The Impact of a Rise in the Real Estate Transfer Taxes on the French Housing Market

Guillaume Bérard & Alain Trannoy

Aix-Marseille School of Economics (AMSE)

AFSE - DG Trésor 3rd conference on Public Policy Evaluation
December 14th, 2017

Introduction
The reform

- A reform of the French real estate transfer taxes (RETT) was engaged from March 2014 (DMTO)
- The Finance Act for 2014 allows the *départements* to vote an **optional increase** in their part of the taxes from 3.80% to 4.50% (i.e. an increase of 18.42%)
  - Starting point for a natural experiment
- Reform enacted as temporary
  - However, on December 2014 the reform was made permanent

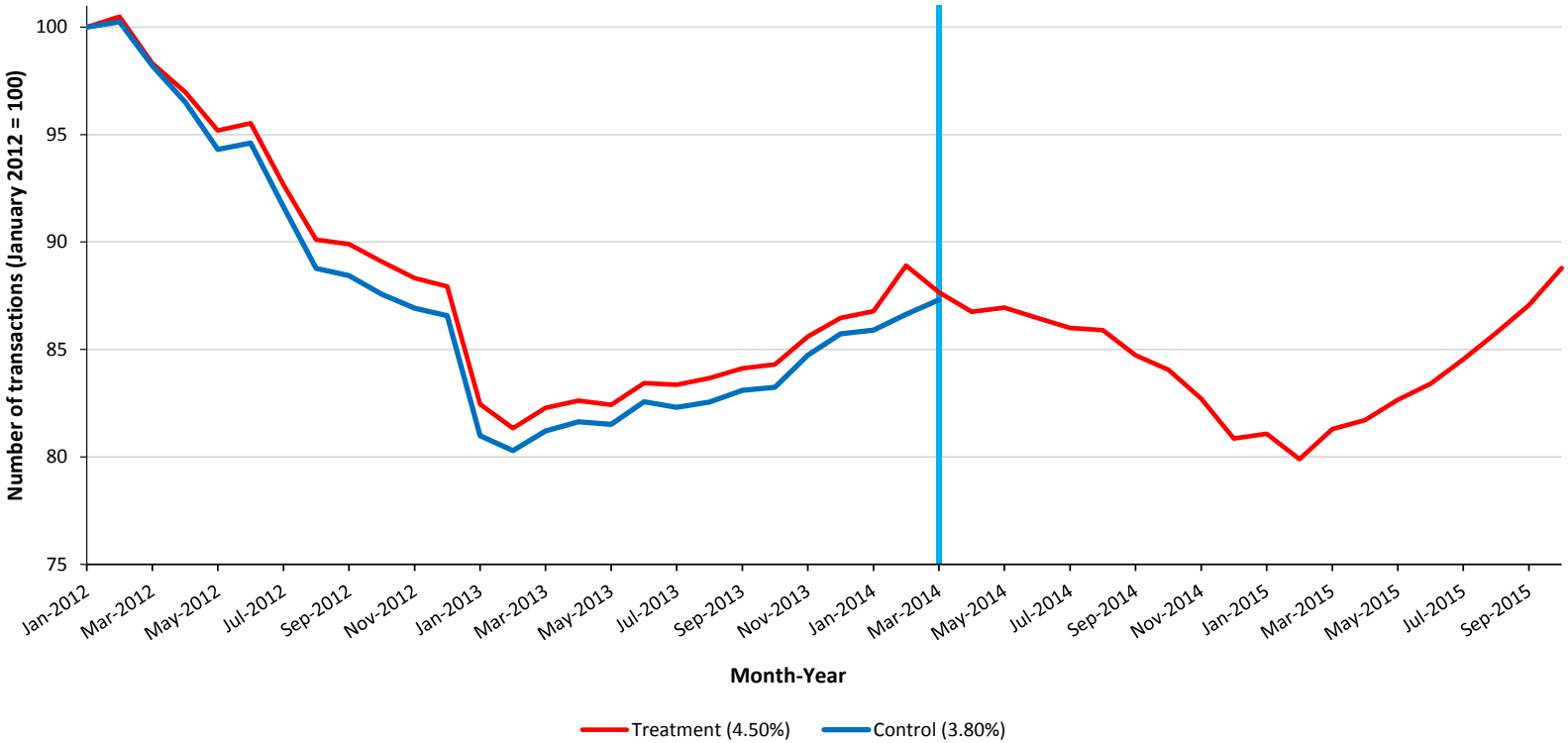
Introduction
The RETT system in France (1/2)

- RETT are calculated on the sale price after abatements (quite limited and scarce)
- RETT are decomposed as follows:
  - **3.80% goes to the départements** (purpose of the reform)
  - 1.20% goes to the municipalities
  - 0.09% goes to the State
- Total rate: 5.09% of the tax base before reform, 5.81% after

Introduction
The RETT system in France (2/2)

- The transaction costs (i.e. the RETT + the notary and experts' fees) are **paid by the buyer, and must be paid in full when the bill of sale is signed**
  - Average rate: 7% of the sale price
  - Represent on average €16,000
  - Mostly financed by savings
- Collected by the notary on behalf of the Treasury Department (*Direction Générale des Finances Publiques* or DGFiP).

Figure 1: Trend of the volume of transactions between treatment and control groups



Notes: the number of transactions of the *départements* in each group are cumulated over the previous 12 months, and correspond to the number of transactions in the *régime de droit commun* registered by the DGFiP in each *département*. Treatment group is composed of the *départements* which implemented the RETT increase in March (i.e. 58). Control group is composed of all the *départements* of the sample which did not implemented the RETT increase in March (i.e. 34). Vertical lines correspond to the implementation dates. Base 100 = January 2012.

Introduction
Purpose of the evaluation (1/2)

- We assume **no effect on the sale price**
- Confirmed empirically by the preliminary results of Bachelet and Poulhès, forthcoming (2018), using microeconomic data (notaries' databases)

Price effect

1. The French housing market is sticky in terms of price
2. No interest in changing the sale price (due to proportional RETT)
3. Why is the tax fully born by the buyers in the short run?
   - Out of the scope of the paper

Introduction
Purpose of the evaluation (2/2)

We focus on two potential effects on quantities, assuming no price reactions.

