

**The Foreclosure-House Price Nexus:
A Panel VAR Model for U.S. States, 1981-2009**

**Supplemental Appendix
Regressions for Judicial Foreclosure Status**

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This supplemental appendix presents the tables and figures from our core PVAR regression model for judicial foreclosure states only.

Note: Figure and table names have been matched to those in the body of the text. Thus, Table J1 corresponds to Table 1 in the text.

Table J1 – Panel VAR Regression Results – Judicial States
(Dependent Variables in Columns)

	Employment	Sales	Permits	Prices	Foreclosures
Employment					
L1	0.386574*** (0.102719)	-0.897016 (0.596239)	-0.652802 (0.741006)	-0.160751** (0.050061)	0.352072 (1.749373)
L2	0.145392* (0.058181)	-0.646257 (0.750496)	-1.085490 (0.999522)	0.067830 (0.047354)	-0.093700 (1.482366)
L3	0.126507** (0.042737)	-1.792283** (0.597153)	-2.170443* (0.878061)	0.010084 (0.048449)	0.660680 (1.679314)
L4	-0.125125** (0.040236)	-0.370276 (0.538375)	-2.907195** (0.956401)	0.129664* (0.052083)	-1.854759 (2.147096)
L5	0.157046** (0.048138)	0.174948 (0.573551)	1.585381 (0.883941)	-0.053633 (0.067568)	1.659418 (1.528740)
L6	0.020553 (0.027883)	0.291213 (0.572230)	1.055732 (0.745000)	-0.133910* (0.055847)	0.196906 (1.274142)
L7	0.007329 (0.025480)	0.126395 (0.521375)	0.430978 (0.641102)	0.131092* (0.054280)	-1.860874 (1.230789)
L8	-0.153417*** (0.026827)	-0.252803 (0.494726)	-0.557879 (0.683278)	-0.049654 (0.051808)	-0.212577 (1.106634)
L9	0.063123* (0.028858)	-0.062988 (0.501201)	-0.860863 (0.689899)	-0.038074 (0.050422)	-2.606241* (1.123092)
L10	0.011723 (0.028312)	-1.124760* (0.527647)	0.559945 (0.691317)	-0.013076 (0.047936)	0.571931 (1.172928)
L11	0.030030 (0.022589)	-0.263686 (0.491277)	0.290266 (0.701082)	0.134553** (0.048159)	0.577604 (1.218113)
L12	-0.066725*** (0.019501)	0.053632 (0.540246)	-0.036543 (0.731520)	0.003415 (0.053930)	1.045811 (1.228287)

Table J1 – Panel VAR Regression Results – Judicial States
(Dependent Variables in Columns)

	Employment	Sales	Permits	Prices	Foreclosures
Sales					
L1	0.000290 (0.001208)	-0.282857*** (0.047081)	0.212944*** (0.042681)	0.002953 (0.002826)	0.057628 (0.070595)
L2	0.002063 (0.001243)	-0.109499* (0.044642)	0.182415*** (0.045865)	0.003612 (0.003216)	0.009798 (0.075765)
L3	0.001036 (0.001302)	-0.091326* (0.038314)	0.186056*** (0.040686)	0.003368 (0.003366)	0.058252 (0.075583)
L4	0.002178 (0.001501)	0.044250 (0.037223)	0.084793 (0.043513)	0.001040 (0.003140)	0.083610 (0.074146)
L5	0.003636* (0.001456)	-0.018914 (0.035244)	-0.001931 (0.041394)	0.003455 (0.002997)	0.046022 (0.070013)
L6	0.001833 (0.001390)	0.074992* (0.036253)	0.070277 (0.037304)	0.006947* (0.002957)	-0.049435 (0.077748)
L7	0.002450 (0.001499)	0.005633 (0.041356)	0.007570 (0.040771)	0.008343** (0.003099)	-0.007642 (0.070745)
L8	0.001248 (0.001580)	-0.026087 (0.038872)	-0.043042 (0.038555)	-0.000131 (0.003156)	0.014561 (0.070056)
L9	-0.000074 (0.001324)	-0.017777 (0.035715)	-0.104897** (0.039669)	0.001246 (0.003011)	0.066228 (0.064948)
L10	-0.001336 (0.001267)	0.015809 (0.029105)	-0.031158 (0.032379)	0.001403 (0.002704)	0.011892 (0.065603)
L11	-0.000010 (0.001146)	0.018539 (0.028497)	-0.024308 (0.039866)	0.001590 (0.002674)	-0.031578 (0.066329)
L12	-0.000215 (0.001090)	0.050280 (0.028957)	-0.035287 (0.032914)	0.001886 (0.002361)	0.071835 (0.055054)

