



# Financial Services Dynamics in Florida

## Second Quarter 2022

### The Florida Department of Financial Services



July 1<sup>st</sup>, 2022

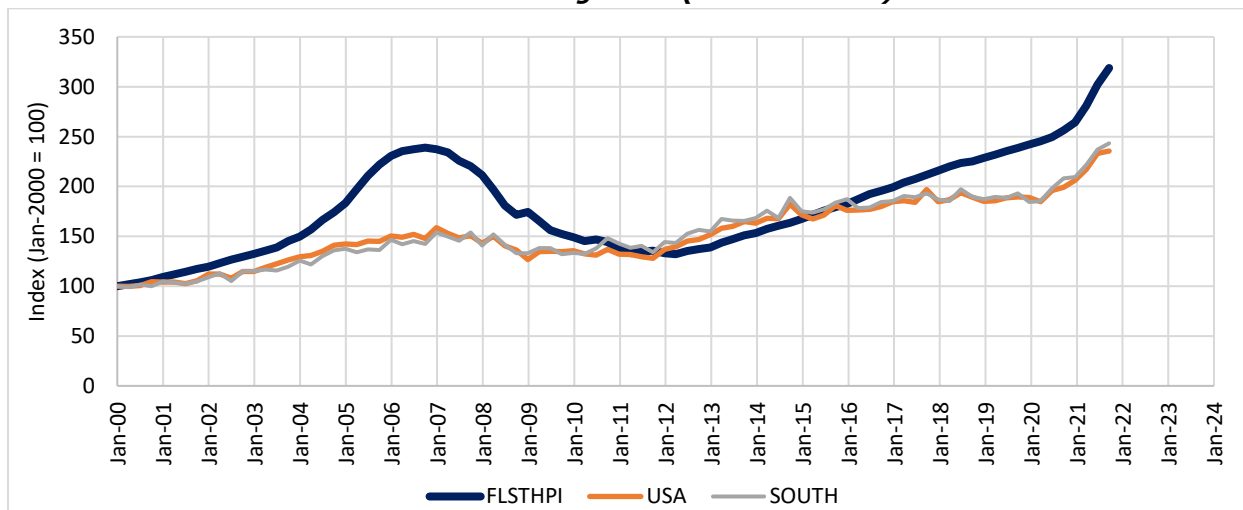
#### Summary:

This brief is made pursuant to section 20.121(6), Florida Statutes. This brief examines the relationship between home values and insurance premiums; as well as the effectiveness of sales tax exemptions in refunding taxpayers. Overall, increases in property insurance premiums by 1% diminish home prices by \$0.40 on the insurance dollar. Further, tax holidays are a better tool than government refund checks when it comes to refunding the taxpayer.

#### Florida Home Prices and Insurance Premiums:

In order to examine the relationship between home prices (or home value) and insurance premiums, data on average home prices in Florida and data on Florida insurance premiums for the years 2000-2021 was needed. The Insurance Premium data was obtained from the Florida Office of Insurance Regulation (OIR). However, no comprehensive value timeseries exists for home prices in Florida; therefore, the calculations detailed in the following two paragraphs were made in order to create workable data estimates for Florida home prices. Figure 1 reflects data on All-Transaction house prices indices for Florida (new and existing homes).

**Figure 1: All-Transactions House Price Index (based on Current Prices) for Florida, Years 2000 through 2021 (Jan 2000 = 100)**



Source: U.S. Federal Housing Finance Agency<sup>1</sup>

Source: U.S. Census Bureau and U.S. Department of Housing and Urban Development,<sup>2,3</sup>

First, the All-transactions House Price Index for Florida (FLSTHPI)<sup>1</sup> was crossed with Florida Department of Revenue (DOR) Name-Address-Legal (NAL) files on property assessments for Hillsborough County for years 2008-2019, with the assumption

