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What drives urban consumption in  
mainland China? The role of property  
price dynamics



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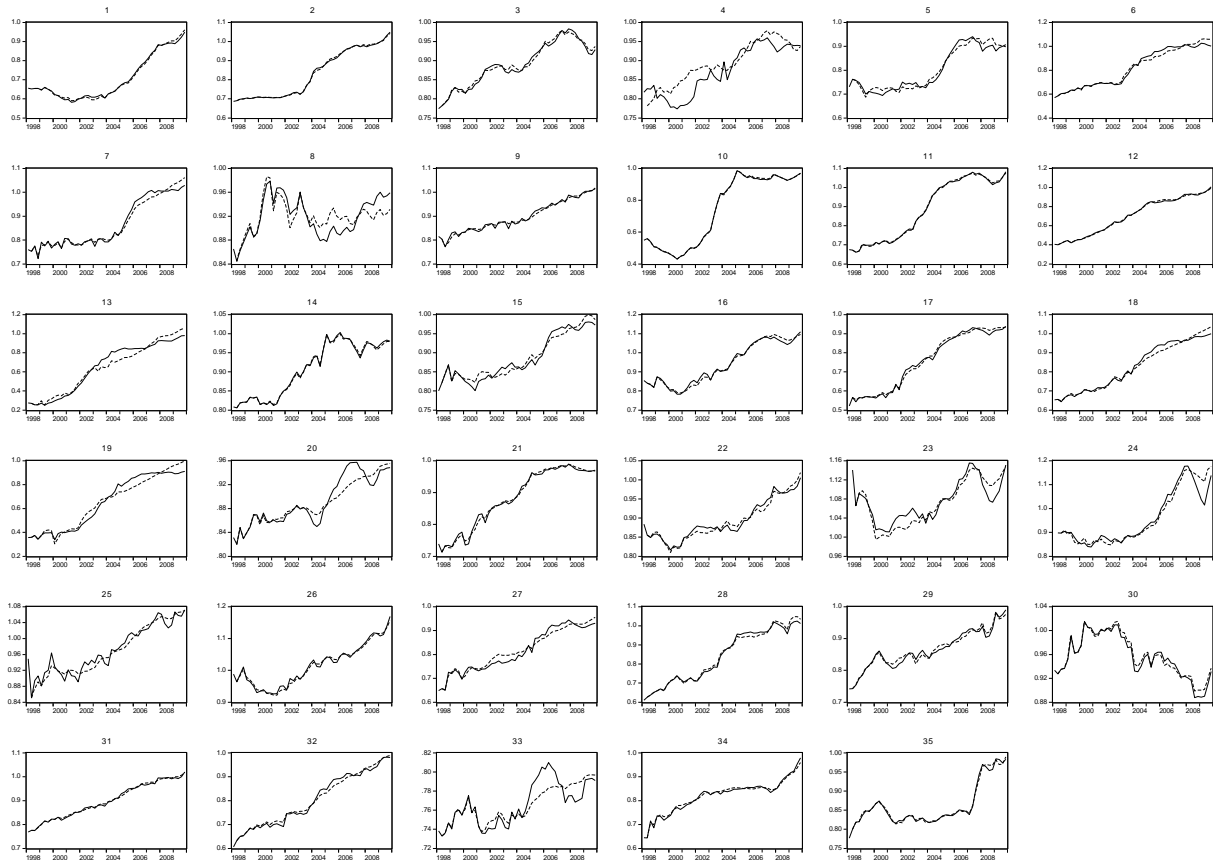








Real house prices (solid lines) and their kalman-filtered permanent component (dotted lines)



Cities: (1) Beijing, (2) Tianjin, (3) Shijiazhuang, (4) Taiyuan, (5) Hohhot, (6) Shenyang, (7) Dalian, (8) Changchun, (9) Harbin, (10) Shanghai, (11) Nanjing, (12) Hangzhou, (13) Ningbo, (14) Hefei, (15) Fuzhou, (16) Xiamen, (17) Nanchang, (18) Jinan, (19) Qingdao, (20) Zhengzhou, (21) Wuhan, (22) Changsha, (23) Guangzhou, (24) Shenzhen, (25) Nanning, (26) Haikou, (27) Chengdu, (28) Chongqing, (29) Guiyang, (30) Kunming, (31) Xian, (32) Lanzhou, (33) Xining, (34) Yinchuan, (35) Urumqi.



