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Risk Analysis of the Real Estate Market in Switzerland

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In collaboration with comparis.ch

30 January 2013

Introduction

comparis.ch has started a collaboration with the chair of Entrepreneurial Risks at the department of Management, Technology and Economics (D-MTEC) of ETH Zurich since January 2012. We have been analyzing the Swiss real estate market, particularly the price development of the residential properties. The chair of Entrepreneurial Risks under the leadership of Professor Dr. Didier Sornette has developed a unique competency in detecting real estate and financial bubbles. Together with his collaborators, Dr. Peter Cauwels and Dr. Ryan Woodard at ETH Zurich and Prof. W.-X. Zhou, his former post-doc now at ECUST in Shanghai, he has successfully diagnosed in advance the US real estate market bubble that burst in 2007, the oil bubble that crashed in 2008, the Shanghai Composite index crashes in 2007 and 2009 and many other financial system crashes. Professor Sornette is also the director of the Financial Crisis Observatory, a scientific platform that focuses on identifying financial market bubbles before they crash. The present project, which benefits from focused research and development provided by Dr. Dorsa Sanadgol, Dr. Peter Cauwels and Master student Diego Ardila at the chair of Entrepreneurial Risks, has been jointly funded by the Commission for Technology and Innovation (CTI) and comparis.ch.

Data and Methodology

The data used in this study was collected by comparis.ch between January 2005 and December 2012. The property market division of comparis.ch gathers data from the 17 largest property portals in Switzerland. Duplicates in the aggregated data set have been automatically removed before performing any analysis. During the mentioned period, comparis.ch listed a total number of 1'013'171 residential properties for sale in the Swiss real estate market. This does not represent all the properties that were on the market between 2005 and 2013. However, it is assumed that the data collected by comparis.ch represents the market very closely. One important fact about this data set is that the prices are asking prices and not the final transaction prices.

The residential properties have been divided into two main categories: apartments and houses. Each category is further subdivided according to the number of rooms into small, medium and large sizes and aggregated quarterly for each Swiss district (Bezirk).

Table 1: Categorization of Properties Based on the Number of Rooms.

	Houses		Apartments	
Size	Min Rooms	Max Rooms	Min Rooms	Max Rooms
Small	1	4.5	1	3.5
Medium	5	6.5	4	5.5

Large

7+

6+

Real Estate Market in Switzerland

Figure 1 shows the change in median asking price per square meter between the first quarter of 2007 and the fourth quarter of 2012 for all apartments listed on comparis.ch during this period. The district of Entremont, marked in red, shows the highest price increase, where the median asking price of apartments per square meter has more than doubled since the first quarter of 2007. The districts of Zurich and Geneva along with the districts surrounding the lakes of Zurich and Geneva, as well as the touristic destinations in canton Graubünden all show significant rise in asking price per square meter, mostly between 51 and 75 percent. The regions marked with “*” represent the districts with not enough listings during the specified period. The cantonal median price change per square meter values are shown for those districts.

Median Asking Price Change per m², Apartments
1st quarter 2007 – 4th quarter 2012

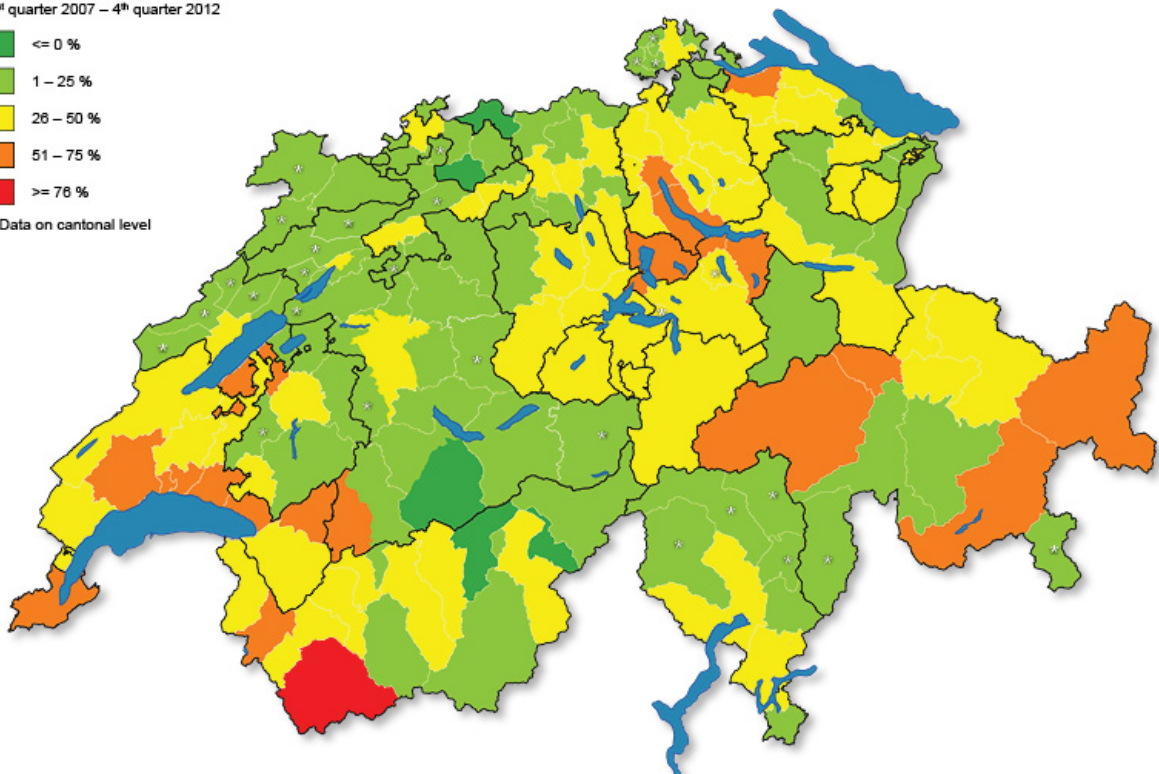
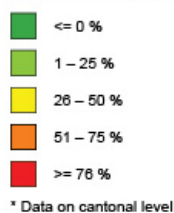


Figure 1: Change in Median Asking Price per Square Meter for Apartments in All Swiss Districts between 2007 Q1 and 2012 Q4.

Figure 2 shows the median asking price per square meter for apartments as of the 1st of January 2013. The most expensive apartments are located in the districts of Saanen (BE), Maloja (GR), Entremont (VS), and Meilen (ZH). Districts with “*” marks represent the districts with not enough listings at the last quarter of 2012. The cantonal median prices per square meter for apartments are shown instead.

