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Questions

Spillover Matrix(h=1)

		FROM			
		y1(=e1)	y2(=e2)	y3=(e3)	From Others
	y1	75	15	10	25
TO	y2	25	60	15	40
	y3	30	40	30	70
To Others		55	55	25	135
All		130	115	55	300

Spillover Index = 0.45 = 135/300

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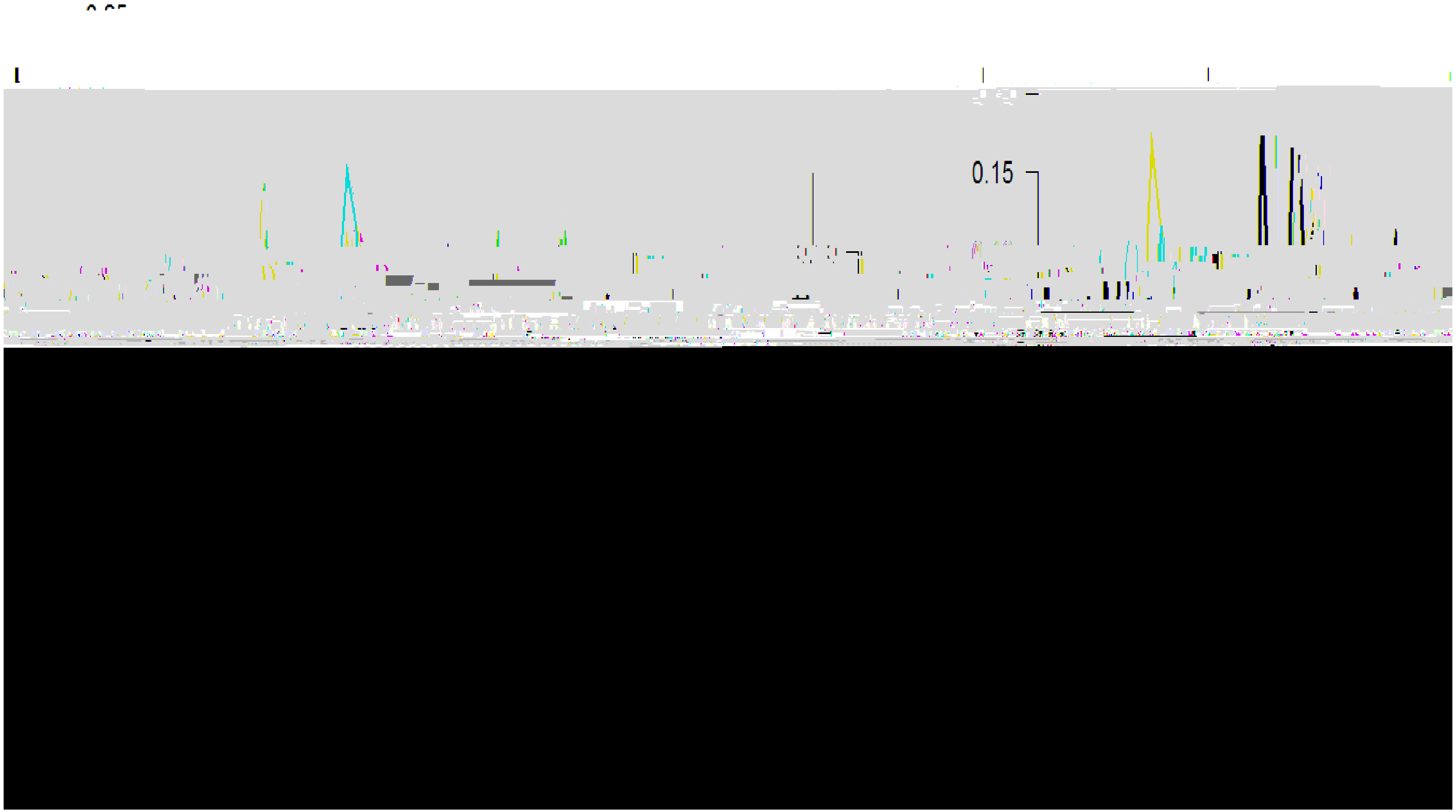

Data Sources

Real Estate Institute of Australia (REIA)

