The Economic Impact of Real Estate in the District of Columbia

December 2005

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wdcar
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Executive Summary

Real estate is an important contributor to economic growth because as an extremely decentralized industry, it has many links to other industries and is an important source of tax revenue.

A vigorous real estate industry generates expenditures in related areas that multiply economic benefits. Homeowners purchase additional goods such as paint, carpeting, furniture and appliances, and engage services such as cleaning, moving and landscaping. Construction of a new house generates demand for employment and goods such as lumber, insulation, brick and cement.

Expenditures in these related industries produce a multiplier effect in the economy that goes beyond the value of the primary and intermediate products that go into the resale of an existing home or the construction of a new home.

Federal government statistics show that the real estate industry accounts for about 8% of the District's total Gross State Product and 12% of private industry product. This is made up of $569 million in employee compensation, $870 million in business taxes, and about $4.1 billion in business gross income.

In the District of Columbia, the 2004 residential sales market was very strong, in fact a record year. In 2004, there were 9,139 brokered property sales through the Metropolitan Regional Information Systems, Inc. (MRIS) multiple listing service. They accounted for over $4.1 billion in total dollar volume. This year should see approximately 9,589 sales and over $5.16 billion in total dollar volume.

In recent years, real property taxes have accounted for between 20% and 30% of District budgets, and 22% of the General Fund's revenue. The base of real property, both residential and commercial, totaled nearly $109.7 billion in FY2004, a substantial increase from $73 billion in the late 1990s. Total taxable property totaled almost $66.5 billion, up from $42.4 billion in 1999. The incredible growth of this base is due to the continued development, transfer, and appreciation of real property. It provides one of the most important sources of revenue to the District of Columbia. In fiscal 2004, collections from real property taxes on residential and commercial totaled almost $948 million.

Another substantial source of real estate related tax revenue includes the transfer and recordation taxes on residential sales. Each of these sources have provided from over $18 million to nearly $57 million annually in taxes to the city since the beginning of this decade. In fiscal 2004, deed recordation taxes on residential and commercial property totaled $164.5 million and the transfer tax contributed about $121.8 million.

In total, real estate and its related activities accounted for over $1.23 billion in direct revenue to the District of Columbia in fiscal 2004. Clearly, real estate is a key contributor to the fiscal health and economic soundness of the District.

Introduction

This report provides statistical and quantitative measures of the contribution of real estate and related businesses to the District of Columbia economy in 2003. We analyze several measures of that contribution, based on nationally accepted measures as well as figures for the local market. The study focuses on data generated since the end of the 1990s through the present. An analysis of the homebuyer tax credit is then provided. This work, updated and based on prior analysis, shows that the first-time housing tax credit in DC has played a crucial role in increasing home sales and is likely to have contributed to a reversal in population and migration patterns.
(References are numbered in brackets "[ ]" in the text and listed at the end of the paper.)

Few analysts or laypersons would doubt that the real estate industry is a major contributor to Washington, DC's economic engine. Over the past year, economic analysts have often reported that strength in the real estate sector has been a significant factor in keeping the national economy out of recession. A 2002 study published by the Joint Center for Housing Studies of Harvard University [1] cited Federal Reserve estimates that every $1,000 gain realized from a home sale increases consumer spending by as much as $150. Contrast this with their finding that every $1,000 in stock market gain generates only $30 to $50 in additional spending. The Joint Center analysts also concluded that the strong growth of home equity in 2001 helped sustain consumer spending and offset the weakness in other sectors while the economy was moving into a recession.

The Role of Housing and Finance in the Economy

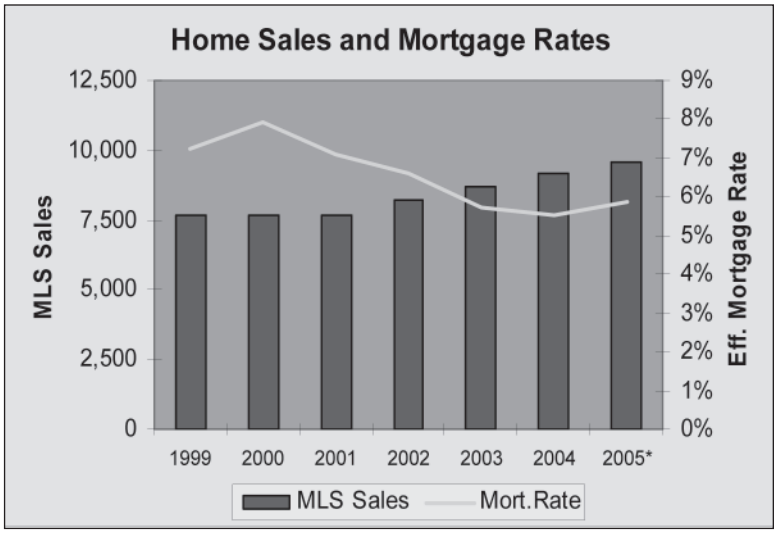
Real estate is an extremely decentralized industry with many links to other industries. Thus, the strength or weakness of economic activity in real estate has serious implications for the rest of the economy. For example, construction of a new house generates demand for construction employment and intermediate goods such as lumber, insulation, bricks and cement. The Joint Center study also cites data compiled by the National Association of Home Builders which indicate that in 2000 the national production of 1,000 new single-family homes generated 2,448 jobs in construction and construction related industries. This amounted to an average of $79.4 million in wages, and $42.5 million in federal, state and local tax revenues and fees [1, 2] due to direct economic impacts on local areas.

