Some lessons from six years of practical inflation targeting

Lars E.O. Svensson

Web: larseosvensson.se

October 21, 2014

1

Some of my lessons for Sweden and the Riksbank: Outline

1. How should the mandate be specified?
2. Should household debt be (effectively) added as a target for monetary policy?
3. How should forecast targeting be done?
4. How can policy be evaluated, ex ante and ex post
5. What are the policy implications of a downward-sloping long-run Phillips curve?
6. What is the relation between monetary policy and financial policy (micro- and macroprudential policy)?
7. What are my conclusions?

2

---

1. The mandate for monetary policy: Riksbank

- Sveriges Riksbank Act
  - "The objective for monetary policy shall be to **maintain price stability"**
- Government bill
  - "In addition, as an authority under the Riksdag, the Riksbank, without prejudice to the price stability target, is to support the goals of general economic policy with the aim to achieve sustainable growth and **high employment**".
  - High employment = highest **sustainable** rate of employment
- Price stability and the highest sustainable rate of employment
  - Highest sustainable rate of employment = the lowest sustainable rate of unemployment [participation rate!]
  - Stabilize inflation around the inflation target and unemployment around an estimated long-run sustainable rate of unemployment (LSRU)

3

---

1. The mandate for monetary policy: Fed

- Federal Reserve Act
  - The Fed shall "promote effectively the goals of **maximum employment** and **stable prices**"
  - Maximum **sustainable** employment
- Statement on longer-run goals and monetary policy strategy
  - Inflation target of 2 percent
  - Maximum employment determined by non-monetary factors, may change, needs to be estimated
  - Longer-run normal rate of unemployment, central tendency 5.2-6 %
  - **Balanced approach** in mitigating inflation and employment deviations
- Fed and Riksbank same mandate
  - Stabilize inflation around inflation target and unemployment around an estimated LSRU

4

1. The mandate for monetary policy

- Accountability requires not only deviation of inflation but also deviation of resource utilization to be measured
  - Therefore unemployment gap to estimated long-run sustainable rate of unemployment (LSRU)
  - Gap to LSRU as target variable; gap to short-run NAIRU in Phillips curve. Different! (Blanchard and Galí 2010)
- What does the clause "without prejudice to the objective of price stability" mean?
  - Not "inflation on or close to target at all times"
  - Instead "average inflation over a longer period on or close to target"
 - Criterion whether price-stability objective fulfilled or not

1. The mandate for monetary policy

- Stabilize output gap instead of unemployment gap?
- Problems with potential output
  - Requires estimates of potential: labor force, worked hours, total factor productivity, capital stock
  - Not stationary, moving target
  - Output date measures less frequently, often revised, larger measurement errors
  - Impossible to verify, possible to manipulate
  - Riksbank's estimate of potential output shifted down after crisis, but mainly aggregate-demand shock (?)
  - HP filter problems

Swedish GDP and potential GDP
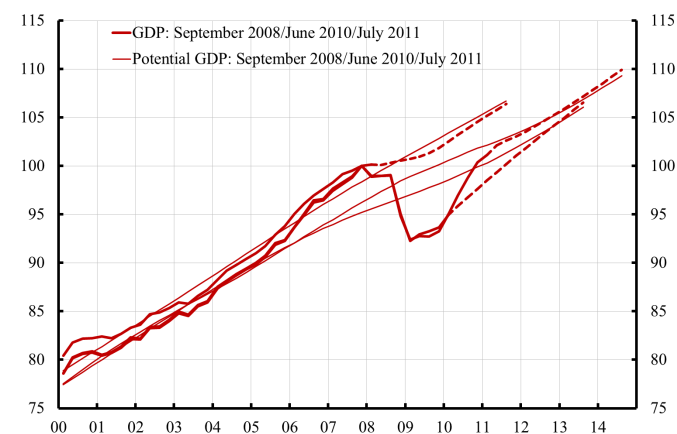
Source: Statistics Sweden and the Riksbank..

