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Real Estate Transfer Taxes and Housing Price Volatility in the United States

Haiwei Chen
School of Management, 303 Tanana Loop, University of Alaska Fairbanks, Fairbanks, Alaska 99775. Phone: (907) 474-5437, Fax: (907) 474-5219. Email: hchen13@alaska.edu

Both parametric and nonparametric tests show that housing price volatility is lower in states that impose a real estate transfer tax on transaction values than those that impose no such tax in the United States. However, regression analyses show no difference in price volatility between the two tax regimes, after controlling for known economic and demographic factors, such as income, population growth, mortgage rates, property taxes, and jobless rates. Such a conclusion is robust because the fixed effect and the two-way clustering models are used to account for irregularities in the error structures.

Keywords

Real Estate Transfer Taxes, Tobin Taxes, Housing Markets, Price Volatility, United States

1. Introduction

Taxing real estate transactions can generate significant revenue for governments because the value of real estate and the volume of transactions are both high. A real estate transaction tax is also of interest to policy makers, as Tobin (1978) argues that a transaction tax may help to curtail market volatility. The debate on the merits of a financial transaction tax has been reignited after the great financial crisis of 2007-2009. Although the European Union has embraced the idea of imposing a financial transaction tax, the debate wages on in other parts of the world. As surveyed in Schwert and Seguin (1993), the most contentious issue is whether a Tobin tax actually increases, rather than reduces, market volatility. For example, Song and Zhang (2005) show that a value-based transaction tax can either increase or decrease market volatility.

Empirical evidence is mixed on the effects of a financial transaction tax on price volatility. For example, Umlauf (1993) finds no evidence that a transaction tax reduced market volatility in the Swedish stock market during the 1980s. Similarly, Hu (1998) shows that a financial transaction tax in Hong Kong, Japan, Korea and Taiwan has no significant effect on market volatility. Recently, Meyer, Wagener, and Weinhardt (2015) examine the effect of the French financial transaction tax on trading volume and the bid-ask spread for a sample of French stocks in 2012. They find a decrease in trading volume after the implementation of such a tax but no significant change in the bid-ask spread for the sample of stocks. On the other hand, Westerhoff and Dieci (2006) show that imposing Tobin taxes can stabilize the market.

Leung, Leung, and Tsang (2015) examine the effect of a stamp duty (SD), a property transaction tax in Hong Kong, over the period of 1996-2007. As a Tobin tax, the SD is imposed on the buyer when a property is sold. SD rates differ with different property price ranges and this tax is progressive in nature. They find evidence of "bunching" around different price ranges, i.e., underpricing for tax avoidance purposes.[1]

In the literature, there is no study that examines the effect of a real estate Tobin tax on housing price volatility. This paper therefore aims to fill the void by studying the impact of a real estate transfer tax on housing price volatility in the United States. In contrast to the limited history of a financial transaction tax in the developed stock markets, real estate transfer taxes have been in place in the United States for over a long period of time. There are 36 states plus the District of Columbia (DC) that impose a transfer tax on real estate transactions, whereas 14 states do not impose such a tax. As a result, researchers have enough observations to examine the effect of such a tax on housing price volatility.

[1] Chen (2016) develops a theoretical model which shows that imposing Tobin taxes only on sellers is preferred to splitting the tax between the buyer and the seller.

The results of this paper have policy implications. If housing price volatility is higher in states that impose transfer taxes on the value of housing transactions than in those that do not impose such taxes, policy makers and the public may need to weigh the need to raise tax revenues against the potential drawbacks from a higher market volatility. In contrast, if imposing a real estate transfer tax can reduce price volatility, then more states may want to levy a tax on real estate transactions. Furthermore, despite the difference between real estate and financial transactions, the impacts of a real estate transfer tax on housing price volatility can shed some light on the potential effects from the proposed Tobin taxes on stocks and other financial securities.

The rest of the paper is organized as follows. Section 2 discusses the data, testable hypothesis, and methodology. Section 3 presents the empirical results. Section 4 discusses the policy implications of the findings and concludes.

2. Data, Testable Hypotheses, and Methodology

In the United States, some states levy a real estate transfer tax on the value of the property in transaction. Information on real estate transfer taxes by different states is obtained from the National Conference of State Legislatures. Only 14 states do not impose a real estate transfer tax: Alaska, Arizona, Idaho, Indiana, Louisiana, Mississippi, Missouri, Montana, New Mexico, North Dakota, Oregon, Texas, Utah, and Wyoming.[2] Five states impose a real estate transfer tax only recently in response to budget shortfalls. They are Michigan in 1993, South Carolina and South Dakota in 1996, Ohio in 2001, and Illinois in 2004. For the rest of states imposing such a tax, the transfer tax has been in place since at least the early 1960s. Many states split such a tax evenly between the buyer and the seller, whereas several states choose to impose the tax solely on the buyers or the sellers.