Selling a new or existing home involves financial transactions that employ many people in the financial services and real estate brokerage industries. Before and after a real estate sale, owners purchase additional goods such as paint, carpeting, furniture and appliances, and engage services such as cleaning, moving and landscaping. Expenditures in these related industries produce a multiplier effect in the economy that goes beyond the value of the primary and intermediate products/factors that go into the construction of a new home or resale of an existing home [3,4]. Additionally, beyond real estate's direct employment of large amounts of material, capital and labor, it also uses intermediate goods as well—plumbing, finished wood products, gypsum, electrical systems, etc. Once property is "in the ground," it provides a level of services to its owner-occupants and is a store of financial value.

Because home purchases require a large capital cost, a significant portion of the selling price is usually financed. Housing is one of the most interest-rate sensitive segments of the economy and one of the largest users of funds raised in capital markets. Due to its sensitivity to interest rate changes, housing is a leading indicator of the economic cycle. This means that, historically, real estate is the sector that leads the economy out of the bottom of recessions, as the efficient organization of the real estate brokerage and homebuilding industries allows it to gear up quickly to meet market demands from the bottom of a cycle. This leading indicator aspect of real estate activity makes it a stimulus to economic growth in all areas. Equity in existing housing helps provide financing for purchasing existing homes or new homes. Obviously, the value of property is a major and increasing source of revenue for the District government.

Housing's Impact on the District of Columbia Economy

The District's Gross State Product (GSP) (similar to U.S. Gross Domestic Product) provides an all encompassing economic activity measure. The Bureau of Economic Analysis has estimated Washington, DC's 2004 GSP at $75.264 billion. In 2003, the figure was $70.668 billion and the DC real estate sector accounted for $5.485 billion or 7.8% of this total. [*The most recent industry sector figure is for 2003*] The measure of real estate economic output can be further broken down into subcategories: Compensation of employees and workers, business taxes and property-type income. In 2003, compensation of employees (wages and salaries) was $569 million; business taxes, such as general sales and property taxes, amounted to $870 million; and a general category of gross income/ property-type income totaled around $4.103 billion.



Real estate's share has been relatively stable in recent years. For the period 1998 to 2003, real estate's percentage of total GSP has steadily ranged between 7.7% and 7.9%. However, since Washington, DC is uniquely impacted by the federal presence, we should adjust this measure. Looking only at private sector industries (subtracting federal and local government employment), real estate's contribution to the District's total private industry product has averaged a more significant 12%. Finally, by another important economic measure, 2004 personal income (income from all sources) totaled $28.8 billion for DC residents. Earnings in the real estate industry amounted to $997.4 million and the separate building construction industry added another $316.7 million.

Recent Real Estate Industry Activity

Table 1 below provides a historical look at some recent real estate indicators for the District of Columbia. Low mortgage rates and special housing tax credits have qualified many new households to purchase a home in recent years. Consequently, home sales have been robust, mortgage approvals have risen and the homeownership rate has edged up higher. Also, the low interest rates from the late 1990s to the present and growth in incomes and wealth have substantially boosted the sales performance of the industry.

The 2004 residential sales market was very strong. Through December 2004, there were 9,139 brokered property sales through the Metropolitan Regional Information Systems, Inc. (MRIS) multiple listing service (MLS). They accounted for over $4.116 billion in total dollar volume [5].

Table 1: Real Estate Market Indicators for the District of Columbia

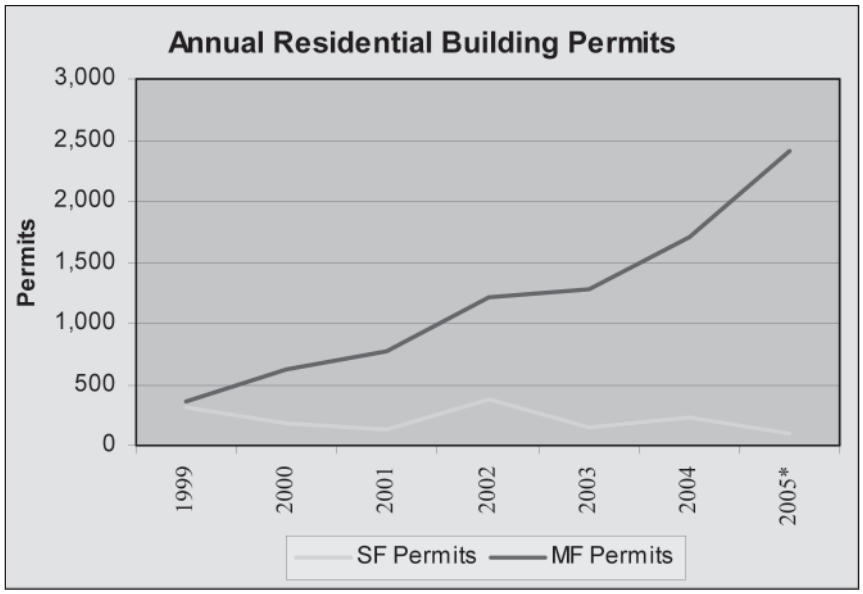
	Bldg. Permits-Units		MLS Sales			Rate on
Year	One-Fam.	Multi-Fam.	Units	Avg. Price	Med. Price	Clsd. Lns.
2005*	98	2,412	9,589	$538,230	$423,422	5.88%
2004	226	1,710	9,139	$450,430	$350,000	5.53%
2003	152	1,275	8,706	$382,206	$290,000	5.73%
2002	383	1,208	8,250	$348,334	$250,950	6.62%
2001	131	765	7,683	$304,872	$199,500	7.07%
2000	187	619	7,656	$250,236	$159,000	7.90%
1999	319	364	7,676	$221,268	$147,000	7.22%

