



Seðlabanki Íslands

Stóra sveiflan á fasteignamarkaði

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Málstofa Seðlabanka Íslands

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FYRIRVARI

Höfundur er hagfræðingur á sviði fjármálastöðugleika hjá Seðlabanka Íslands. Skoðanir sem koma fram í kynningunni eru höfundar og ber ekki að túlka sem skoðanir Seðlabankans.

- „Icelandic boom and bust: Rationalizing large swings in the housing market“
 - Umfjöllun um sveifluna á markaðnum frá 2003
 - Byggist á líkani úr eldri grein (Elíasson & Pétursson 2009) og með lengra gagnasetti
 - Lagt mat á hvort „bóla“ myndaðist á markaðnum 2003 til 2007
 - Líkanið uppfært með tilliti til sveiflunnar

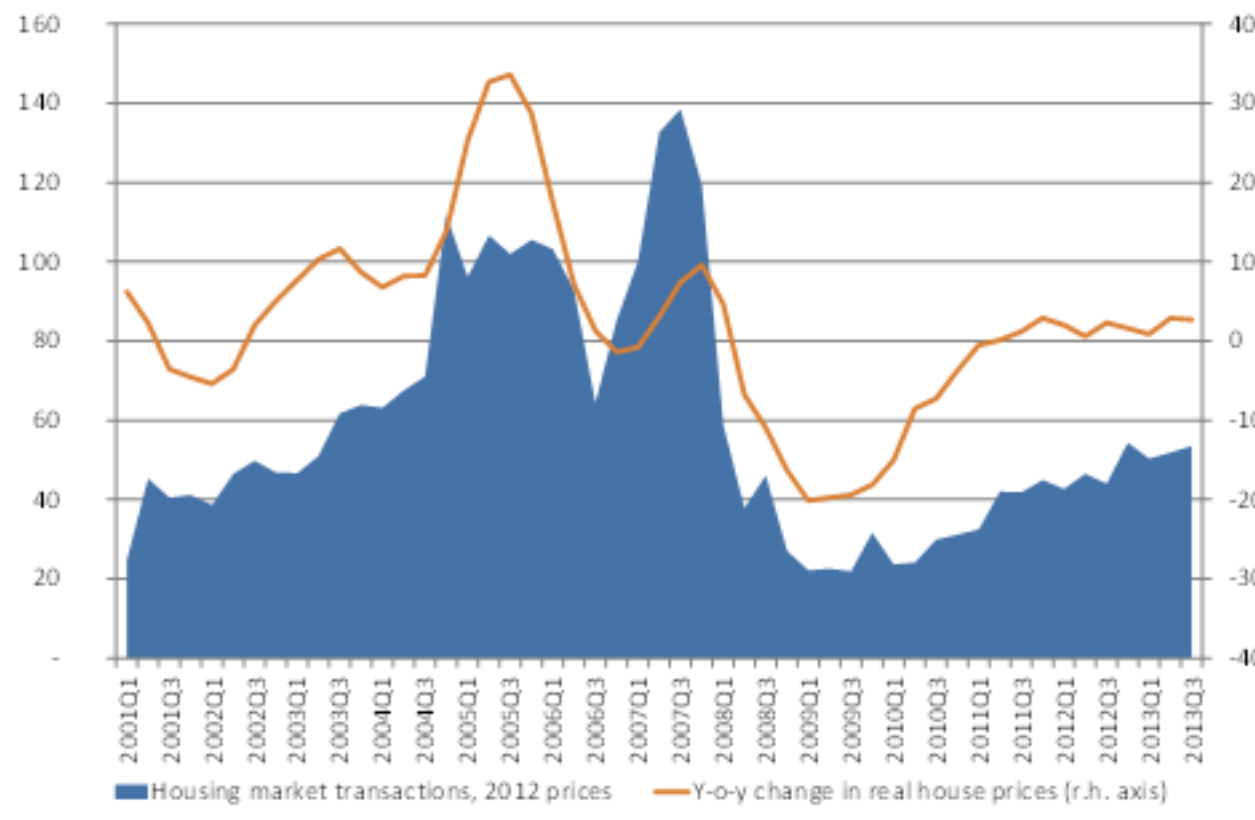
„BÓLAN“ OG „HRUNIÐ“

Alþjóðlegt samhengi

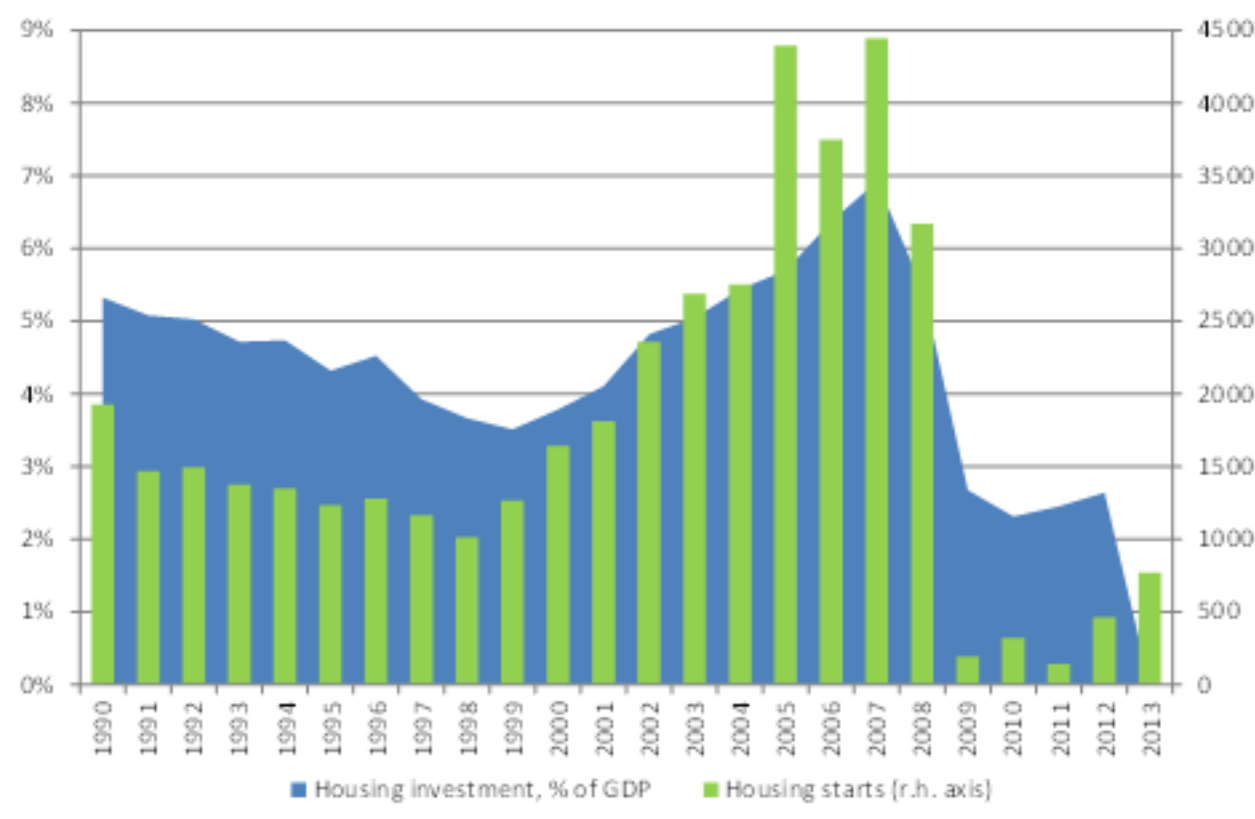


	Change (%) 1995-2013	Largest YoY change (%)	Downturn			
			Top (Q)	Bottom (Q)	Drop (%)	Period (Qs)
Norway	189.3	17.6	1.4.2013	1.10.2013	-5.1	2
Sweden	143.8	12.6	1.7.2010	1.1.2012	-6.6	6
Finland	98.4	13.9	1.4.2011	1.7.2013	-10.1	9