Anticipation effect (ex-ante effect)

- Agents should have brought forward the sale date
- Timing response
- Should precede the implementation month ($t-1$)

Retention effect (ex-post effect)

- Extensive margin response

Outline

1. Previous literature
2. Data
3. Empirical strategy
4. Estimates
5. Robustness checks
6. Model
7. Conclusion

Previous literature
(1/2)

- Previous literature on RETT is quite recent and scarce
- First evaluation of the effects of RETT on housing: Benjamin, Coulson and Yang (1993)
- In the following decade, research articles were more focused on the theoretical framework of the effects of transaction costs on residential mobility: Ioannides and Kan (1996) and Van Ommeren and Van Leuvensteijn (2005)
- The most important empirical research took place during the last five years

Previous literature
(2/2)

- Dachis et al.(2011), Davidoff and Leigh (2013), Besley et al. (2014), Best and Kleven (2016), Kopczuck and Munroe (2014), Slemrod et al. (2016)
- They showed that RETT is highly distorting in the short-run (in the number and price of transactions)
- Theoretical models of Nash bargaining
- Difference with France: **RETT in these countries are progressive or notches** (which generate bunching)

Data
Sources

- Dataset comes from the DGFiP, and was compiled by the *Conseil Général de l'Environnement et du Développement Durable (CGEDD)*
- Databases MEDOC + Fidji

Variable of interest

- Monthly tax bases by *départements*
- From January 2000 up to now

- **Exhaustive data!**

Empirical strategy
Difference-in-differences (1/3)

101 *départements* in France

Removed from the sample

- 9 *départements*
  1. Alsace-Moselle Region, because of particular legal status following the German annexation of 1870: Moselle 57, Bas-Rhin 67 and Haut-Rhin 68
  2. Paris 75
  3. Overseas *départements*: Guadeloupe 971, Martinique 972, Guyane 973, La Réunion 974 and Mayotte 976 (too much heterogeneity)

Empirical strategy
Difference-in-differences (2/3)

- Main issue: estimate the effects **simultaneously**, taking into account **the spread of implementation of the reform**

Treatment group (4.50%), by implementation date

1. 58 *départements* implemented in March 2014
2. 18 *départements* implemented in April 2014
3. 2 *départements* implemented in May 2014
4. 7 *départements* implemented in June 2014
5. 3 *départements* implemented in January 2015

- 88 *départements* in all

Empirical strategy
Difference-in-differences (3/3)

- **Attrition of the control group** over the regressed period

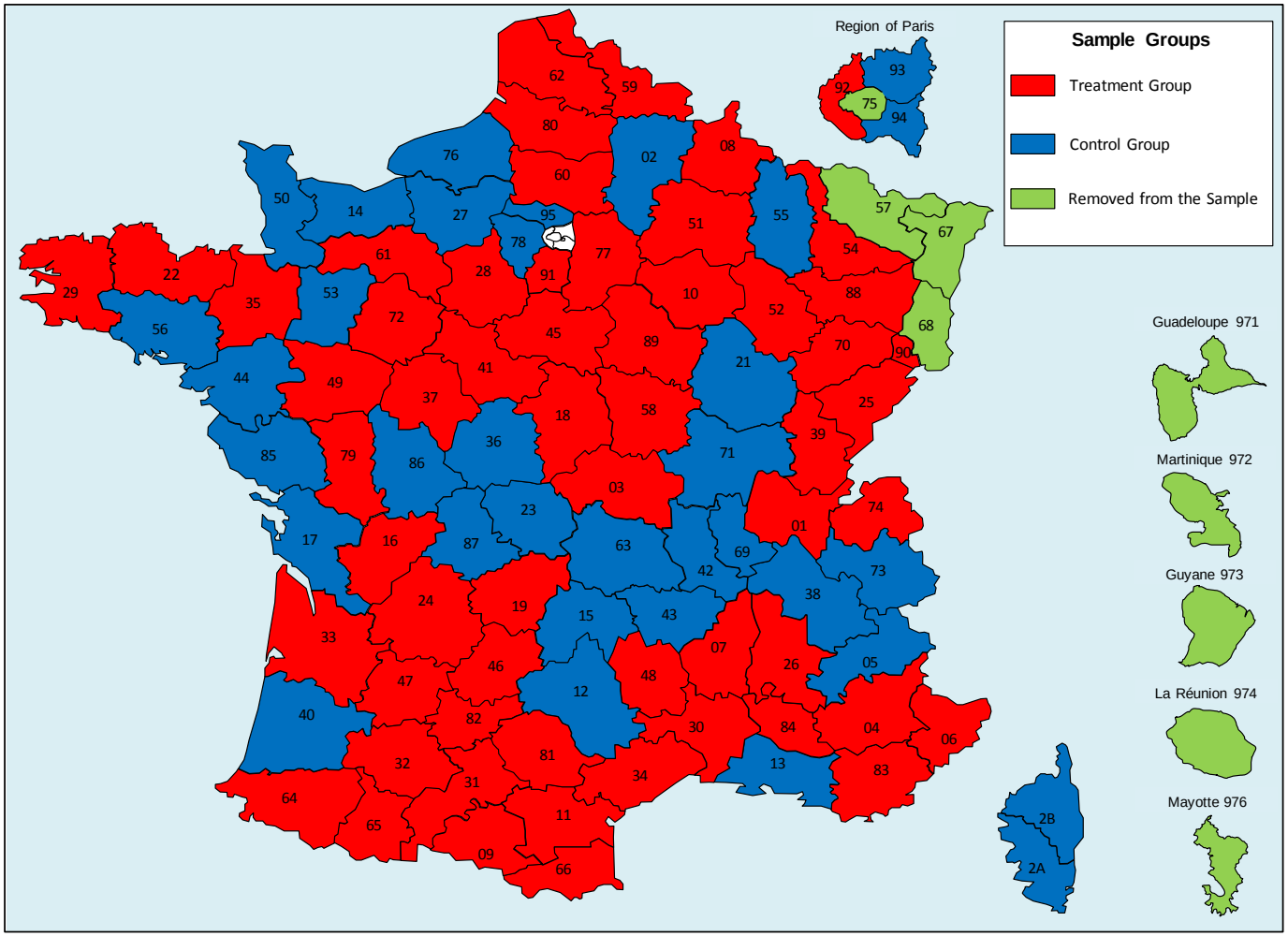
Table 1: Size of the treatment and control groups over the estimated period, by date of implementation