Quarterly median prices and rents for houses and units
eight capital cities

Sample Periods

	6 biggest cities	8 cities
Houses	1982:2 2015:2	1994:1 2015:2
Units	1988:1 2014:2	1997:4 2014:2

Real Returns to Housing

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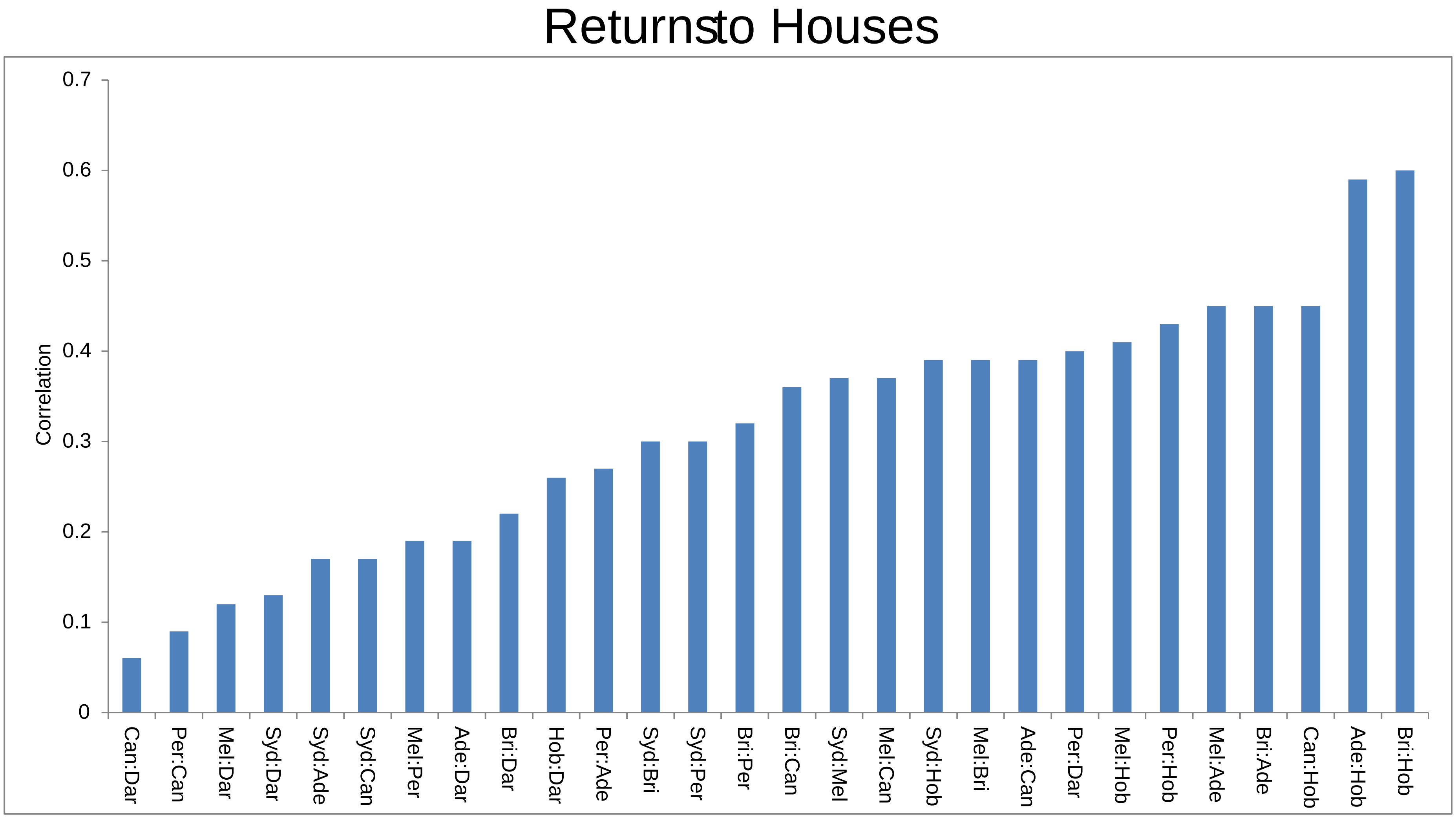
Pair-wise Correlations