Quarterly housing price indexes are obtained from the Federal Housing and Finance Agency (FHFA). The expanded-data index series starts in the first quarter of 1975 and ends in the fourth quarter of 2012. As in Dolde and Tirtiroglu (2002), the quarterly return is measured by the logarithmic difference of the price index (P), i.e., $return_t = ln(P_t)\text{-}ln(P_{t-1})$. Since the data are of low frequency, housing price volatility is measured by the standard deviation of the quarterly returns, which is similar to that in Zhou and Haurin (2010) who use the standard deviation of the price appreciation rates for a sample of houses.[3] From the Census Bureau, the following annual data are obtained for each state:

[2] The State of Arizona is included in this group since it imposes a minuscule flat fee of $2 per contract.

[3] For higher frequency data, other volatility models can be used, e.g., Hui and Zheng (2012) use a multivariate stochastic volatility model with monthly housing prices in Hong Kong.

mortgage rates (*Mortgage*), state resident population (*Population*), median household income (*Income*), unemployment rate (*Jobless*), and annual state and local property taxes (*Propertytax*).

Table 1 presents the summary statistics. Except for the mortgage rates, the logarithmic difference of the variable is taken to measure the changes in these variables. As can be seen from the minimum and the maximum values, there are large variations in the variables, which is expected given the differences in the characteristics of individual states. As indicated by the correlation coefficients, housing price volatility is not significantly correlated with the changes in the state household income nor with the change in state population. However, price volatility is positively correlated with the mortgage rates, changes in the jobless rate, and the state and local property taxes. The augmented Dickey-Fuller test is applied to the price volatility time series and the null hypothesis of a unit root in the time series is rejected at the 1% significance level. For brevity, the unit root test results are not presented in the paper.

Table 1 Summary Statistics

Panel A. Summary Statistics

	Period	N	Mean	Std	Minimum	Maximum
Volatility	1975-2012	1,938	0.0179	0.0311	0.0006	0.4634
Mortgage	1978-2011	1,733	6.12	2.10	2.24	17.37
Δ*Income*	1984-2011	1,377	-0.0304	0.05722	-0.2009	0.1450
Δ*Population*	1976-2012	1,887	0.0102	0.0118	-0.0599	0.1158
Jobless	1976-2012	1,683	6.1199	2.0975	2.2417	17.3667
Δ*Propertytax*	1976-2010	1,683	0.0681	0.0721	-0.60	1.6644

Panel B. Correlation Coefficients

	Mortgage	**Δ*Income***	**Δ*Population***	**Δ*Jobless***	**Δ*Propertytax***
Volatility	0.41**	0.03	-0.03	0.10**	0.12**
Mortgage		-0.13**	0.02	0.02	0.11**
Δ*Income*			0.04	0.24**	0.001
Δ*Population*				0.02	0.19**
Δ*Jobless*					0.03

Note: The housing price index and the 30-year conventional mortgage rate (%) in each state and the District of Columbia are obtained from the FHFA. Housing price volatility is the standard deviation of the changes in quarterly house price index levels. Other variables are obtained from the Census Bureau. Unless indicated otherwise, the logarithmic difference is used to measure the rate of changes in these variables. *Mortgage* is the state mortgage rate. Δ*Income* is the median household income. Δ*Population* is the annual state resident population. Δ*Jobless* is the state unemployment rate in percentage. Δ*Propertytax* is the annual state and local property tax collections. In parentheses are the t-statistics. ** and * indicate significance at the 1% and 5% levels, respectively.

Hypothesis: Housing prices are as volatile in the states that impose a real estate transfer tax as in those that impose no such a tax.