1. The mandate for monetary policy

- Unemployment better known and understood
- Importantly, strongly related to welfare. Blanchflower (2009):

  "**Unemployment hurts. Unemployment has undeniably adverse effects on those unfortunate enough to experience it.** A range of evidence indicates that unemployment tends to be associated with malnutrition, illness, mental stress, depression, increases in the suicide rate, poor physical health in later life and reductions in life expectancy. **However, there is also a wider social aspect. Many studies find a strong relationship between crime rates and unemployment, particularly for property crime.**

  Sustained unemployment while young is especially damaging. By preventing labour market entrants from gaining a foothold in employment, sustained youth unemployment may reduce their productivity. Those that suffer youth unemployment tend to have lower incomes and poorer labour market experiences in later life. **Unemployment while young creates permanent scars rather than temporary blemishes.**" [Boldface added.]

2. Should household debt be an additional target variable for monetary policy?

- High household debt used as justification for inflation below target and unemployment above LSRU
- Effectively new target (or intermediate target)
- Preceding discussion and analysis?
  - Justified for economic and economic-policy reasons?
  - What mechanisms and channels?
  - Consistent with Riksbank Act and Government Bill?

2. Should household debt be an additional target variable for monetary policy?

- **Three claims** that must all be true before trying to use the policy rate to limit household indebtedness
1. The current level of household debt in Sweden entails sufficiently large risks that it needs to be restrained.
2. A higher repo rate could, by restraining the debt, significantly reduce these risks and the risks thus reduced are worth the lower inflation and higher unemployment caused by the higher repo rate.
3. There is no better instrument available, with greater or similar effect on the risks and less effect on inflation and unemployment.

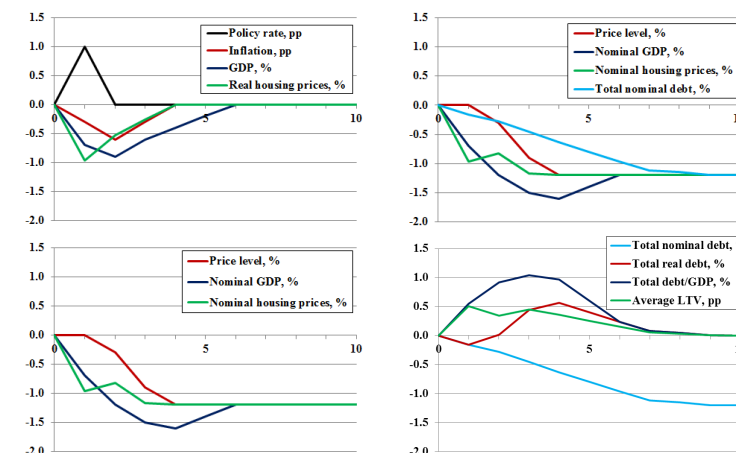## Check claim 2: Policy rate effective in reducing the risks?

- Extensive theoretical and empirical research on effects of policy rate
- The policy rate has **little short-run effect** on the household debt ratio (debt/ disposable income) and **no long-run effect** [but the long run is pretty long…]
- "Leaning against the wind" – a higher policy rate – actually *increases* (not reduces) real debt and the debt-to-GDP and debt-to-income ratios (Svensson 2013)
- After 10-15 years, real debt and debt ratios back to baseline
- The policy rate affects total nominal debt very slowly – but the price level, nominal GDP and nominal income much faster (the long run is pretty long)
- Assumptions
  - New mortgages at constant LTV ratio (70%)
  - Only $1/7^{th} = 16\%$ of mortgages refinanced each year
  - Impulse responses of inflation and GDP according to Ramses (Riksbank's DSGE model)
  - Housing-price semi-elasticity w.r.t. 1-yr mortgage rate about 0.7 (Svensson 2013)

Impulse responses to 1 percentage point higher policy rate during year 1
Deviations from baseline

Check claim 2: Policy rate effective in reducing the risks?

- The dynamics of real debt and debt ratios dominated by the dynamics of the denominator
- Real housing prices are relative prices
- The debt ratio is not a nominal variable

- **Claim 2 does not hold true!**

New strengthened framework for financial stability in Sweden

- Finansinspektionen (FSA)
  - Responsible for financial stability
  - Control of all micro- and macroprudential instruments (including the counter-cyclical capital buffer)
  - Accountability: One authority
  - Efficiency: Micro- and macroprudential policy hang together in Sweden (financial sector of 4 major banks in oligopoly)
- Stability Council
  - Chair: Minister of Financial Markets
  - Members: Heads of the FSA, the NDO, and the Riksbank
  - Transparent discussion about financial stability, not decisions
- Riksbank mandate not broadened

Check claim 3: No other instruments?

