **0PAQ**.

Figure 3: Economic Impact of the Real Estate Transfer Tax



A transfer tax shifts the supply curve upward by the amount of the tax. In Figure 3, the supply curve shifts from **Supply(1)** to **Supply(2)**. Because of the tax, the new higher price is P_t and the new lower quantity sold is Q_t. The amount of the tax is shown as the area $P_t'P_tBD$.

Sellers now receive a reduced amount equal to $0P_t'DQ_t$, where they received the area **0PAQ** before the tax. The average price that sellers receive is lower at P_t'. Buyers pay a higher price which is equal to P_t. Because of the tax, there is a gap between what the buyer pays and what the seller receives. Sellers who would be willing to sell at the higher price will no longer be willing to do so at the lower price. Thus, the tax prevents the exchange of real estate and results in an overall welfare loss. The magnitude of the welfare loss is shown in Figure 3 as the area of the triangle **ABC**.[6]

[6] On this point, see Arnold C. Harberger, "Three Basic Postulates for Applied Welfare Economics: An Interpretive Essay, *Journal of Economic Literature*, vol. 9, no. 3 (1971), pp. 785-797.

Past Studies of Real Estate Transfer Taxes

Several previous studies have examined the impact of a transfer tax in the U.S. and elsewhere. Benjamin, Coulson, and Yang (1993) examine the impact of an increase in the transfer tax in Philadelphia in 1988 on the prices of single-family homes. They report that home prices fell subsequent to the imposition of the tax, which is consistent with Figure 3 above, but they report that the decline was substantially more than the amount of the tax.

Dachis, Duranton, and Turner (2008) assess the impact of a 1.1 percent transfer tax on single-family home sales in the Toronto area. They find that the tax results in a 16 percent drop in home sales and 1.5 percent reduction in house values. They report that as a result of the tax, household mobility in the Toronto area is substantially reduced, resulting in a significant loss in household wellbeing. A similar study of the transfer tax in Europe by Van Ommeren and Van Leuvensteijn (2005) concludes that the tax reduces household mobility by 8 to 19 percent.

Sara Johnson and Asieh Mansour (1997) of DRI/McGraw-Hill look at the economic impact of a 2-percent real estate transfer tax in Massachusetts. They report that the tax if enacted would reduce personal income in the state by $1.4 billion and result in the loss of 21,000 jobs. Charles Gilliand (2004) examines the economic impact of a transfer tax in Texas. He reports that the tax would reduce the level of activity in the real estate market by $650 million resulting in a $956 million loss in economic activity and a 11,575 decline in employment.

A Model of the Effect of the Real Estate Transfer Tax in North Carolina

To evaluate the impact of the transfer tax in North Carolina, this analysis employs a multiple regression analysis. A cross-sectional model is estimated to examine the principal factors that influence the level of real estate market activity in counties across the state. The model includes factors (location, income, population, employment, density, and taxes) that affect real estate market demand and supply. The model is defined as follows:

$$(1)\quad RE_i = b_0 + b_1 TT_i + b_2 \Delta E_i + b_3 \Delta P_i + b_4 IN_i + b_5 LT_i + b_6 LT_i^2 + b_7 LO_i + b_8 LO_i^2 + b_9 PO_i + b_{10} PO_i^2 + b_{11}(PO_i/LA_i) + b_{12} TR_i + b_{13}(WA_i/LA_i) + e_i$$

where,

RE_i = total dollar value of real estate transactions in the *i*th county during five year period from 2002-03 through 2006-07;

TT_i = a dummy variable (equal 1, 0 otherwise) indicating the presence of transfer taxes in the *i*th county;

ΔE_i = change in total employment in the *i*th county, 2002-07;

ΔP_i = change in population in the *i*th county, 2002-07;

IN_i = per capita personal income the *i*th county, 2002;

LA_i = land area (sq. miles) of the *i*th county;

LT_i = latitude of the *i*th county;

LO_i = longitude of the *i*th county;

PO_i = population of the *i*th county, 2000;

TR_i = effective real estate tax rate (dollars per $100 valuation) in the *i*th county, 2002;

WA_i = water area (sq. miles) in the *i*th county;

e_i = a random error term.