This hypothesis is first tested via a t-test. As a robustness check, the nonparametric Wilcoxon rank-sum test is used to test the null hypothesis again. It is obvious that a simple t-test or the Wilcoxon test may not be adequate given that there are other economic and demographic factors that impact housing prices. For example, Dolde and Tirtiroglu (2002) document that increases in housing price volatility in different regions of the United States are associated with regional income decelerations and relatively higher interest rates. Capozza, Hendershott, and Mack (2004) find that housing prices in 62 larger U.S. metropolitan areas are positively related to population changes and real household incomes. Miller and Peng (2006) find that the per capita gross metropolitan product growth rate Granger-causes housing price volatility in a sample of 277 metropolitan statistical areas in the United States over the third quarter of 1990 to the second quarter of 2002. Similarly, Deng, Ma, and Chiang (2009) also find that housing prices are related to these economic and demographic factors. As a result, the following regression model is used to control for these well-known economic and demographic factors.

$$Volatility_{i,t} = \alpha + \beta_1 Volatility_{i,t-1} + \beta_2 tax_{i,t} + \beta_3 D86_{i,t} + \beta_4 Mortgage_{i,t} + \beta_5 \Delta Population_{i,t} + \beta_6 \Delta Income_{i,t} + \beta_7 V\Delta Jobless_{i,t} + \beta_8 \Delta Propertytax_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *Volatility* is housing price volatility, and $Volatility_{t-1}$ is the lagged housing price volatility. The dummy variable *tax* takes a value of one if a state imposes a real estate transfer tax in a specific year and zero otherwise.[4] The variable *D*86 is a dummy variable that takes a value of one for the years after 1986 and zero otherwise. This dummy variable is used to control for the structural changes in the housing market after the tax reform of 1986 as discussed in Poterba (1991). Other control variables include the mortgage rates and changes in the state median household income, state population growth rate, unemployment rate in a state, and the state and local property taxes.

The specification in Equation 1 assumes that the variable tax is not endogenous. Recent converts such as Michigan in 1993, South Carolina and South Dakota in 1996, and Ohio in 2001 have imposed a transfer tax on real estate transactions to raise state revenue after an economic recession. As discussed in Wheeler (2003), Illinois imposed such a tax in 2004 as a part of the package to close the budget shortfall. It is interesting to note that the states that did not impose a real estate transfer tax tend to be the ones with vast land but are not immune to land speculation.

[4] Since the parties to a real estate transaction can meet face-to-face, it will be up for negotiation to determine which party pays for the tax, regardless of whether a buyer or a seller is designated by law as the responsible party for paying the tax.

It is conceivable that the dummy variable *tax* may conceal the impact of a higher tax rate. One may argue that a state with a higher transfer tax rate may have a more significant impact on housing price volatility. As a result, an alternative model specification is presented below.

$$Volatility_{i,t} = \alpha + \beta_1 Volatility_{i,t-1} + \beta_2 rate_{i,t} + \beta_3 D86_{i,t} + \beta_4 Mortgage_{i,t} + \beta_5 \Delta Population_{i,t} + \beta_6 \Delta Income_{i,t} + \beta_7 V\Delta Jobless_{i,t} + \beta_8 \Delta Propertytax_{i,t} + \varepsilon_{i,t} \quad (2)$$

where *rate* is the real estate transfer rate.[5]

These two models are first estimated via the ordinary least squares method. Then, a fixed-effect model is applied to control for individual state effects. To account for irregularity in the error structures such as clustering, the models are re-estimated with heteroskedasticity and autocorrelation consistent covariance matrices to account for possible two-way clustering in states and time.

3. Results

Panel A in Table 2 presents the results from a univariate analysis of the volatility under the two tax regimes. Based on the result from the t-test, the null hypothesis of no difference in housing price volatility between the two groups is rejected at the 5% significance level. Under the nonparametric Wilcoxon rank-sum test, the null hypothesis is also rejected at the 1% significance level. Thus, these results suggest that housing price volatility is lower in states that impose real estate transfer taxes than in those that impose no such taxes.

Since five states introduced a real estate transfer tax during the sample period, a comparison is conducted to examine the pseudo difference in the change in housing price volatility between the five states and the two samples of states, namely, the states that impose taxes and those who do not impose taxes. Panel B in Table 2 shows a comparison of price volatility, over a five-year window before and after the introduction of the tax, between these five states and the states that impose taxes and those who do not impose taxes. As shown in Panel B, the introduction of a real estate transfer tax has no significant impact on housing price volatility in these five states. As shown in the last two columns of Panel B, the changes in housing price volatility in these five states do not significantly differ from those in the states that impose no taxes or those that impose such taxes. Thus, there is no evidence for an introduction effect in these five states.[6]

[5] I thank an anonymous reviewer for suggesting this analysis.
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Table 2 Housing Price Volatility in Different States

