

MEDIUM-TERM ADJUSTMENT AND THE INFLATION DYNAMIC: PART III

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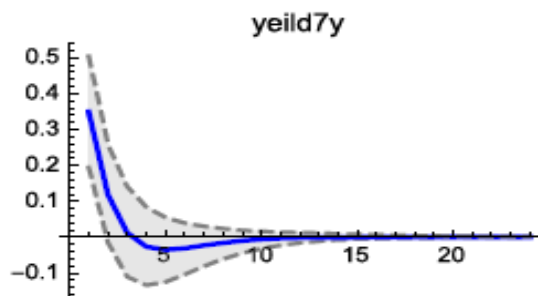
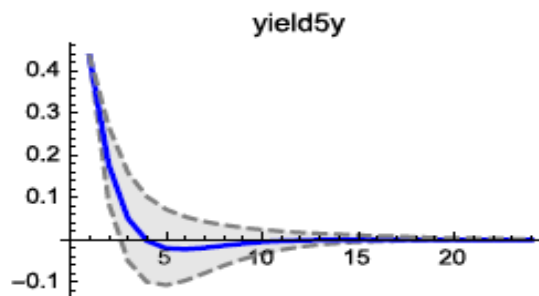
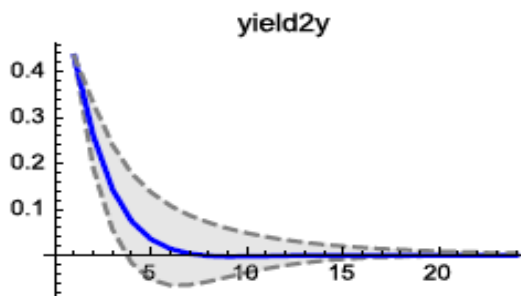
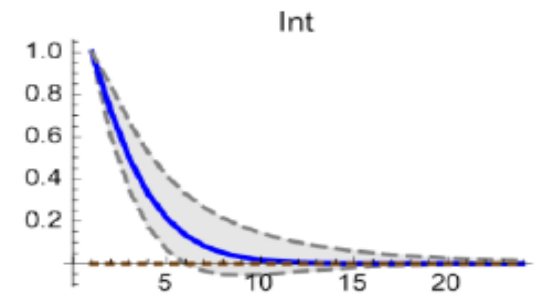
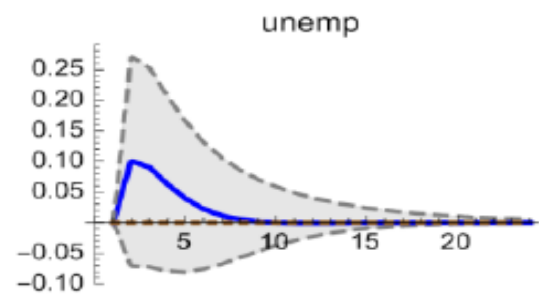
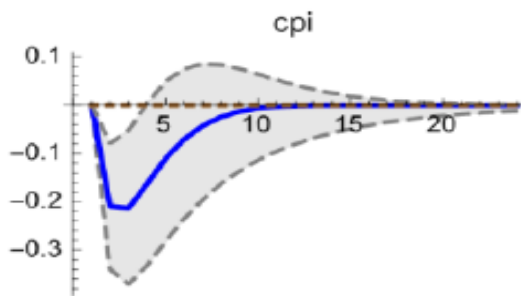
AGENDA THIS PART!

- Labor market in details
- Phillips curve and inflation dynamic
- Policy implications
- Current state-of-the-art of inflation dynamic model