	Group		
Period	**Treatment**	**Control**	**Total**
January 2012 - January 2014	0	92	92
February 2014	58	34	92
March 2014	76	16	92
April 2014	78	14	92
May 2014 - November 2014	85	7	92
December 2014 - October 2015	88	4	92

Notes: numbers correspond to the number of *départements*.

Empirical strategy

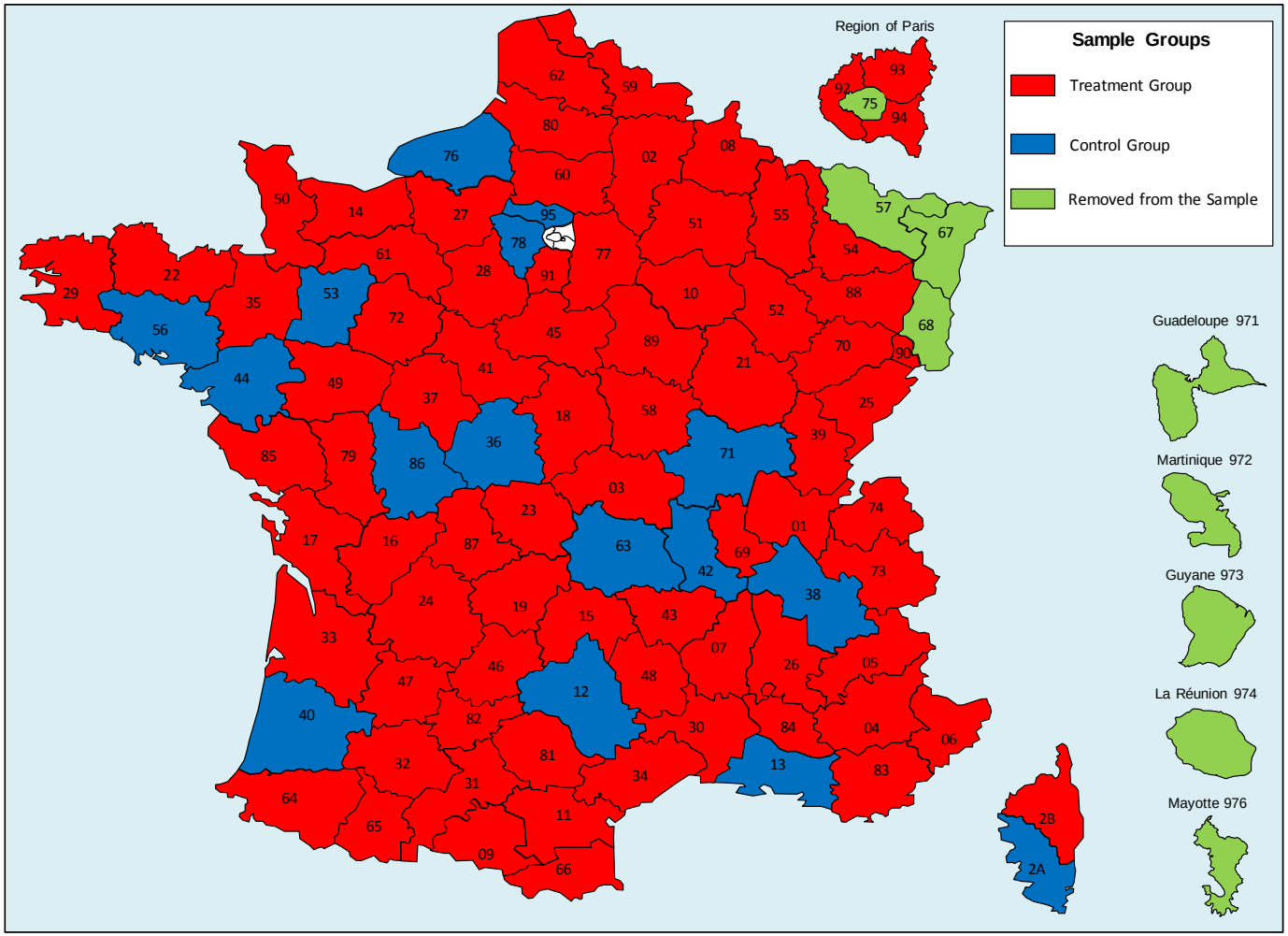
Map of the Treatment and Control Départements - **February 2014**



Sources: original map comes from ExcelDownloads; authors' drawing.