Table J1 – Panel VAR Regression Results – Judicial States
(Dependent Variables in Columns)

	Employment	Sales	Permits	Prices	Foreclosures
Permits					
L1	0.002782** (0.001045)	0.092633*** (0.024991)	-0.354734*** (0.094403)	0.001821 (0.001676)	-0.084006* (0.042691)
L2	0.002429* (0.000999)	0.044558 (0.022876)	-0.158781** (0.057115)	0.004574* (0.001835)	-0.139933** (0.045986)
L3	0.001481 (0.000954)	-0.014459 (0.019954)	-0.010319 (0.038949)	0.000192 (0.002063)	-0.202538*** (0.047530)
L4	0.002553* (0.001090)	-0.065746** (0.022393)	0.029638 (0.042548)	-0.004468 (0.002394)	-0.126727* (0.050904)
L5	0.002086 (0.001210)	0.016348 (0.022849)	0.079216* (0.037415)	0.006454* (0.002522)	-0.163010** (0.056233)
L6	0.001383 (0.001185)	-0.004931 (0.021876)	0.077409 (0.043055)	0.000255 (0.002339)	-0.146419** (0.055980)
L7	0.000135 (0.000983)	-0.035154 (0.022193)	0.075129 (0.046682)	0.003376 (0.002500)	-0.086016 (0.057104)
L8	-0.001152 (0.001013)	-0.054160* (0.024299)	-0.025382 (0.054871)	-0.002742 (0.002600)	-0.050231 (0.058022)
L9	0.000444 (0.001012)	-0.005898 (0.023502)	0.129415** (0.045473)	0.004260 (0.002441)	-0.051543 (0.052845)
L10	-0.000093 (0.001036)	-0.005358 (0.022524)	0.131481*** (0.037915)	0.000580 (0.002411)	0.083277 (0.058028)
L11	-0.000143 (0.000966)	0.004965 (0.022846)	0.052561 (0.040549)	-0.004475 (0.002406)	0.096438 (0.051329)
L12	0.000726 (0.000816)	-0.031564 (0.022492)	0.034574 (0.033714)	-0.000089 (0.002131)	0.031459 (0.048965)

Table J1 – Panel VAR Regression Results – Judicial States
(Dependent Variables in Columns)

	Employment	Sales	Permits	Prices	Foreclosures
Prices					
L1	0.003905 (0.009779)	1.677424*** (0.233931)	1.660692*** (0.327130)	0.348052*** (0.029006)	-0.912063 (0.561148)
L2	0.024721* (0.010364)	0.019964 (0.253153)	1.793911*** (0.376966)	0.098894** (0.033986)	-1.071132 (0.604062)
L3	0.028041* (0.010886)	0.597897* (0.254482)	-0.229226 (0.344723)	0.280132*** (0.032776)	-1.747879** (0.592877)
L4	-0.017286 (0.010682)	-0.263596 (0.260248)	-0.360638 (0.379284)	0.157376*** (0.031405)	0.239318 (0.630069)
L5	-0.044856*** (0.010785)	-1.016288*** (0.307376)	-1.661549*** (0.340886)	0.012614 (0.032027)	-0.583990 (0.683434)
L6	-0.010992 (0.010803)	-0.062040 (0.306564)	0.073826 (0.367418)	-0.067989* (0.028190)	-0.142670 (0.689749)
L7	0.013636 (0.010458)	0.636063* (0.294086)	0.016717 (0.347354)	-0.050308 (0.028049)	0.142842 (0.671957)
L8	-0.004687 (0.010291)	-0.663943* (0.258820)	-0.113224 (0.429170)	0.095765** (0.030752)	0.417786 (0.672498)
L9	0.015178 (0.009999)	-0.479554 (0.249889)	-0.205347 (0.471284)	0.076167** (0.025273)	0.842902 (0.727643)
L10	0.016527 (0.009020)	0.209909 (0.262005)	-0.649789 (0.362334)	-0.026647 (0.024321)	0.678402 (0.703171)
L11	-0.023376* (0.009145)	-0.592767* (0.259041)	-1.313303*** (0.348873)	-0.095914*** (0.025308)	0.986653 (0.691605)
L12	-0.012449 (0.008486)	-0.047271 (0.237629)	-0.254303 (0.309780)	-0.016536 (0.024934)	0.041785 (0.633834)