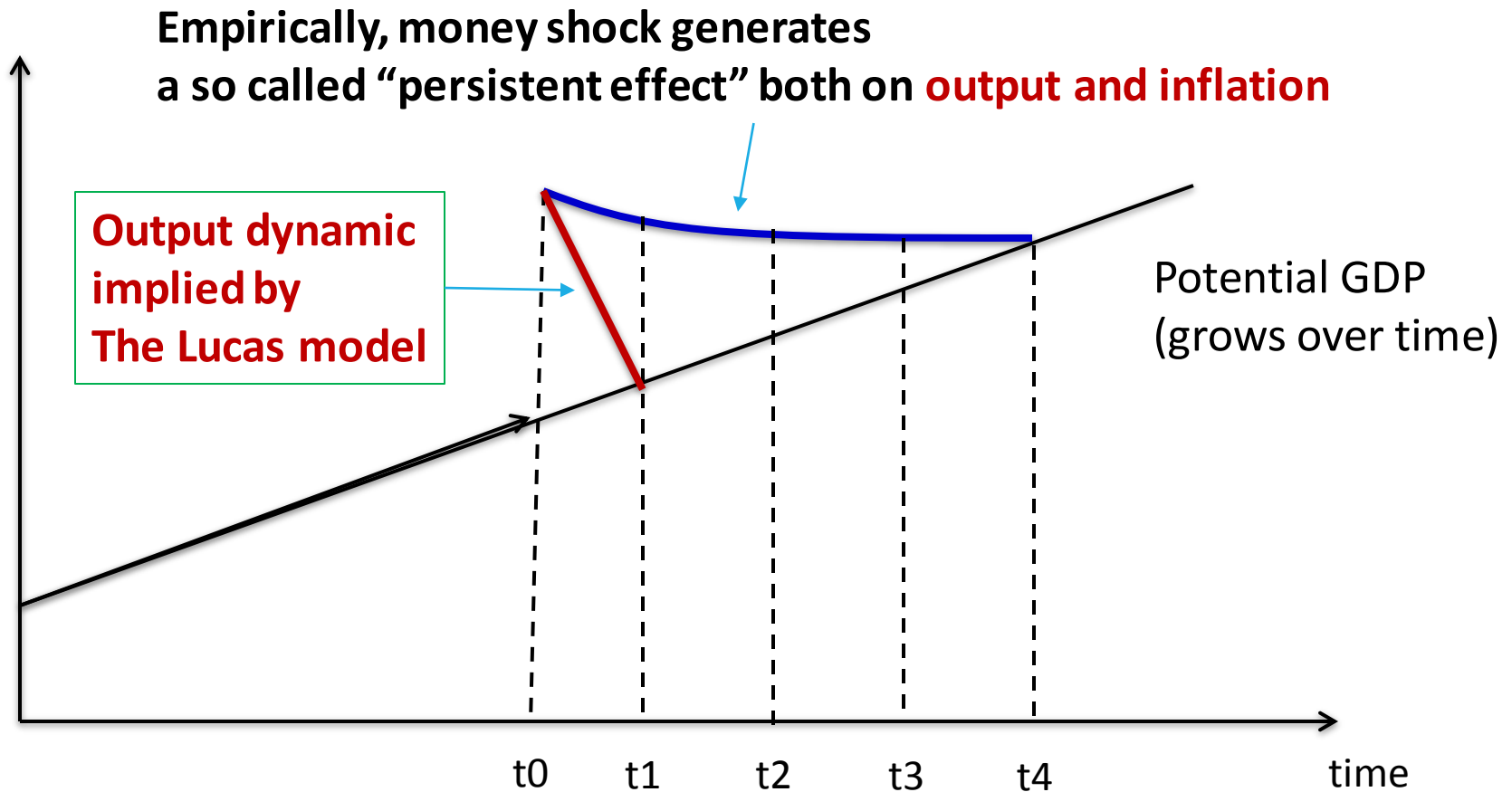
WHAT'S WRONG WITH THE NEW CLASSICAL ECONOMICS

- Question: Can New Classical economics framework explain the pattern of business cycles? **How well does it explain the data?**
- Unfortunately, the answer is **NO**.
 - Demand shocks have **short-lived effect in their model**; gone within a period.
 - Empirical evidence suggests otherwise; **the impact of demand shocks is quite persistent.**
 - **Consider monetary policy shocks.**

EFFECTS OF POLICY INTEREST RATE SHOCKS: 25 BASIS POINTS INCREASE



VERY SHORT-LIVED EFFECT UNDER NEW CLASSICAL ECONOMICS V.S. PERSISTENT EFFECT IN THE DATA



NEW INTERPRETATION TO THE BUSINESS CYCLES: RESURRECTION OF KEYNESIAN

May be everything is back to the *incomplete in wage and price adjustment*, i.e. price and wage stickiness (rigidity)

- This leads to the resurrection of Keynesian school, newly known as the *New Keynesian economics*.
 - To explain (i) why rigidities exist , and (ii) seek for the implication of rigidities for business cycles.