- The government and Finansinspektionen (FSA) have taken or announced several effective measures
1. The loan-to-value cap
2. Higher capital adequacy requirements for systemically important banks
3. Higher risk weights for mortgages
4. FSA Mortgage Market Report
- The banks are contributing
1. Applying the loan-to-value cap
2. Strict lending standards (FSA Mortgage Market Reports)
- **Claim 3 does not hold true**
- **Household debt should not be an additional target**
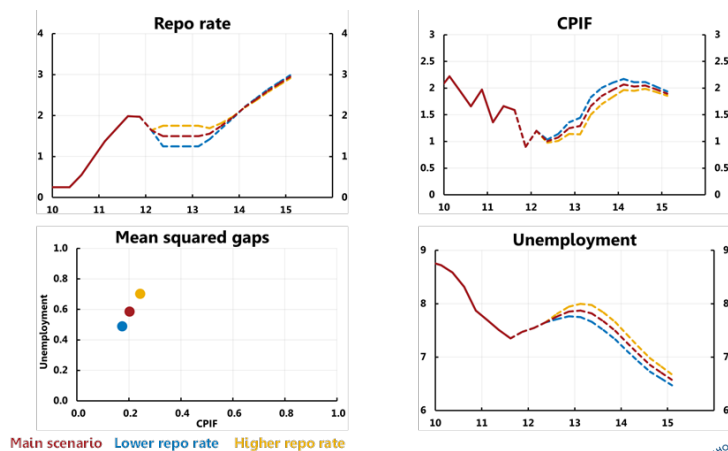
3. Forecast targeting

- Set policy rate and policy-rate path so corresponding forecasts for inflation and unemployment "look good"
- Algorithm
  - Step 1: For previous policy-rate path, show impact of new information and assessments on forecasts for inflation and unemployment
  - Step 2: Adjust policy-rate path so corresponding forecasts for inflation and unemployment "look good"
  - Publish both steps
  - In practice, only outcome of step 2 published so far

3. Forecast targeting: Use four-panel graphs
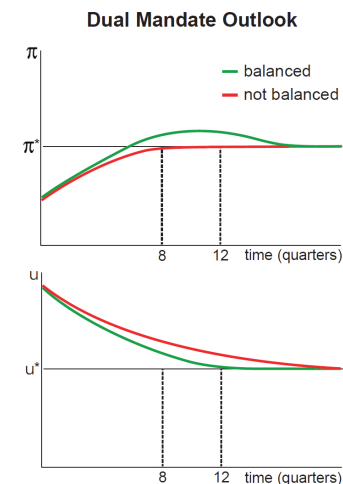### Example: Feb 2012 meeting

17

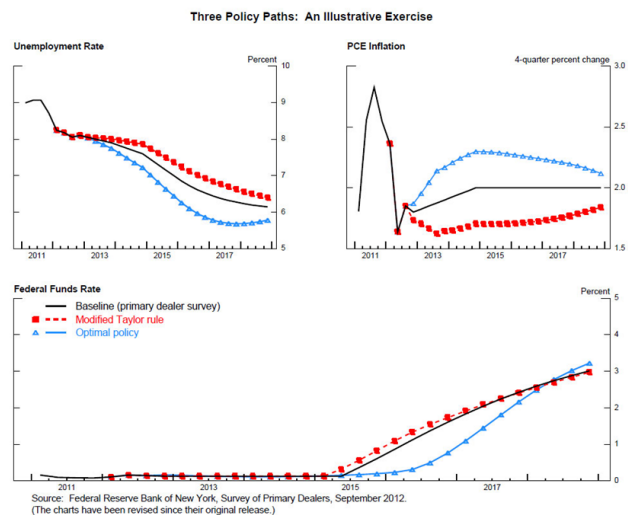### 3. Forecast targeting: "Balanced approach" Kocherlakota (2013)

Kocherlakota, Narayanaa (2013), "Operational Implications of the FOMC's Principles Statement," speech at the Federal Reserve Bank of Boston, April 13, 2013.
19