Ireland	94.4	23.9	1.4.2007	1.10.2012	-36.6	22
UK	86.0	25.8	1.7.2007	1.10.2012	-32.6	21
Netherlands	68.8	17.5	1.1.2008	1.10.2012	-22.5	19
Denmark	68.2	23.1	1.7.2007	1.10.2012	-28.9	21
Iceland	58.5	33.6	1.10.2007	1.10.2010	-34.0	12
Switzerland	40.5	8.1	1.10.2013	-	-	-
Spain	31.3	13.2	1.1.2007	1.7.2013	-34.1	26
USA	25.2	12.3	1.1.2006	1.1.2012	-42.5	24

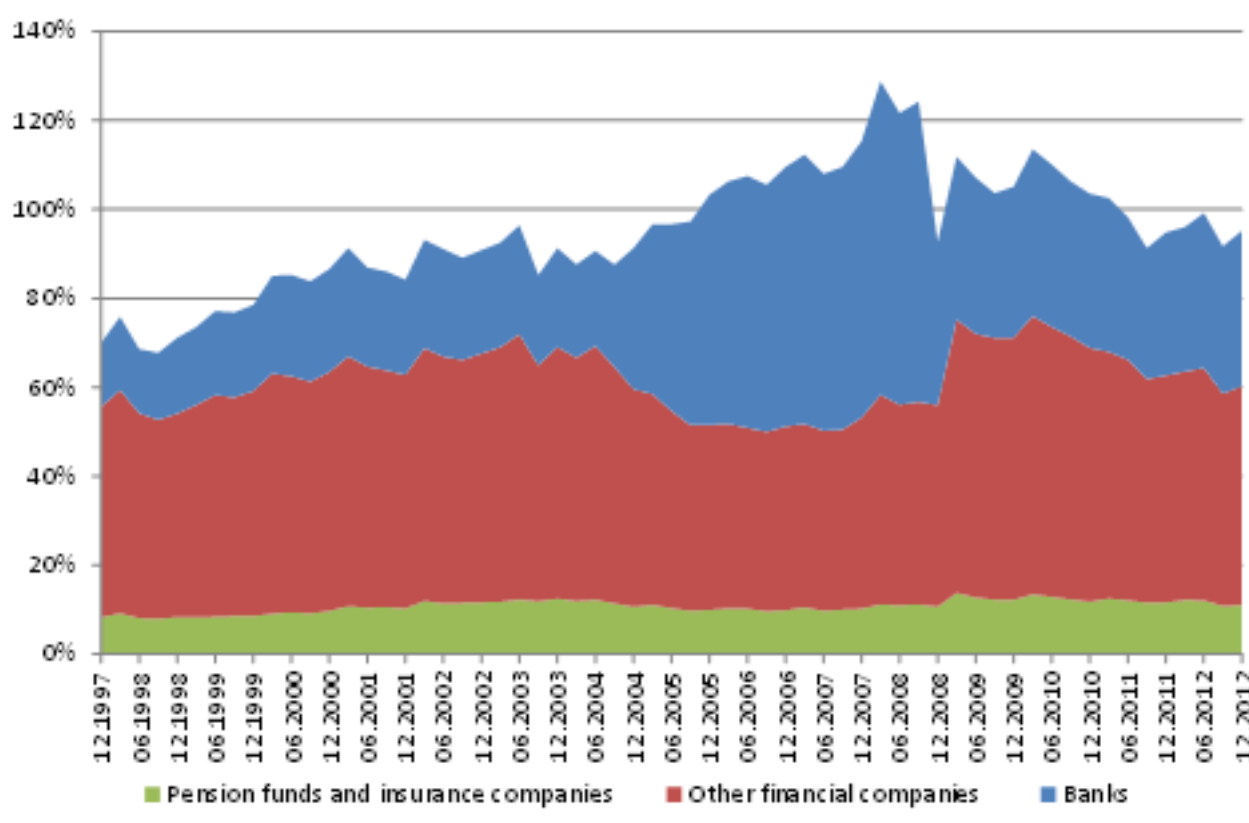
Raunverð og velta



Fjárfesting í húsnæði og nýbyggingar



Skuldir heimilanna



Orsakir sveiflunnar á fasteignamarkaði

- Hin fjölþjóðlega sveifla
 - Gætti víða á Vesturlöndum
 - ... en síður þar sem
 - Fasteignaverð var þegar mjög hátt og almenn skuldsetning mikil
 - Leigumarkaður er ráðandi
 - Útlánareglur voru strangar og ósveigjanlegar
 - Tengsl við hið alþjóðlegt fjármagnsflæði var takmarkað
 - Hófst hér seinna en víðast annars staðar
 - Fór í gang eftir að
 - Hagvöxtur jókst sem og vaxtamunur við útlönd
 - Rýmkað var um lánaþjór vegna fasteignakaupa
 - Fjármögnun fasteignalána varð aðgengilegri fyrir erlenda fjárfesta