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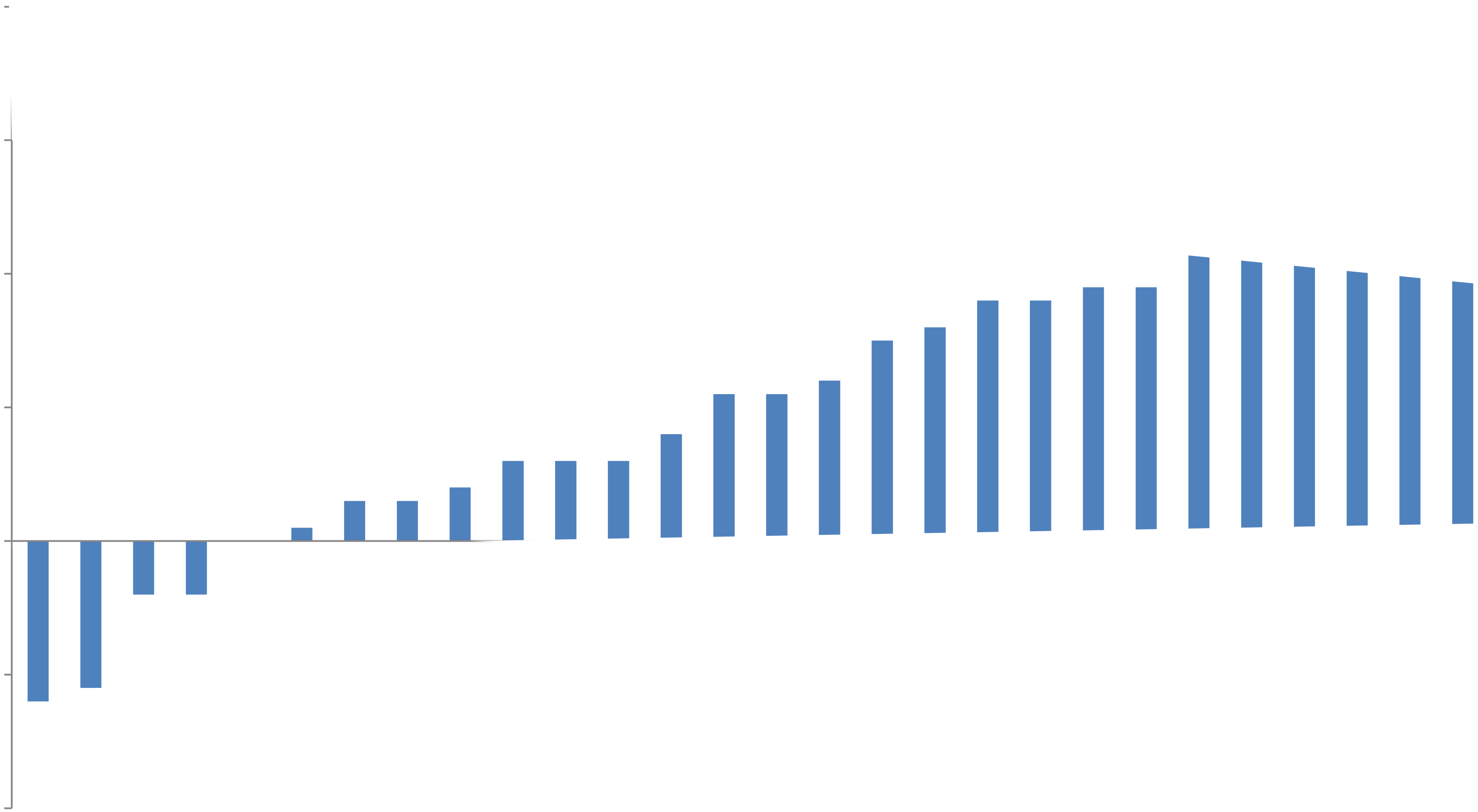


Pair-wise Correlations

Returns to Houses and Units

Econometric Analysis

Baseline Model

VAR model: 4 lags

Data on real returns for 6 cities (excludes Hobart and Darwin)