Table J1 – Panel VAR Regression Results – Judicial States
(Dependent Variables in Columns)

	Employment	Sales	Permits	Prices	Foreclosures
Foreclosures					
L1	-0.000574 (0.000792)	-0.005301 (0.013428)	-0.007516 (0.013434)	-0.003100* (0.001226)	0.496103*** (0.034104)
L2	-0.000304 (0.000529)	0.001446 (0.014687)	0.030248* (0.014877)	-0.001333 (0.001327)	0.150910*** (0.037969)
L3	-0.000223 (0.000518)	-0.011230 (0.013990)	-0.039337* (0.015968)	0.001685 (0.001261)	0.124682** (0.043549)
L4	-0.001567** (0.000587)	-0.022460 (0.014913)	-0.010993 (0.017921)	0.001746 (0.001205)	0.140529*** (0.040809)
L5	0.000640 (0.000590)	0.009866 (0.015820)	-0.019745 (0.016265)	-0.002793* (0.001319)	-0.025792 (0.043323)
L6	-0.001268* (0.000547)	-0.017249 (0.017310)	-0.031730 (0.018311)	0.004103** (0.001260)	0.063092 (0.039902)
L7	0.000500 (0.000495)	-0.009537 (0.017046)	0.028875 (0.020507)	-0.002122 (0.001254)	-0.018647 (0.037323)
L8	0.000975* (0.000475)	0.047475** (0.016059)	0.046962** (0.015150)	0.002113 (0.001248)	-0.022670 (0.038495)
L9	-0.000017 (0.000556)	-0.028891* (0.013705)	-0.034219 (0.018989)	0.001197 (0.001338)	0.098652** (0.034066)
L10	0.000789 (0.000593)	0.007295 (0.015850)	0.013966 (0.016528)	-0.000787 (0.001201)	-0.076256 (0.041453)
L11	-0.000063 (0.000520)	0.003829 (0.013894)	-0.002514 (0.015008)	0.000077 (0.001184)	-0.033427 (0.035684)
L12	-0.000425 (0.000444)	-0.019041 (0.012052)	-0.008365 (0.013141)	-0.000819 (0.001033)	0.037049 (0.032298)

Notes: Standard errors are presented in parentheses below the regression coefficients.

*** Coefficient significant at the 0.1% level.

** Coefficient significant at the 1% level.

* Coefficient significant at the 5% level.

The variables used in the analysis are as follows:

- **Employment** – Growth rate (log difference) of the quarterly average of seasonally-adjusted monthly total non-farm employment for the state.
- **Sales** – Growth rate (log difference) of the seasonally-adjusted annual rate of existing home sales for the state in the quarter.
- **Permits** – Growth rate (log difference) of the quarterly average of the monthly seasonally-adjusted annual rate of single-family residential building permits for the state.
- **Prices** – Growth rate (log difference) of the quarterly FHFA house price index (all transactions) for the state.
- **Foreclosures** – Log level of the MBA quarterly foreclosures started as a percent of loans serviced for the state.

All regression variables were de-meanned using a Helmert transformation, while the actual values of the variables were used as instruments to obtain consistent estimates.