Empirical strategy

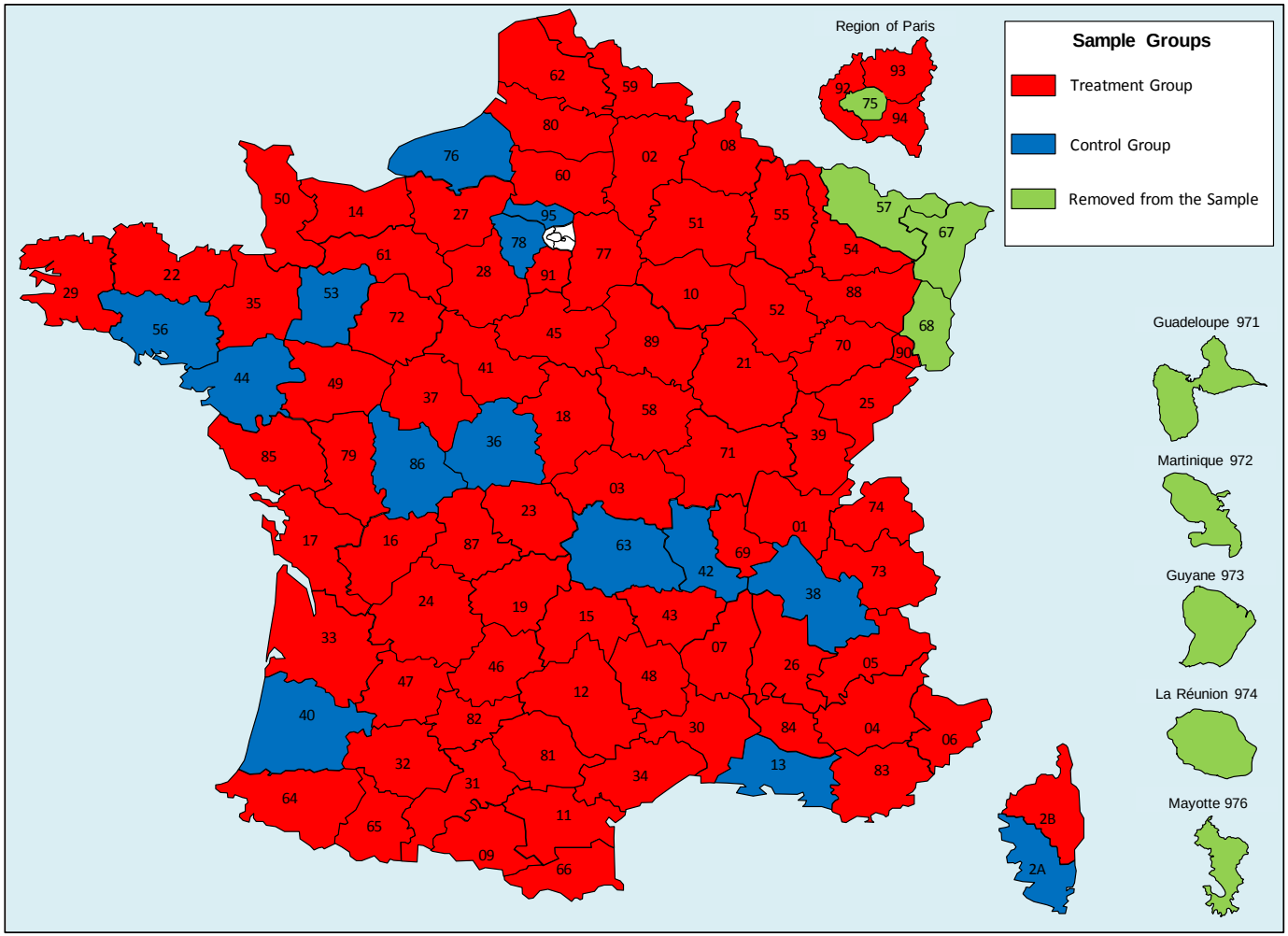
Map of the Treatment and Control Départements - **March 2014**



Sources: original map comes from ExcelDownloads; authors' drawing.

Empirical strategy

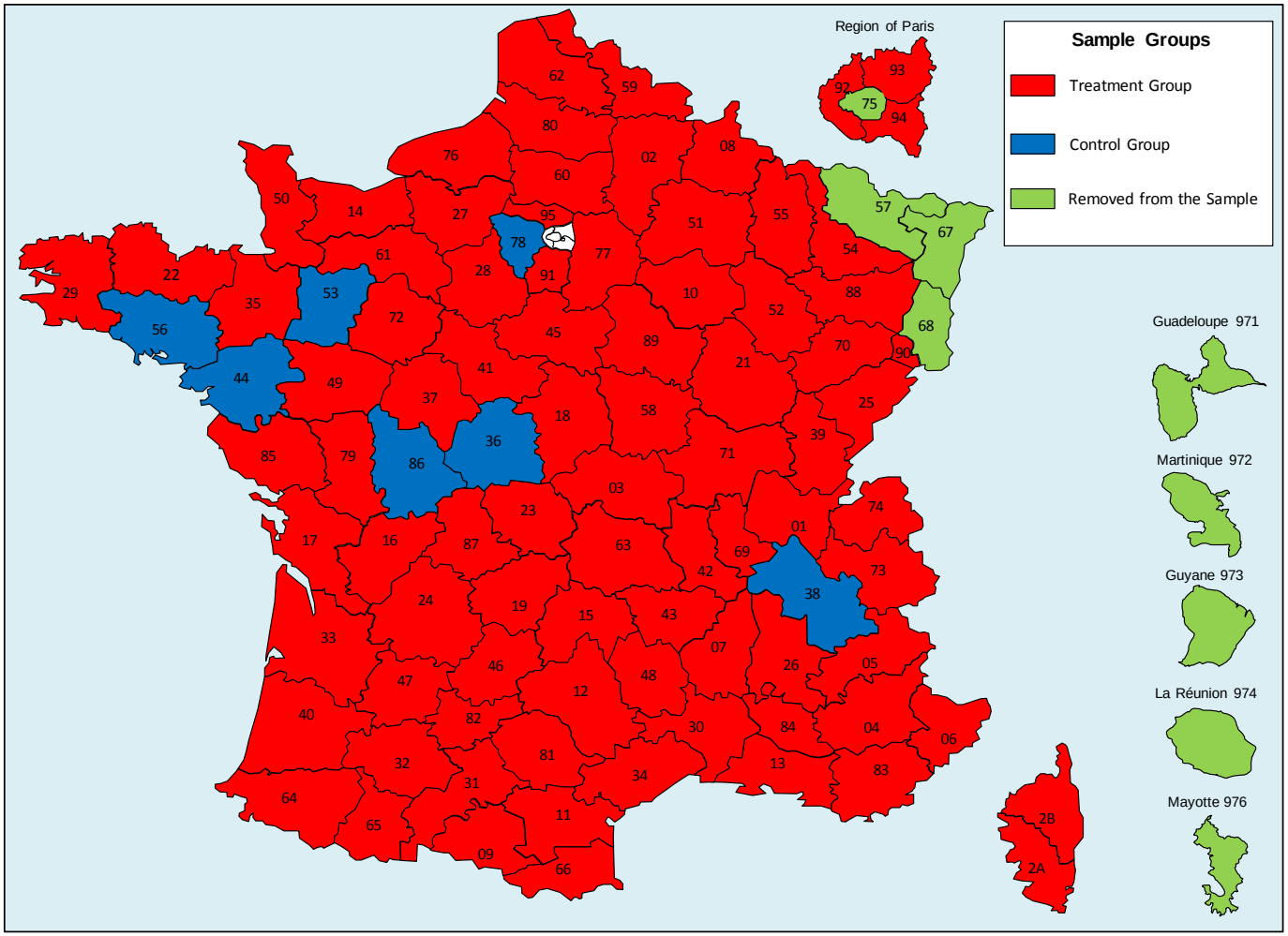
Map of the Treatment and Control Départements - **April 2014**