Separate models for Houses and Units

Identification of city-specific shocks

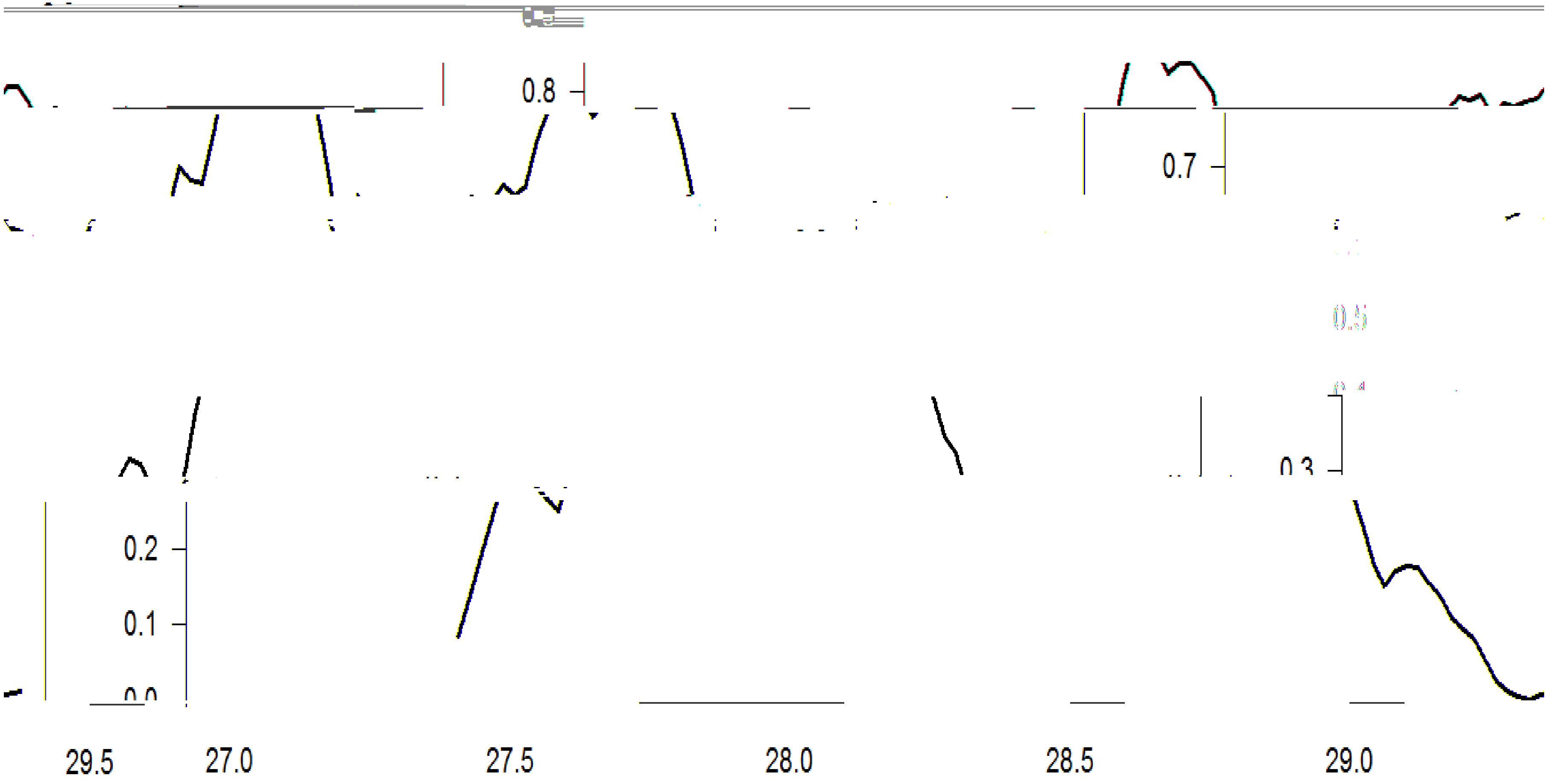
Recursive structural ordering based on current popu

Spillover Table for Real Returns to Units 1 Year Ahead Forecast

		From						
		Syd	*Mel*	*Bri*	*Per*	*Ade*	*Can*	
	Syd	*81*	*1*	*2*	*3*	*4*	*1*	
	Mel	*7*	*84*	*2*	*3*	*4*	*1*	
	Bri	*10*	*4*	*74*	*4*	*1*	*7*	
To	*Per*	*7*	*2*	*1*	*85*	*1*	*3*	
	Ade	*4*	*13*	*3*	*3*	*74*	*3*	
	Can	*14*	*10*	*6*	*1*	*17*	*53*	