Innlendir sveifluvaldar

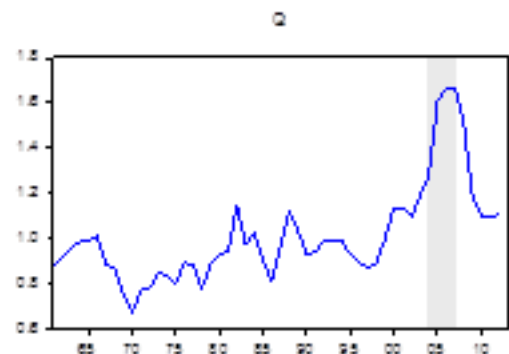
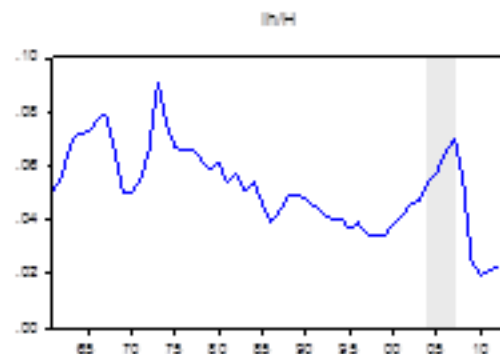
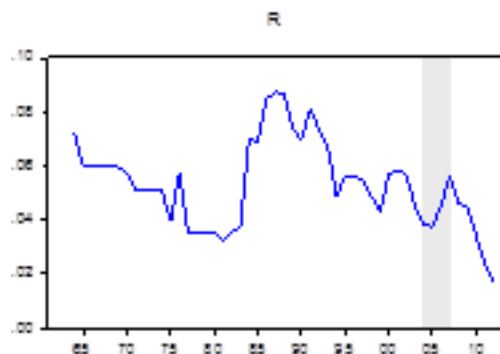
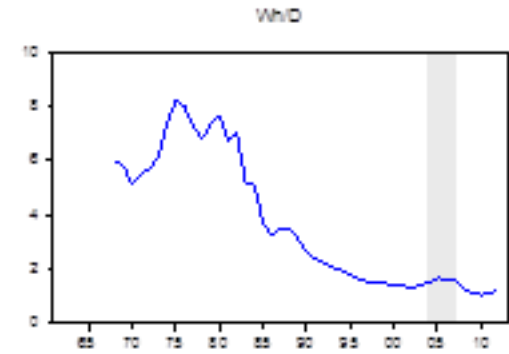
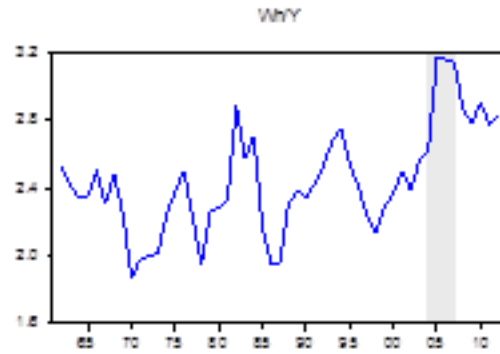
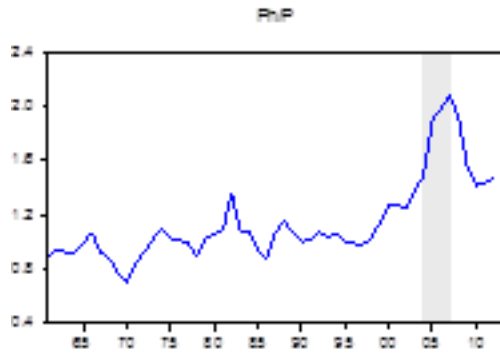


- Mikill hagvöxtur, m.a. drifinn áfram af fjárfestingu með aðkomu hins opinbera
 - Hraður vöxtur kaupmáttar
 - Lækkun skatta
 - Lækkun opinberra skulda
- Sókn innlendra aðila í erlenda fjármögnun samhliða sókn erlendra fjárfesta í íslenska ávöxtun
 - Endurskipulagning fjármögnunar og útlána ÍLS
 - Hraður vöxtur banka með erlendri fjármögnun
- Óheft innflæði fjármagns
- Bitlítil peningastefna
 - Brestir í miðlunarferlinu
 - Lágir raunvextir
 - Seðlabankinn viljugur til að mæta peningaeftirspurn



LÍKAN AF FASTEIGNAMARKAÐI

Gögn 1961 - 2012



Framboð og eftirspurn á fasteignamarkaði

- Byggt á líkani úr greininni „The residential housing market in Iceland: analysing the effects of mortgage market restructuring“
- Gagnasettið nær út 2012 – spannar 52 ár
- Hlutfall íbúðaverðs og byggingarkostnaðar sett jafnt 1 árið 1999
 - Bætir 20% við byggingarkostnað vegna lóðaverðs
- Gervibreypa í eftirspurnarjöfnu
 - Er 0 fyrir 2009, 1 árið 2009, lækkar svo um 0.2 á ári

Endurmat á jöfnum líkansins



- Verðjafna (eftirspurn)

$$\Delta p_{ht} = 0.661 + 0.751 \Delta p_{ht-1} - 0.263 \Delta(w_h - d)_{t-1} - 0.535(w_h - y)_{t-1} - 3.001 R_t$$

(0.10) (0.07) (0.12) (0.09) (0.75)

- Fjárfesting (framboð)

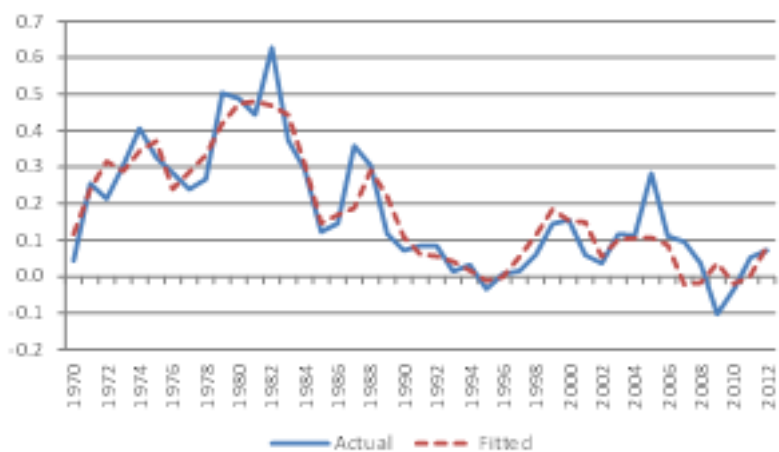
$$\Delta i_{ht} = 0.811 + 0.628 \Delta q_t + 0.562 q_{t-1} - 0.547(i_h - h)_{t-1} + 0.793 \kappa(t)^s - 0.714 D_{0912}$$