Median Asking Price per m², Apartments
CHF per m², 1st January 2013

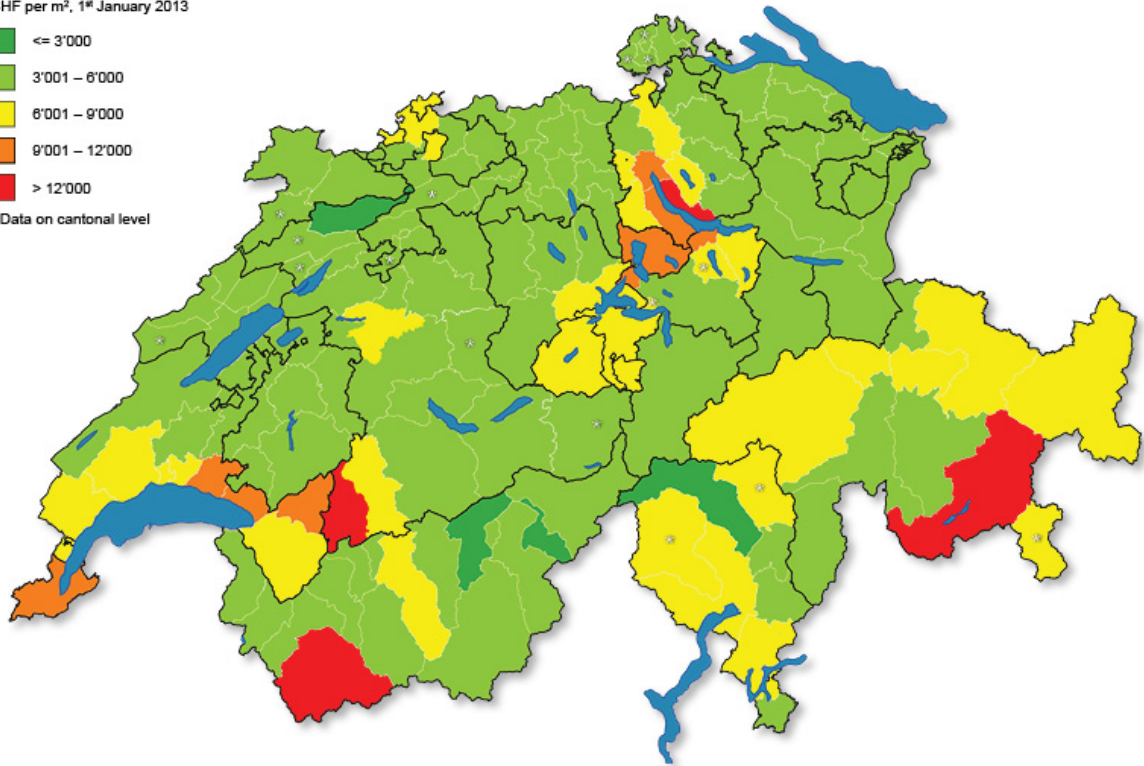
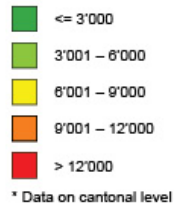
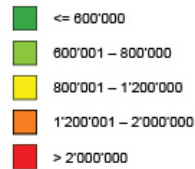


Figure 2: Median Asking Price per Square Meter for Apartments in all Swiss Districts as of 1st January, 2013.

Median asking price of medium size houses (5 to 6.5 rooms) are shown in figure 3, with the most expensive medium size houses located in the district of Höfe in the south side of the lake Zurich (over 2'000'000 Swiss Francs for a medium size house).

Median Asking Price, Medium Size Houses (5 – 6½ rooms)

CHF, 1st January 2013

* Data on cantonal level

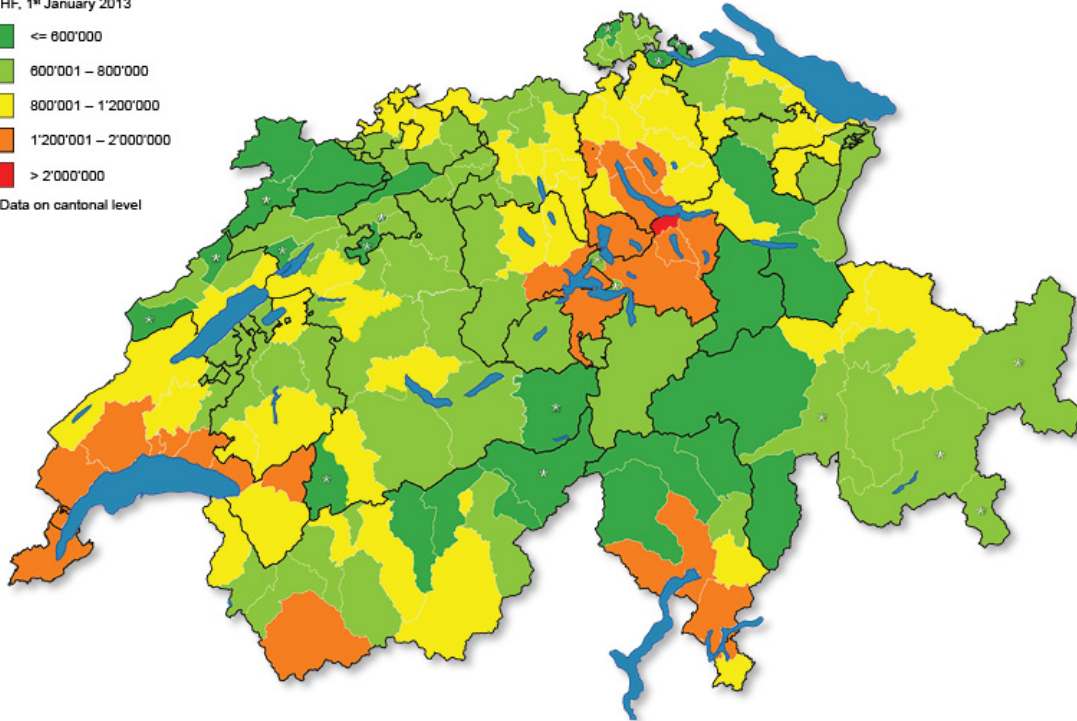


Figure 3: Median Asking Price of Medium Size Houses (5 to 6.5 rooms) in all Swiss Districts as of 1st January 2013.

The available data is not sufficient to generate price heat maps for the other categories of properties.

The Log Periodic Power Law (LPPL) model of bubbles

The term “bubble” refers to a situation in which excessive future expectations cause prices to rise above long-term trends and/or above what would be justified by rent prices, incomes, demographics and other fundamental factors. For instance, during a house-price bubble, buyers think that a home that they would normally consider too expensive is now an acceptable purchase because they will be compensated by a significant price increase in the future. They believe that they will not need to save as much as they otherwise might, because they expect the increased value of their home to do the saving for them. First-time homebuyers may also worry during a bubble that if they do not buy now, they will not be able to afford a home later. Furthermore, the expectation of large price increases may have a strong impact on demand if people think that home prices are very unlikely to fall, and certainly not likely to fall for long, so that there is little perceived risk associated with an investment in a home.

Technically, we define a bubble as the faster-than-exponential rise of a price due to the progressively increasing build-up of cooperation and interactions between investors. In a nutshell, speculative bubbles are caused by 1) precipitating factors that change public

opinion about markets or that have an immediate impact on demand and 2) amplification mechanisms that take the form of price-to-price positive feedback: the larger the price, the higher the demand and ... the larger the price! The behavior of the market no longer reflects any real underlying value and a bubble is born. The price increases faster and faster in a vicious circle with spells of short-lived panics until, at some point, investors start realizing that the process is not sustainable and the market collapses in a synchronization of sale orders. The specific manner by which the bubble bursts and the prices collapse is secondary: a crash occurs because the market has entered an unstable phase and any small disturbance or process may reveal the existence of the instability. Like a ruler held up vertically on your finger, any small disturbance could have triggered the fall. It should be noted that a bubble does not necessarily need to end in a crash. The critical time is merely an indicator of a change in regime, which could be a slow deflation or stagnation of the price. This less violent and slower end of bubbles in terms of price is a better representative characteristic of real estate markets. However, transaction volumes often crash when a real estate bubble bursts.

Professor Sornette and his team model these speculative bubbles, recognizing the essential mechanism of positive feedback. Based on their model, a crash is not a particular event, but is characterized by a probability distribution: the critical time is the most probable time of a crash (the end of the bubble). They have been analyzing the real estate market in Switzerland using the data from comparis.ch between January 2005 and January 2013 and the results of their work is summarized in figure 4. The price dynamics in districts 1 through 11, as shown on the heat map on Figure 4, show very strong signs of developing bubbles with critical times between the first quarter of 2013 and the second quarter of 2014.

The districts to watch (A through G in figure 4) are where our model has predicted critical times in the year 2012 for all different size apartments (except the district of Dietikon where the bubble was only on small size apartments). The price dynamics for apartments in the districts to watch have indeed shown clear signs of a regime change in the year 2012. Detailed results of these analyses are presented in Appendices A and B, where the development in the asking prices along with possible scenarios are shown. These scenarios are indicators of possible critical times (80 percent confidence intervals, shown as gray regions) in the corresponding districts.