About 1/4 of variance in unit returns is due to spillovers

Distribution of Spillover Index Estimates Across Recursive Models



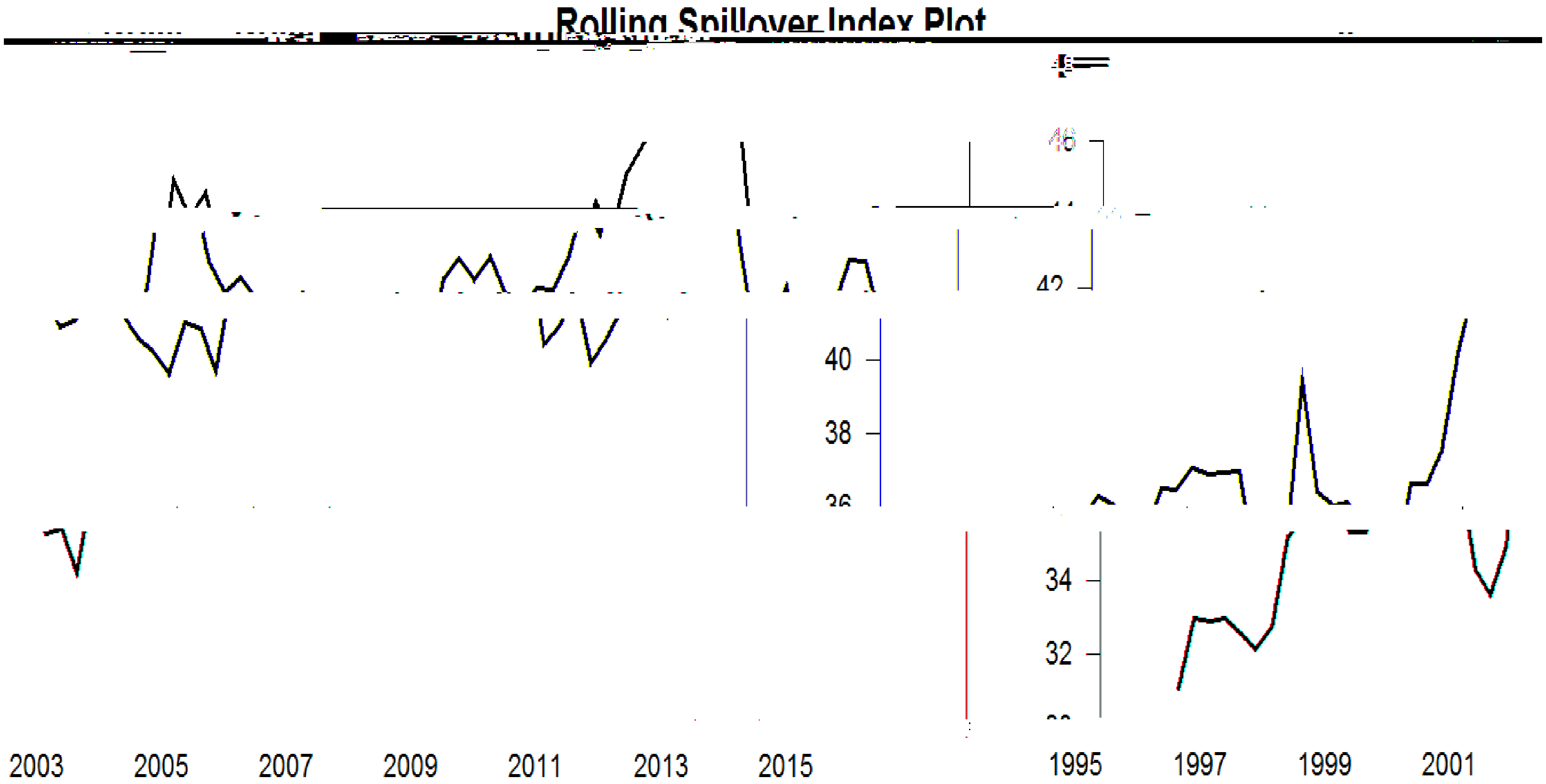
Time-Varying Spillovers

Does the degree of return spillovers vary over time?