NEW KEYNESIAN ECONOMICS

- Criticize the ground on which New classical economics used for **the interpretation of business cycles and its adjustment process.**
- Argue for the role of **rigidity and imperfection** as an important way that can account for the **persistent pattern in medium-term adjustment.**
- Focus on **microeconomic reasoning** that justifies the existence of such rigidities and imperfection.
- Justify the role of government policies, fiscal and monetary policy. (From **welfare-related point** of view.)

NEW KEYNESIAN ECONOMICS

- Persistent business cycles occurs because of the prevalence of *nominal rigidities in price and wage, and some frictions that impede market allocation*
- Let's tackle first things first, and to understand what they are.

NOMINAL RIGIDITIES

- A situation in which **agents cannot adjust the value of some nominal variables.**
- Commonly used to refer to the situation in which firms and labor cannot adjust their **price** and **money wage**, respectively.
- The prevalence of nominal rigidities is one of the very first reasoning used to explain the pattern in which our economy slowly reverts to long-term trend.

NOMINAL RIGIDITIES

- What do we mean by nominal price/wage rigidities?
 - Price and wage fixed → sound right, but not 100% correct
- *Price and wage cannot be frequently adjusted; moreover, the adjustment speed varies*
- To understand this, we need to see data; *behavior of price/wage adjustment!*
 - Price → wage

MICRO EVIDENCES ON PRICE SETTINGS KLENOW AND MALIN (2010)

Number of Price Changes per year (%) in Survey Data

Country	Paper	<1	1	2-3	≥4	Median	Mean (in months)
Austria	Kwapil <i>et al.</i> (2005)	24	51	15	11	1	12.7
Belgium	Aucremanne and Druant (2005)	18	55	18	8	1	11.9
Canada	Amirault <i>et al.</i> (2006)	8	27	23	44	2-3	6.8
Estonia	Dabusinskas and Randveer (2006)	14	43	25	18	1	10.0
Euro Area	Fabiani <i>et al.</i> (2005)	27	39	20	14	1	12.3
France	Loupias and Ricart (2004)	21	46	24	9	1	11.8
Germany	Stahl (2005)	44	14	21	21	1	13.5
Italy	Fabiani <i>et al.</i> (2007)	20	50	19	11	1	11.9
Japan	Nakagawa <i>et al.</i> (2000)	23	52	11	14	1	12.5
Luxembourg	Lunnemann and Matha (2006)	15	31	27	27	2-3	9.0
Mexico	Castanon <i>et al.</i> (2008)	-	-	-	-	-	5.7
Netherlands	Hoebrechts and Stokman (2006)	10	60	19	11	1	10.7
Portugal	Martins (2005)	24	51	14	12	1	12.7
Romania	Copaciu <i>et al.</i> (2007)	-	-	-	-	-	4.1
Spain	Álvarez and Hernando (2007a)	14	57	15	14	1	11.1
Sweden	Apel, Friberg and Hallsten (2005)	29	43	6	20	1	12.7
Turkey	Sahinoz and Saracoglu (2008)	-	-	-	-	-	3.0
United Kingdom	Hall, Walsh and Yates (2000)	6	37	44	14	2-3	8.2
United States	Blinder <i>et al.</i> (1998)	10	39	29	22	1	8.8

Note: Source: Álvarez (2008), Table 3. Mean implicit durations obtained from the interval-grouped data using the following assumptions: for firms declaring “at least four price changes per year”, 8 price changes are considered (i.e. mean duration of 1.33 months); for those declaring “two or three price changes per year”, 2.5 price changes are considered (i.e., 4.8 months); for those declaring “one change per year” a duration of 12 months, and for those declaring “less than one price change per year”, a change every two years is considered (i.e., 24 months).

1. Survey data for price adjustment of some randomly selected firms/products
2. How many times does the firm change its price in a year?
3. Each firm have an **unequal frequency** of price change in a year.
4. What’s shown in the last column on the table represents **“average” of the duration in month** that firms keep their price fixed.

