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# **Monthly House Price Indices and Their Applications in New Zealand**

A thesis presented in fulfilment of the requirements for  
the degree of Doctor of Philosophy

**Song Shi**

Department of Economics and Finance  
College of Business  
Massey University

June 2009

# ABSTRACT

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Developing timely and reliable house price indices is of interest worldwide, because these measures influence consumer behaviour, inflation targeting, and spot and futures markets. Several techniques for constructing a constant quality price index are available in the literature, but these methods are difficult to apply in localities where market transaction data is limited. Since house price movements are a local phenomena, improving the timeliness of a quality controlled price index at local housing market levels in small countries like New Zealand is a challenge.

This thesis comprises three essays that focused on improving the timeliness of reported house price indices at the local market levels. The timeliness issue examined in this thesis has not previously been rigorously investigated and this makes the results of this thesis both important and unique for the benefit of both academic research and practical application. Essay One reviews the sale price appraisal ratio (SPAR) method, which has been applied since the 1960s for producing local house price indices at a semi-annual and quarterly basis in New Zealand. Utilizing a variety of statistical tests and comparing this index with the repeat sales and median price index result in the study highlighting the potential of, as well as the problems associated with, a price index produced by the SPAR method at a monthly level. In the following two essays, monthly price indices are tested using empirical real estate research methods in order to examine their usefulness in exploring the research questions as well as revealing the statistical differences between them. Essay Two studies the relationship between sale price and trading volume, and the ripple effect of local house price comovements. The results show that the trading volume generally

leads the sale price in the long-run and the ripple effect is most likely constrained within regions. In Essay Two, the monthly SPAR index produces similar statistical results to those estimated by the repeat sales index for large cities. Essay Three is a study on the market efficiency of housing markets. It is found the local housing market is neither weak-form nor semi-strong form efficient. Local house price movements are strongly correlated and are mean reverting towards their long-run equilibrium. It is further concluded that monthly price indices for small cities are problematic due to the problem of small sample size.

Overall, the findings in this thesis show monthly house price indices can be generated by using the SPAR method at local market levels. However, this potential is limited to large cities. Further research can focus on improving the quality of monthly price indices for large cities.

# ACKNOWLEDGEMENTS

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There are a number of people who have contributed to the completion of this thesis. Firstly, I would like to thank my supervisors, Professor Martin Young and Professor Bob Hargreaves for their excellent guidance throughout this research. I am grateful for their wisdom in setting the research orientation, unwavering support, encouragement and understanding.

Secondly, I would like to express my gratitude to the anonymous reviewers of the journals in which the essays in this thesis have been published, or are under review. Gratitude is also extended to the discussants and participants at the 15<sup>th</sup> Pacific Rim Real Estate Society Conference 2009, Sydney, Australia; the 13<sup>th</sup> Asian Real Estate Society Conference 2008, Shanghai, China; the 14<sup>th</sup> Pacific Rim Real Estate Society Conference 2008, Kuala Lumpur, Malaysia; and the 13<sup>th</sup> Pacific Rim Real Estate Society PhD Colloquium 2007, Fremantle, Australia.

I would particularly like to thank Steve Langridge from Quotable Value Ltd for his kindness in providing the research data. Many thanks are also due to Neil Sullivan from the Office of the Valuer-General for his guidance on the statistical rules for rating valuations in New Zealand. I also gratefully acknowledge the assistance of Trish Castle for her tremendous work on the proofreading of this thesis.

Special thanks also go to the Property Group of the Department of Economics and Finance at Massey University, particularly to Iona McCarthy, Raewyn Fortes and others for their generous support while I was teaching and studying at Massey

University. Also, I would like to thank the Massey Property Foundation for providing financial support for this research.

Finally, I would like to dedicate this thesis to my wife Amy, daughter Claire and my parents. Without their support, encouragement and love this thesis would not have been possible. Thank you.

# RELATED RESEARCH

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## Accepted Journal Articles

Shi, S., Young, M., and Hargreaves, B. (2009). Issues in measuring a monthly house price index in New Zealand. *Journal of Housing Economics*, **18**(4), 336-350.

Shi, S., Young, M., and Hargreaves, B. (2009). House price-volume dynamics: evidence from 12 cities in New Zealand. *Journal of Real Estate Research*, *forthcoming*.

Shi, S., Young, M., and Hargreaves, B. (2009). The ripple effect of local house price movements in New Zealand. *Journal of Property Research*, **26**(1), 1-24.

## Journal Articles under Editorial Review

Shi, S., Young, M., and Hargreaves, B. (2009). Testing for predictability of local house price movements in New Zealand. *Journal of Real Estate Finance and Economics*, *under editorial review*.

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