Rolling window of 50 observations

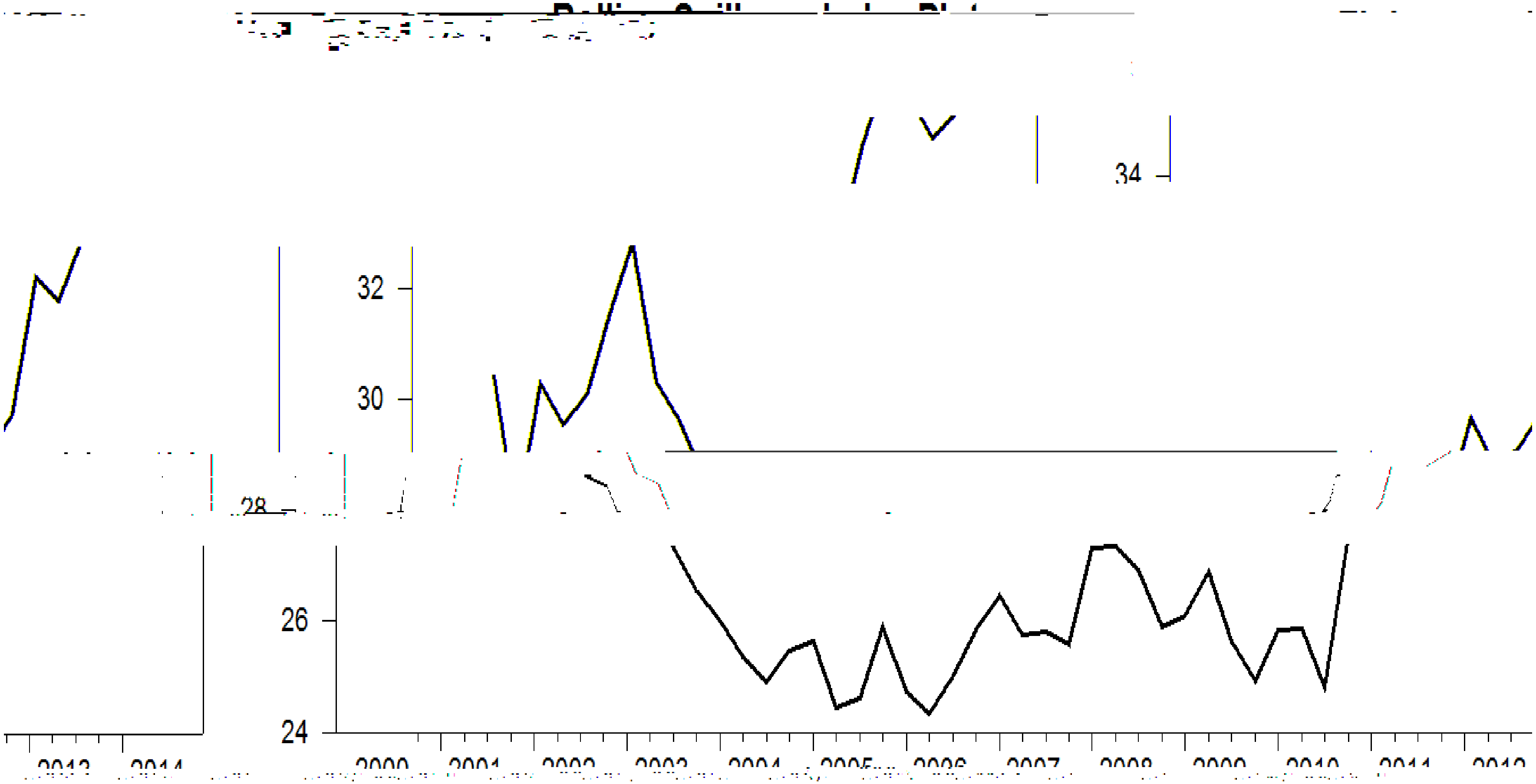
VAR(2) instead of VAR(4)