MICRO EVIDENCES ON PRICE SETTINGS

KLENOW AND MALIN (2010)

Price Durations by Category in the U.S. CPI

Durations in Months	Posted		Regular		% of CPI
	Median	Mean	Median	Mean	
All Items	3.4	6.2	6.9	8.0	100.0%
Durable Goods	1.8	3.0	1.8	5.0	21.7
Nondurable Goods	3.4	5.8	7.3	8.3	48.6
Services	7.6	9.4	7.6	9.6	29.7
Raw Goods	1.0	1.1	1.0	1.2	12.0
Processed Goods	4.4	6.9	7.7	8.9	88.0
Apparel	2.8	2.9	9.2	10.1	7.0
Education and Communication	5.4	6.2	6.7	6.3	7.3
Food	3.4	6.9	8.5	9.3	22.4
Home Furnishings	1.9	3.5	2.0	5.4	17.0
Medical Care	10.0	14.2	12.6	14.7	7.8
Recreation	6.3	7.5	9.4	9.8	8.5
Transportation	1.8	3.7	1.8	3.8	24.5
Other Goods and Services	8.6	14.7	12.1	16.7	5.5

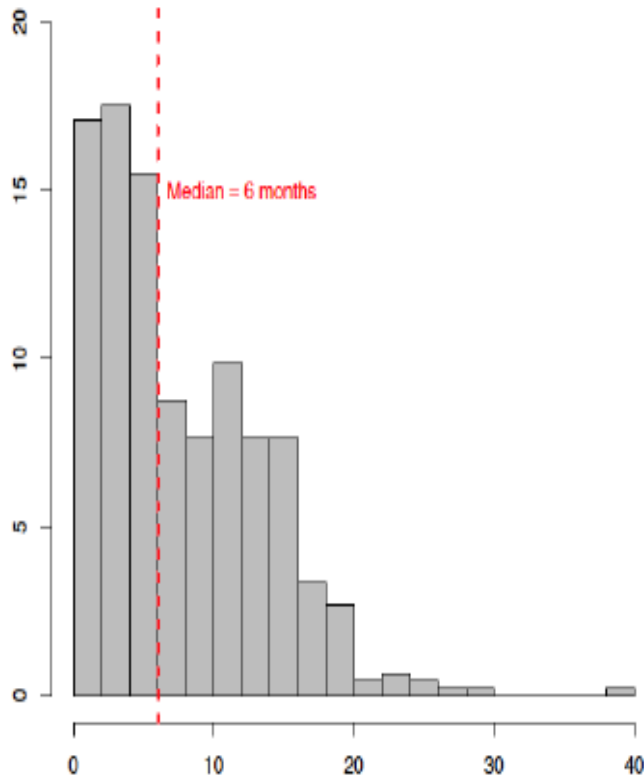
1. In each sector, each firm cannot adjust their price at the same time!
2. *Duration of price stickiness varies across sectors. (finer disaggregate details)*
3. Sectoral price rigidities is academically referred to “*unsynchronized adjustment of products within and across sector*”

Source: CPI-RDB. Data are for the top three cities (New York, Los Angeles, and Chicago) from February 1988 through October 2009. Durations are weighted medians or means of implied durations from weighted average frequencies within ELIs. Durables, Nondurables, and Services coincide with U.S. National Income and Product Account classifications. Raw goods include gasoline, motor oil and coolants, fuel oil and other fuels, electricity, natural gas, meats, fish, eggs, fresh fruits, fresh vegetables, and fresh milk and cream. Apparel, etc. are Major Groups in the CPI (1998-onward definition).

MICRO EVIDENCES ON PRICE SETTINGS

APHAITHAN AND PYM (2018)

