



# A Practical Anti-bubble Prescription

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It is common for asset price bubbles to precede financial crises and depressions. Indeed, a real estate bubble lies at the heart of the recent U.S. financial crisis and the ensuing economic slump<sup>1</sup>. Typical anti-bubble policy responses include both tightening monetary policy and deploying macro-prudential tools, such as raising capital requirements, imposing transaction costs, and applying direct lending constraints. However, effective application of such policy responses faces two difficulties.

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First, timely deployment of monetary policy and macro-prudential tools poses the significant difficulty of recognizing an inflating bubble in real time. Most bubbles are only recognized (with sufficient degree of certainty to justify policy action) in hindsight or when it is too late to prevent damage.

Second, commonly-proposed monetary and macro-prudential anti-bubble measures can create negative effects on regions or markets without bubbles. For example, the very policies that help to fend off a real-estate bubble in overheating regions may retard needed investment and growth in others. There was substantial variation in the timing and magnitude of real estate price swings across different U.S. metropolitan areas in the recent boom and collapse, which highlights this potential drawback of a one-size-fits-all approach<sup>2</sup>. Moreover,

calibrating anti-bubble policies on a regional basis is likely difficult at best, and politically impossible at worst.

## OUR PROPOSAL AND THE THEORY BEHIND IT

We argue that coordinated, mass dissemination of information about asset fundamentals can mitigate bubbles without serious downsides. In real estate markets this dissemination could be achieved by establishing and promoting a government-sponsored website containing real estate statistics and simple analysis. The aim would be for such a website to be the first stop for investors in the residential real estate markets.

There are two channels through which coordinated dissemination of information can mitigate asset price bubbles. First, if bubbles are caused by over-optimism, information can

serve as a “reality check” that dampens “irrational exuberance”. However, our own research (described below) suggests greater confidence in a second, more subtle channel based on the “greater fool” theory of bubbles.

The greater fool theory of bubbles holds that investors knowingly overpay for an asset (relative to fundamental value) because they believe a yet “greater fool” may arrive in the future to pay even more. Indeed, Noah Smith (2012) presents experimental evidence that some investors *knowingly* overpay for assets during bubble episodes. Moreover, research on the recent U.S. housing bubble documents that speculators and house flippers played an important role in contributing to price booms in a number of markets<sup>3</sup>.

In formalizing the greater fool theory of bubbles, “resale option” models separate an asset’s price into two components: a fundamental value and a resale option value<sup>4</sup>. The fundamental value is the present value of future asset cash flows and represents the benefit from buying the asset and holding it forever. The resale option value is a non-negative “bubble component” of asset prices, and relates to the possibility of reselling the asset later at a higher price. It is

positive (i.e., there is a bubble) when there are short-selling constraints and current or prospective disagreement across investors about fundamental values.

A key insight in these models is that when such investor disagreement is greater, so too is an asset’s resale option value and hence its bubble component. Thus, to the extent that greater public dissemination of information about fundamentals reduces investor disagreement, it will mitigate bubbles. Greater dissemination of information reduces disagreement as long as it coordinates investors’ beliefs, i.e., as long as it is common knowledge that investors update their priors towards the information being disseminated.

#### EMPIRICAL SUPPORT

There is evidence that greater dissemination of information can mitigate asset pricing bubbles by reducing investor disagreement as we claim. In Andrade et al. (2012) we undertook a cross-sectional study of the China’s 2007 stock market, which displayed several classic features of a bubble. For example, over a six-month period, stock prices nearly tripled and trading activity nearly quadru-

pled, only to return to “normal” levels after the bubble deflated. We studied China’s stock market because of its availability of data for research purposes, but our findings should be applicable to other markets that are also predominantly populated by retail investors and display strict short selling constraints, such as U.S. residential real estate markets.

We found that Chinese stocks with a greater degree of information dissemination, as measured by the number of brokerage analysts following the stock (by far the literature’s most popular proxy), experienced significantly smaller bubbles. We used several different overvaluation proxies to assess cross-sectional differences in bubble intensity and the results held for all of these proxies. Of course, a battery of control variables were included, and we went to great lengths to address the fact that analyst coverage is endogenous and thus not just randomly assigned to stocks (instruments, lagged variables, placebo periods, ancillary tests, etc.). Moreover, additional findings supported the notion that information disseminated by analysts mitigated bubbles because it reduced investor disagreement, as resale option models predict.