3. Forecast targeting: Yellen (2012)

Source: Yellen, Janet L. (2012), "Revolution and Evolution in Central Bank Communications," speech at the Haas School of Business, University of California, Berkeley, November 13, 2012, www.federalreserve.gov.
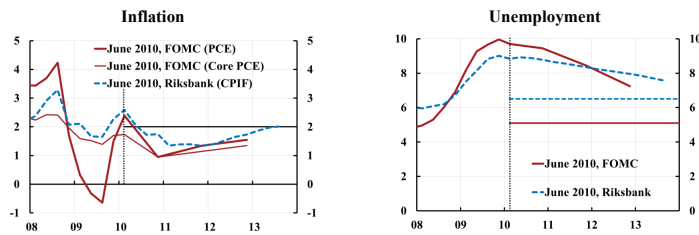18

4. Policy evaluation

- Ex ante, in real time, taking into account only information available at the time of decision
- Ex post, after the fact, taking into account information about economy after the decision

20

4. Policy evaluation ex ante
Example: Fed and Riksbank, June/July 2010

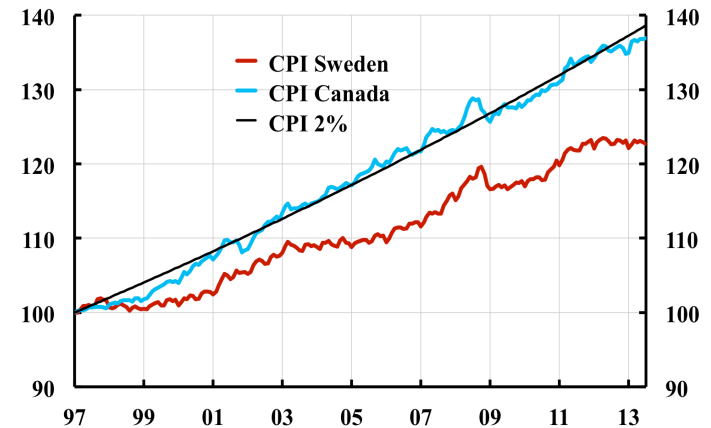**Inflation**

Unemployment

- Riksbank and Fed forecasts quite similar
- Policy very different
  - Fed: Keep policy rate between 0 and 0.25%, forward guidance, prepare QE2
  - Riksbank: Start raising the policy rate from 0.25 to 2% in July 2011
- Riksbank: Premature tightening?

Source: Svensson, Lars E.O. (2011), "Practical Monetary Policy: Examples from Sweden and the United," *Brookings Papers on Economic Activity*, Fall 2011, 289-332.
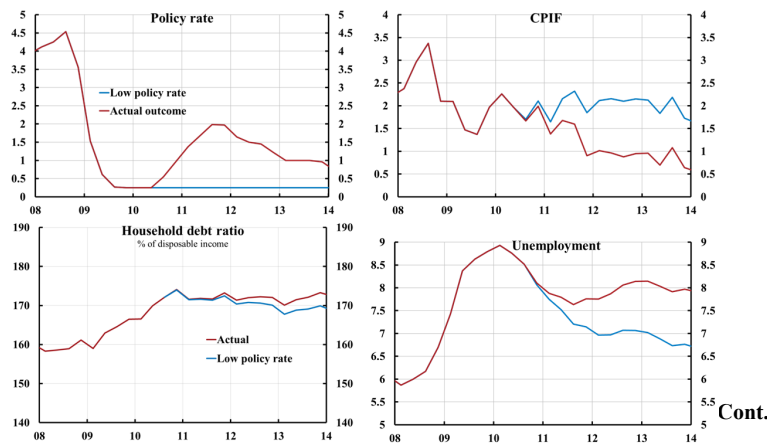
21

4. Policy evaluation ex post: Riksbank: Actual outcome compared to counterfactual low policy rate 2010-2013

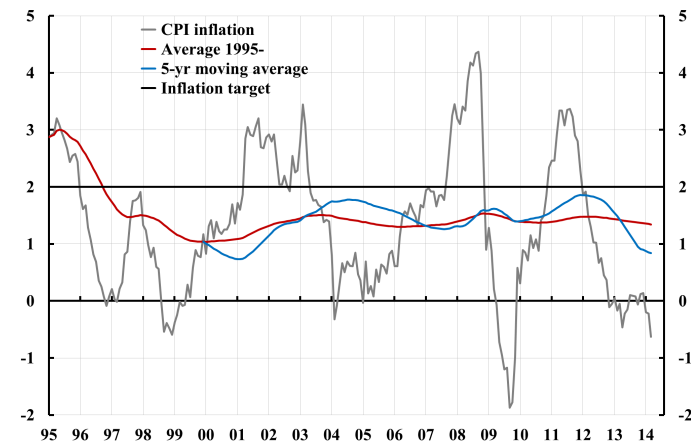**Cont.**

Source: Svensson (2013), "Unemployment and monetary policy – update for the year 2013," larseosvensson.se.