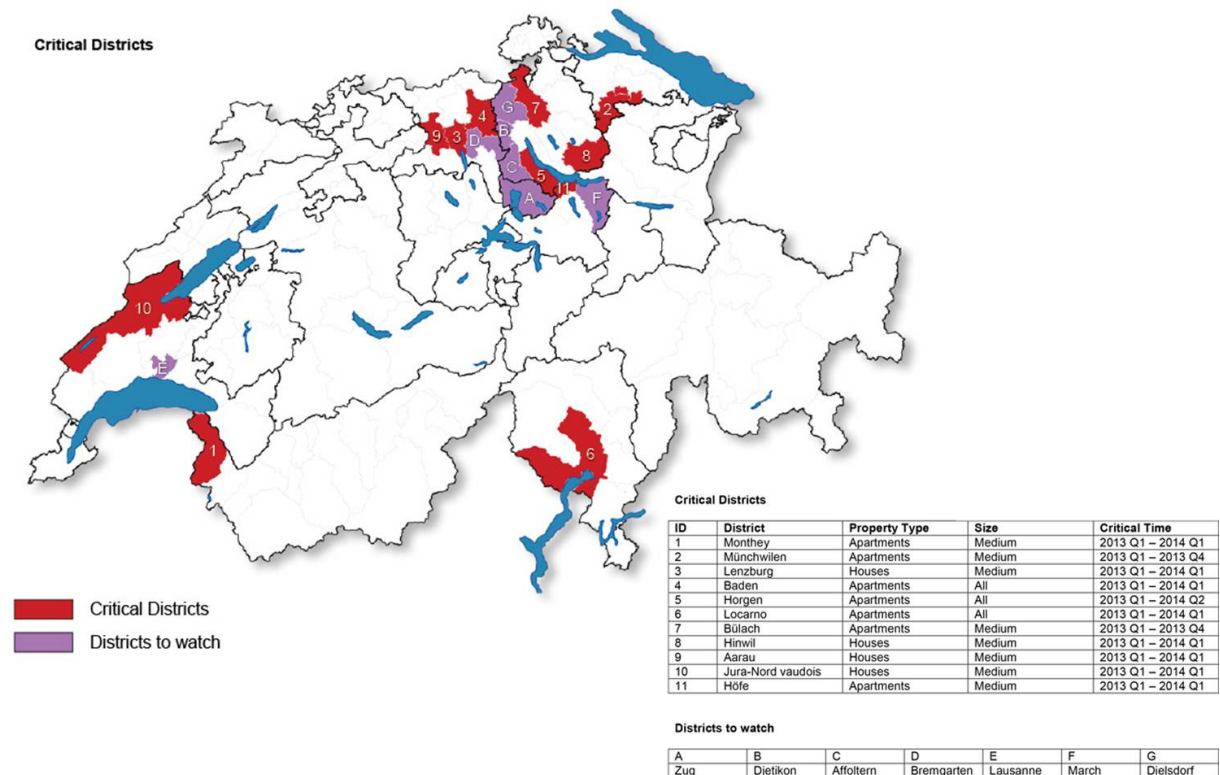


Figure 4: Critical districts and districts to be watched.

Conclusion and Recommendations

Our diagnostic of real estate bubbles in the 11 critical districts is not a reason for panic. While the exceptional low interest rate (not a specific Swiss phenomenon but a worldwide characteristic spurred by central banks and a currency war towards the bottom) and the high uncertainties associated with the on going development of the European economic and political crises has certainly catalyzed a growing demand in real estate, we expect much more a change of regime to a plateau or soft landing than a crash. However, households who can afford to wait may choose to postpone the purchase of their home by a year or two in those critical districts, in the hope of profiting from a slight deflation. The “districts to watch” offer potential buying opportunities, after the prices have been found to stabilize in their deflation.