(0.29) (0.12) (0.10) (0.07) (0.14) (0.07)

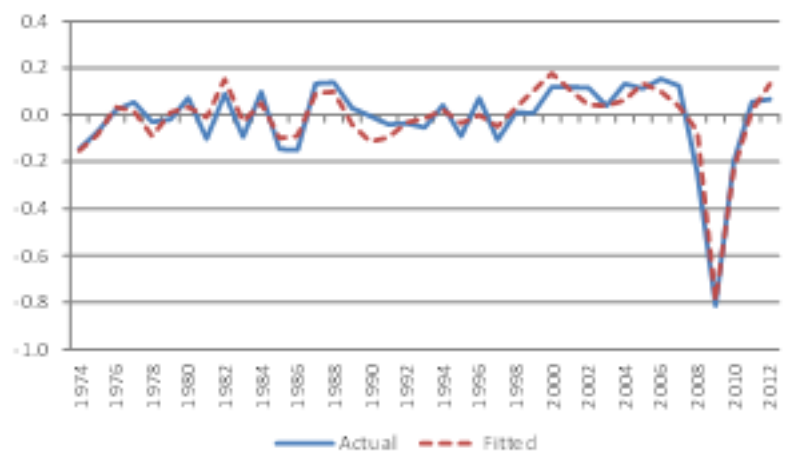
Fylgni líkans og gagna



Íbúðaverð Δp_{ht}



Íbúðafjárfesting Δi_{ht}





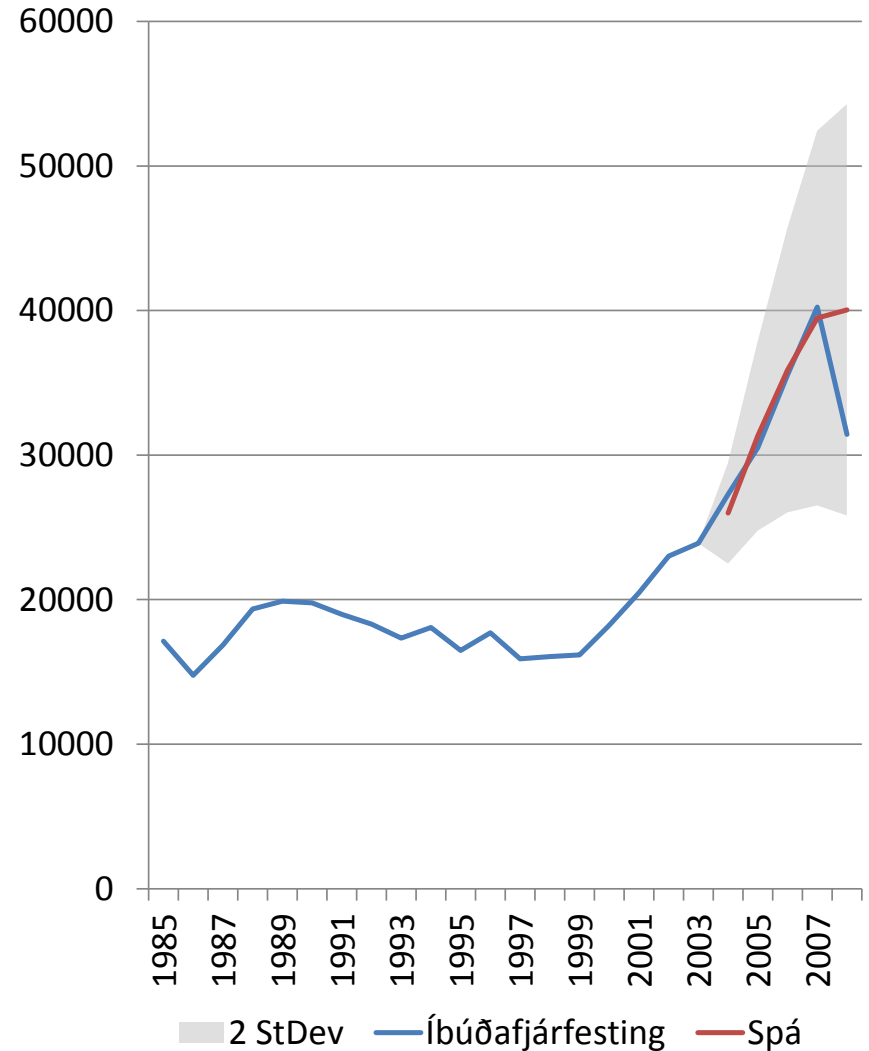
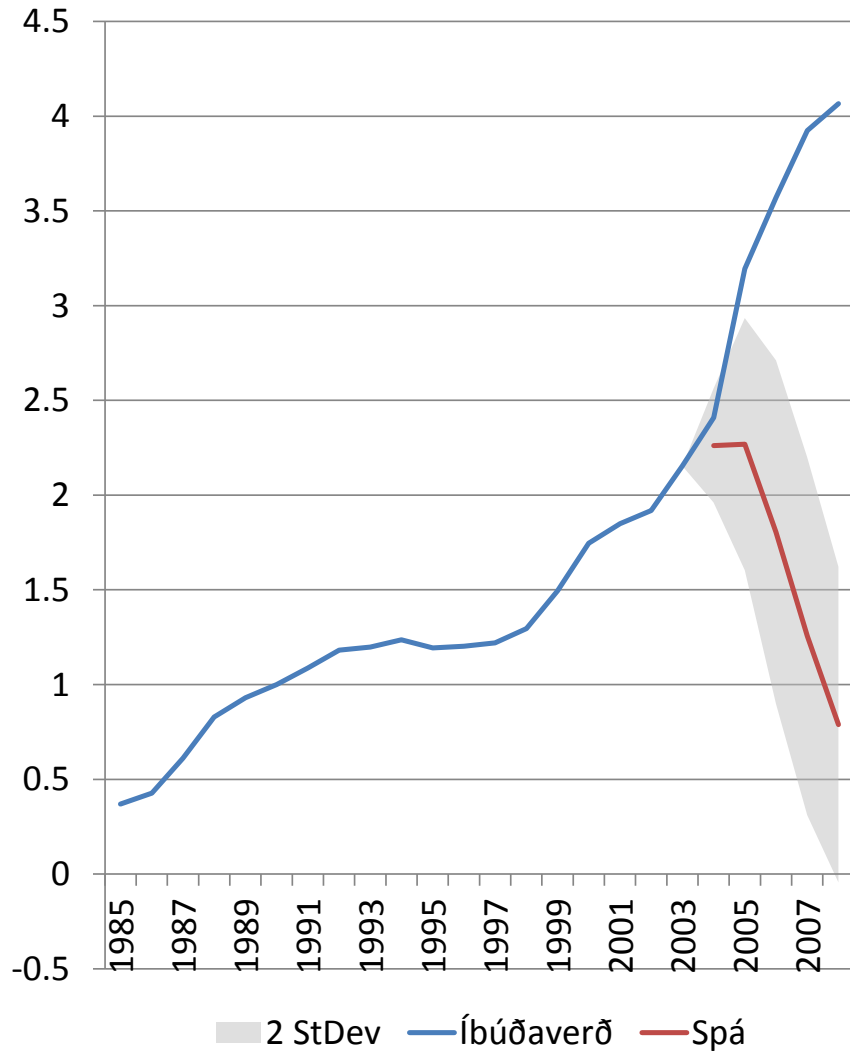
VAR BÓLA Á MARKAÐNUM 2003 – 2007?