22

4. Policy evaluation ex post:
Average inflation over a longer period on target?

- CPI Sweden
- CPI Canada
- CPI 2%

23

Average inflation substantially below target

- CPI inflation
- Average 1995-
- 5-yr moving average
- Inflation target

24

Average inflation below credible target: "Debt deflation!"

- Since 1997, inflation target credible, average inflation expectations anchored at target 2 %
- Average CPI-inflation 1.4 %
- Sweden an outlier
- Inflation lower than expectations
- Higher unemployment
- Higher real debt than anticipated

7. Conclusions

- Be clear about the mandate: Stabilize inflation around inflation target and unemployment around an estimated LSRU
- Do not add the household debt ratio as a target
- "Leaning against the wind" is counterproductive
- Use a 2-step algorithm to do forecast targeting: Show both steps in 4-panel graphs
- Use 4 panel graphs in evaluation of monetary policy ex ante and ex post
- With a credible inflation target, the long-run Phillips curve will be non-vertical: Keep average inflation over a longer period on or close to the target

6. Monetary policy and financial stability

- Lessons from financial crisis?
- Financial policy (micro- and macroprudential policy) failed, not monetary policy
- Flexible inflation targeting remains best-practice – before, during, and after crisis
- Monetary policy and financial policy should not be confused
- Financial policy: Maintain **resilience** of financial system
- Conduct monetary policy and financial policy independently but with full information about the conduct of the other policy
- For Sweden: New strengthened framework for financial stability, in line with this
- More on household debt and risks to financial stability in paper (and tomorrow)
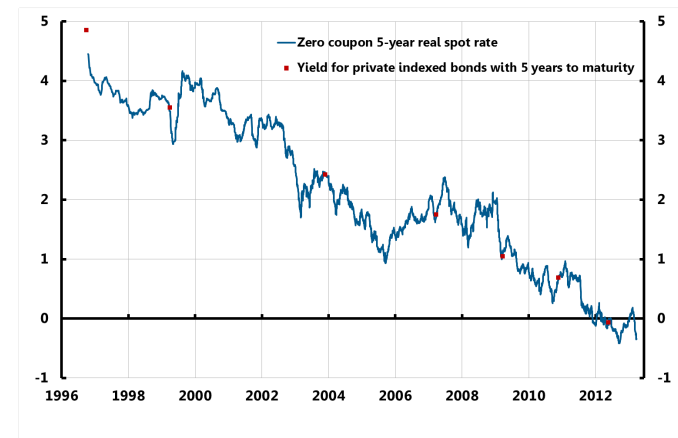
7. Conclusions

- Flexible inflation targeting remains best-practice monetary policy before, during, and after the financial crisis
- Do not confuse monetary and financial policy
- Use monetary policy to achieve price stability and highest sustainable employment
- Use financial policy to maintain financial stability (maintain sufficient **resilience** against disturbances that threaten financial system's 3 main functions)
- Each policy fully informed about the conduct of the other
- The new framework for financial stability in Sweden in line with this

Swedish 5-year real interest rate, contributes to rising housing prices
percent

Zero coupon 5-year real spot rate

Yield for private indexed bonds with 5 years to maturity

Additional slides

Monetary Policy and House Prices in the Advanced Economies

$R^2 = 0.05$
T-statistic = -0.97

Change in real house prices (2001Q4 -2006Q3)

Average Taylor rule residuals (2002Q1-2006Q3)

Source: International Monetary Fund.

9

Current Accounts and House Prices in the Advanced Economies

Y-axis: Change in real house prices (2001Q4 -2006Q3)
X-axis: Change in Current Account as Percent of GDP (2001Q4-2006Q3)

$R^2 = 0.31$
T-statistic = -2.84
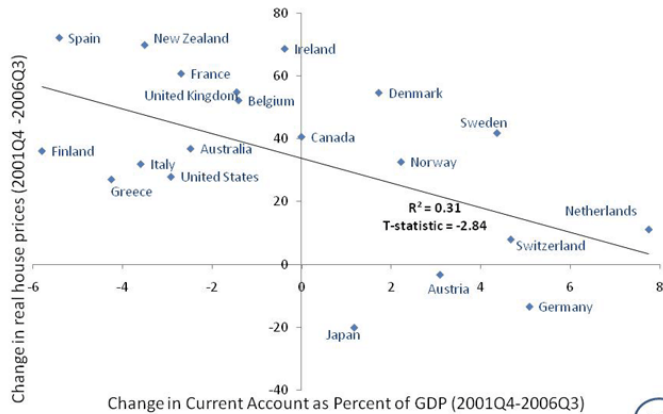
Source: International Monetary Fund, Haver Analytics, and Federal Reserve staff calculations.