Distribution of the duration of price changes

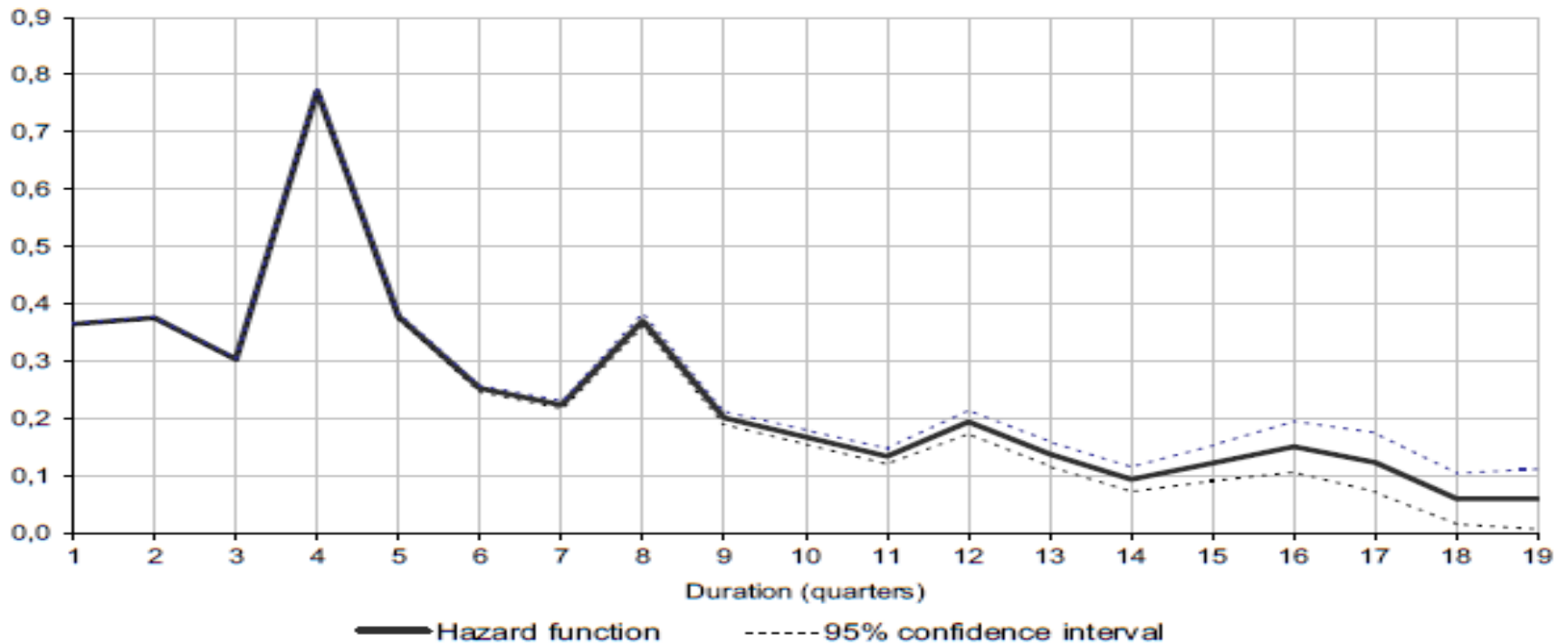


Category	Mean Frequency	Implied Mean Duration (months)	Mean Duration (months)
Food & Non-Alcoholic Beverages	0.23	3.91	5.47
Apparel & Footware	0.03	29.37	13.85
Housing & Furnishing	0.13	7.37	6.57
Medical & Personal Care	0.07	13.03	10.10
Transportation & Communication	0.29	2.86	7.25
Recreation & Education	0.04	22.88	8.79
Tobacco & Alcoholic Beverages	0.11	8.70	7.17
Total CPI	0.20	4.40	7.04