Hvað er „bóla“?

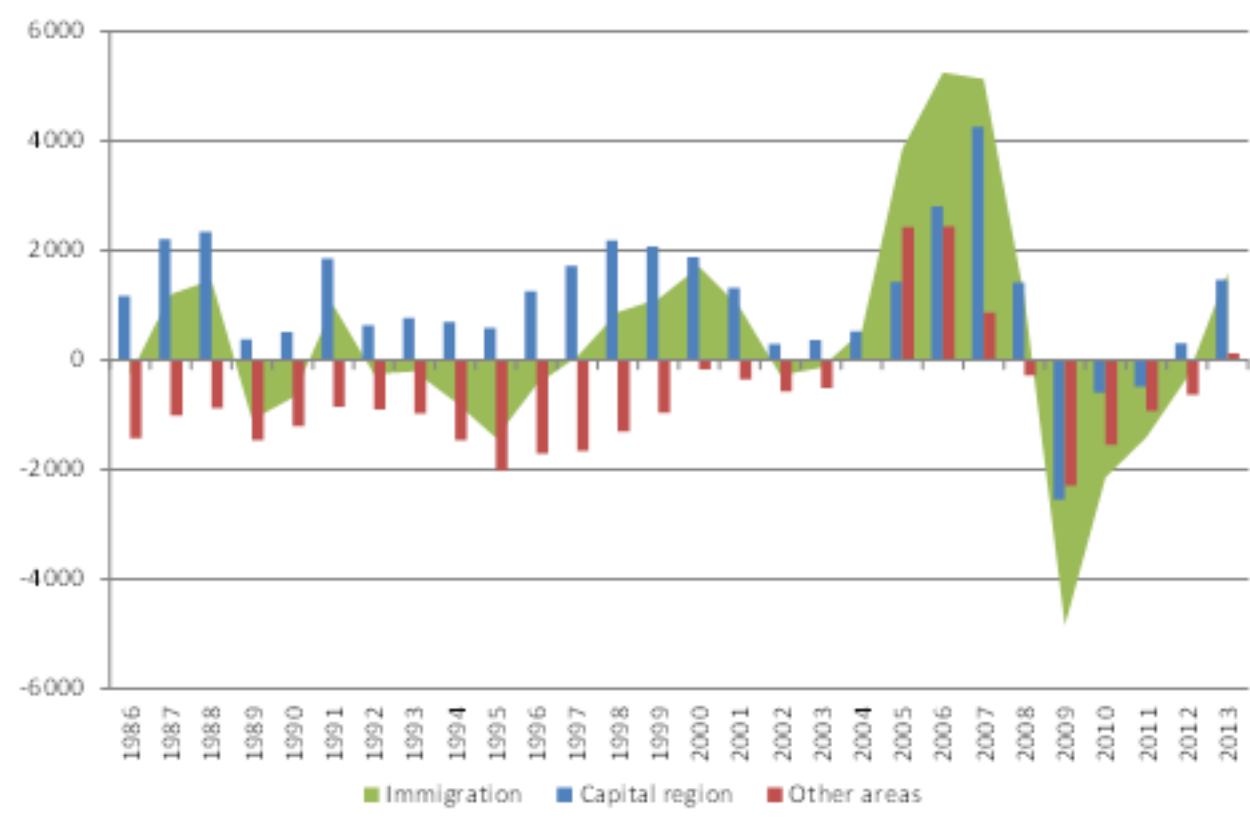


- Hröð hækkun eignaverðs getur átt sér ýmsar skýringar
 - Undirliggjandi verðmætasköpun
 - Skattaumhverfi
 - Skorðum aflétt
- Getur verið rökrétt þótt hún skýrist ekki af þróun undirliggjandi stærða
- Getur einnig verið órökrétt