Panel A: All of Sample

	No-tax States	Tax States	Difference	*t* statistic	Wilcoxon *z* statistic
Volatility	0.0202	0.0167	-0.0035	-2.36*	4.45**

Panel B: The Five Switched States

	Five States	No-tax States	Tax States	Five vs. No-tax States	Five vs. Tax States
Before	0.0056	0.0079	0.0064		
	(0.0018)	(0.0010)	(0.0003)		
After	0.0047	0.0065	0.0069		
	(0.0009)	(0.0004)	(0.0003)		
Difference	-0.0008	-0.0015	0.0004	-0.0006	0.0013
	(0.0014)	(0.0010)	(0.0003)	(0.0033)	(0.0015)

Note: In Panel A, a t-test is used to test the null hypothesis of no difference in housing price volatility between the two groups. As a robustness check, the nonparametric Wilcoxon rank-sum test (the z-statistic) is also reported. In Panel B, volatility is the average calculated over a 5-year window before and after the introduction of a real estate transfer tax in Illinois, Michigan, Ohio, South Carolina, and South Dakota during the sample period. In parentheses are standard errors. ** and * indicate significance at the 1% and 5% levels, respectively.

As shown in Table 3, several model specifications are estimated to detect the presence of multicollinearity bias. In Model 1, only mortgage rates and changes in state population are included since Table 1 shows no significant correlation between these two variables. As expected, the coefficient for the lagged volatility in Model 1 is significantly positive, thus indicating a persistence in housing price volatility. The coefficient for the mortgage rates is significantly positive, thus reflecting the strong co-movement in gradual interest rate increases and housing price run-ups during good times and simultaneously precipitous drops in both interest rates and housing prices during economic downturns. The coefficient for changes in the state population is significantly negative, which is different from that in Capozza, Hendershott, and Mack (2004) who document a positive relation between population growth and housing price volatility. Besides the difference in samples, the cause for the different results is not known. The coefficient for the dummy variable *D*86 is significantly negative, which confirms a structural change in the housing price dynamics after the tax reform of 1986 as suggested by Poterba (1991).[7]

[7] A dummy variable is also included to account for the five states that introduced a real estate transfer tax during the sample period. Its coefficient is insignificant in general and thus not reported.

Table 3 Housing Price Volatility and Real Estate Transfer Taxes

	Model 1	Model 2	Model 3	Model 4	Fixed Effect
Constant	0.0024	0.0059	0.0029	0.0042	n/a
	(0.0036)	(0.0014**)	(0.0035)	(0.0015**)	
***Volatility*$_{t-1}$**	0.5585	0.4773	0.5534	0.4749	0.5550
	(0.0187**)	(0.0154**)	(0.0186**)	(0.0158**)	(0.0185**)
tax	-0.0007	-0.0006	-0.0008	-0.0008	-0.0006
	(0.0010)	(0.0004)	(0.0010)	(0.0004*)	(0.0009)
***D*86**	-0.0042	-0.0009	-0.0045	-0.0604	-0.0033
	(0.0017*)	(0.0007)	(0.0017**)	(0.0007**)	(0.0008*)
Mortgage	0.0010	0.0000	0.0009	0.0002	0.0011
	(0.0003**)	(0.0001)	(0.0003**)	(0.0001)	(0.0001**)
Δ*population*	-0.0784	-0.0784	-0.0824	-0.0604	-0.0785
	(0.0388*)	(0.0146**)	(0.0386*)	(0.0150**)	(0.0383*)
Δ*Income*		0.0052		0.0032	
		(0.0031)		(0.0033)	
Δ*Jobless*			0.0020	0.0008	0.0020
			(0.0004**)	(0.0002**)	(0.0004**)
Δ*P ropertytax*				0.0026	
				(0.0032)	
Adj. R^2	0.47	0.49	0.48	0.50	n/a
# of obs.	1,733	1,377	1,733	1,275	1,733

Note: The model is estimated with the generalized linear model method. The dependent variable is the housing price volatility. The dummy variable *tax* takes a value of one if a state imposes a transfer tax, and zero otherwise. The fixed-effect model is used to control for individual state effects. Other control variables include a dummy variable *D86* for the 1986 tax reform effect, state average mortgage rate (*Mortgage*), annual median state household income (*Income*), annual state population (*Population*), annual unemployment rate (*Jobless*), and annual state and local property taxes (*Propertytax*). In parentheses are standard errors. ** and * indicate significance at the 1% and 5% levels, respectively.