The total dollar value of real estate transactions (RE_i) is calculated using data compiled by the North Carolina Department of Revenue showing taxes collected on real estate conveyances during the five fiscal years, 2002-03 through 2006-07.[7] Employment data are collected from the North Carolina Employment Security Commission showing the change in nonagricultural wage and salary employment by place of work, 2002-07. Effective real estate tax rates are taken from data compiled by the North Carolina Department of Revenue. Per capita personal income data are from the U.S. Department of Commerce, Bureau of Economic Analysis. Data on latitude, longitude, land area, water area, and population for each of the 100 counties are from the Bureau of the Census. Table 1 shows the mean and standard deviation of all variables used in the analysis.

Table 1: Sample Means and Standard Deviations
(n = 100)

	Mean	Median	Maximum	Minimum	Std. Dev.
RE_i	3,010,000,000	1,040,000,000	44,900,000,000	103,000,000	6,490,000,000
TT_i	0.0600	0.0000	1.0000	0.0000	0.2387
ΔE_i	3,003.4100	573.5000	67,955.0000	-5,259.0000	9540.6300
ΔP_i	7,417.3900	1,162.0000	151,758.0000	-1,959.0000	20814.9900
IN_i	23,888.6100	23,250.0000	38,442.0000	17,509.0000	3914.1860
LT_i	35.6192	35.6913	36.4963	34.0045	0.5725
LO_i	-79.5079	-79.3014	-75.6563	-84.0091	2.1417
PO_i	83,192.9300	50,566.5000	738,106.0000	4,187.0000	114371.6000
PO_i/LA_i	170.8390	99.2319	1,402.5100	9.2576	212.9758
TR_i	0.5863	0.5867	0.8698	0.3585	0.1308
(WA_i/LA_i)	0.1211	0.0105	3.0709	0.0007	0.3890

Table 2 shows the estimated regression model. The model is estimated using the White (1980) adjustment for heteroskedasticity. The adjusted R^2 indicates that the model explains the variation in real estate market activity among the 100 counties very well, accounting for 98.6 percent of the total variation.

The coefficient on the transfer tax dummy variable (TT_i) is statistically significant at the .01 level and above using a one-tailed test. The estimated sign on the transfer tax variables is negative (consistent with Figure 3) and indicates that the tax lowers the level of activity in the real estate

[7] See, http://www.dornc.com/publications/5yrconveyancetax.pdf

market. It suggests that, for the average county in the state, the imposition of a 1-percent transfer tax like that currently imposed in the 6 transfer tax counties (Camden, Chowan, Currituck, Dare, Pasquotank and Perquimans) tax reduces real estate market by $1.06 billion over five years examined or by $212 million per year.

Table 2: Real Estate Market Activity

Variable	Coefficient	t-value
b_0	2,560,000,000,000	3.50
TT_i	-1,060,000,000	-2.67
ΔE_i	124,532	2.99
ΔP_i	125,652	7.02
IN_i	151,179	4.32
LT_i	-111,000,000,000	-3.00
LT_i^2	1,560,000,000	3.00
LO_i	14,600,000,000	3.70
LO_i^2	92,385,425	3.72
PO_i	3,690	0.99
PO_i^2	0.021680	3.77
PO_i/LA_i	2,427,884	2.12
TR_i	-923,000,000	-1.33
$(WA_i/LA_i)^2$	481,000,000	10.69
Adjusted R^2	0.986	
N	100	

During the five-year period from 2002-03 through 2006-07, data from the NC Department of Revenue indicate that real estate market activity in the average NC county totaled $3,006 million, or $601 million annually. With a 1-percent transfer tax, the model in Table 1 indicates that the level of annual activity would be $212 million per year less (-35.2 percent).

In 2007, the General Assembly allowed any county to impose an additional 0.4 percent transfer tax if approved by county voters. At the lower rate, the impact of the transfer tax would be less than that estimated in Table 2. Assuming a linear relationship, a 0.4 percent tax is estimated to reduce real estate market activity in the average county by $84.8 million per year, of by -14.1 percent.