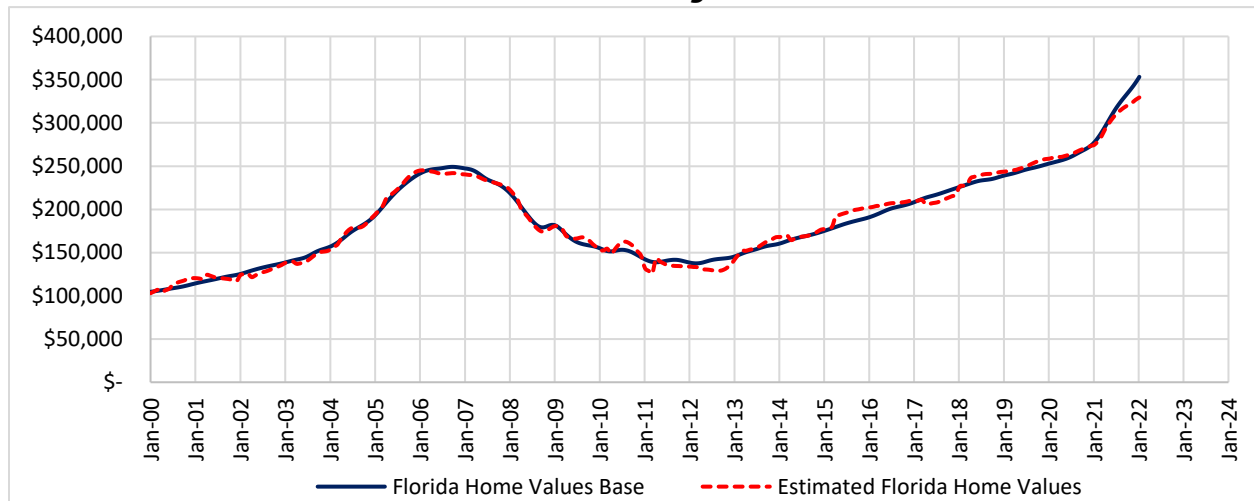
<sup>1</sup> All-Transactions House Price Index for Florida [FLSTHPI], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/FLSTHPI>, April 19, 2022.

<sup>2</sup> Average Sales Price of Houses Sold for the United States [ASPUS], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/ASPUS>, April 19, 2022.

<sup>3</sup> Average Sales Price of Houses Sold for the South Census Region [ASPS], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/ASPS>, April 20, 2022.

that Hillsborough County is a representative sample of homes across Florida.<sup>4</sup> Within the Hillsborough County data, figures on sold homes were used to derive the market price of the Florida homes sold. This data was then filtered by using DOR's "001 Single Family Residential" code (as to exclude other types of housing and construction types) and then further cleaned to remove outlier figures, resulting in slightly over (n=) 10,000 values (or 150 monthly median values).<sup>5</sup> After filtering, data on Median Prices for homes sold each month were derived and were converted into averages using Census data.<sup>6</sup> However, the Census data uses home price averages from the entire "South" Census region,<sup>7</sup> which encompasses multiple states including Florida. For the purposes of converting the median prices into averages, it is assumed that the prices in the "South" Census region are representative of Florida's averages. Additionally, data was only available for the prices of new home construction in the "South" region, so it must be assumed this data is indicative of both new and existing sale prices (All Sales). Next, South new home construction is converted to South all sales values per month. Finally, the semi-final figures obtained up to this point were again crossed with the FLSTHPI to obtain the final estimates of average home prices in Florida, which is depicted in Figure 2.

**Figure 2. All Transactions Average House Price Value Estimates (Current Prices) for Florida, Years 2000 through 2021**



The economic model as used is defined as follows:<sup>8,9</sup>

$$f(P_t^*) = \alpha_1 \left(\frac{S}{H}\right)_t + \alpha_2 R_t + \alpha_3 Med.HH.Ink_t - \alpha_4 MR_t - \alpha_5 Mil_t + \alpha_6 Ins.P_t + \alpha_7 FIT_t + \alpha_8 HPI_t + \varepsilon$$

<sup>4</sup> P. 5, DOR 2018 User's Guide, Department Property Tax Data Files, DOR Land Use code, Residential Land Use codes 001 through 009. Retrieved from: [https://floridarevenue.com/property/Pages/DataPortal\\_RequestAssessmentRollGISData.aspx](https://floridarevenue.com/property/Pages/DataPortal_RequestAssessmentRollGISData.aspx)

<sup>5</sup> For further details on the databases, see pp. 36-47: An Economic Analysis of Impact Fees in Hillsborough County - Final Report. June 2020. Center for Economic Forecasting and Analyses (CEFA), Florida State University (FSU).