## Appendix C

### Goodness-of-fit and diagnostic tests for maximum likelihood estimation

Beijing	Changchun	Changsha	Chengdu	Chongqing	Dalian
R <sup>2</sup> 0.993	R <sup>2</sup> 0.828	R <sup>2</sup> 0.963	R <sup>2</sup> 0.973	R <sup>2</sup> : 0.986	R <sup>2</sup> : 0.969
q-ratio 0.344	q-ratio 1.000	q-ratio 1.000	q-ratio 0.290	q-ratio 1.000	q-ratio 0.019
BS 1.121 [0.571]	BS 3.267 [0.195]	BS 1.834 [0.399]	BS13.488 [0.001]	BS 6.117 [0.047]	BS 1.156 [0.561]
Q 7.438 [0.592]	Q 27.678 [0.001]	Q 11.998 [0.213]	Q 8.127 [0.521]	Q 12.874 [0.168]	Q 12.251 [0.200]
Fuzhou	Guangzhou	Guiyang	Haikou	Hangzhou	Harbin
R <sup>2</sup> : 0.963	R <sup>2</sup> 0.838	R <sup>2</sup> 0.956	R <sup>2</sup> 0.946	R <sup>2</sup> 0.995	R <sup>2</sup> : 0.962
q-ratio 1.000	q-ratio 0.068	q-ratio 1.000	q-ratio 0.011	q-ratio 0.102 BS	q-ratio 0.297
BS 86.82 [0.000]	BS 34.995[0.000]	BS 5.220 [0.074]	BS 0.561 [0.755]	1.829 [0.401]	BS 0.592 [0.744]
Q 8.663 [0.469]	Q 9.536 [0.389]	Q 11.002 [0.276]	Q 11.173 [0.264]	Q 4.690 [0.861]	Q 13.095 [0.158]
Hefei	Hohhot	Jinan	Kunming	Lanzhou	Nanchang
R <sup>2</sup> : 0.961	R <sup>2</sup> : 0.976	R <sup>2</sup> : 0.994	R <sup>2</sup> : 0.839	R <sup>2</sup> : 0.989	R <sup>2</sup> : 0.988
q-ratio 1.000	q-ratio 1.000	q-ratio 0.094	q-ratio 1.000	q-ratio 1.000	q-ratio 0.428
BS 0.321 [0.852]	BS 0.785 [0.675]	BS 0.629 [0.730]	BS 1.354 [0.508]	BS 15.491[0.000]	BS 3.848 [0.146]
Q 12.508 [0.186]	Q 8.231 [0.551]	Q 14.677 [0.100]	Q 11.151 [0.266]	Q 5.593 [0.780]	Q 8.395 [0.495]
Nanjing	Nanning	Ningbo	Qingdao	Shanghai	Shenyang
R <sup>2</sup> : 0.994	R <sup>2</sup> : 0.900	R <sup>2</sup> : 0.997	R <sup>2</sup> : 0.995	R <sup>2</sup> : 0.991	R <sup>2</sup> : 0.992
q-ratio 1.000	q-ratio 0.003	q-ratio 1.000	q-ratio 0.133	q-ratio 0.325	q-ratio 0.393
BS 4.696 [0.096]	BS 8.625 [0.013]	BS 0.416 [0.812]	BS 12.574[0.002]	BS 15.288[0.001]	BS 3.808 [0.149]
Q 17.722 [0.039]	Q 18.193 [0.033]	Q 8.296 [0.505]	Q 10.446 [0.316]	Q 17.109 [0.047]	Q 4.087 [0.906]
Shenzhen	Shijiazhuang	Taiyuan	Tianjin	Urumqi	Wuhan
R <sup>2</sup> : 0.972	R <sup>2</sup> : 0.982	R <sup>2</sup> : 0.948	R <sup>2</sup> : 0.995	R <sup>2</sup> : 0.960	R <sup>2</sup> : 0.979
q-ratio 0.058	q-ratio 1.000	q-ratio 0.055	q-ratio 0.662	q-ratio 1.000	q-ratio 0.948
BS 2.501 [0.286]	BS 0.843 [0.656]	BS 11.048[0.004]	BS 18.713[0.000]	BS 0.227 [0.893]	BS 0.809 [0.667]
Q 7.635 [0.571]	Q 6.955 [0.642]	Q 6.082 [0.732]	Q 2.549 [0.980]	Q 9.281 [0.412]	Q 4.798 [0.852]
Xiamen	Xian	Xining	Yinchuan	Zhengzhou	
R <sup>2</sup> : 0.970	R <sup>2</sup> : 0.993	R <sup>2</sup> : 0.878	R <sup>2</sup> : 0.961	R <sup>2</sup> : 0.949	
q-ratio 1.000	q-ratio 0.796	q-ratio 1.000	q-ratio 0.06	q-ratio 0.039	
BS 4.408[0.110]	BS 0.895 [0.639]	BS 0.753 [0.686]	BS 4.891 [0.087]	BS 0.254 [0.881]	
Q 11.192 [0.263]	Q 6.377 [0.702]	Q 6.818 [0.656]	Q 8.391 [0.495]	Q 8.339 [0.500]	

Notes: R<sup>2</sup> is the coefficient of determination. q-ratio refers to the signal-to-noise ratio for the level (slope in the case of Beijing, Dalian, Hangzhou, Shenzhen and Yinchuan; cycle in the case of Jinan, Lanzhou, Ningbo, Xiamen and Xining; for the mentioned cities the relative variance of the level or slope is zero). BS is the Bowman-Shenton test statistic for non-normality. Q is the Box-Ljung test statistic for residual autocorrelation. *p*-values are in brackets.

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