Since real estate market activity includes the transfer of land and existing buildings, not all of the $84.8 million drop in market transactions represents an actual decline in wealth-creation activity. A big part of overall market activity is simply a transfer of wealth claims, but no real wealth creation. However, some portion of real estate market activity does represent real economic growth, involving the creation of new capital structures, both residential and nonresidential. In addition, even when existing property is transferred, new income is generated through the

payment of the fees and charges associated with the transfer. Such fees for legal work, insurance, inspections, real estate commissions, appraisals, etc. all generate new economic activity.

Table 3: Real Estate Market Activity in North Carolina

	2002	2003	2004	2005	2006
R/E Mkt. Activity	$39,995,440,500	$45,215,862,000	$62,729,726,500	$77,749,231,500	$74,904,037,500
New Spending	$16,846,638,221	$17,394,664,642	$20,860,409,500	$23,001,607,489	$22,434,032,890
Nonresidential	5,563,500,000	5,139,000,000	5,479,500,000	5,648,000,000	6,114,500,000
Residential	9,283,366,196	9,994,871,542	12,244,423,175	13,466,145,914	12,574,331,015
Transfer Costs	1,999,772,025	2,260,793,100	3,136,486,325	3,887,461,575	3,745,201,875
New Spending (%)	42.1%	38.5%	33.3%	29.6%	30.0%

Sources: Estimates of Nonresidential and residential construction put in place are from the US Census. Transfer costs are estimated at 5 percent of real estate market activity. Real estate market activity is estimated from data provided by the NC Department of Revenue.

Table 3 shows an estimate of the proportion of overall real estate market activity that results in new spending. New spending resulting from real estate market activity is estimated to include the value of construction put in place (both residential and non-residential) plus estimated transfer costs.[8] Over the 5-year period shown in Table 3, new spending associated with real estate market activity averaged 34.7 percent. Accordingly, it is assumed that 34.7 percent of the decline in market activity resulting from a transfer tax represents a loss of new spending to the economy.

For the average county in the state, therefore, the decline in real estate market activity resulting from a transfer tax is estimated at $84.8 million of which 34.7 percent, or 29.4 million is a loss of new spending.

Balanced against this loss is the new spending by government that would result from the revenue received from the transfer tax. Since real estate market activity in the average North Carolina county is estimated at $601 million annually, a 0.4-percent tax on real estate transfers would yield $2.4 million per year. Accordingly, the expenditures of local government are estimated to be $2.4 million more per year.

Economic Impact of the Transfer Tax

This section examines the economic impact of the real estate transfer tax on the average North Carolina county. Economic impact is measured in terms of 1) total additional output of all industries in the area, 2) total number of new jobs created, 3) total value added (the sum of all final goods and services produced), 4) total amount of additional personal income (the income of all persons from all sources, including wages, profits, dividends, interest, rents, and transfer payments), 5) total amount of additional labor income, and 6) total amount of additional city and county tax revenue.

The analysis is conducted using the IMPLAN® (IMpact Analysis for PLANing) input-output model that divides the economy into sectors, defined by the good or service produced, where the outputs of one sector are inputs of another. IMPLAN analyzes a computer model that contains 509 sectors of the local economy and reflects the existing structure of the economy using data from the U.S. Department of Labor, Bureau of the Census, and the Bureau of Economic Analysis. IMPLAN was originally developed by the U.S. Forest Service and the University of Minnesota and is now marketed by Minnesota IMPLAN Group, Incorporated. Active users of the IMPLAN model include: NC Dept of Commerce and the NC Department of Parks, Recreation, & Tourism Management.

The basic input into the IMPLAN model is the estimated decline in new spending associated with the transfer tax. For the average county in the state, as outlined above, the decline in real estate market activity is estimated at $84.8 million of which 34.7 percent, or 29.4 million, is a loss of new spending. Offsetting the decline in new spending is the estimated $2.4 million increase in local government spending that is estimated to result from the proceeds received from the tax.