Source: *U.S. Dept. Commerce; Bureau of the Census, Series C-40.*
Metropolitan Regional Information Systems, Inc.
Federal Housing Finance Board.
**Consultant estimates.*

While a strong resale market is critical, the development of new housing is also important to the local economy. In 2004, 226 single-family homes were permit authorized in the District, along with over 1,710 permits for multi-family units [6]. Based on relative performance year to date, we estimate that multiple listing sales in 2005 will total about 9,589 units at an average price of $538,230. The chart on the left shows the trend of single-family and multi-family permits in Washington.

The District of Columbia Economic Profile

The income and job base in the city has grown considerably in the past eight years (Table 2). Over the period 1997 to 2003, Washington, DC per capita personal income increased by over 40% and average wage and salary income rose 30%. Wage and salary jobs increased by nearly 51,000 positions and sole proprietorships increased by 9,215.



The most recently available data from the U.S. Bureau of Economic Analysis show that in 2003, personal income in the District of Columbia per person averaged $48,446 including wages and salaries, commissions, dividends, interest, rental income, and transfer payments, less personal contributions for social insurance [7]. Annual wage and salary income averaged $59,299; non-farm sole proprietors made $57,955; and earnings per job averaged $73,960. The city's economic base consisted of almost 777,000 full-time and part-time jobs.

Obviously, the large presence of the federal government provides employment for a substantial number of people who are not District residents. Recent U.S. Bureau of Labor Statistics data indicate that the 2004 local DC unemployment rate averaged 8.2% on a labor force of 298,958 with an average of 274,465 employed for the year. In 2003, the unemployment rate was 7.2%, and employment averaged 276,595 in a DC labor force of 297,906.

Table 2: District of Columbia Economic Profile

(Current Year Dollars)

	Incomes and Wages/Salaries				Jobs and Sole Proprietorships		
Year	Per cap. Pers. Inc.	Wage & Sal. Distri.	Non-Farm Prop. Inc.	Earnings per job	Wage & Sal. Jobs	N-Farm Props.	Total FT & PT Emp.
2003*	$48,446	$59,299	$57,955	$73,960	719,263	57,496	776,759
2002	$46,407	$57,047	$56,169	$71,343	718,529	55,533	774,062
2001	$44,827	$55,379	$55,583	$68,764	705,176	54,757	759,933
2000	$40,456	$52,634	$51,276	$64,730	703,841	53,138	756,979
1999	$37,030	$50,924	$52,631	$63,227	684,474	50,328	734,802
1998	$36,379	$47,776	$52,504	$59,619	670,346	50,168	720,514
1997	$34,488	$45,544	$48,975	$57,216	668,309	48,281	716,590

Source: *U.S. Department of Commerce, Bureau of Economic Analysis*

** Most recent data available.*

Real Estate's Contribution to District Tax Revenues

Real property finances local school districts and other services. Increasing property values are important as they enable the city to provide certain levels of services while maintaining a given tax rate. High tax rates, on the other hand, tend to discourage economic development; thus, the ability to expand the tax base through new construction and property value appreciation is critical to maintaining a fiscally strong government.

There are three major types of taxes on real estate in Washington, DC. At the time of sale of a property, deed recordation fees and deed transfer taxes are charged, usually to the buyer and seller respectively. These are one-time sales-based charges. However, annual property taxes, usually paid through monthly mortgage escrows, are levied in the District regardless of whether a property is transferred or not. Also levied are inheritance and estate taxes, but their incidence is not tied to the sale or annual taxation of property.

The District collects two types of transfer or transaction taxes on the sale of a home or private commercial property. Currently, a deed recordation tax of 1.1% is charged on the home price or value. There is also a deed transfer tax which is levied at the same rate of 1.1% of the sales price. In two prior years, these rates were as high as 1.5%, but were recently rolled-back to the pre-FY2003 levels of 1.1%.