<sup>6</sup> Sale Price, Median and Average Sales Prices of New Single-Family Houses. See <https://www.census.gov/construction/chars/>

<sup>7</sup> Regions defined as the four Census regions. South includes Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

<sup>8</sup> in which: P\* = price paid for a home sale, S/H = supply or the stock of housing over the number of current households, R = price of Rent, Med.Inc. = Median Household Income, MR = mortgage rate, Mil. = effective property tax rate or millage, Ins.P = Insurance Premium, FIT = federal marginal income tax rate, HPI = rate of housing price appreciation, and t = month t. Data sources:

Supply or stock of housing: Census Bureau, data taken from <https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-housing-units.html>

Rent: Department of Numbers data taken from Freddie Mac <https://www.deptofnumbers.com/rent/florida/>

Household Income: Federal Reserve Bank of St. Louis, <https://fred.stlouisfed.org/series/MHIFL12000A052NCEN>

Mortgage Rates: Freddie Mac data taken from <http://www.freddiemac.com/pmms/pmms30.html>

Millage: Florida Department of Revenue data taken from <https://floridarevenue.com/property/Documents/maxmillhistory.pdf>

Insurance Premiums: data request Florida Organization of Insurance Regulation (OIR) (N.B. Personal Residential Policies only).

Federal Income Tax: Money chimp, as calculated from [http://www.moneychimp.com/features/tax\\_brackets.htm](http://www.moneychimp.com/features/tax_brackets.htm)

All-Transactions House Price Index for Florida, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/FLSTHPI>

Inter- and extrapolation using Cubic Spline, SRS1 Software, LLC. See <http://www.srs1software.com/SRS1CubicSplineForExcel.aspx>

Variable	Intercept	St/Ht <sub>t-8</sub>	RENT <sub>t-1</sub>	Med.HH.Inc. <sub>t-12</sub>	Mort.R. <sub>t-6</sub>	Mill <sub>t-6</sub>	Ins.P <sub>t</sub>	Fed.Inc.Tx. <sub>t</sub>	HPI HC <sub>t</sub>
Coefficient	-2,112,943.62	1,739,633.46	221.44	4.66	-1,883.89	-170,002.41	-70.292	-376,594.19	274,789.41
t Stat	-25.65	21.35	14.38	16.60	-2.01	-11.25	-10.41	-6.95	37.29
P-value	1.10E-72	8.69E-59	9.40E-35	1.69E-42	4.60E-02	4.13E-24	2.09E-21	3.02E-11	1.86E-105

Applied, this model yielded the following results as depicted in Figure 2 (red dashed line):

$$f(P_t^*) = 1,739,633.5 * \left(\frac{S}{H}\right)_{t-8} + 221.24 * R_{t-1} + 4.7 * Med.HH.Inc_{t-12} - 1,883.9 * MR_{t-6} - 170,002.4 * Mil_{t-6} \\ - 70.292 * Ins.P_t - 376,594.2 * FIT_t + 274,789.4 * HPI_t - 2,112,943.6 \quad adj. R^2 = 0.9863$$

The impact of Insurance Premium on Home Sales prices can be estimated by using the latest data point on average Florida home price of \$329,955 (calculated using the process detailed above) and varying the Insurance Premium, while keeping all other variables fixed (Ceteris Paribus). Overall, increases in Insurance Premium lead to decreases in home sales prices, this is by way of reducing the consumer's purchasing budget. The consumer's overall budget must account for higher premium cost, which results in the consumer purchasing less house than they could have when premiums are lower.