The decline in expenditures stemming directly from the net effect of the transfer tax affects the economy through multiplier effects on output, income, and employment. Each dollar decline in spending generates additional declines in output and income through successive drops in

[8] This estimate understates the volume of new spending because it ignores new spending that arises for property repairs, improvements, and refurbishing that are part of almost every real estate purchase. Jud and Winkler (2005) use an estimate of 8 percent in their study of the returns to single-family home ownership.

spending within the economy. The effects of these spending declines are termed negative multiplier effects.

The IMPLAN model separates the multiplier effects into 1) indirect effects and 2) induced effects. Indirect effects arise as the fall in direct spending leads to additional declines of spending in supplier industries. The falling spending by various supplier industries induces lower income and spending in the household sector as employment and payroll in the supplier industries decline. The induced effects reflect the changes in spending by households as household income declines as a result of the lower production of supplier industries.

Table 4: Transfer Tax Impact

Net Impacts:	Direct	Total	Multiplier
Output (2005)	$27,005,386	$50,647,329	1.88
Employment	251	516	2.06
Value Added	$10,416,341	$24,403,834	2.34
Personal Income	$9,941,951	$22,642,458	2.28
Labor Income	$7,983,812	$16,990,360	2.13
Ave. Income/Worker	$31,783	$32,902	n.a.
Local and State Tax Revenues	n.a.	$2,116,956	n.a.
Property Taxes	n.a.	$515,620	n.a.
Sales Taxes	n.a.	$716,180	n.a.
Other Taxes	n.a.	$885,156	n.a.

The estimated annual impact of a transfer tax on the economy of the average county is shown in Table 4. Because of the direct, indirect, and induced effects of the spending decline, total output (or total business receipts) is estimated to fall by $50.6 million per year. Value added (equivalent to state gross domestic product) is lower by $24.4 million. Personal income drops by $22.6 million, and labor income is lower by $17.0 million.

From 2002 through 2007, the Bureau of Economic Analysis reports that personal income in the average North Carolina county was $2.6 billion and average employment 51,156. The net loss to the average county from the imposition of a 0.4 percent real estate transfer tax corresponds to a -0.9 percent decline in personal income and a -1.0 percent drop in employment.

The loss in local and state tax revenue amounts to $2.1 million annually, so the indirect and induced revenue losses engendered by the tax are almost as large as the $2.4 million collected directly from the tax, making it a very inefficient method of revenue collection.

The economic impact of the transfer tax in any particular county depends of the size of the county's real estate market. Detailed estimates of employment and income losses by county are shown in the Appendix. Figure 4 shows the negative employment impacts of the tax as a fraction of county employment. Counties colored red in Figure 4 are those were the tax has the most negative employment impacts. Red counties tend to be on the coast and in the mountains where the second-home market is large. The tax also has large negative impacts in rapidly growing metropolitan counties like Mecklenburg and Wake and in metropolitan adjacent counties on the urban fringe of these rapidly growing metro areas.

Figure 4: Impact of the Transfer Tax on Employment

(Job Loss as a Percent of County Employment)