(10)

Sources: Bernanke, Ben S. (2010), "Monetary policy and the housing bubble", AEA meeting, January 2010. 33

"The Effect of Housing Prices of Changes in Mortgage Rates and Taxes"

$$p_t = \frac{h_t + (1 - \tau^g)\mathrm{E}_t p_{t+1}}{1 + \gamma_t - (1 - \mathrm{E}_t \pi^c_{t+1})\tau^g}$$

$$p_t = \frac{h_t}{\gamma + \tau^g \pi^c - (1 - \tau^g)g}$$

$$\gamma - g \equiv r + \delta + \tau^h + \sigma + \theta - g$$

$$\gamma = 2.2 + 7 + 2 = 11.2 \text{ percent}$$

$$\gamma - g = 11.2 - 2 = 9.2 \text{ percent}$$

$$\frac{\partial \ln p_t}{\partial i_t} = -\frac{\partial \ln[1 + \gamma_t - (1 - \pi^c)\tau^g]}{\partial i_t} = -\frac{\partial \gamma_t / \partial i_t}{1 + \gamma_t - (1 - \pi^c)\tau^g} = -\frac{1 - \tau^i}{1 + \gamma_t - (1 - \pi^c)\tau^g}$$

35

"The Effect of Housing Prices of Changes in Mortgage Rates and Taxes"

$$h_t = [(1 - \tau^i)i_t - \mathrm{E}_t \pi^c_{t+1} + \delta + \tau^h + \sigma + \theta]p_t - (\mathrm{E}_t p_{t+1} - p_t)$$

$$r_t \equiv (1 - \tau^i)i_t - \mathrm{E}_t \pi^c_{t+1}$$

$$h_t = \gamma_t p_t - (\mathrm{E}_t p_{t+1} - p_t)$$

$$\gamma_t \equiv r_t + \delta + \tau^h + \sigma + \theta$$

$$p_t = \frac{h_t + \mathrm{E}_t p_{t+1}}{1 + \gamma_t}$$

$$p_t = \frac{h_t}{\gamma - g}$$

$$\gamma - g \equiv r + \delta + \tau^h + \sigma + \theta - g$$

34

Table 1. The effect on housing prices in percent of a temporary change in the 1-year mortgage rate and in CPI inflation expectations; of a permanent change in the mortgage rate, tax rates, the growth rate of real value of housing services, and the CPI inflation rate; and of the elimination of the deductibility of the capital-income tax and of the capital-gains tax.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Semi-elasticity				Elimination	
	Infinitesimal		Finite			
Variable	CGT	No CGT	+1 pp	−1 pp	CGT	No CGT
Mortgage rate, temp.	−0.78	−0.63				
Inflation expectations, temp.	0.87	0.90				
Mortgage rate, permanent	−6.94	−7.61	−6.5	−7.5		
Capital-income tax	0.60	0.65			−15.2	−8.4
Property and wealth tax	−9.92	−10.87	−9.0	−11.0		
Capital-gains tax	−0.40	−0.44			9.6	
Housing services growth	7.74	10.87				
CPI inflation	0.79	3.26				

Note: CGT refers to the case when the capital-gains tax is fully internalized, including that the tax is paid each year. No CGT refers to the case when the capital-gains tax is disregarded. Columns (2) and (3) report the infinitesimal semi-elasticity. Columns (4) and (5) report the finite semi-elasticity of housing prices with respect to plus and minus 1 percentage point change in the variable only for the case when the capital-gains tax is fully internalized. When the capital-gains tax is disregarded, the magnitudes are somewhat higher. Columns (6) and (7) report the change in percent of housing prices with respect to an elimination of the deductibility of the capital-income tax and to an elimination of the capital-gains tax when it is fully internalized before the elimination. 6