According to the Chief Financial Officer's Annual Financial Report for fiscal year 2004 [8],deed recordation fees totaled $164.5 million; deed transfer collections were about $121.75 million; and, collections from real property taxes totaled $947.69 million. [*Note: the fiscal year extends from October 1 of the prior year through September 30*] The combined total of these three real estate taxes was nearly $1.234 billion; and it amounted to 28.5% of the total revenues in the District's General Fund (over $4.326 billion). Local inheritance and estate tax collections amounted to $26.466 million, of which residential property is a significant part of the total. So, it is likely that real estate's contribution to the government General Fund in FY2004 was a solid 29%, assuming that about half of all private estate is real estate related.

There is another complication in assessing the direct contribution of real estate to the District. The federal government does not pay taxes directly on the value of its buildings, instead providing an annual impact payment. This is a further complication in measuring the relative importance of real estate to the District. The federal government occupies some prime land and those parcels and structures are not valued in the private market. However, the District does estimate their value and those figures are published as part of the value of tax-exempt property in the annual financial report (see Table 4).

Estimating Residential Recordation Fees and Transfer Taxes

Table 3 provides simulated tax revenues of the recordation and transfer taxes for the residential sales market. The data for this analysis were taken from the Metropolitan Regional Information System, Inc. Web site (www.mris.com). The unit sales and average prices of properties include new or existing/resale and include all property types: single-family, town house, duplex, condominium, and cooperatives. These figures cover MLS brokered sales, not properties sold by individual homeowners themselves, builder sold, or sales by attorneys on behalf of clients. Commercial property sales are not included as there is no publicly available data covering these transactions.

Table 3: Transfer and Recordation Taxes on MLS Sales

Year	Property Sales Units	Property Sales Avg.Price	Estimated Dollar Volume	*Est. City Transfer Tax	*Est. City Record. Tax
2005	9,589	$538,230	$5,161,084,575	$56,771,930	$56,771,930
2004	9,139	$450,430	$4,116,479,770	$61,747,197	$61,747,197
2003	8,706	$382,206	$3,327,485,436	$49,912,282	$49,912,282
2002	8,250	$348,334	$2,873,755,500	$31,611,311	$31,611,311
2001	7,683	$304,872	$2,342,331,576	$25,765,647	$25,765,647
2000	7,656	$250,236	$1,915,806,816	$21,073,875	$21,073,875
1999	7,676	$221,268	$1,698,453,168	$18,682,985	$18,682,985

Source: *MRIS and Government of the District of Columbia*
***Notes:** *Consultant estimates*

The data provide estimates of the annual collections of recordation taxes from MLS sales of residential properties. The 1.1% rate was used for years 1999-2002 and our 2005 estimates. The 1.5% rate was applied to 2003-2004 sales. These figures suggest that recordation fees on MLS residential property sales have ranged from almost $18.7 million to a potential $56.8 million in 2005—a 204% increase since the end of the last decade. Similarly, since the transfer and recordation rates have been equal, estimates for the deed transfer tax also range from $18.7 million to over $56.8 million projected for 2005. Based on recent estimates, MLS residential sales have generated as much as $100 million to about $120 million in fees and transfer taxes to the District.

Real Estate Property Taxes

Property taxes are paid annually, whether or not a property is sold. Obviously, a healthy real estate market with sound price appreciation produces higher property values and greater tax revenues. Indeed, municipalities usually depend upon rising home values to increase the assessable base of property so lawmakers do not have to

advocate raising transfer or property tax rates.

The city currently applies a residential real property tax rate of $0.96 per $100 of assessed value (Class 1), with property usually assessed at 100% of market value. This rate has been in effect for owner-occupied residential properties at least since the mid-1990s. Commercial properties are currently taxed at a rate of $1.85 per $100; and Class 3, or unimproved or abandoned property are taxed at $5.00 per $100.

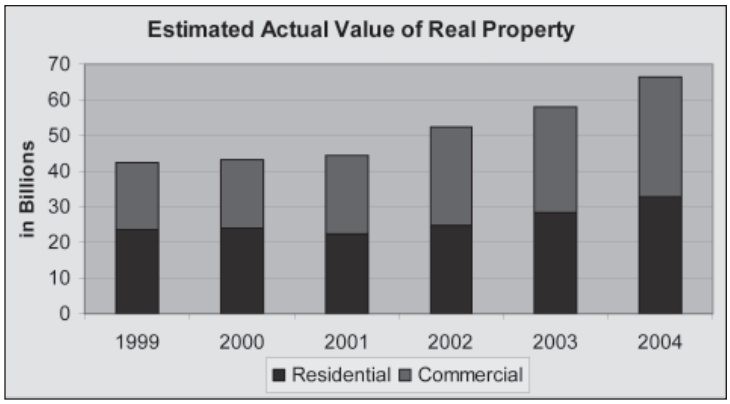
Table 4: Estimated Actual Values of Real Estate ($000s)