Appendix A: Analysis Results for the Critical Districts

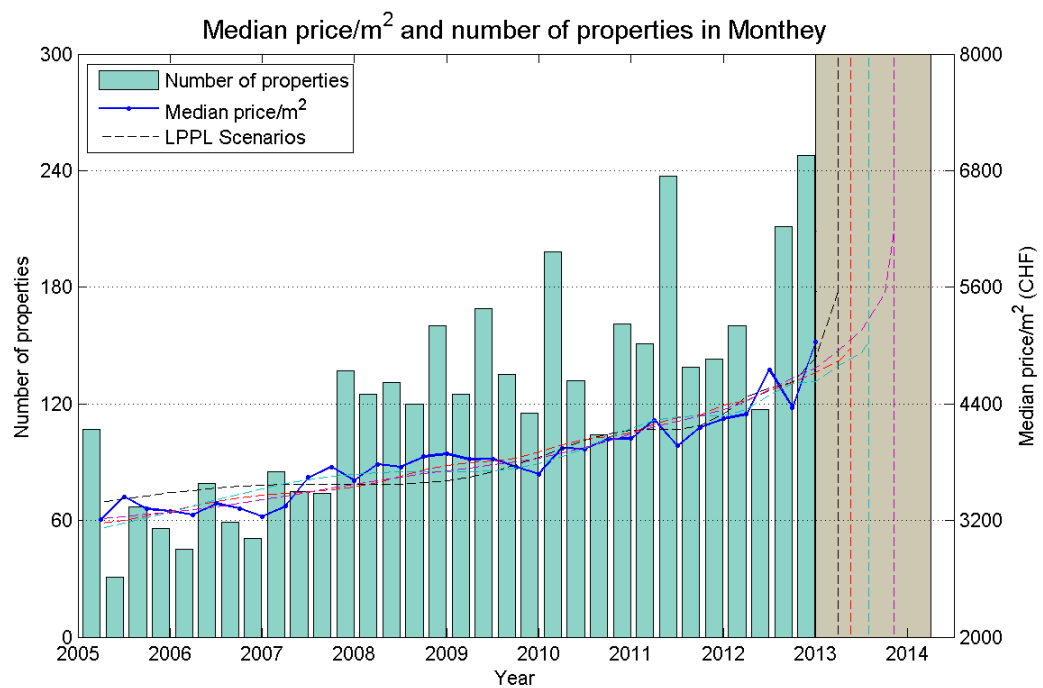


Figure A. 1: Critical District 1, Monthey, Medium Size Apartments

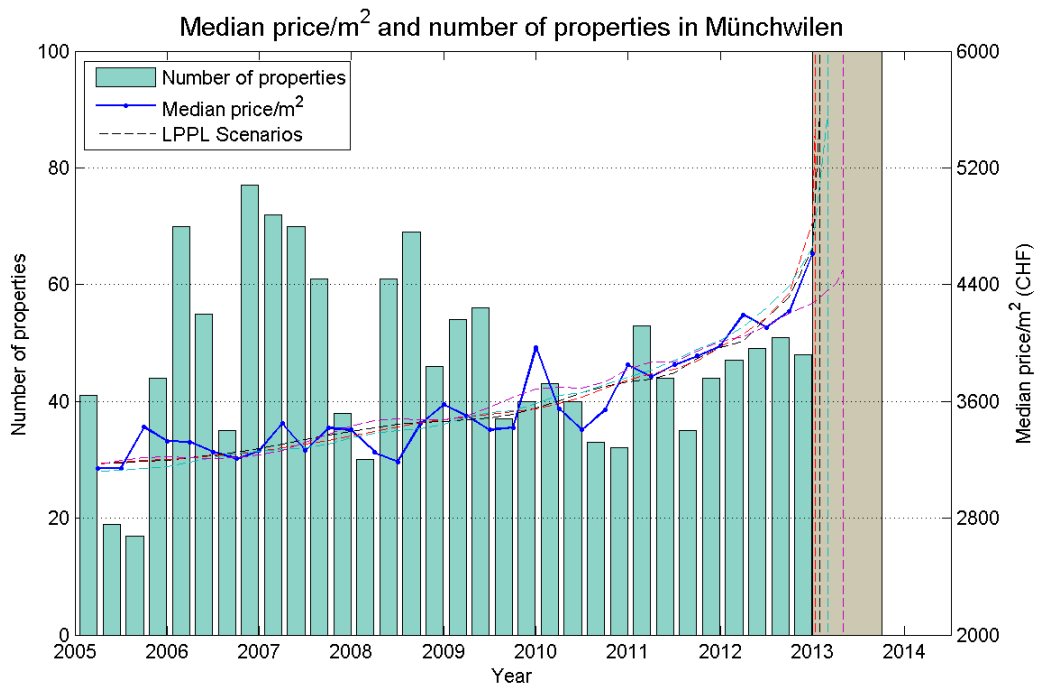


Figure A. 2: Critical District 2, Münchwilen, Medium Size Apartments

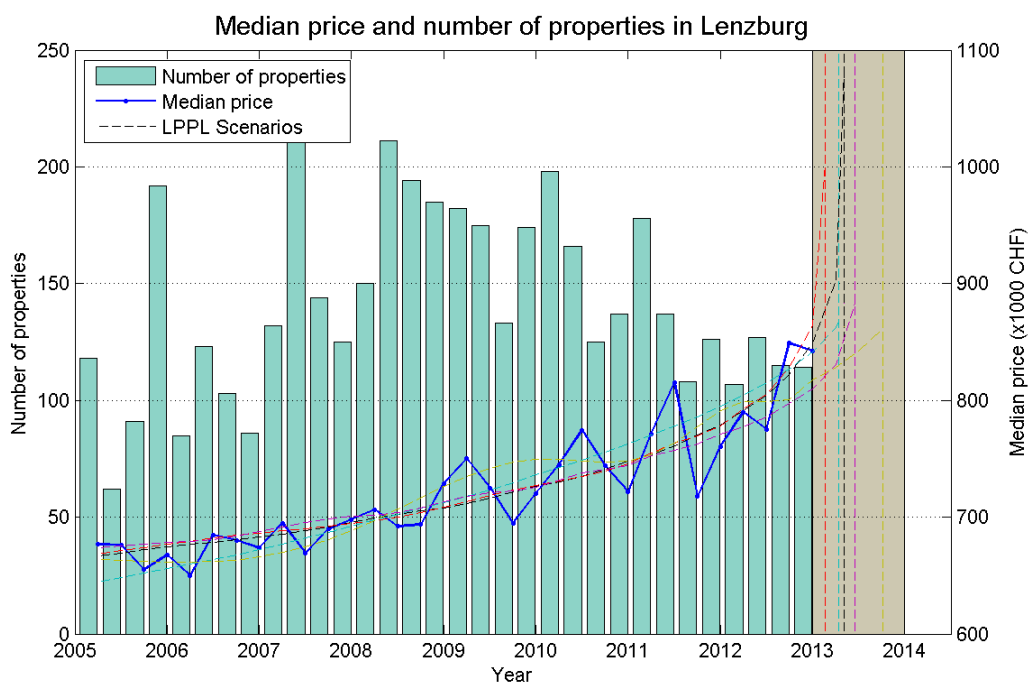


Figure A. 3: Critical District 3, Lenzburg, Medium Size Houses