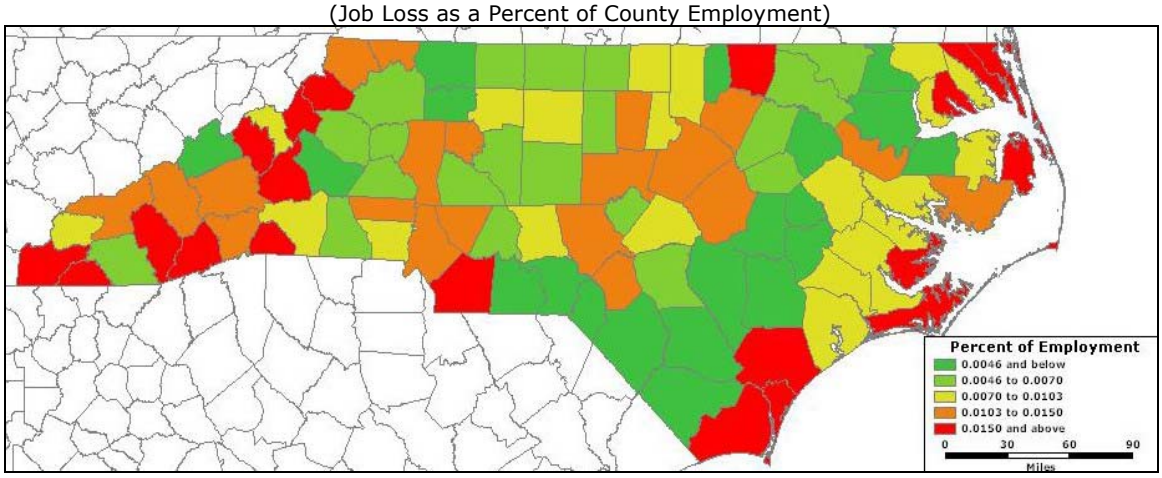
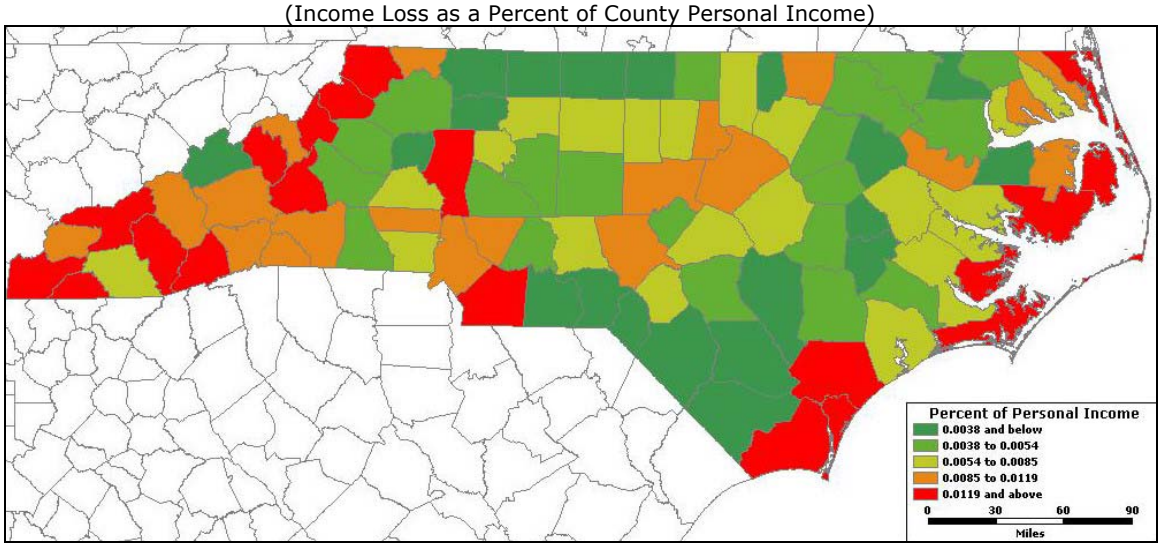


Figure 5 shows the impact of the tax on personal income. Again, counties where the transfer tax results in the largest percentage losses are colored red. They tend to be on the coast and in the mountains where there is a large second-home market. The tax also generates large income losses in rapidly growing metropolitan counties like Mecklenburg and Wake and in metropolitan adjacent counties on the urban fringe of these rapidly growing metro areas.

Figure 5: Impact of the Transfer Tax on Personal Income

(Income Loss as a Percent of County Personal Income)



Evaluation of the Transfer Tax

In 2007, the six transfer tax counties in North Carolina collected 103.0 million in property taxes, 43.2 million in sales taxes and 11.8 million in transfer taxes (Table 5).

Table 5: Tax Revenues in Transfer-Tax Counties

	2007	2002	Avg. Ann. % Chg.
Property Taxes	103,039,271	69,341,421	8.2%
Other Taxes	35,144,158	25,262,815	6.8%
Sales Tax	43,238,234	25,192,213	11.4%
Sales & Services	43,448,588	31,042,876	7.0%
Intergovernmental Transfers	33,629,083	37,017,343	-1.9%
Debt Proceeds	69,626,039	4,835,165	70.5%
Other Miscellaneous	24,151,867	16,807,454	7.5%
Total	352,277,240	209,499,287	11.0%
Population	134,536	118,168	2.6%
CPI-U	207.3	179.9	2.9%
Transfer Tax Revenues	11,754,802	10,320,644	2.6%

Source: NC Office of the State Treasurer, http://www.nctreasurer.com/lgc/units/unitlistjs.htm

Examination of Table 5 reveals that it is not feasible for transfer-tax counties to substantially replace their property or sales taxes by a tax on real estate transfers without raising the transfer tax rate to prohibitory levels. Moreover, transfer tax revenues have not kept pace with the growth of population and inflation during 2002-07. As a result, the transfer tax would not have been able to fund a constant level of real (inflation-adjusted) expenditures per capita without increases in the tax rate.