In Model 2, changes in the state household income, which has a significantly negative correlation with mortgage rates, is added. The coefficients for lagged volatility and changes in the state population are still significant. However, the coefficients for both the mortgage rate and the income variable are insignificant in Model 2. It is surprising that the coefficient for the income variable is insignificant since the conventional wisdom is that demand for housing is related to household income. For example, an increase in the state income level may lead to run-ups in housing prices and thus a higher price volatility, which is found in Dolde and Tirtiroglu (2002), and Capozza, Hendershott, and Mack (2004).[8]

[8] As pointed out by the reviewer, the debt-to-income ratio may be a better measurement for demand for housing. Unfortunately, the debt-to-income ratio, although available at the national level, is not available at the state level.

Obviously, income is tied to employment. As a result, the income variable is replaced by the state jobless rate in Model 3. The coefficient for the changes in the state unemployment rate is significantly positive, which indicates a more volatile housing market during tough economic times. Notice that the coefficients for the population variable remains significantly negative after the introduction of the jobless rate. The coefficient for mortgage rates is also significantly positive. However, the coefficient for the dummy variable *tax* is insignificant in Models 1-3, thus indicating no significant difference in housing price volatility between states that impose real estate transfer taxes and those that impose no such taxes.

In Model 4, all of the control variables are included. Again, the coefficients for the income and the property tax variables are insignificant. The coefficient for the dummy variable tax is significantly negative, thus indicating that housing prices are less volatile in the states that impose real estate transfer taxes. Such a result is consistent with those in Panel A of Table 2. However, given the results from Model 2, the inclusion of the income and the property tax variables creates debate on the validity of this result. Although not reported, a comparison of the Akaike information criterion (AIC) indicates that Model 3 has the lowest value and is thus preferred to Models 2 and 4. As a result, Model 3 is re-estimated to adjust for the fixed-effects from individual states.

Also shown in Table 3, the results from a fixed-effect model are similar to those in Model 3. In addition to lagged volatility, only three economic variables are significant factors, i.e., mortgage rates, changes in state population, and changes in state jobless rate. The dummy variable for the 1986 tax reform is still significantly negative. Most important is the fact that the coefficient for the tax dummy variable is insignificant. Thus, one cannot reject the null hypothesis that there is no difference in housing price volatility between states that impose real estate transfer taxes and those that do not impose such taxes. Proponents of Tobin taxes argue that such taxes make it hard for speculators to engage in market-destabilizing activities, e.g., flipping houses. By reducing the number of these speculators from the housing market, a real estate transfer tax can stabilize housing prices. The empirical results so far do not provide any support for this argument.

Would a state with a higher tax rate enjoy lower housing price volatility? As shown in Table 4, the dummy variable *tax* is replaced with the variable *rate*, which is a state transfer tax rate. For comparison purposes, the same models in Table 3 are estimated. AIC is used again in model selection. Almost model by model, the results in Table 4 are similar to those in Table 3. A glance of the results in Model 3 and the fixed-effect model shows that the coefficient of the variable *rate* is insignificant. Thus, there is no evidence that housing price volatility is significantly lower in states with a higher real estate transfer tax rate than in those with a lower tax rate.

Table 4 Housing Price Volatility and Real Estate Transfer Taxes – Alternative Model Specifications

	Model 1	Model 2	Model 3	Model 4	Fixed Effect
Constant	0.0015	0.0053	0.0019	0.0035	n/a
	(0.0035)	(0.0014**)	(0.0002)	(0.0015)	
***Volatility*$_{t-1}$**	0.5585	0.4803	0.5534	0.4787	0.5543
	(0.0187**)	(0.0153**)	(0.0186**)	(0.0157**)	(0.0185**)
rate	0.0007	-0.0001	0.0008	-0.0003	0.0008
	(0.0011)	(0.0004)	(0.0011)	(0.0004)	(0.0010)
D86	-0.0042	-0.0008	-0.0045	-0.0006	-0.0036
	(0.0017*)	(0.0007)	(0.0017**)	(0.0007)	(0.0008**)
Mortgage	0.0010	0.0001	0.0010	0.0003	0.0011
	(0.0003**)	(0.0001)	(0.0003**)	(0.0001*)	(0.0001**)
Δ*population*	-0.0748	-0.0541	-0.0784	-0.0590	-0.0759
	(0.0388*)	(0.0146*)	(0.01386*)	(0.0153**)	(0.0383*)
Δ*Income*		0.0052		0.0033	
		(0.0031)		(0.0033)	
Δ*Jobless*			0.0020	0.0007	0.0020
			(0.0004**)	(0.0001**)	(0.0004**)
Δ*Propertytax*				0.0024	
				(0.0032)	
Adj. R^2	0.47	0.48	0.49	0.50	n/a
# of obs.	1,733	1,377	1,733	1,275	1,733