Fiscal Year	Residential	Commercial	Total Taxable	Tax-Exempt	Total Value
2004	$32,701,220	$33,752,889	$66,454,109	$43,234,068	$109,688,177
2003	$28,379,237	$29,684,430	$58,063,667	$35,728,289	$93,791,956
2002	$24,902,543	$27,619,604	$52,522,147	$33,812,037	$86,334,184
2001	$22,268,968	$21,960,148	$44,229,116	$32,086,134	$76,315,250
2000	$23,912,435	$19,357,631	$43,270,066	$30,900,682	$74,170,748
1999	$23,710,565	$18,734,933	$42,445,498	$30,620,782	$73,066,280

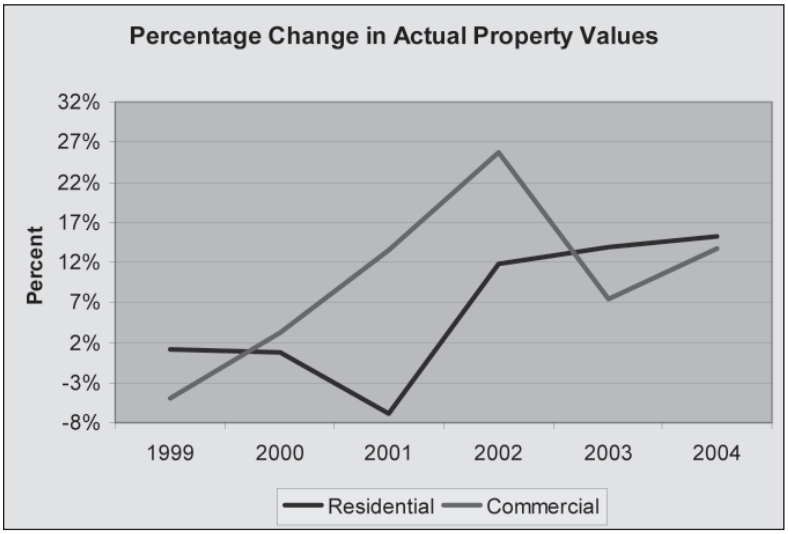
Source: *Office of the Chief Financial Officer, Annual Financial Report, FY2004.*

Based on the FY2004 financial report, real property taxes in the General Fund have accounted for as much as 22% of Washington, DC's total annual General Fund local source revenues. They also make up over 23% of the expenditures taken under the General Fund. When funds from private and federal sources, capital improvements, and other sources are added to the revenues, they are still 15% of all revenues going into the District accounts. When all of the property related taxes levied by the District in fiscal year 2004 are combined, the total is almost $1.234 billion. Compared to the General Fund revenues, it accounts for 28.5% and 30.3% of revenues and expenditures. Even compared to the Total Government Funds line, the relevant percentages are 18.5% and 17.9% for revenues and expenditures. Summing up, these results indicate real estate taxes account for roughly 20% to 30% of relevant District government budgets.

Table 4 above shows the estimated taxable values of residential and commercial real estate in the District. For fiscal 2004, residential real estate is estimated at over $32.7 billion and commercial totals almost $33.8, for a total of nearly $66.5 billion. In 2004, there was more than $43.2 billion that was tax-exempt so the total value of taxable and tax-exempt was almost $109.7 billion, establishing the exempt portion at a little over 39.4%. As the District's privately developed sector has grown, the percentage of tax-exempt real estate has declined from about 43% in the mid-1990s to the 39% range.



The chart to the right shows the annual trend of actual property values since 1999. Overall, residential has risen a total of 37.9% since 1999, or an average of 7.6% per year. For commercial, the overall rate of increase has even been larger—nearly 80.2%, an average of 16% per year, or a near doubling of commercial property values.



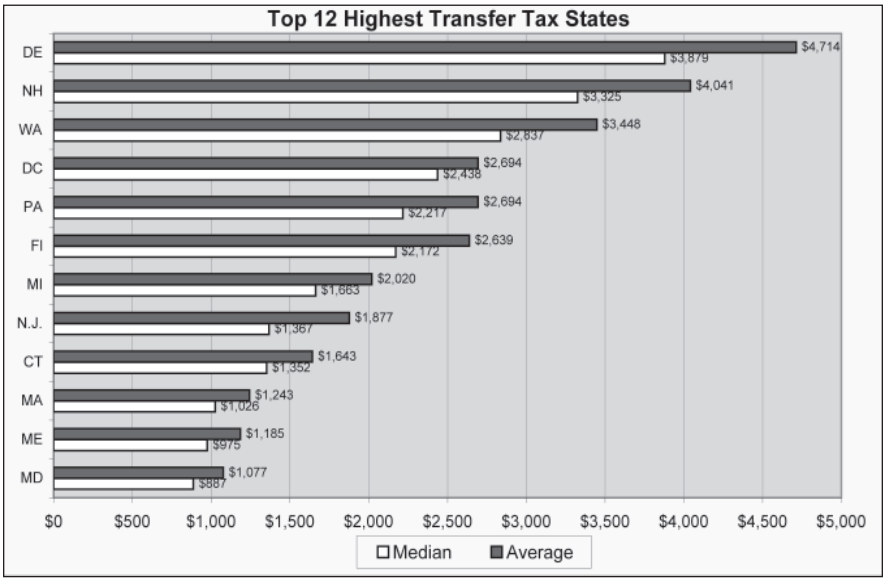
The total value of all taxable property has increased 41% over the past five year periods. Although the overall 5-year rates of growth are impressive, the chart on the left shows that the value of property has varied significantly from year to year. Residential saw a 7% drop from 2000 to 2001, and commercial had experienced a decrease in value from 1998 to 1999. However, the past three years have seen mostly double-digit increases on a year-to-year basis.