Sources: original map comes from ExcelDownloads; authors' drawing.

Empirical strategy

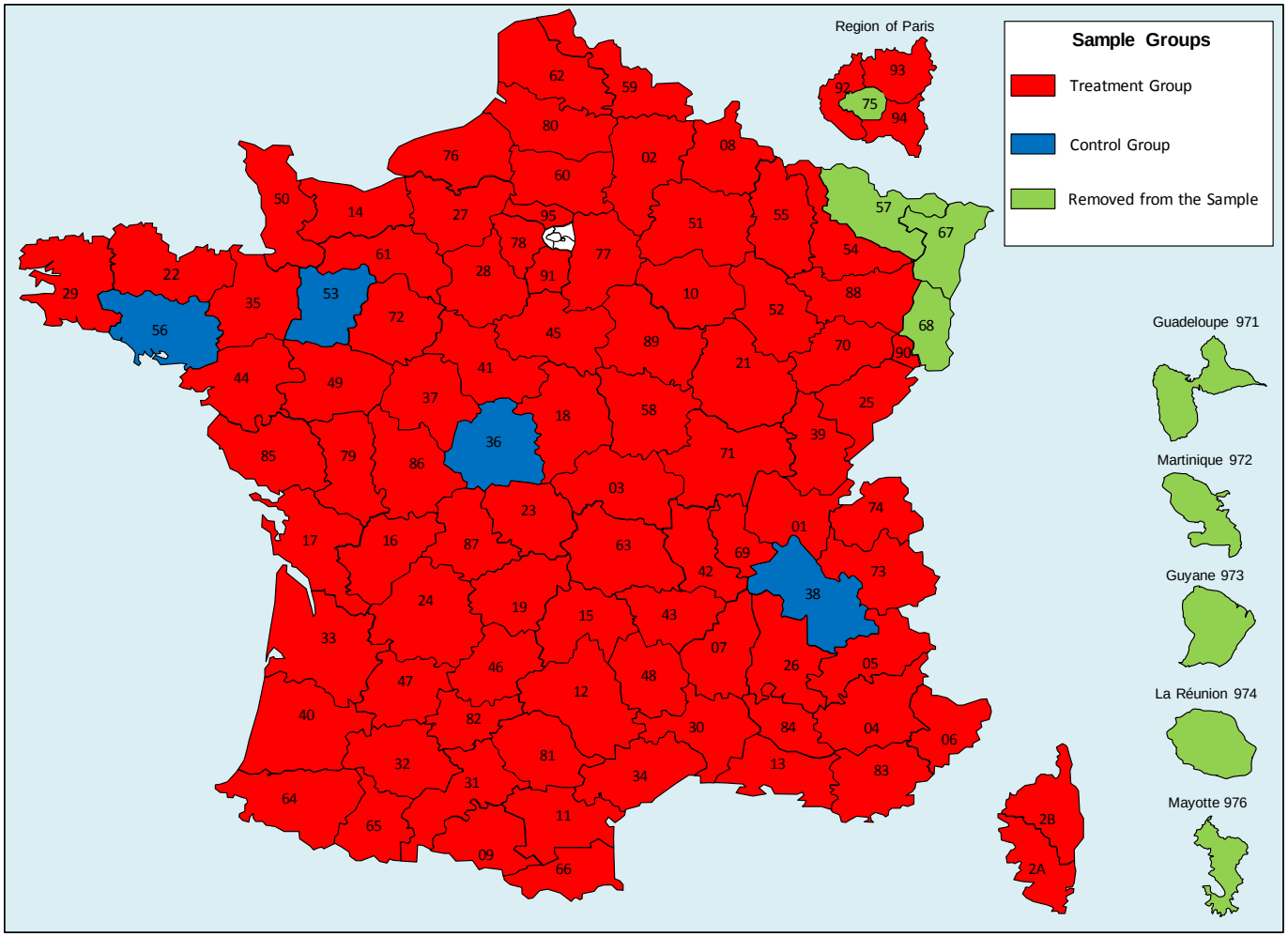
Map of the Treatment and Control Départements - **May 2014 to Nov. 2014**



Sources: original map comes from ExcelDownloads; authors' drawing.

Empirical strategy

Map of the Treatment and Control Départements - **Dec. 2014 to Oct. 2015**



Sources: original map comes from ExcelDownloads; authors' drawing.