Spá fyrir 2004 til 2008



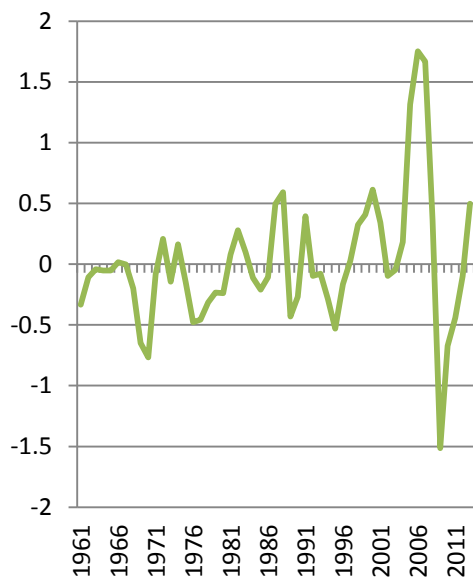
Fólksflutningar



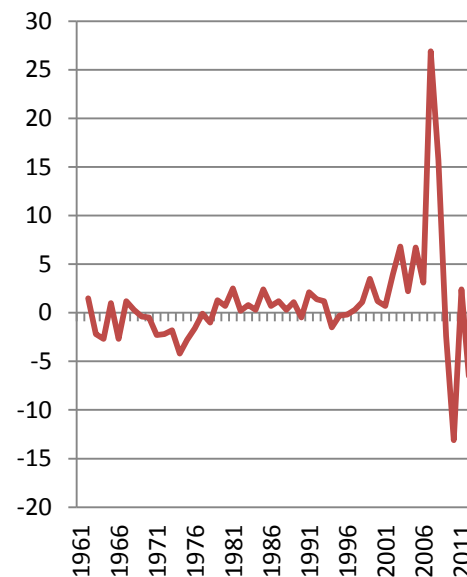
Hugsanlegar skýribreytur sem vantar



Hreinir fólksflutningar



$\Delta(M3/GDP)$



Stuðlamat verðjöfnu



	Model1		Model2		Model3		Model4		Model5	
		StDev		StDev		StDev		StDev		StDev
Constant	0.661	0.10	0.776	0.10	0.765	0.10	0.743	0.08	0.767	0.09
Lagged price inflation	0.751	0.07	0.755	0.07	0.744	0.07	0.742	0.06	0.741	0.06
Change in wealth to debt ratio	-0.262	0.12	-0.347	0.12	-0.294	0.12	-0.401	0.11	-0.395	0.11
Wealth to income ratio	-0.535	0.09	-0.662	0.09	-0.630	0.09	-0.592	0.07	-0.619	0.09
Real interest rate	-3.001	0.75	-3.321	0.69	-3.495	0.73	-3.710	0.65	-3.764	0.68
Trend 2004-2007			0.044	0.01					0.003	0.02
Δ(M3/GDP)					0.005	0.00			0.002	0.00
Net immigration							7.115	1.73	6.045	2.76
Diagnostic tests										
Adjusted R²		0.809		0.843		0.834		0.865		0.860
StDev of Eq.		0.072		0.066		0.067		0.061		0.062
JB (p-value)		0.077		0.313		0.144		0.713		0.983
BG (p-value)		0.519		0.103		0.556		0.511		0.595
W (p-value)		0.451		0.108		0.435		0.189		0.557
Log likelihood		54.59		59.37		58.25		62.69		63.00

All estimated parameters are significant at the 5% level. JB is the Jarque-Bera test for residual normality (distributed as $\chi^2(2)$), BG is the Breusch-Godfrey LM test for first-order residual autocorrelation (distributed as F(1,37) in model 1, F(1,36) in models 2, 3 and 4, and F(1,34) in model 5). W is the White LM test for residual heteroskedasticity (distributed as F(14,28) in model 1, F(18,24) in model 2, F(20,22) in models 3 and 4 and F(31,11) in model 5).

Stuðlamat fjárfestingarjöfnu



	Model1		Model2		Model3		Model4		Model5	
		StDev		StDev		StDev		StDev		StDev
Constant	0.811	0.29	0.656	0.27	0.559	0.25	0.804	0.29	0.527	0.25
Change in Tobins-Q	0.628	0.12	0.490	0.12	0.641	0.10	0.594	0.15	0.674	0.13
Lagged Tobins-Q	0.562	0.10	0.380	0.11	0.606	0.08	0.536	0.12	0.571	0.12
Investment to housing ratio	-0.547	0.07	-0.552	0.06	-0.416	0.07	-0.543	0.07	-0.462	0.07
Investment intensity	0.793	0.14	0.752	0.13	0.580	0.13	0.788	0.14	0.617	0.13
Post-crisis dummy	-0.714	0.07	-0.677	0.07	-0.668	0.06	-0.695	0.09	-0.726	0.08
Trend			0.048	0.02					0.035	0.03
Lagged $\Delta(M3/GDP)$					-0.009	0.00			-0.007	0.00
Net immigration							1.185	3.36	-4.833	3.53

Diagnostic tests

Adjusted R²	0.846	0.871	0.893	0.842	0.894
StDev of Eq.	0.065	0.060	0.055	0.066	0.054
JB (p-value)	0.404	0.482	0.450	0.456	0.473
BG (p-value)	0.842	0.305	0.285	0.783	0.467
W (p-value)	0.000	0.693	0.821	0.010	0.495
Log likelihood	54.26	58.22	61.86	54.34	63.36

All estimated parameters are significant at the 5% level with the exception of β_8 , i.e. the coefficient on net immigration in model 4, which is statistically insignificant. JB is the Jarque-Bera test for residual normality (distributed as $\chi^2(2)$), BG is the Breusch-Godfrey LM test for first-order residual autocorrelation (distributed as F(1,32) in Model1 and F(1,31) in models 2, 3 and 4). W is the White LM test for residual heteroskedasticity (distributed as F(18,20) in Model 1, F(22,16) in model 2, F(24,14) models 3 and 4, and F(8,30) in model 5 (where cross-terms were excluded due to data availability)).

Uppfært líkan



- Verðjafna

- Nettó fólksflutningi til landsins bætt við sem skýristærð

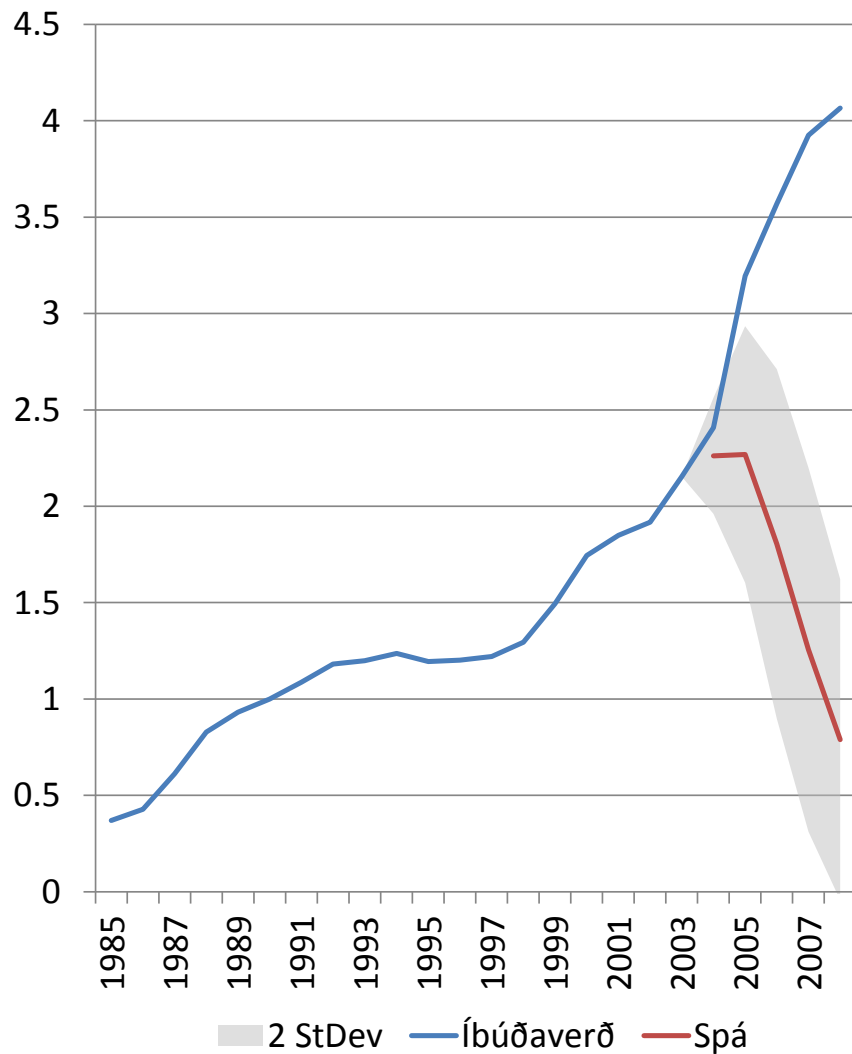
$$\Delta p_{ht} = 0.743_{(0.08)} + 0.742_{(0.06)} \Delta p_{ht-1} - 0.401_{(0.11)} \Delta (w_h - d)_{t-1} - 0.592_{(0.07)} (w_h - y)_{t-1} - 3.710_{(0.55)} R_t + 7.115_{(1.73)} IMM_t$$