Conclusions:
The Contribution of Real Estate to the District of Columbia Economy

Over the past eight years, incomes in the city have increased by 30% to 40% and jobs have grown by 51,000. Real estate contributes almost 8% of the Gross State Product of the District, a value of nearly $5.5 billion. If we subtract out the value of the government sector, real estate is 12% of private sector product.

MLS sales of residential properties have accounted for over $4.1 billion in dollar volume. Over the past 5 years, sales units have increased by 19%, while the average value of MLS properties has risen by 104%—or over 20% per year. Clearly, the real estate sector has been a major growth and prosperity engine for Washington, DC. The fiscal and economic contribution of construction of single-family, multi-family, and commercial building has been substantial, generating around $300 million in income for the building construction industry.

Real estate is one of the largest contributors to the District's tax base. The total taxable base of property for all property totals about $66.5 billion. Based on Fiscal Year 2004 figures it is split almost evenly between commercial and residential property. This base of residential and commercial business property has accounted for almost $1 billion in property taxes for the General Fund in fiscal 2004. In addition, real estate transfer taxes and recordation fees accounted for over $286 million in FY2004. The base and its incredible growth has been due to the continued development, transfer, and valuation of real property, and is a key source of revenue to the city.



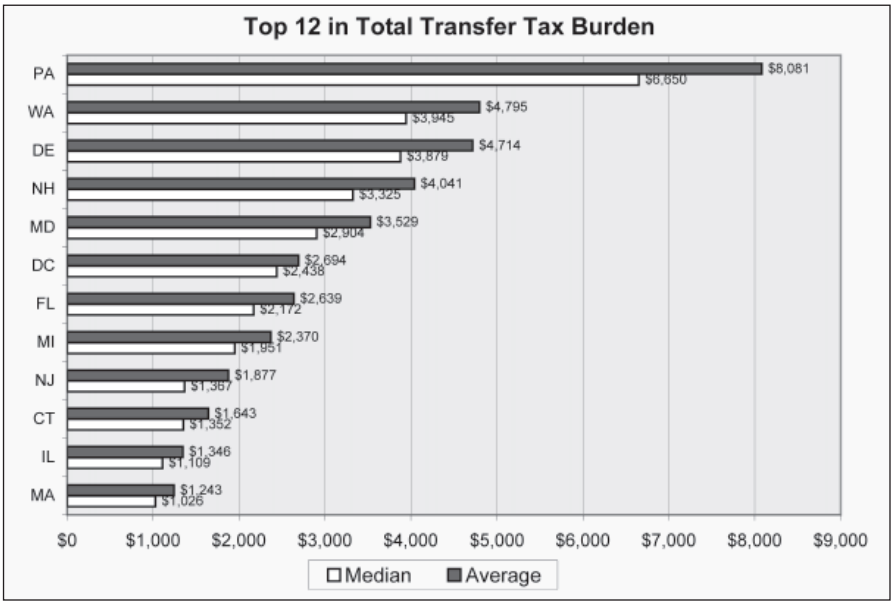


Table 5: Estimated State, Local and Total Transfer Tax Burden
2004 Prices

	State Tax			Local Tax		Total Burden		Total
State	Average	Median	Rank*	Average	Median	Average	Median	Rank*
Delaware	$4,714	$3,879	1	$0	$0	$4,714	$3,879	3
New Hampshire	$4,041	$3,325	2	$0	$0	$4,041	$3,325	4
Washington	$3,448	$2,837	3	$1,347	$1,108	$4,795	$3,945	2
DC	**$2,694**	**$2,438**	**4**	**$0**	**$0**	**$2,694**	**$2,438**	**6**
Pensylvania	$2,694	$2,217	5	$5,387	$4,433	$8,081	$6,650	1
Florida	$2,639	$2,172	6	$0	$0	$2,639	$2,172	7
Michigan	$2,020	$1,663	7	$350	$288	$2,370	$1,951	8
New Jersey	$1,877	$1,367	8	$0	$0	$1,877	$1,367	9
Connecticut	$1,643	$1,352	9	$0	$0	$1,643	$1,352	10
Massachusetts	$1,243	$1,026	10	$0	$0	$1,243	$1,026	12
Maine	$1,185	$975	11	$0	$0	$1,185	$975	13
Maryland**	**$1,077**	**$887**	**12**	**$2,452**	**$2,017**	**$3,529**	**$2,904**	**5**
New York	$1,077	$887	13	$0	$0	$1,077	$887	14
Rhode Island	$1,077	$887	13	$0	$0	$1,077	$887	14
Tennessee	$997	$820	14	$0	$0	$997	$820	15
Arkansas	$889	$732	15	$0	$0	$889	$732	17
Wisconsin	$808	$665	16	$0	$0	$808	$665	18
Minnesota	$744	$596	17	$0	$0	$744	$596	19
South Carolina	$700	$576	18	$296	$243	$996	$819	15
Nevada	$673	$554	19	$269	$222	$942	$776	16
Alabama	$593	$488	20	$0	$0	$593	$443	20
West Virginia	$593	$488	20	$296	$244	$889	$732	17
Kansas	$560	$461	21	$0	$0	$560	$461	20
North Carolina	$539	$443	22	$0	$0	$539	$554	21
Nebraska	$471	$388	23	$0	$0	$471	$388	22
Iowa	$431	$355	24	$0	$0	$431	$355	23
Oklahoma	$404	$332	25	$0	$0	$404	$332	24
Virginia	**$404**	**$333**	**25**	**$0**	**$0**	**$404**	**$333**	**24**
Georgia	$269	$222	26	$0	$0	$269	$222	26
Hawaii	$269	$222	26	$0	$0	$269	$222	26
Illinois	$269	$222	26	$1,077	$887	$1,346	$1,109	11
Ohio	$269	$222	26	$808	$665	$1,077	$887	14
South Dakota	$269	$222	26	$0	$0	$269	$222	26
Kentucky	$269	$222	26	$0	$0	$269	$222	26
Colorado	$27	$22	27	$0	$0	$27	$22	27
Arizona	$2	$2	28	$0	$0	$2	$2	28
California	$0	$0	29	$296	$244	$296	$244	25