Empirical strategy
Econometric models

- **Quasi-myopic** models developed by Malani and Reif (2015)
- Monthly-based model:

$$\log Y_{dt} = \alpha_d + \lambda_t + \sum_{j=1}^{6} \beta_{Aj} Anticipation_{d,t=T_d-j} + \sum_{k=0}^{19} \beta_{Rk} Retention_{d,t=T_d+k} + \rho X_{dt} + \epsilon_{dt}$$

Where T_d is equal to the implementation month of the reform in a *département d*

- Parsimonious model:

$$\log Y_{dt} = \alpha_d + \lambda_t + \beta_{A1} Anticipation_{d,t=T_d-1} + \beta_2 Retention_{d,t\in[T_d,T_d+19]} + \rho X_{dt} + \epsilon_{dt}$$

- Regressed period: January 2012 to October 2015

Estimates
Anticipation effect

Anticipation effect

The volume of transactions increased by **28%** (significant at the 1% level), the month just before the implementation month (i.e. $T_d - 1$)

- Proof that there was a **timing response** from the buyers and sellers to avoid the taxes increase
- Confirmed by the estimates on the tax revenues

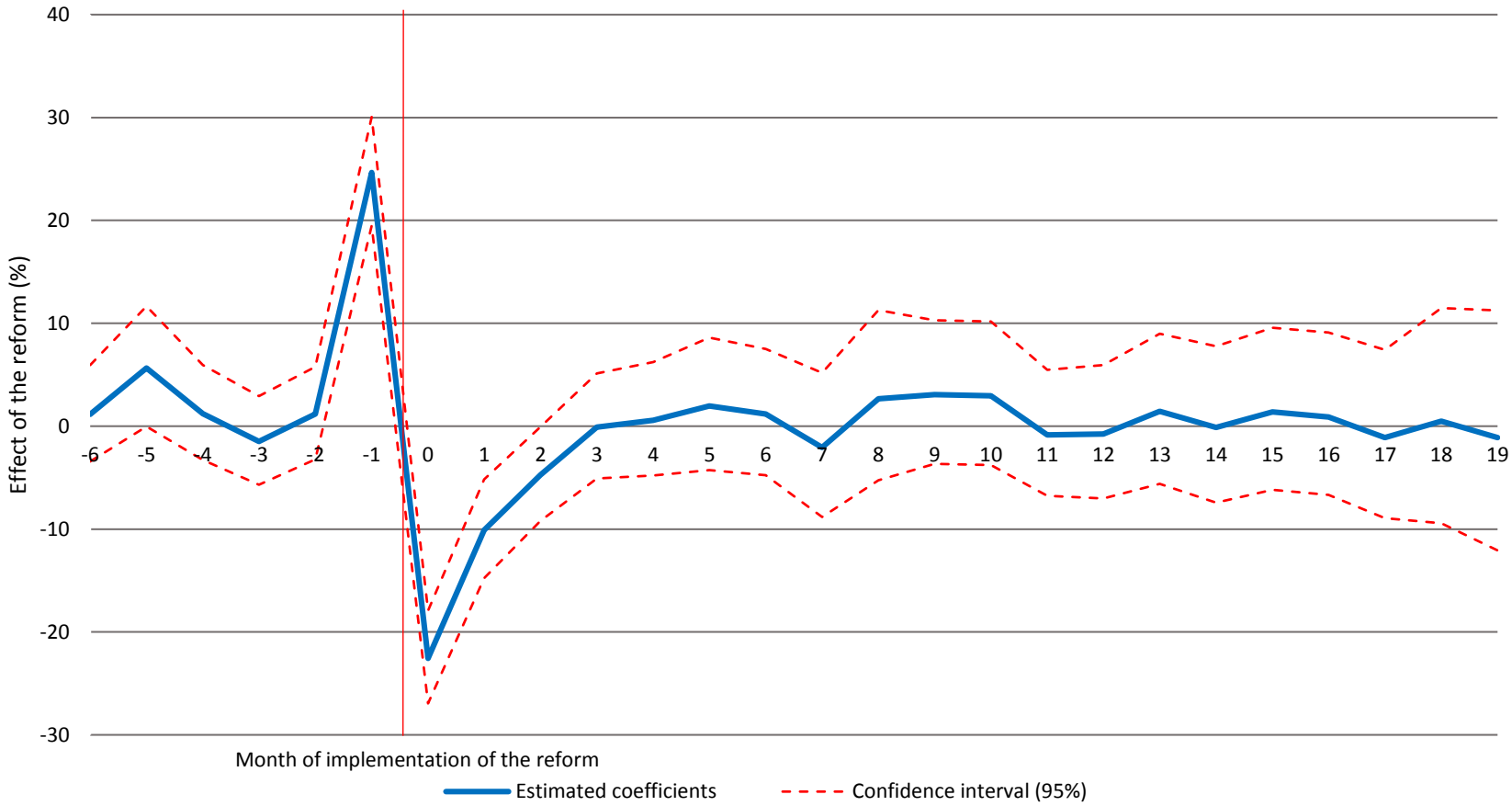
Estimates
Retention effect

Retention effect

Average decrease in the volume of transactions of **7%** (significant at the 1% level)

- Most of the decrease took place during the first months following the RETT increase
- Elasticity of the tax base to the tax: - 0.45
- Confirmed by the estimates on the tax revenues (10% increase instead of 18.42%)
- Elasticity of the tax revenue to the tax: 0.65

Figure 2: Effect of the reform on the volume of transactions, month by month before and after the implementation



Notes: month 0 corresponds to the month of implementation of the reform in a given *département*.
Sources: CGEDD and DGFiP, Assiettes des droits de mutation immobiliers par département, from 2000 to 2016; authors' computation.

Estimates
Net effect

- Issue: **gap in the data**

Net effect

- Using moving-average bimonthly data
- The transactions of the month of anticipation $T_d - 1$ and the following month T_d are added up
- The volume of transactions decreased on average by **4.6%** over a period of ten months after the reform (i.e. $T_d + 9$) (significant at the 5% level)

- Represents around **35,000 missing transactions**

Robustness checks

1. Test on possible self-selection: Logit
2. Placebo test
3. Alternative dependent variables
4. Estimations using different periods and samples
5. Changes in local economic conditions
6. Removing possibly heterogeneous groups
7. Possible political selection bias between the treatment and control groups? Negative answer

Model
Puzzle

- The loss of transactions should be forever
- However, we get back after a few months to the initial situation
- No more difference between the treatment and control groups

Model
Behavioural-economics interpretation

- The rise of the tax is small in percentage, even though it represents a lot of money

Nobel Prize Richard Thaler

- People are ready to pay a relatively important "cost" to save €10 for a small purchase (e.g. at a restaurant)
- At the same time: they think that a €200,000 and a €205,000 housing are almost of the same values, except the deviation is €5,000!