Houses

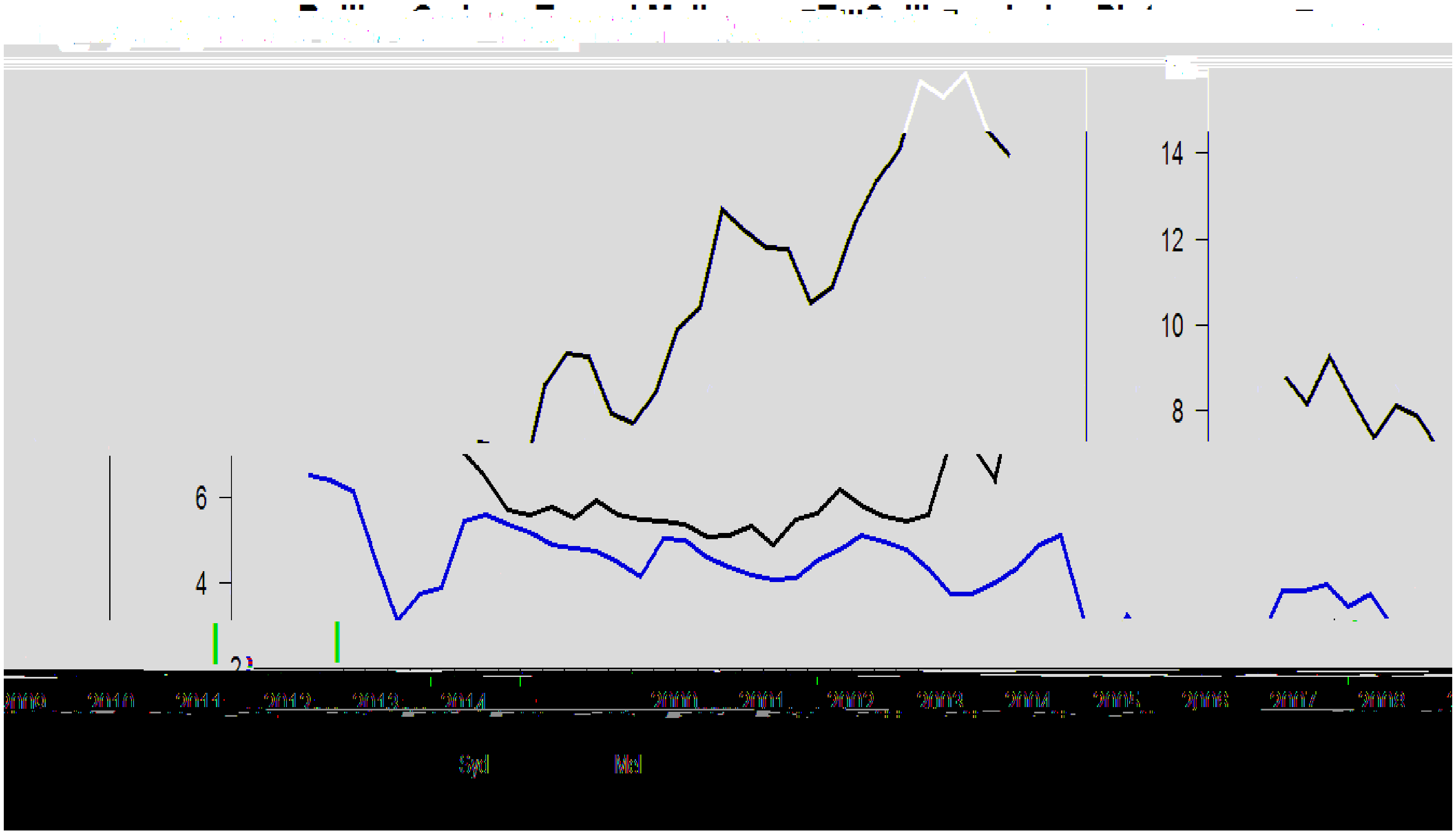


Spillovers are time-varying and have increased over time

Units



Units



Controlling for Potential Macroeconomic Factors

Add to VAR model

Real GDP growth rate

(Ex-post) real cash rate

Spillover Table for Real Returns to Houses

Results for all Eight Capital Cities

Shorter Samples

Houses: 1994:1 2015:2

Units: 1997:4 2014:2

Spillover Table for Real Returns to Units t 1 Year Ahead Forecast

	From						
	Syd	*Mel*	*Bri*	*Per*	*Ade*	*Can*	*Hob*
To							

Other Issues

Non-recursive identifying restrictions

Generalised FEVD

Volatility spillovers

Summary

quantitatively important spillover effects from city-specific shocks.

Spillover effects have been generally increasing over time

Since mid-1990s spillover shocks account for about 40-50 percent of the variance in one-year forecast errors for returns to houses and to units

The Sydney housing market appears to be the most important generator of shocks that transmitted to other cities