Transfer tax revenues are more volatile making them more difficult to predict than revenues generated by property or sales taxes. Figure 2 shows that transfer tax revenues are very unstable, rising 106.5 percent from 2002 to 2005 and falling -44.9 percent thereafter. Thus, reliance on a transfer tax adds to the variability of revenues and increases the difficulty of formulating county budgets.

Ordinary property and sales taxes are paid by property owners and consumers in a county. In contrast, a transfer tax is paid only by the buyers and sellers of real estate. Since, for most people, the buying and selling of real estate is infrequent, the transfer tax places the burden of funding governmental services consumed by the bulk of the population on only a small subset of citizens. The transfer tax does not accord with ordinary notions of fairness and burden sharing.

Finally, and perhaps most importantly, as discussed above, the revenue losses engendered by the tax are almost as large as those collected directly from the tax, making it a very inefficient form of taxation.

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Appendix: Estimated Employment and Income Losses by County

County	Output	Employment		Personal Income	
		Number	Percent*	Amount	Percent*
Alamance	$48,576,091	495	0.6%	$21,716,487	0.6%
Alexander	$6,982,657	71	0.5%	$3,121,675	0.4%
Alleghany	$6,636,779	68	1.1%	$2,967,047	1.1%
Anson	$4,550,183	46	0.4%	$2,034,210	0.4%
Ashe	$16,774,390	171	1.2%	$7,499,180	1.2%
Avery	$20,499,466	209	1.7%	$9,164,516	2.2%
Beaufort	$16,685,857	170	0.7%	$7,459,600	0.7%
Bertie	$4,053,700	41	0.5%	$1,812,252	0.4%
Bladen	$5,468,305	56	0.3%	$2,444,667	0.3%
Brunswick	$186,843,496	1,905	4.9%	$83,530,484	3.8%
Buncombe	$154,896,413	1,579	1.1%	$69,248,182	1.1%
Burke	$18,917,288	193	0.4%	$8,457,186	0.4%
Cabarrus	$104,681,726	1,067	1.3%	$46,799,142	1.0%
Caldwell	$23,093,379	235	0.6%	$10,324,155	0.5%
Camden	$4,873,584	50	1.6%	$2,178,790	1.0%
Carteret	$82,931,343	846	2.4%	$37,075,389	2.1%
Caswell	$3,620,401	37	0.6%	$1,618,541	0.3%
Catawba	$55,180,200	563	0.5%	$24,668,928	0.6%
Chatham	$42,178,686	430	1.2%	$18,856,456	0.9%
Cherokee	$20,114,119	205	1.6%	$8,992,243	1.7%
Chowan	$5,756,812	59	0.7%	$2,573,647	0.7%
Clay	$12,039,163	123	3.5%	$5,382,243	2.5%
Cleveland	$20,776,843	212	0.5%	$9,288,521	0.4%
Columbus	$8,112,218	83	0.3%	$3,626,658	0.3%
Craven	$43,578,624	444	0.7%	$19,482,314	0.7%
Cumberland	$98,431,657	1,004	0.5%	$44,004,978	0.5%
Currituck	$44,657,706	455	5.4%	$19,964,729	3.2%
Dare	$90,708,602	925	3.2%	$40,552,300	3.9%
Davidson	$43,525,466	444	0.6%	$19,458,548	0.5%
Davie	$18,307,487	187	1.1%	$8,184,568	0.7%
Duplin	$9,727,825	99	0.4%	$4,348,933	0.4%
Durham	$164,785,433	1,680	0.8%	$73,669,179	0.9%
Edgecombe	$7,981,638	81	0.3%	$3,568,281	0.3%
Forsyth	$152,662,893	1,557	0.7%	$68,249,662	0.6%
Franklin	$23,136,639	236	1.2%	$10,343,495	0.8%
Gaston	$68,733,967	701	0.7%	$30,728,292	0.5%
Gates	$2,544,967	26	1.0%	$1,137,756	0.5%
Graham	$3,366,098	34	0.9%	$1,504,852	0.9%
Granville	$17,619,261	180	0.7%	$7,876,889	0.7%
Greene	$2,248,154	23	0.2%	$1,005,062	0.2%
Guilford	$236,640,714	2,413	0.7%	$105,792,890	0.7%
Halifax	$12,264,923	125	0.5%	$5,483,172	0.4%
Harnett	$31,085,632	317	0.8%	$13,897,181	0.6%
Haywood	$33,472,016	341	1.3%	$14,964,041	1.1%