Sources: *Commerce Clearing House; Maryland Association of REALTORS ®*

Notes: **Ranks based on average price.*

***Uses proportionally weighted avg. for repeat (.60 and 0.5%) and first-time buyers (.40 and 0.25%).*

Impact of the First-Time Homebuyer Individual Income Tax Credit

The population declines of the recent years have stopped and the strong real estate markets of recent years indicate a significant in-migration of households from the suburbs to purchase housing in the District of Columbia. The first-time homebuyer individual income tax credit is likely to have contributed to this reversal in population and migration changes. In this section, the earlier analysis of the impact of the first time buyer tax credit program by the research department of the National Association of REALTORS® is updated based on the methodology used in that study. Since only two years worth of new data are available to update the analysis, it is assumed that the results from the previous study are still applicable [9].

The first-time homebuyer individual income tax credit for DC residents started in August 1997 and the credit is typically $5,000 (single, married filing jointly, head of household, or qualifying widow(er)). It is set at $2,500 for those who are married but filing separately. The credit can be claimed if the buyer purchased a principal residence and did not own any other principal residence in the District of Columbia during the year prior to the date of closing on this property. The credit is claimed on the federal Form 1040, using Form 8859.

Results of the Analysis

The regression analysis of the prior study was based on the assumption that the two most important factors influencing home sales are the number employed in the District and the mortgage rate. However, there are no publicly available data indicating how many homebuyer households made use of the credit, so there is no direct measure of the impact of the tax credit on home sales. A regression equation was fit using estimates of District of Columbia sales data from 1973 to 2002 with District employment and interest rates as the independent variables. The District sales data were provided by the National Association of REALTORS® series on total existing home sales (single-family, condo and co-ops) [10]. Bureau of Labor Statistics employment data and Federal Housing Finance Board interest rates were used to measure the independent variables.

The results from the equation indicated that a 1% increase in employment led to a 1.1% increase in home sales over this time period. At the same time, a 1% decrease in the average mortgage rate led to a 0.5% increase in home sales. These results are generally consistent with the direction of findings in similar housing demand models. Since actual home sales in the District, after creation of the tax credit, were much higher than those predicted by the equation, the analysts concluded the tax credit played a role in the higher level of home sales.

Table A below shows an annual side-by-side comparison of home sales with and without the tax credit. Since the equation does not control for the tax credit program initiated in 1997, it tells us the projected level of sales without the program, given changes in District employment and interest rates. For example, in 2002, after implementation of the tax credit program there actually were 14,100 total residential sales in DC. But the prediction equation for sales, based on the percentage increase in employment and decrease in interest rates, indicate sales would have increased to 10,000 by 2002 from the 1997 level of 8,700. The details of these calculations are provided below for 2004.

Based on the Bureau of Labor Statistics data, District employment grew about 8.7% from 1997 to 2004, suggesting that this factor alone would have increased home sales by about 9.6% (the 1.1% elasticity estimate times 8.7%). Also, the average mortgage rate (Federal Home Loan Bank contract interest rates on all homes) declined from 7.52% to 5.68% (or by nearly -24.5%) over the same time period. The falling interest rate would have increased home sales by additional 12.25% (the -0.5% elasticity estimate times -24.5%). So the combined effect of employment and mortgage rate effects would have increased home sales by about 21.8%. A 21.8% increase in home sales from 8,700 units in 1997 translates into 10,600 sales in 2004, as shown by their predicting equation based on employment and interest rates (does not include the tax credit). But actual home sales in 2004 were 17,200—the additional

Table A: Effect of the First-Time Buyer Tax Credit on DC Home Sales

Year	Actual Sales	Est. Sales - No Tax Credit	Diff.
1997	8,700	8,700	0
1998	13,000	8,600	4,400
1999	13,800	9,700	4,100
2000	12,700	11,300	1,400
2001	13,000	10,600	2,400
2002	14,100	10,000	4,100
2003*	15,600	10,500	5,100
2004*	17,200	10,600	6,600

Source: NAR Research Report

Consultant updated estimates.

home sales are due to contributions from other factors aside from employment and mortgage rate, including the first-time homebuyer tax credit. These results suggest that the first-time buyer tax credit did have an effect on sales in the District of Columbia market.