Note: The dependent variable is the housing price volatility. The variable *rate* is the actual tax rate with a value of zero assigned for states that do not impose a real estate transfer tax. A fixed-effect model is used to control for individual state effects. The dummy variable *tax* takes a value of one if a state imposes a transfer tax, and zero otherwise. *Volatility*$_{t-1}$ is the lagged volatility. Other control variables include a dummy variable *D86* for the 1986 tax reform effect, state average mortgage rate (*Mortgage*), annual median state household income (*Income*), annual state population (*Population*), annual unemployment rate (*Jobless*), and annual state and local property taxes (*Propertytax*). In parentheses are t-statistics. ** and * indicate significance at the 1% and 5% levels, respectively.

Finally, since it is conceivable that there is clustering both by time and state, failure to control for the clustering effects would lead to underestimation of the standard errors and thus a higher t-statistic as discussed in Petersen (2009). Model 3 is estimated again to adjust for the two-way clustering effect as in Thompson (2011) and the results are shown in Table 5.

As can be seen in Table 5, there are some drastic changes in the standard errors for several coefficients. For example, the coefficients for the variable *D86* and mortgage rates are no longer significant. However, lagged volatility, changes in state population, and changes in state jobless rate are still significant explanatory variables. More importantly, the coefficients are insignificant for either the dummy variable *tax* or the variable *rate*. Combining the results from the fixed-effect model in Tables 4 and 5, one can conclude that there is no significant difference in housing price volatility between states that impose real estate transfer taxes and those that do not impose such taxes.

Table 5 Housing Price Volatility and Real Estate Transfer Taxes – A Robustness Check for Clustering Effects

	Model 1	Model 2
Constant	0.0029	0.0019
	(0.0103)	(0.0096)
***Volatility*$_{t-1}$**	0.5534	0.5534
	(0.0712*)	(0.1650*)
tax	-0.0008	
	(0.0017)	
rate		0.0008
		(0.0015)
***D*86**	-0.0045	-0.0045
	(0.0042)	(0.0041)
Mortgage	0.0009	0.0010
	(0.0008)	(0.0007)
Δ*population*	-0.0824	-0.0784
	(0.0280*)	(0.0267*)
Δ*Jobless*	0.0020	0.0020
	(0.0006*)	(0.0006*)
# of obs.	1,733	1,733

Note: As a robustness check, the regression model is re-estimated via the method in Thompson (2011) to adjust for the two-way clustering in time and states. The dependent variable is the housing price volatility. In Model 1, the dummy variable *tax* takes a value of one if a state imposes a transfer tax, and zero otherwise. The variable *rate* is the actual tax rate with a value of zero assigned for states that do not impose a real estate transfer tax. *Volatility*$_{t-1}$ is the lagged volatility. Other control variables include a dummy variable *D86* for the 1986 tax reform effect, state average mortgage rate (*Mortgage*), annual median state household income (*Income*), annual state population (*Population*), annual unemployment rate (*Jobless*), and annual state and local property taxes (*Propertytax*). In parentheses are t-statistics. * indicate significance at the 1% level.

4. Conclusions and Discussion

This paper examines the effect of a real estate transfer tax on housing price volatility in the United States. Results from both the t-test and the nonparametric test show that housing prices are less volatile in states that impose real estate transfer taxes than in those that impose no such taxes. However, after controlling for well-known economic and demographic factors, the regression analyses show no evidence that there is a significantly negative relation between housing price volatility and the tax dummy variable or the actual transfer tax rates. The conclusion is robust because the two-way clustering model is used to account for irregularities in the error structure.

For public policy debates, the results are interesting for two reasons. First, the argument of using a real estate transfer tax to dampen housing price volatility

may be invalid. Second, given the urgent need to raise revenues from such a tax, there is a concern that imposing a financial transaction tax may lead to a higher market volatility. The results in this study seem to alleviate this concern since housing price volatility in states that impose real estate transfer taxes is not significantly different from that in states that do not impose such taxes.

For future research, it will be interesting to expand this study by examining the effects of a real estate transaction tax in other countries, e.g., in Hong Kong as discussed in Leung, Leung, and Tsang (2015). One can also extend this study by examining city-level data, e.g., using data from metropolitan statistical areas in the United States.

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