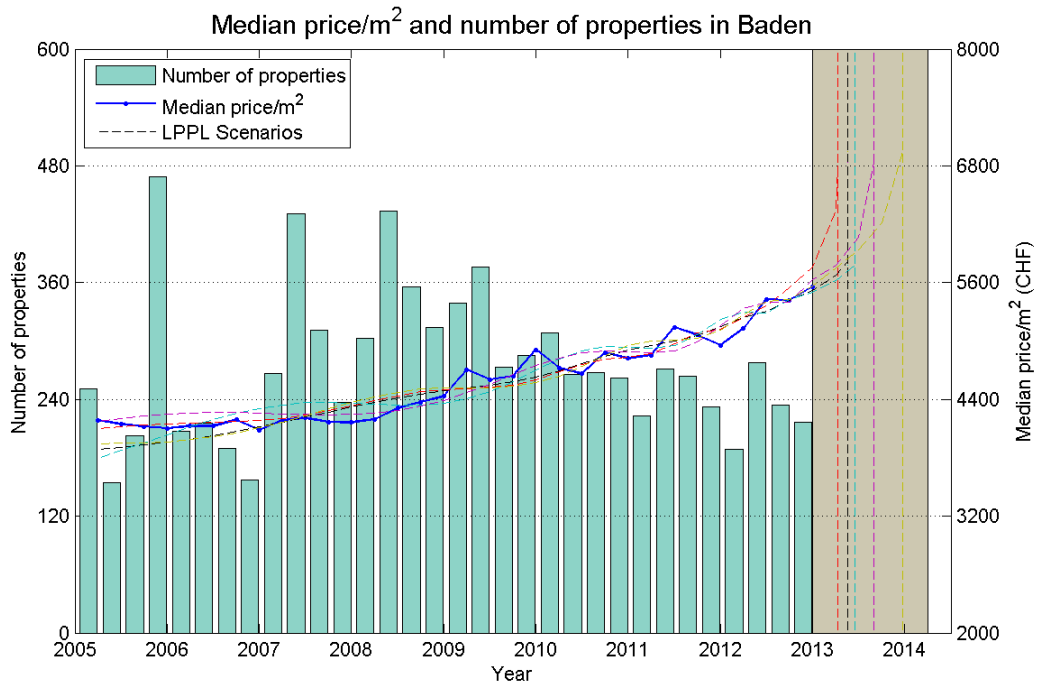


Figure A. 4: Critical District 4, Baden, All Apartments

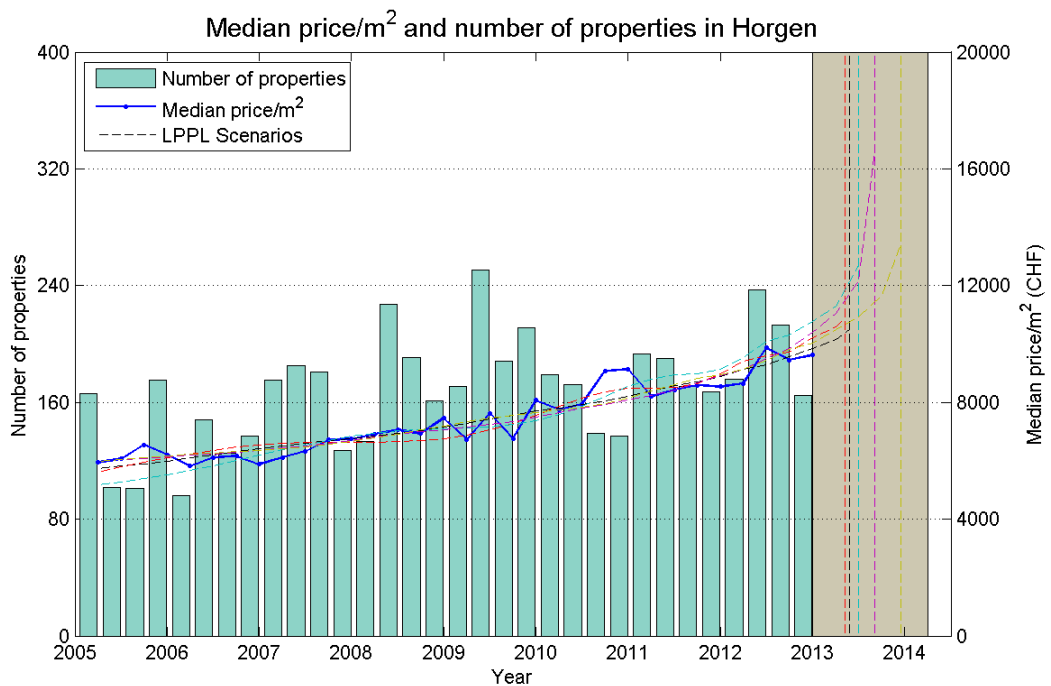


Figure A. 5: Critical District 5, Horgen, All Apartments

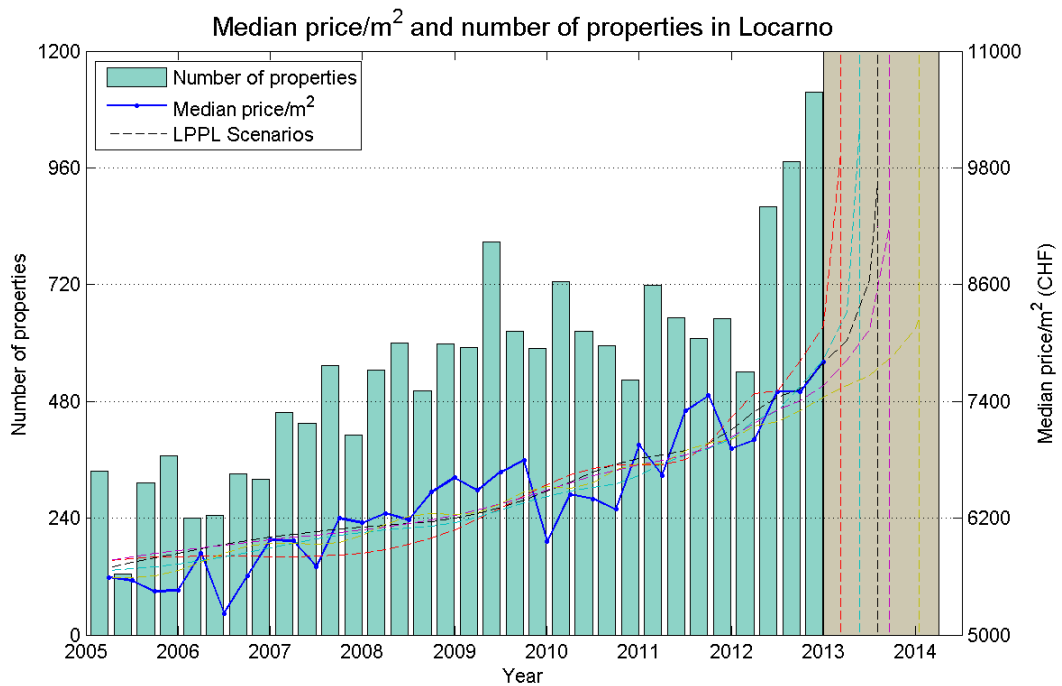


Figure A. 6: Critical District 6, Locarno, All Apartments

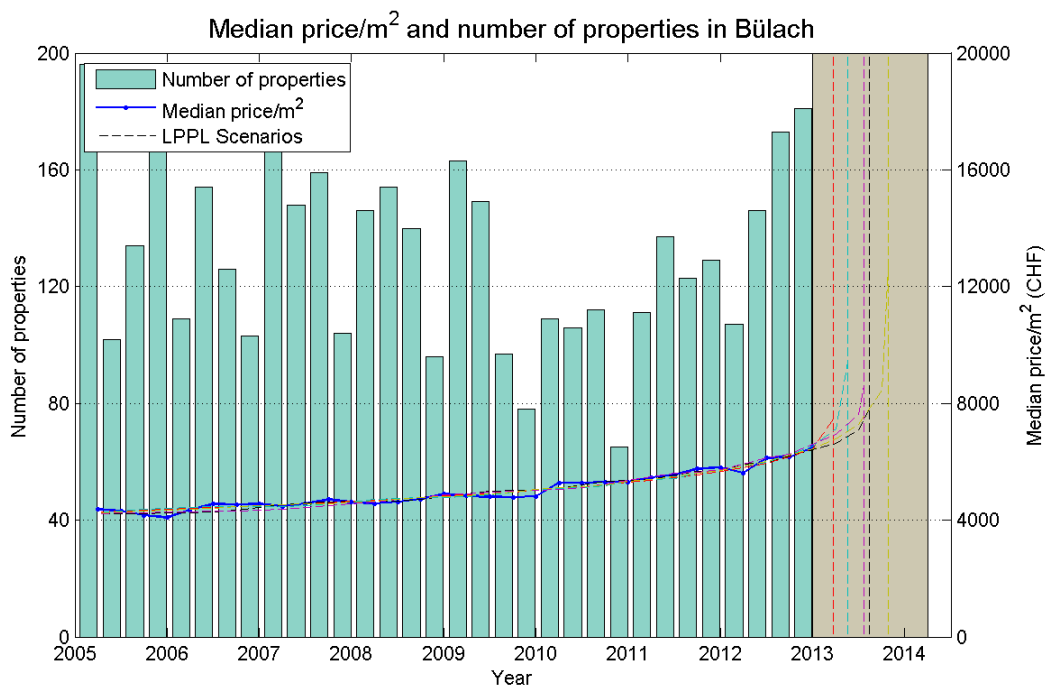


Figure A. 7: Critical District 7, Bülach, Medium Size Apartments