Appendix: Estimated Employment and Income Losses by County
(continued)

County	Output	Employment		Personal Income	
		Number	Percent*	Amount	Percent*
Henderson	$64,877,974	661	1.4%	$29,004,427	1.0%
Hertford	$3,749,027	38	0.3%	$1,676,044	0.3%
Hoke	$12,909,408	132	1.1%	$5,771,296	0.8%
Hyde	$3,774,073	38	1.2%	$1,687,242	1.4%
Iredell	$111,393,677	1,136	1.5%	$49,799,795	1.3%
Jackson	$54,193,535	553	2.6%	$24,227,829	2.9%
Johnston	$72,082,415	735	1.2%	$32,225,254	0.8%
Jones	$2,525,287	26	0.8%	$1,128,958	0.5%
Lee	$17,385,480	177	0.5%	$7,772,374	0.5%
Lenoir	$8,513,614	87	0.2%	$3,806,107	0.3%
Lincoln	$36,419,010	371	1.5%	$16,281,528	0.9%
Macon	$36,265,743	370	1.8%	$16,213,008	1.7%
Madison	$10,589,890	108	0.6%	$4,734,329	0.6%
Martin	$3,156,984	32	0.4%	$1,411,365	0.3%
McDowell	$14,036,375	143	1.1%	$6,275,119	1.1%
Mecklenburg	$756,059,121	7,709	1.2%	$338,004,725	1.1%
Mitchell	$6,678,363	68	0.9%	$2,985,637	0.9%
Montgomery	$10,247,458	104	0.7%	$4,581,241	0.7%
Moore	$53,995,155	551	1.3%	$24,139,141	0.9%
Nash	$27,960,148	285	0.6%	$12,499,898	0.5%
New Hanover	$202,761,389	2,067	1.7%	$90,646,757	1.7%
Northampton	$4,914,544	50	0.6%	$2,197,102	0.4%
Onslow	$73,106,316	745	0.8%	$32,683,000	0.7%
Orange	$77,989,057	795	1.1%	$34,865,884	0.8%
Pamlico	$10,711,759	109	2.4%	$4,788,812	1.4%
Pasquotank	$16,301,858	166	0.8%	$7,287,929	0.8%
Pender	$45,047,357	459	3.1%	$20,138,927	1.9%
Perquimans	$6,423,133	65	1.7%	$2,871,534	1.0%
Person	$10,734,725	109	0.7%	$4,799,079	0.5%
Pitt	$60,681,563	619	0.7%	$27,128,374	0.7%
Polk	$15,634,829	159	2.1%	$6,989,726	1.1%
Randolph	$34,909,696	356	0.6%	$15,606,772	0.5%
Richmond	$6,746,265	69	0.4%	$3,015,993	0.3%
Robeson	$13,171,967	134	0.3%	$5,888,676	0.2%
Rockingham	$18,568,723	189	0.5%	$8,301,356	0.4%
Rowan	$36,099,720	368	0.6%	$16,138,786	0.5%
Rutherford	$28,311,029	289	1.0%	$12,656,764	0.8%
Sampson	$8,199,042	84	0.3%	$3,665,474	0.3%
Scotland	$5,573,780	57	0.3%	$2,491,821	0.3%
Stanly	$14,542,597	148	0.6%	$6,501,431	0.4%
Stokes	$8,838,236	90	0.7%	$3,951,233	0.4%
Surry	$13,856,772	141	0.3%	$6,194,826	0.3%
Swain	$7,442,670	76	1.0%	$3,327,329	1.2%
Transylvania	$26,875,110	274	2.0%	$12,014,820	1.5%