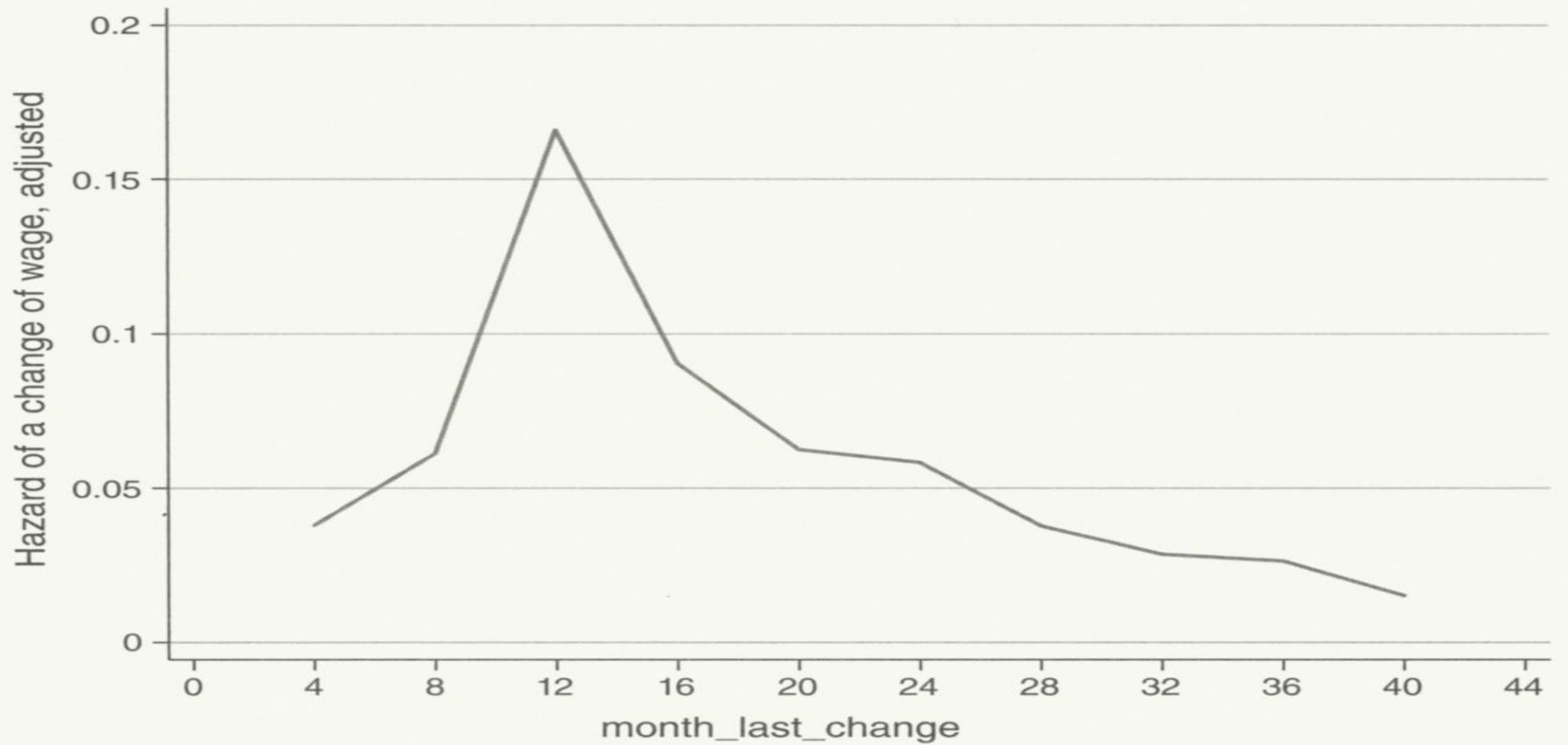
Sector	Mean Frequency	Implied Mean Duration (months)	Mean Duration (months)
Core	0.06	15.13	9.16
Non-core	0.50	1.44	2.50
Control	0.34	2.45	5.28
Non-Control	0.12	7.60	8.10
Service	0.06	16.88	9.72
Non-Service	0.26	3.38	6.07
Durables	0.07	14.38	8.43
Non-Durables	0.22	4.03	6.87
Total CPI	0.20	4.40	7.04