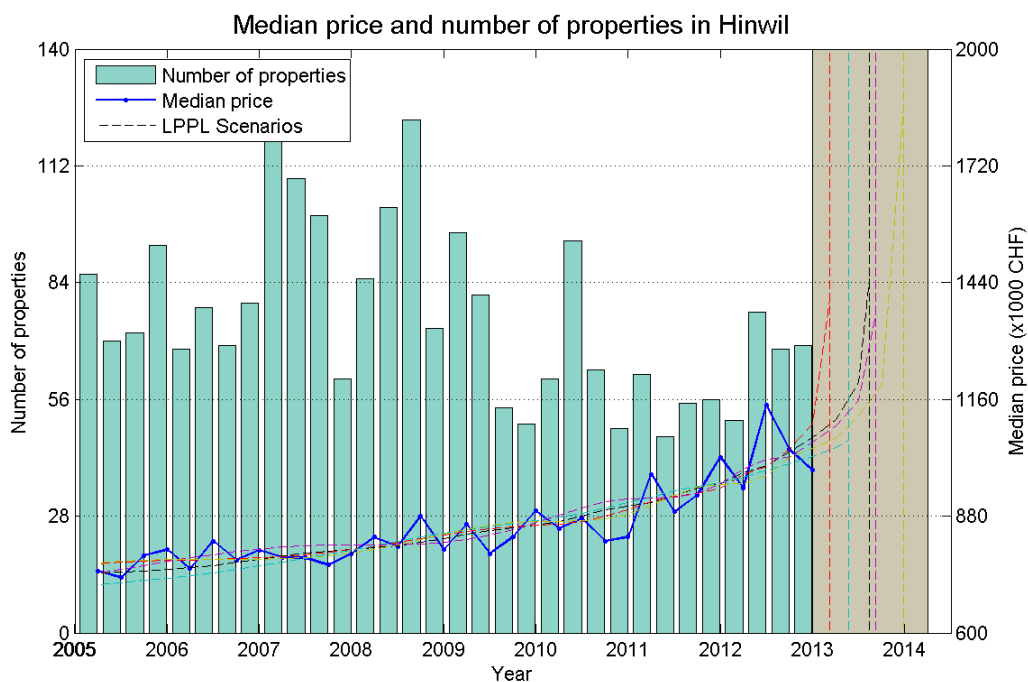


Figure A. 8: Critical District 8, Hinwil, Medium Size Houses

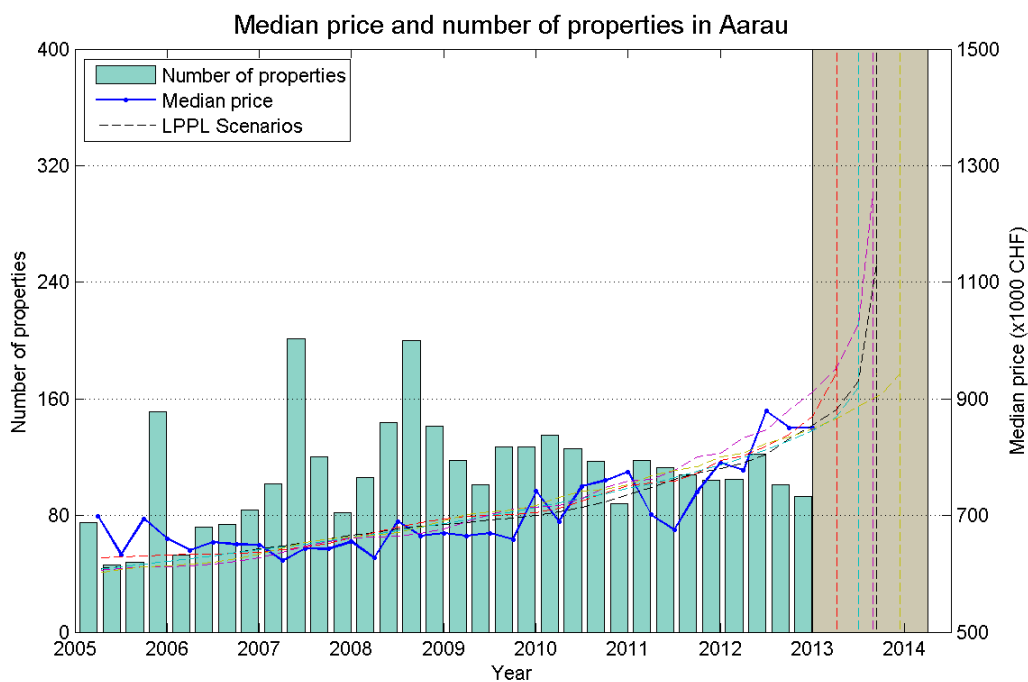


Figure A. 9: Critical District 9, Aarau, Medium Size Houses

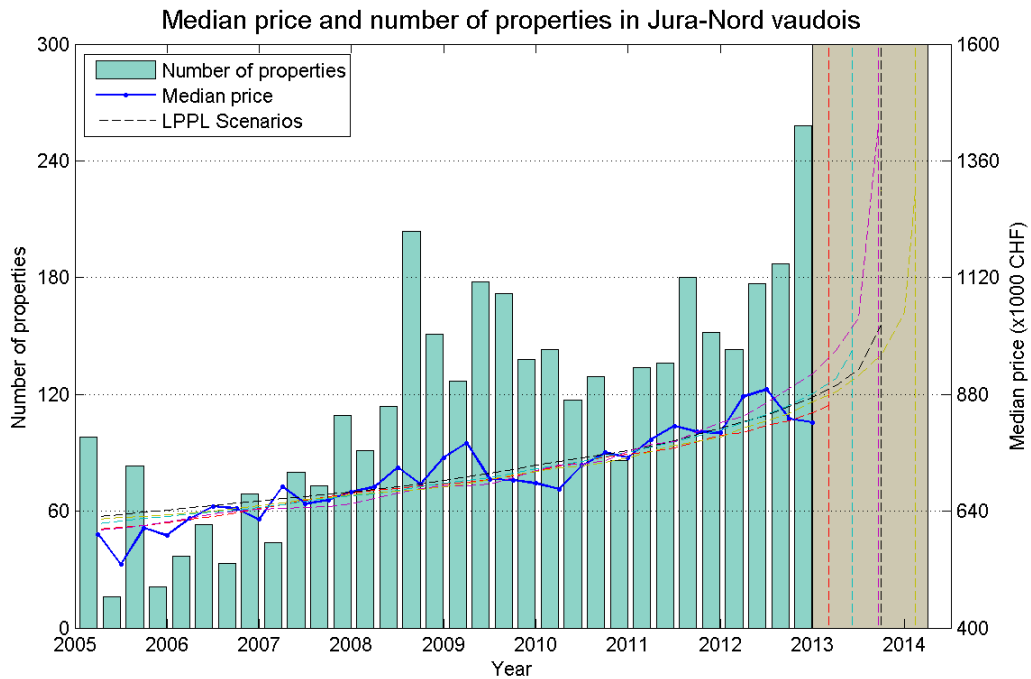


Figure A. 10: Critical District 10, Jura-Nord Vaudois, Medium Size Houses

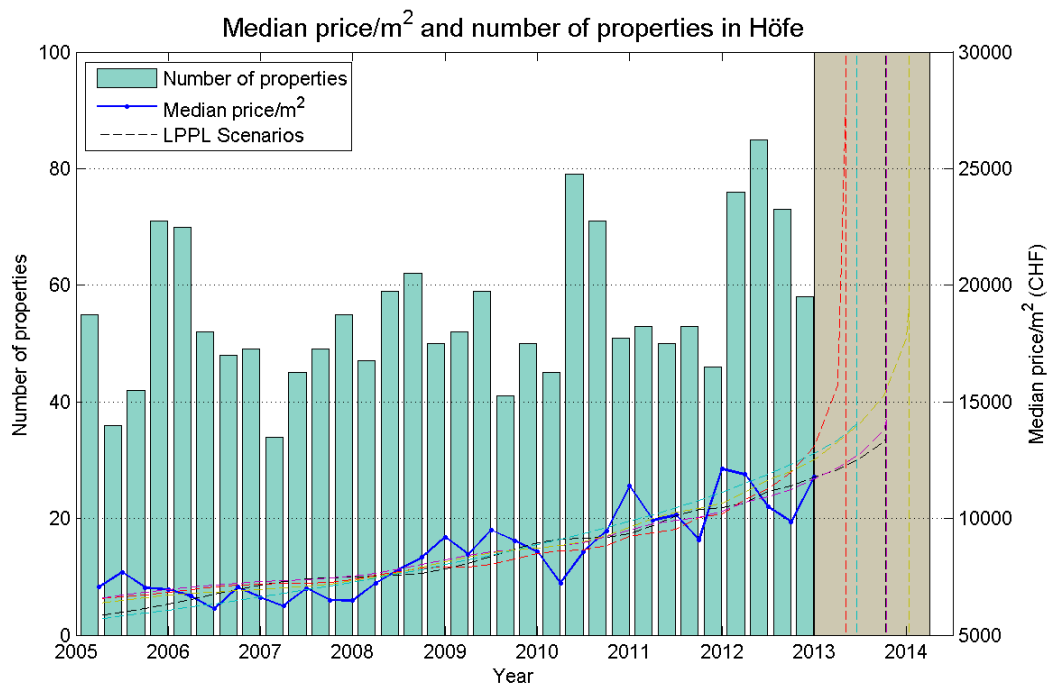