- Fjárfestingarjafna

- Gervibreyta fyrir eftirhrunsárin
 - Hugsanlega vegna skerts aðgengis að fjármögnun
- Breytingar í peningamagni
 - Kannski vegna meiri dýptar í fjármálakerfi
 - Kannski tilviljun

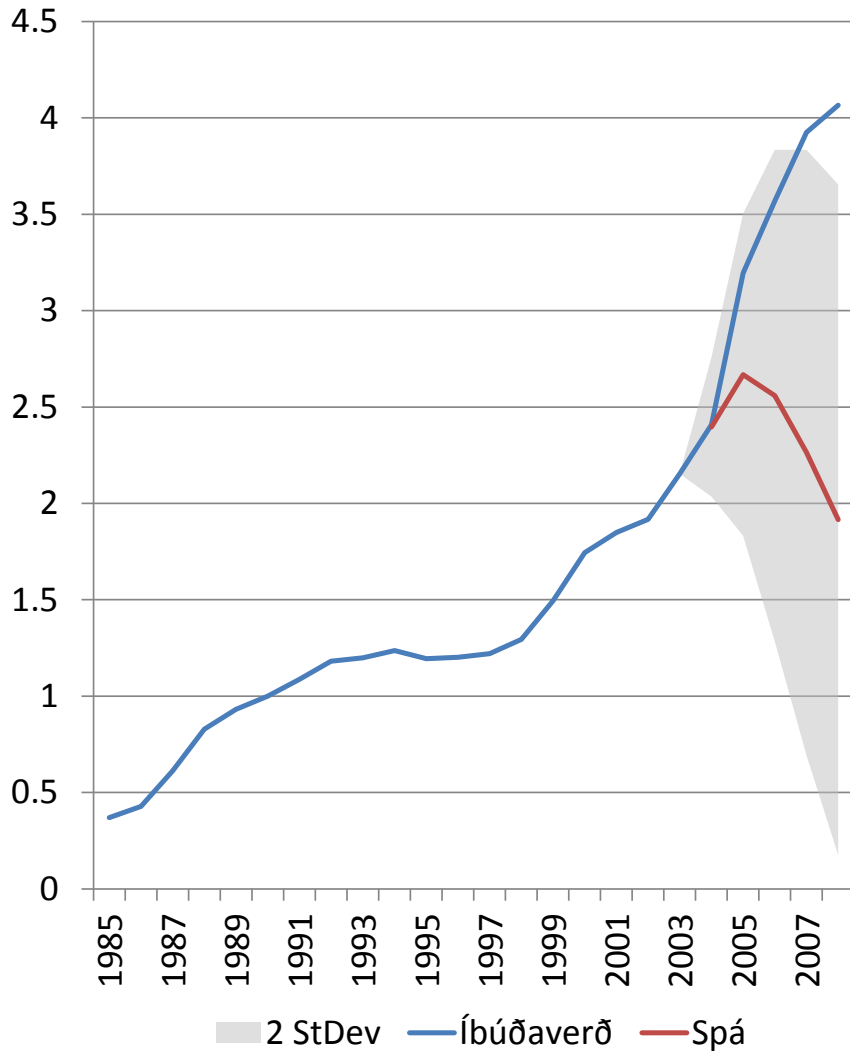
$$\Delta i_{ht} = 0.559_{(0.25)} + 0.641_{(0.10)} \Delta q_t + 0.606_{(0.08)} q_{t-1} - 0.416_{(0.07)} (i_h - h)_{t-1} + 0.580_{(0.13)} \kappa(t)^s - 0.668_{(0.06)} D_{0912} - 0.009_{(0.00)} \Delta (M3/GDP)$$

Spá fyrir 2004 til 2008



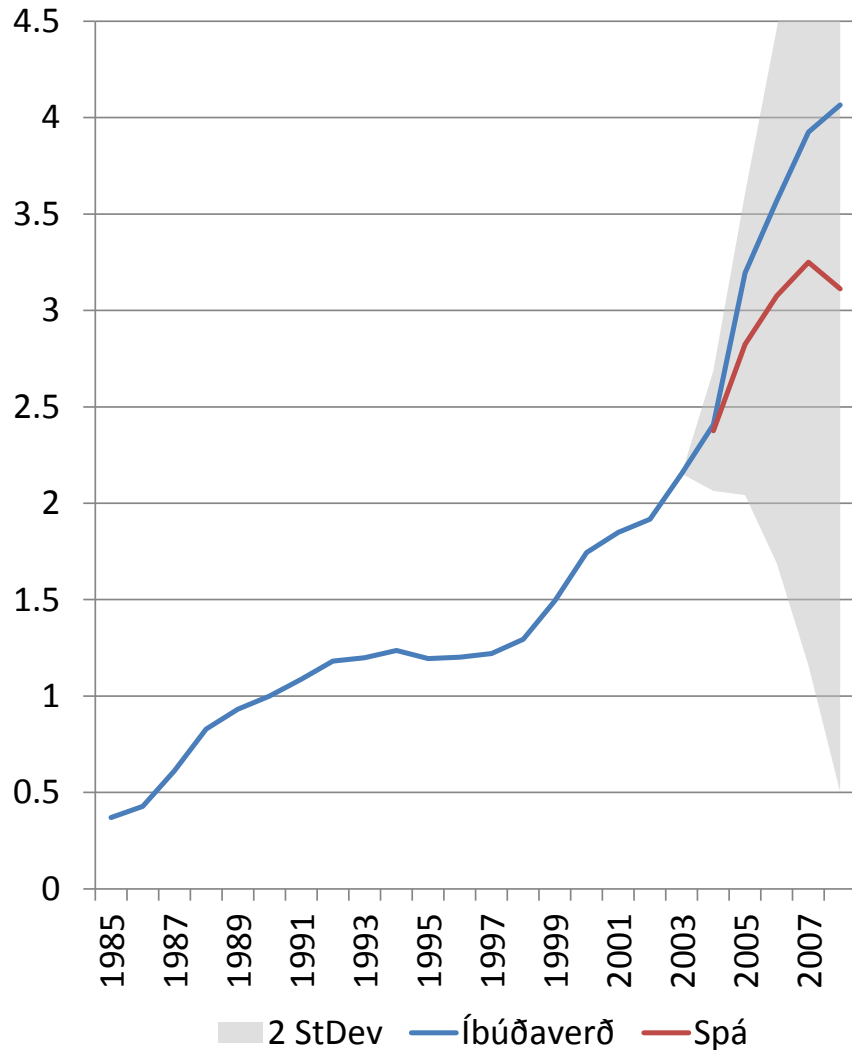
- Upphafleg jafna metin út 2003 og notuð til að spá 2004 til 2008