Increasing insurance premiums by 1 percent (*i.e.*, from an average of \$1,859.67 to \$1,878.26) results in a decrease in home sales prices of -0.40 percent or \$1,307.20. This decrease in home sales revenue may be looked at two ways, either by quantity (q) or price (p). By quantity, for every 252.02 homes (=1/0.40), a one percent premium increase causes the insurer to lose one policy. The overall gain that the insurer gets from a one percent premium increase on 252.05 homes is offset by the loss of one policy. In this example, the insurers' gross gain is \$4,686.64 (1 percent or \$18.60 \* 252.02) for increasing premiums by one percent, but the lost policy of \$1,878.26 reduces the gain to a net of \$2,808.38. By price, an equivalent amount is lost due to loss in insurance value. Put differently, for every \$100,000 premium increase (or re-assessments), the loss is estimated at \$40,077 (or 40.1 percent) where the net gain is an estimated \$59,923 (or 59.9 percent). The loss in home value is felt by homeowners. Economic impacts are wider as reduced home prices in the market will impact the real estate market, as well as "just value" appraisals for tax purposes. Overall, looking at the economic impact, an increase in premiums by 1 percent results in a loss of 40 cents on the dollar.

### **An experiment on Government Refunds (Direct Tax) and Indirect Tax (Sales Tax)<sup>10</sup>**

Direct taxes are imposed by government on individuals or companies and are collected directly, like income tax. A direct tax cannot be passed on to anyone else. Indirect tax, on the other hand, is collected by manufacturers or sellers of goods or services (usually embedded in the price) and paid to the government. The experiment here is to gauge how each fiscal tool impacts the economy.

Recently, Florida received some unexpected revenue gains, particularly generated through sales tax. The record high \$109.9 billion budget for fiscal year 2022-2023 that passed contemplates various sales tax exemption initiatives, such as the back to school sales tax holiday, the disaster preparedness sales tax holiday, and the building mitigation sales tax exemption. Ideally, the state's sales tax rate should be at a number where no surplus revenue comes back into the budget; however, when that happens, the surplus should be returned to the taxpayers.

With this, two questions can be raised. The first question is whether a surplus in a given budget is recurring and/or sizable. If this is the case, then sales tax rates should be lowered. The second question is which tool, a sales tax holiday (indirect) or a government refund check (direct), would be effective way to "refund" a surplus to taxpayers. Based on the analysis below, sales exemptions/holidays are more effective.<sup>11</sup>

Assume a small simple macro-economic model with no external sector and assume direct tax to be entirely induced ( $B = b' Y$ ). The solution may be acquired via:<sup>12</sup>

$$\bar{Y} = \frac{1}{1 - c' + b'c'} (C_0 + I_0 + G_0)$$

The fraction component in the equation represents the multiplier. Adding indirect or sales tax, as a set-back on disposable income for consumption, will change the multiplier into:

<sup>10</sup> Main data used in this section are: Bureau of Economic Analyses, Personal Current Taxes (series SAINC50) – Florida, and ibidem series SQGDP2 Gross Domestic Product (GDP) by State – Florida. Retrieved from: <https://apps.bea.gov/iTable/iTable.cfm?reqid=70&step=1#reqid=70&step=1> and <https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1&acrdn=1> respectively

<sup>11</sup> Sales-tax or indirect refunds versus direct tax refunds in the form of maybe a State of Florida direct cashable cheque (as Florida doesn't have or levy Direct or Income tax.

<sup>12</sup> In which: Y is GDP ( $\bar{Y}$  is model equilibrium GDP), C is consumption, I is investment, G is government expenditures, B is Direct Tax, b' and c' are induced tax and consumption respectively based on Y. Subscript *a* autonomous spending.

$$\frac{1}{1 - (1 - t')c' + (1 - t')b'c'}$$

Now, assume a sales tax rate or  $t'$  to be 0.0705 (*i.e.*, 6 percent statewide and an added 1.05 percent local tax added onto transactions giving the state its 7.05 percent state and local sales tax average).<sup>13</sup> Assume  $b'$  equals 0.1016.<sup>14</sup> Both result in an induced disposable income  $c' = 0.8279$ ,<sup>15</sup> which makes for a base multiplier value of:

$$\frac{1}{1 - (1 - 0.0705) * 0.8279 + (1 - 0.0705) * 0.1016 * 0.8279} = 3.24033$$

Hence every \$1 spent (in  $C_0$ ,  $I_0$  and/or  $G_0$ ) will generate \$3.24 in terms of GDP or  $Y$ .