Figure A. 11: Critical District 11, Höfe, Medium Size Apartments

Appendix B: Analysis Results for Districts to Watch

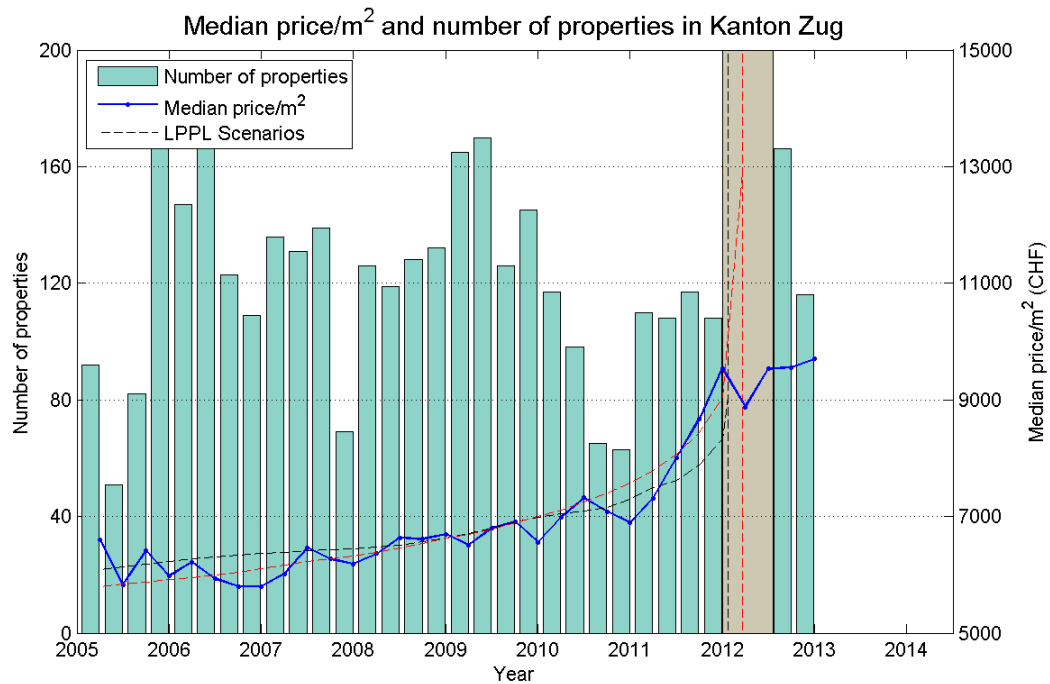


Figure B. 1: Watch District A, Canton Zug, All Apartments

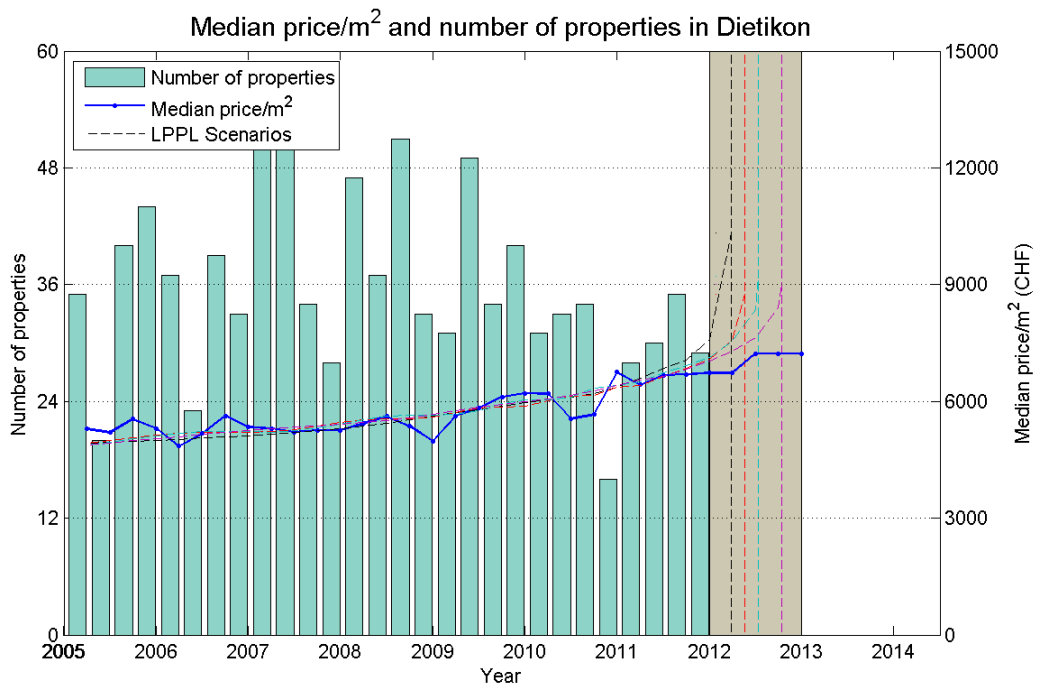


Figure B. 2: Watch District B, Dietikon, Small Apartments

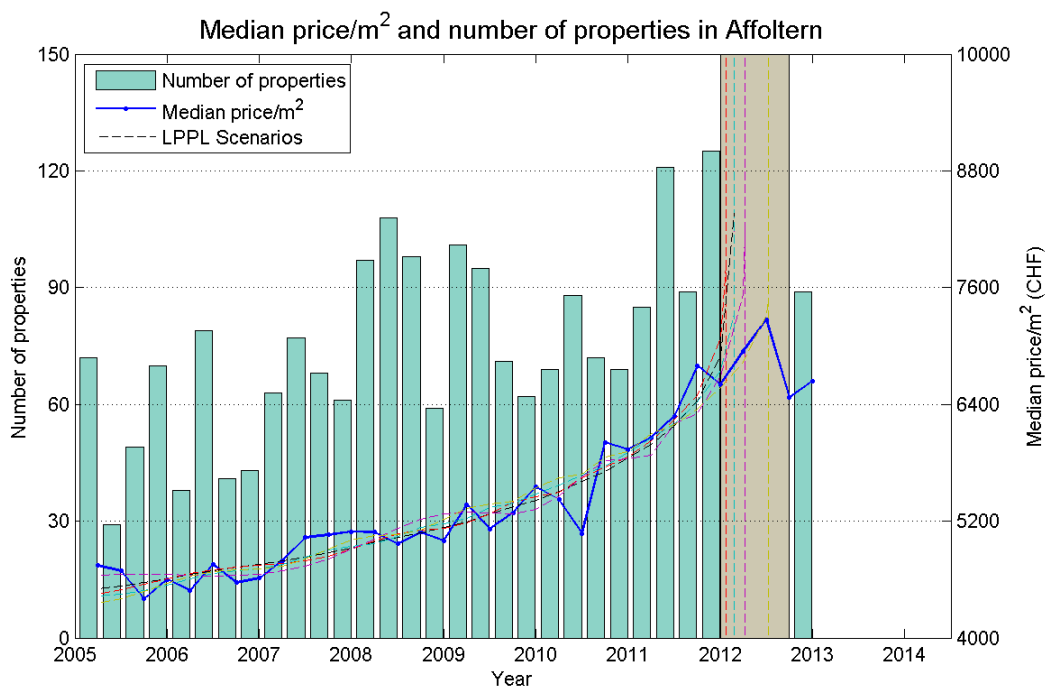


Figure B. 3: Watch District C, Affoltern, All Apartments