MICROECONOMIC SURVEY OF WAGE SETTING: FRANCE

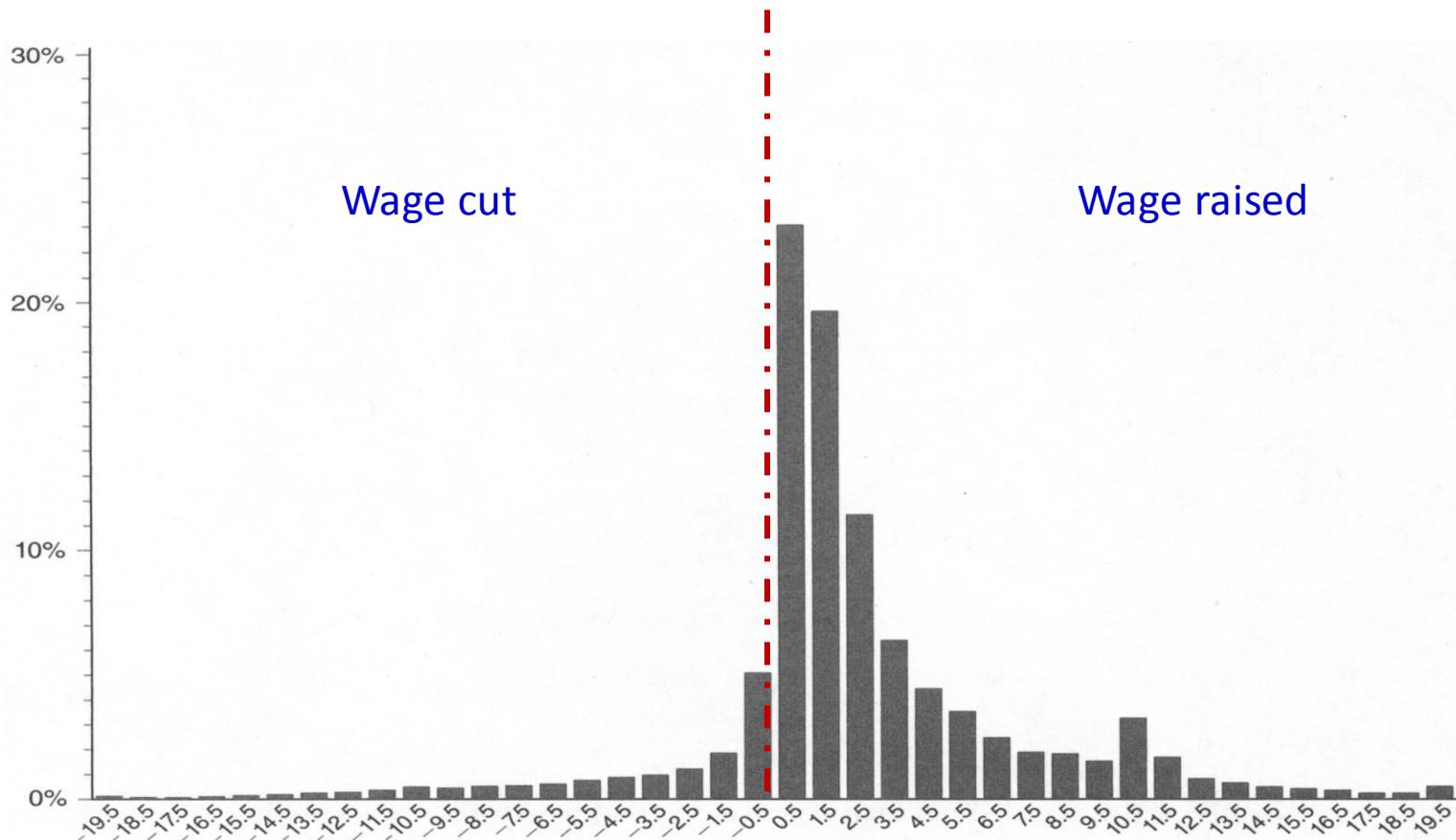
Figure 2 : Hazard function of wage changes



MICROECONOMIC SURVEY OF WAGE SETTING: USA



WAGE CHANGE DISTRIBUTION: DOWNWARD RIGIDITY



RATIONALE FOR NOMINAL RIGIDITY

- **Costly price adjustment: Menu cost**
 - Managerial costs : **Information / communication cost**
 - Loss of consumer goodwill: **antagonize customer**
 - Trigger competitive rounds of price cuts: **price war**

- **Information problem in labor market**
 - Managerial costs : **Information / communication cost**

IMPLICATIONS OF NOMINAL RIGIDITY: INTUITIONS

- In fact, it is the implication of ***unsynchronized adjustment of prices/wages within and across sector***
- Effect of shocks gets passed on over time through the *staggering* adjustment.
 - Some firms can change their price right away; many keep their price fixed.
 - When firms can change their price, they will take into account what other firms did in the past.
 - The effect of what happens today get delivered into the future; ***persistent over time.***
- Similar to the staggering effect generated via wage adjustments

FOR AN ILLUSTRATIVE PURPOSE, SUPPOSE 4 TYPES OF FIRMS...

- Consider 4 types of firms with different speed of price adjustment
 - Firms 1: gasoline station (fastest)
 - Firms 2: Logistic company
 - Firms 3: Electronic product
 - Firms 4: Service goods (hair cut / noodle restaurant) (Slowest)
- Suppose that worker for each type of firm can adjust wage at the same time as their firms adjust price.
 - Things would be profound if we assume different degree!

FOUNDATION OF NKES AS CURVE

1. Upward sloping Aggregate **SUPPLY** in goods
 - Many individual firms might have flat supply curve at each point of time.
 - A fraction of firms can adjust the price; individual supply for price-adjusting firm will be upward sloping!
 - By aggregation, output should increase with the general price level.

2. The similar intuition applies to upward sloping of Aggregate supply in labor.

IMPLICATIONS OF NOMINAL PRICE / WAGE RIGIDITY: INTUITIONS FOR STAGGERING ADJUSTMENT (OR INERTIA IMPACTS)