In addition, sales tax revenue at 7.05 percent would generate \$76,907,813,000 whereas direct tax revenue at 10.16 percent stands at \$119,104,954,000.<sup>10</sup> Subsequently, (by experiment) "refund" 1.1B<sup>16</sup>/\$1.2B<sup>17</sup> (used \$1.15B) either by direct or indirect tax. The direct induced tax rate would need to change to 0.1026,<sup>18</sup> whereas the indirect rate needs to change to 0.0694,<sup>19</sup> hence either-or:

Direct: 
$$\frac{1}{1 - (1 - 0.0705) * 0.8269 + (1 - 0.0705) * 0.1026 * 0.8269} = 3.22390$$

Indirect: 
$$\frac{1}{1 - (1 - 0.0694) * 0.8290 + (1 - 0.0694) * 0.1016 * 0.8290} = 3.25791$$

With all other values fixed (*Ceteris Paribus*), a higher multiplier is preferable in this experiment because multiplied by the autonomous variables, the result is higher GDP. Therefore, reductions via indirect tax are preferable.<sup>20</sup>

Given that the government only passes the refund on, lowering the de-facto sales-tax burden, one could rightfully argue for the applied decrease in the rate  $t'$  as in the approach above. This finding is in line with tax impacts on a larger base of income over consumer spending. Raising an x-amount of tax on a larger base is less impactful than raising the same on a smaller base. Conversely, lowering revenue by an x-amount is more impactful once done on a smaller base.

Although the above is a rather abstract macro perspective, one pertinent observation must be made, namely the redistribution impacts, as not all Florida taxpayers can or will make use of the specific sales-tax holiday on the books. Are there better ways to "refund" the taxpayer? Certainly, but first one needs an answer to the other or second question posed: is the revenue gain experienced in 2021 of a more structural nature and substantial enough or not?

**Key Takeaways:**

- One percent increases in property insurance premiums diminish home values by \$0.40 on the insurance dollar.
- Tax holidays are a better tool than government refund checks when it comes to refunding the taxpayer.

<sup>13</sup> Bankrate, Florida state taxes 2021-2022: Income and sales tax rates, Nov 12, 2021, Retrieved from: <https://www.bankrate.com/taxes/florida-state-taxes/#:~:text=Florida%20has%20a%20sales%20tax.and%20local%20sales%20tax%20average.>

<sup>14</sup> See footnote 9, where 10.16% is based on sixteen year average.

<sup>15</sup> 0.8279= 1-0.0705-0.1016

<sup>16</sup> "Gov. Ron DeSantis has signed this year's record tax relief bill, which will save Floridians an estimated \$1.1 billion". See: Downey R. (2022) Tax cuts are aplenty in Florida, which has continued raking in cash. Retrieved from: <https://floridapolitics.com/archives/522538-lawmakers-send-gov-desantis-gas-tax-relief-tool-time-holiday-in-sweeping-tax-package/>

<sup>17</sup> Governor Ron DeSantis Signs Largest Tax Relief Package in Florida's History <https://www.flgov.com/2022/05/06/governor-ron-desantis-signs-largest-tax-relief-package-in-floridas-history/>

<sup>18</sup> 0.1026 = 0.1016 \* \$119.1B / (\$119.1B + \$1.15B) (with 0.8269 = 1 - 0.705 - 0.1026)

<sup>19</sup> 0.0694 = 0.0705 \* \$76.9B / (\$76.9B - \$1.15B) (with 0.8290 = 1 - 0.694 - 0.1016)

<sup>20</sup> Note that conversely tax increases should preferably be done by direct-tax.