Simulating the Impact of a Larger Tax Credit

Table B: Effects of Higher Tax Credits for the DC Metro Area: 2004

Credit Amount	Expansion in Buyer Pool	Potential DC Home Sales
$5,000	16,100	1,100 to 2,700
$7,500	24,100	1,700 to 4,100
$10,000	32,100	2,300 to 5,500

The NAR study also examined the potential effects of increasing the amount of the credit, extending the potential impact to the entire Washington, DC metropolitan area. The NAR analysts indicated that because it was likely that the tax credit made a difference in home sales and in attracting new residents to DC, it would be useful to know what the likely outcome would be if the tax credit was raised to $7,500 or even to $10,000. In this scenario, the credit of $5,000 is analyzed as equivalent to placing a larger down payment on the property. Their reasoning was that because the buyers would have a lower expected tax liability they would up-front devote an extra amount equal to the credit to lowering the mortgage payment. Other factors equal, it creates a reduction in mortgage costs that enlarges the pool of homebuyers who could qualify for homes in the District. Research by the National Association of REALTORS® [11] has suggested that between 7% and 17% of newly qualifying households actually purchase a home, so the analysis estimates the change in the number of households qualifying to buy a house based on the lowered mortgage amount. The detailed analysis is discussed below, based on figures for 2004.

Table B presents estimates of the increase in the number of households who would qualify and the range of additional home sales, based on the NAR study methodology. Given a $7,500 tax credit, the metropolitan area-wide home buying pool would increase by 24,100 households of which 1,700 to 4,100 households would potentially make a home purchase in the District. With a $10,000 tax credit, the home buying pool would expand by 32,100 additional households of which 2,300 to 5,500 would potentially make a DC home purchase. The figures are rounded to the nearest 100; assumptions are detailed below.

Assumptions and Detailed Calculations

According to NAR, the DC metro median home price was $339,800 in 2002 [12] and the average mortgage rate in 2004 was 5.68%. Further assuming a 10% down payment, an initial principal of $305,820 would be amortized to yield a monthly principal and interest payment of $1,771. Applying the standard Fannie Mae guideline (4 times the annual monthly payments), this suggests that households would need to have a minimum income of $85,013 to qualify. The basic principal and interest payment is used to apply the basic Fannie Mae guideline.

Now, assuming that the $5,000 tax credit program would lower the principal to $300,820, this would yield a $1,742 monthly payment and necessitate a minimum income of $83,623. This establishes an income range of between $83,623 and $85,013; and, with an income distribution for the District, allows estimation of the additional households who can now afford to buy with the $5,000 credit. Assuming a proportional distribution of households in an income class, there are about 1,780 current DC households who meet that criteria. This conclusion is based on an adjusted 1999 household income distribution for the District of Columbia provided in the U.S. Bureau of Census SF3 file [13]. The adjustments were applied to the existing income classes using the percentage change in average wage and salary disbursements for 1999-2003 (and a one-year average for 2004). The number of households in the class were increased by the percentage rise in the size of the relevant class interval to maintain the same relative density of households to distribution class intervals.

Because the tax credit also applies to suburban residents (who do not have a principal residence in the District) the total potential pool of buyers can be expanded beyond the immediate District of Columbia to the entire metropolitan statistical area covering Virginia, Maryland, and a county in West Virginia as well. This analysis is accomplished by adjusting for the relative size of the labor forces in the District to the Washington, DC metropolitan area. The DC labor force averaged 298,958 in 2004. And, the labor force in the greater metro Washington, DC region was 2.188 million—about 7.3 times larger. Assuming proportionality between labor force

size and households, the number of households affected by the tax credit in the Washington metro area could be approximately 7 times larger than the number of currently residing DC residents. In other words, at the $5,000 credit level, roughly 16,100 households could qualify to buy a home as a result of the tax credit, as compared to without a tax credit.

A final piece of the puzzle is based on NAR research of homebuyers. This suggests that roughly between 7% to 17% of newly qualifying households actually make the home purchase within a year of being able to qualify to purchase the typical house. This would then translate into about 1,100 to 2,700 additional home sales in the entire DC metropolitan area. By parallel analysis, assuming a higher tax credit of $7,500, the number of additional households affected would be just under 3,300 for DC residents and 24,100 for the greater metro region. This would then translate into about 1,700 to 4,100 potential home sales. Assuming an even higher tax credit of $10,000, the number of additional households affected would be almost 4,400 among existing DC residents and 32,100 for the greater metro region. Estimated home sales could range from 2,300 to 5,500 units.

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