Model
Optimization program

A RETT in t^* paid by the buyer and announced well in advance

$$Max \sum_{t=0}^{+\infty} \beta^t U(C_t, H_t)$$

$$C_t + (A_{t+1} - A_t) + p_t(\overline{H}_{t+1} - \overline{H}_t) = r_t A_t + R_t(\overline{H}_t - H_t) + Y_t \text{ for } t = 1, ..., t^* - 1$$

$$C_t + (A_{t+1} - A_t) + p_t(\overline{H}_{t+1} - \overline{H}_t) + \mathbf{1}_{\Delta \overline{H}_t} \tau p_t(\overline{H}_{t+1} - \overline{H}_t) = r_t A_t + R_t(\overline{H}_t - H_t) + Y_t \text{ for } t = t^*, .., +\infty$$

Model
FOC wrt to $\overline{H}_t$

For $t = 1, ..., t^* - 2$: no impact of the RETT

$$\partial L/\partial \overline{H}_{t+1} = 0 \Leftrightarrow \lambda_t p_t = \lambda_{t+1}\beta(p_{t+1} + R_{t+1})$$

For $t = t^* - 1$: a non-ambiguous anticipation effect

$$\partial L/\partial \overline{H}_{t+1} = 0 \Leftrightarrow \lambda_t p_t = \lambda_{t+1}\beta(p_{t+1}(1 + \mathbf{1}_{\Delta\overline{H_{t+1}}}\tau) + R_{t+1})$$

For $t = t^*...\infty$: an ambiguous retention effect

$$\partial L/\partial \overline{H}_{t+1} = 0 \Leftrightarrow \lambda_t p_t(1 + \mathbf{1}_{\Delta\overline{H_t}}\tau) = \lambda_{t+1}\beta(p_{t+1}(1 + \mathbf{1}_{\Delta\overline{H_{t+1}}}\tau) + R_{t+1})$$

No effect in case of homeownership, $\overline{H}_t = H_t$, the term R_{t+1} vanishes + Y_t is increasing with t, and housing a normal good which makes plausible $\mathbf{1}_{\Delta\overline{H_t}} = \mathbf{1}_{\Delta\overline{H_{t+1}}} = 1$

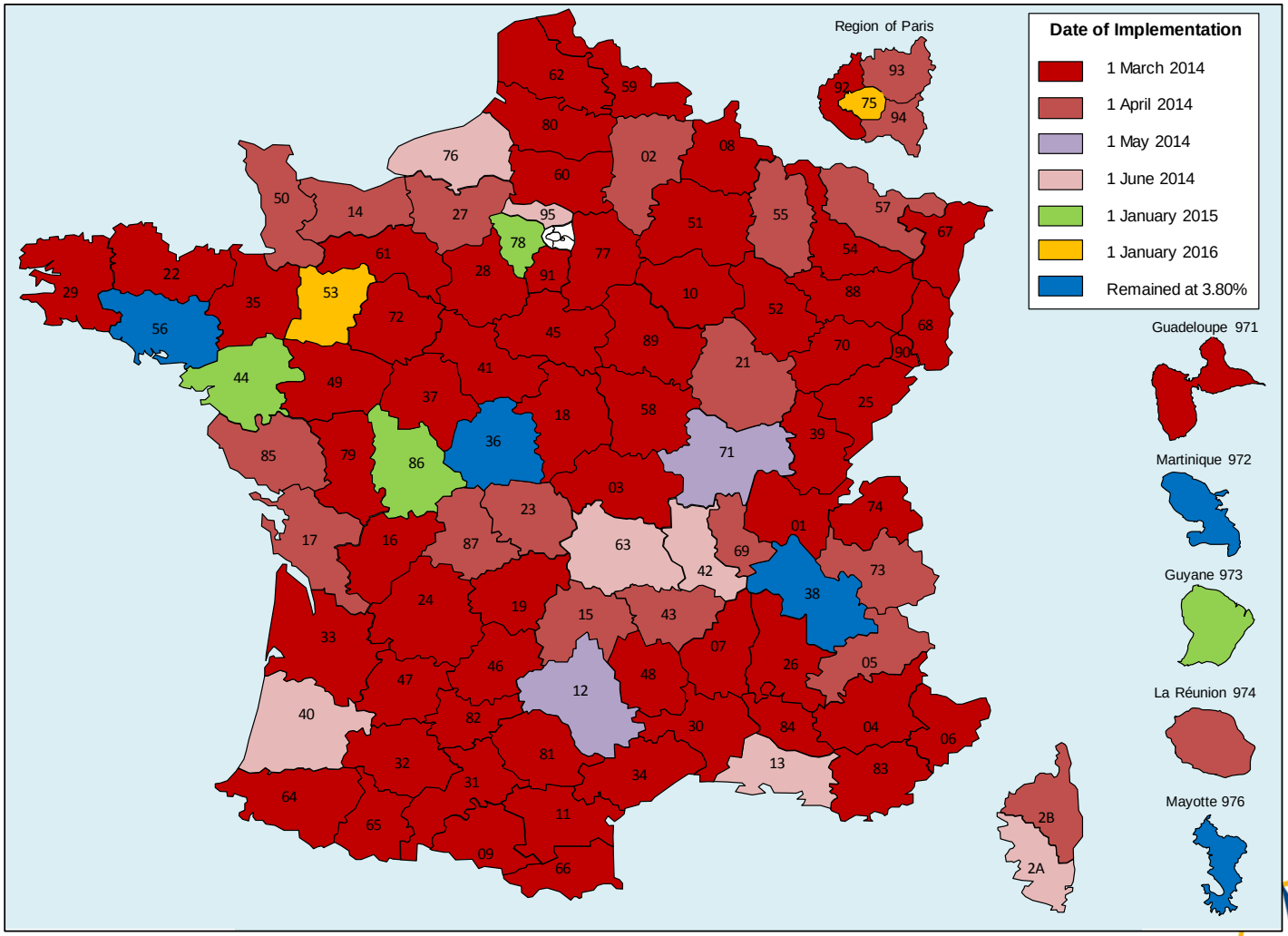
Conclusion

- RETT reform had an impact on the housing market:
  1. Buyers and sellers anticipated the taxes rise
  2. RETT increase had a **temporary negative impact on mobility**
  3. RETT rise was a "good" deal for the *départements* in terms of tax revenue

Thank you for your attention

Appendix - Introduction

Map of the RETT Increase Implementation Schedule by *Département*



Notes: map updated May 2017.
Sources: Authors' drawing and DGFiP, Droits d'enregistrement : taux, abattements et exonérations 2017.