## FLESHING OUT OUR PROPOSAL: THE REAL ESTATE WEBSITE

The key idea behind our proposal is to coordinate beliefs across market participants, i.e., to significantly increase the extent to which key information is known, and known to be known, across market participants. To that end, the government could establish and promote a user friendly website for retail real estate market participants. For each geographical area, the website would contain relevant real estate information as well as simple analysis exploring such information. These geographical areas would be defined as finely as possible, and at the least, no coarser than at the Metropolitan Statistical Area (MSA) level.

Relevant real estate data would include not only price indices based on transactions, but also rental yields, transaction volume, vacancies, units under construction as a fraction of existing units, demographic/migration trends, and prospective changes in zoning laws. It would also include real estate-related borrowing statistics such as average mortgage interest rates, loan-to-values, and the fraction of buyers who actually dwell in their purchased property.

Some (but not all) of these relevant data are already available on governmental (U.S. Department of Housing and Urban Development and Census Bureau) or industry websites (e.g., national associations of home builders or realtors). However, existing information on current websites is scattered across the web, of low quality (e.g., rental data), incomplete (e.g., missing MSAs), subject to potential conflicts of interest when collected by industry participants, and remarkably user unfriendly for most participants in these markets. As such, information currently available on existing websites does not actually coordinate beliefs across most real estate market participants simply because it is doubtful they actually frequent these websites.

The website we envision would also contain simple analysis to further enhance the coordination of beliefs across market participants. This is potentially important because mass dissemination of unstructured information may not actually coordinate beliefs if some market participants believe (correctly or not) that others are incapable of meaningfully analyzing such information. Hence, bubbles could persist as market participants would still perceive some chance of significant current or future disagreement about

valuations. Note that empirical support for our proposal comes from our study of Chinese stock analysts, and these analysts summarize their research by issuing buy-sell-hold recommendations and target stock price levels.

Here is one example of the sort of simple analysis we envision. For each geographical area, the website would display the current real rent/price annual appreciation rate that is consistent with current prices, rents, maintenance costs, interest rates, etc. This number can be backed out from equating the cost of renting to the cost of owning, and, under a few simplifying assumptions (see Himmelberg et al. 2005), boils down to:

$$g = r_{\text{riskfree}} + \tau_{\text{property}} - t_{\text{income}} (r_{\text{mortgage}} + \tau_{\text{property}}) + \frac{C_{\text{maintenance}} - \text{rent}}{\text{price}},$$

where  $r_{\text{riskfree}}$  and  $r_{\text{mortgage}}$  are long-term real risk-free and mortgage interest rates,  $\tau_{\text{property}}$  and  $\tau_{\text{income}}$  are property and income tax rates, rent is annual rental income, and price denotes property prices.

In addition to reporting the market-implied appreciation rate,  $g$ , the website would classify each real estate market as over-, under-, or fairly-valued (e.g., on a 1 to 5 scale). This

classification would be based on the aforementioned market-implied appreciation rate  $g$ , and an open-source econometric model relying on historical appreciation rates, units under construction, transaction volume, vacancies, prospective changes in zoning laws, demographic/migration trends, real estate-related borrowing statistics, etc. Examples of similar econometric models include Chinco and Mayer (2012) and Ferreira and Gyourko (2011).

Of course, this particular model and classification technique is just one example, and the specific methodology is not overly important as long as it is transparent and reasonably justified. It is important, however, that the website disclose only a single point estimate for each geographical area rather than serving as a forum for diverse opinions and analyses. This is because disseminating conflicting opinions would work against the goal of coordinating beliefs. To wit, our own research on the 2007 Chinese stock bubble found that analyst coverage was less effective in mitigating bubbles when stock analysts themselves disagreed more.

To the extent that our proposed real estate website became the first stop for participants in real estate markets, we argue it would sig-

nificantly reduce the odds and severity of future bubbles. Such coordinated mass dissemination of information should help discourage speculators from overpaying for real estate due to an expectation that a “greater fool” will arrive in the future to pay yet more.

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#### NOTES

1. See Reinhart and Rogoff (2009) and Mian et al. (2011).
2. See Ferreira and Gyourko (2011).
3. See Bayer et al. (2011), Haughwout et al. (2011), Chinco and Mayer (2012), and Gao and Li (2012).
4. See Harrison and Kreps (1978), Allen et al. (1993), and Scheinkman and Xiong (2003).

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