Appendix: Estimated Employment and Income Losses by County
(continued)

County	Output	Employment		Personal Income	
		Number	Percent*	Amount	Percent*
Tyrrell	$1,741,182	18	1.0%	$778,415	0.9%
Union	$164,212,245	1,674	2.5%	$73,412,929	1.7%
Vance	$8,222,883	84	0.4%	$3,676,132	0.4%
Wake	$717,197,511	7,313	1.5%	$320,631,206	1.2%
Warren	$9,253,658	94	1.6%	$4,136,952	1.1%
Washington	$2,197,834	22	0.4%	$982,566	0.3%
Watauga	$48,276,868	492	1.7%	$21,582,716	1.9%
Wayne	$25,399,873	259	0.4%	$11,355,299	0.4%
Wilkes	$16,240,536	166	0.5%	$7,260,514	0.4%
Wilson	$20,692,387	211	0.5%	$9,250,764	0.5%
Yadkin	$5,550,090	57	0.4%	$2,481,230	0.3%
Yancey	$11,770,176	120	1.7%	$5,261,989	1.4%

* Note: Employment and income percentages calculated on the basis of county employment and personal income averages for 2002-06. County employment and personal income are from U.S. Department of Commerce, Bureau of Economic Analysis.

Background of the Principal Investigator

G. Donald Jud is Professor Emeritus of Finance in the Bryan School of Business and Economics at the University of North Carolina at Greensboro and principal of Jud & Associates. He has taught courses in economics, finance, and real estate. Dr. Jud received his Ph.D. from the University of Iowa and MBA and BA degrees from the University of Texas. He is author of over 80 academic articles and three books.

Dr. Jud is a NAIOP Distinguished Fellow and a past president of the American Real Estate Society (ARES). He is a fellow of the Homer Hoyt Advanced Studies Institute and the American Real Estate Society. In 2003, he was named a Burns Fellow at the University of Denver.

Dr. Jud serves on the editorial boards of the *Journal of Real Estate Finance and Economics* and the *Journal of Real Estate Literature* and is a member of the *Appraisal Journal*'s academic review panel. He is a past editor of the *Journal of Real Estate Research* and continues to serve as a member of its editorial board. Dr. Jud's research has appeared in numerous academic and professional journals including the *Appraisal Journal, American Real Estate and Urban Economics Association Journal*, *Journal of Real Estate Finance and Economics*, *Journal of Real Estate Research*, *Journal of Housing Economics*, *Journal of Financial Education, Journal of Real Estate Portfolio Management, Journal of Real Estate Practice and Education, Real Estate Issues, Journal of Property Research, Journal of Financial Economics, Land Economics, and Urban Studies*. A recent article entitled "The Internationalization of Real Estate Research," by Kam C. Chan, Wiliam G. Hardin III, Kartono Liano, and Zhenf Yu. (*Journal of Real Estate Research*, vol. 30, no. 1 (2008), pp. 91-124) ranks Dr. Jud 7th in a global ranking of real estate researchers publishing in top-tier academic real estate journals.

Dr. Jud has been a research consultant to Wachovia Bank, NC Department of Commerce, the Piedmont-Triad Partnership, the National Association of Realtors®, the NC Association of Realtors®, the Greensboro Chamber of Commerce, Downtown Greensboro, Inc., the Greensboro Regional Realtors® Association, the City of High Point, the Town of Boone, the North Carolina Association of Electrical Cooperatives, CME Merchant Energy, Home Builders Assn. of Burlington-Alamance County, Triad Real Estate and Building Industry Coalition (TREBIC), the Trial MLS, the Carroll Companies, the Homebuilders Association of Fayetteville, The Reynolds Companies, Wood Partners, Cone Mills, and RMIC Corporation.

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