Table J2 – Residuals Correlation Matrix – Judicial States

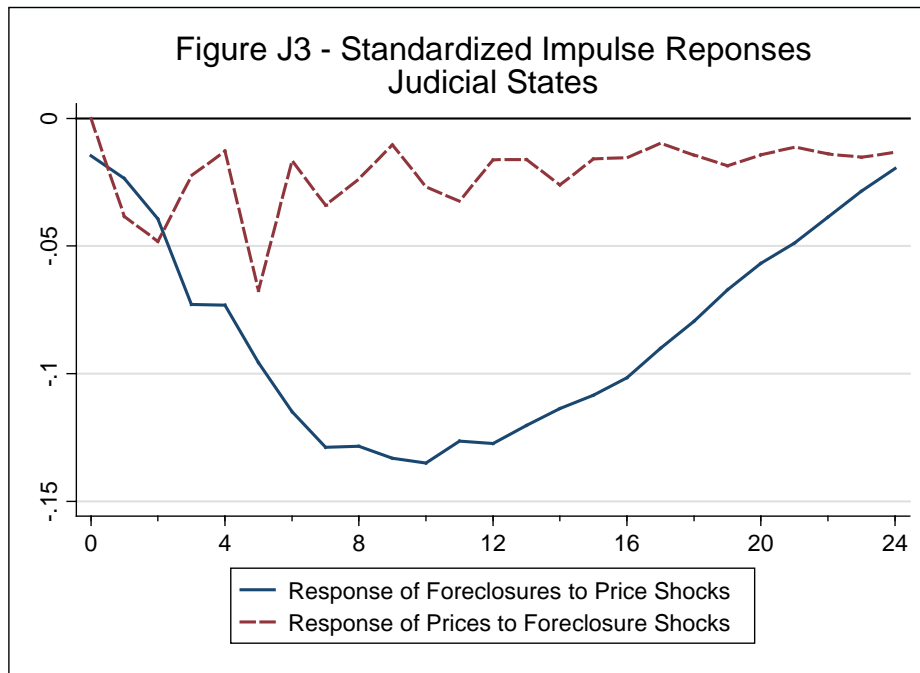
	Employment	Sales	Permits	Prices	Foreclosures
Employment	1				
Sales	0.0513 (0.0254)	1			
Permits	0.1459 (0.0000)	0.1951 (0.0000)	1		
Prices	-0.0576 (0.0121)	0.0854 (0.0002)	0.0337 (0.1414)	1	
Foreclosures	-0.0043 (0.8537)	-0.0753 (0.0011)	-0.0260 (0.2597)	-0.0445 (0.0535)	1

Notes: All variables are Helmert de-meaned log differences of levels except for foreclosures, which is the (de-meaned) log foreclosure start rate (see the notes on Table 1 and the appendix for a complete description of the variables); p-values are reported in parentheses.

Table J3 – Variance Decompositions – Judicial States

	Lag	Employment	Sales	Permits	Prices	Foreclosures
Employment	4	0.9535	0.0099	0.0133	0.0196	0.0037
	8	0.8036	0.0609	0.0429	0.0385	0.0543
	20	0.6508	0.0798	0.0697	0.0876	0.1121
Sales	4	0.0184	0.9262	0.0175	0.0368	0.0012
	8	0.0218	0.8891	0.0289	0.0516	0.0086
	20	0.0261	0.8661	0.0326	0.0599	0.0153
Permits	4	0.0339	0.0482	0.8803	0.0317	0.0059
	8	0.0473	0.0508	0.8522	0.0384	0.0113
	20	0.0494	0.0520	0.8278	0.0525	0.0183
Prices	4	0.0098	0.0196	0.0049	0.9562	0.0095
	8	0.0133	0.0470	0.0169	0.9067	0.0161
	20	0.0217	0.0813	0.0238	0.8566	0.0166
Foreclosures	4	0.0001	0.0083	0.0223	0.0300	0.9393
	8	0.0013	0.0277	0.0654	0.1157	0.7898
	20	0.0057	0.0668	0.1275	0.1899	0.6101

Note: Percent of row variable explained by the column variable at the specified lag.



Note: The standardized responses are calculated by dividing the model impulse responses shown in Figure J2 by the sample standard deviations of the response variable.