Spá með uppfærðu mati



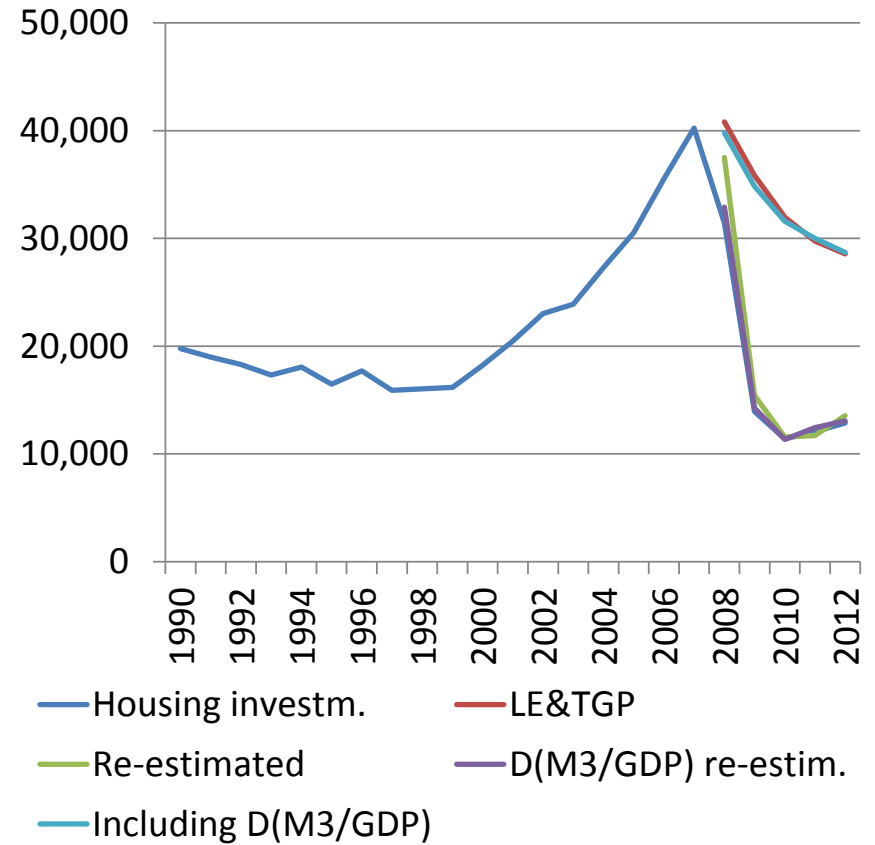
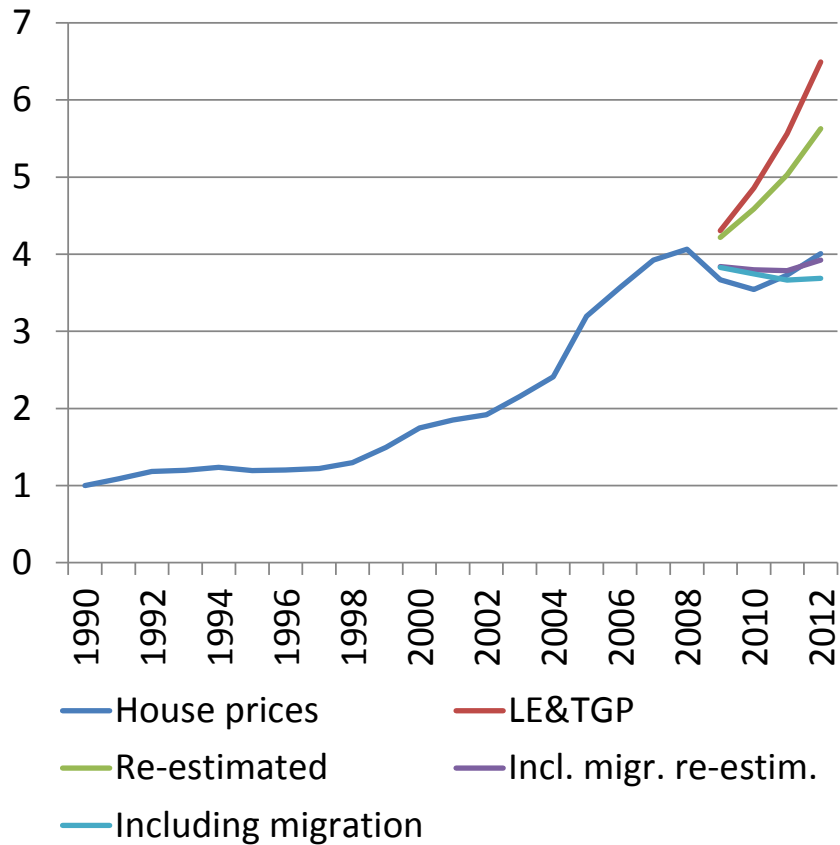
- Upphafleg jafna metin út 2008 og notuð til að spá 2004 til 2008

Spá með uppfærðum jöfnum



- Uppfærð jafna metin út 2008 og notuð til að spá 2004 til 2008

Leiðréttingin eftir bólu



Hvað þýðir þetta?



- 2004 til 2008 fluttust til landsins 15921 umfram brottflutta
 - Skýrir 38,5% hækkun fasteignaverðs
- 2009 til 2012 fluttust 8692 fleiri frá landinu en til þess
 - Skýrir 19,3% lækkun fasteignaverðs
- Árið 2013 var hreinn fólksflutningur til landsins 1598 manns
 - Skýrir 3,5% hækkun fasteignaverðs



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