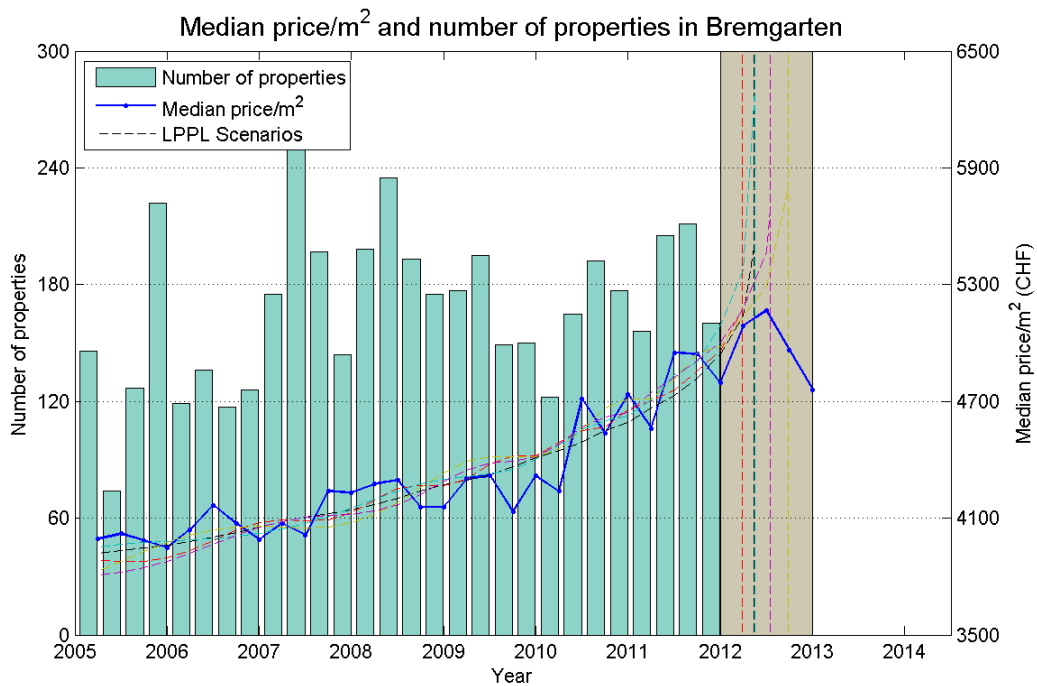


Figure B. 4: Watch District D, Bremgarten, All Apartments

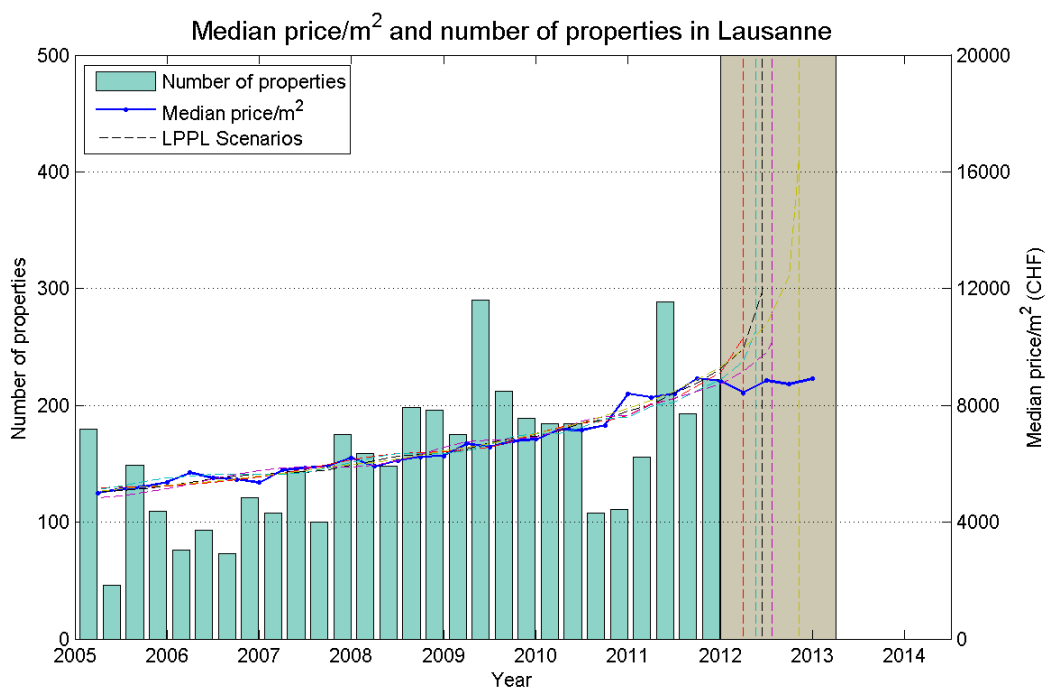


Figure B. 5: Watch District E, Lausanne, All Apartments

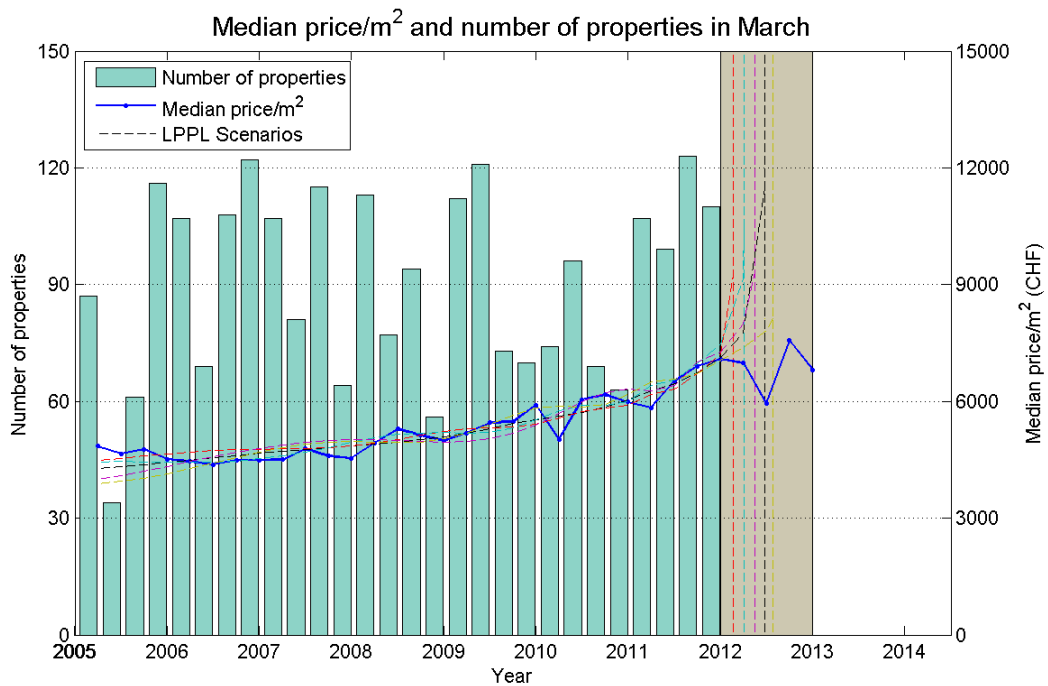


Figure B. 6: Watch District F, March, All Apartments

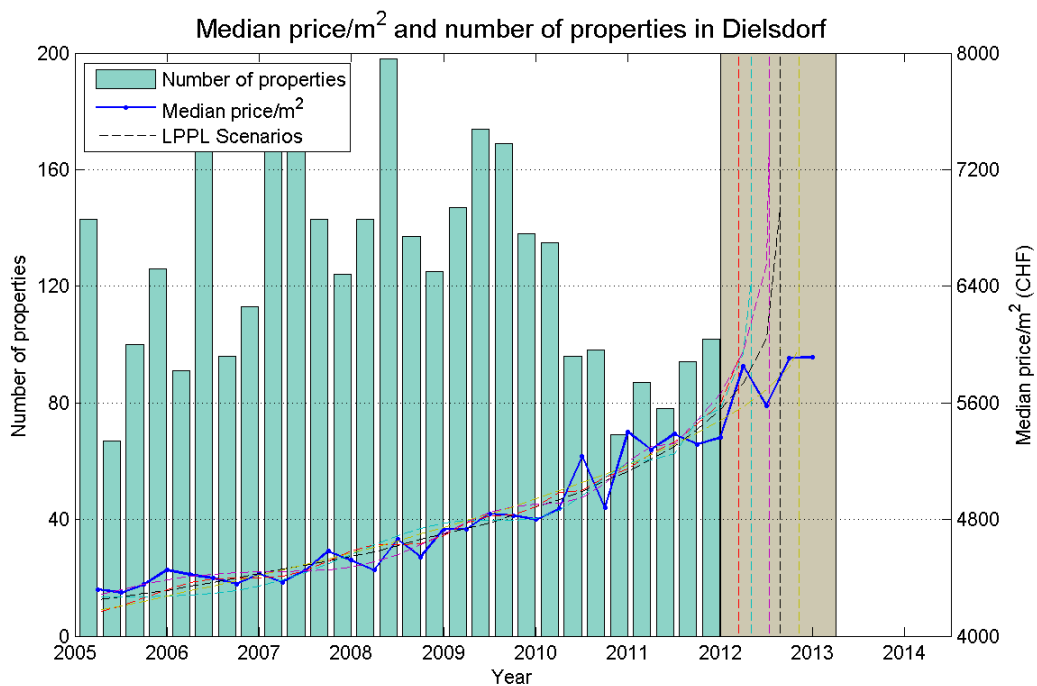


Figure B. 7: Watch District G, Dielsdorf, All Apartments