Appendix - Introduction
Why the reform?

- Two main reasons why the government and the *départements* wanted to increase the RETT
  - The grants of the State decreased drastically (by €1.5 billion in 2013)
  - The 2007 economic downturn impacted the housing market, decreasing the tax revenues of the local governments
- Both factors resulted in a financial stranglehold of the local governments

Appendix - Empirical strategy

Difference-in-differences

"Final" control group (3.80%)

- 4 *départements*
  1. Indre 36
  2. Isère 38
  3. Mayenne 53 (implementation of the taxes increase in January 2016, therefore, out of the regressed period)
  4. Morbihan 56

Appendix - Data
Variables

- Matching data to the months when the bill of sale is signed (and not to the months of tax revenues collection)
- Tax revenues computation:

$$Total\ Tax\ Revenues_{dt} = Total\ Tax\ Bases_{dt} \times \tau_{dt}$$

where d corresponds to the *département*, t to the month and τ to the corresponding *département*'s RETT rate (i.e. either 3.80% or 4.50%)

Appendix - Data
Control variables (1/2)

Control variables

1. Unemployment rates
2. New residential construction
3. Mortgage rate
4. Population
5. Property tax rates
6. Share of social housing
7. Share of secondary residence

Sources: INSEE, Sit@del2 and Banque de France

Data
Control variables (2/2)

- Three local variables in order to compute an index of "good administration" of the local governments

Control variables

1. Salary cost
2. Operating revenue
3. Social spending

Sources: INSEE, Sit@del2 and Banque de France

Appendix - Robustness checks
Logit

- Binary logit on the variable of interest and control variables
- The binary logit is used to test whether there is a selection bias in the *départements* which implemented the tax increase, compared to the départements which did
- Treated *départements* $= 1$; Control *départements* $= 0$
- **Marginal effects are all close to zero**, meaning that there is no selection bias of the treated *départements*

Appendix - Robustness checks

Placebo test

- Check empirically the validity of the common trend assumption
- Regressed Period: January 2008 to October 2011
- Treatment period: February 2010 to October 2011
- Estimates show **no coefficients significantly different from zero** at the 10% level
- The common trend assumption is valid

Appendix - Robustness checks

Alternative dependent variables

- Possible bias due to an exogenous shock affecting the housing markets of the two groups differently
- Substitute the outcome variables with other variables, not affected by the reform
- *Régime dérogatoire*
- **No coefficient significantly different from zero** at the 10% level
- There was **no shock affecting differently the housing markets of the two groups**

Appendix - Robustness checks

Estimations using different period and sample

- Check the validity of our results to the choice of the period and sample groups
- Period: January 2013 to October 2014
- - treated, + control
- Estimates **close to the ones of the principal model**
- Estimates appear **robust to the choice of period and sample**

Appendix - Robustness checks

Changes in local economic conditions

- Results could be impacted by an exogenous economic shock affecting the sample groups differently
- Using the monthly unemployment rates
- Interaction variables between a dummy variable defining in which group belongs the *département d*, and the monthly unemployment rate of this *département d*
- Same method as in Benzarti and Carloni (2015)
- No difference between the estimates and our main results for the anticipation effect
- Estimates of the retention effect are slightly different
- We can conclude that **no exogenous local economic shock affected differently our groups**

Appendix - Robustness checks

Removing possibly heterogeneous groups

- Slightly different trends or levels in January 2015 and May 2014 groups
- Possible heterogeneity or unobservables that affect them differently over time
- Removing either January 2015 or May 2014 group or both, from the estimated sample
- Does not really change the estimates
- Concludes that **our findings are robust to the choice of the sample, and to a possible bias from heterogeneous départements**

Appendix - Political opinion

Political opinion (1/2)

- Main selection problem in natural experiments including a local fiscal policy reform: the political opinion of the local councillors that decided to implement (or not) the tax increase
- One could argue that left-wing or right-wing *départements* might have implemented the reform differently
- **The answer is no!**

Appendix - political opinion

Political opinion (2/2)

Table 2: Distribution of the *départements*' political opinion, by implementation or non-implementation of the RETT increase

	Party		
	Left-Wing	**Right-Wing**	**Total**
RETT = 4.50% (increased)	60.4% 58*	39.6% 38*	100% 96*
RETT = 3.80% (unchanged)	60% 3*	40% 2*	100% 5*
Whole country	60.4% 61*	39.6% 40*	100% 101*

* numbers correspond to the number of *département* used to compute the percentages.

Notes: the party of the local government corresponds to the political color when the RETT increase was voted. Then, it corresponds either to the 2011 or 2015 departmental elections. This computation was made among all the *départements* (i.e. 101).

Sources: Ministère de l'Intérieur and France-Politique, résultats des élections cantonales 2011 et départementales 2015.

Appendix - Model

Can be rationalize this behaviour? YES!

Parameters

Y_t Exogenous income

C_t Consumption of the good

H_t Housing consumption

$\overline{H}_t$ Owned-housing stock

$\overline{H}_t - H_t \gtrless 0$

R_t Rent

p_t Housing price

A_t Financial wealth, rate of return r_t

With or without credit constraints

$A_t \geq 0$, no possibility of borrowing

$A_t \gtrless 0$, possibility of borrowing