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THE NAIRU: STILL NOT AN INTERESTING RATE OF UNEMPLOYMENT

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THE NAIRU: STILL NOT AN INTERESTING RATE OF UNEMPLOYMENT

This presentation is based on a paper co-authored with Rod Cross (Strathclyde University, Glasgow) and published in *the European Journal of Economics and Economic Policies: Intervention*, 8(2), 2011, pp. 317-340.

The presentation takes a broader perspective.

OUTLINE

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

II. THE LNJ ACCOUNT OF THE NAIRU

III. AN ALTERNATIVE: "GENUINE" HYSTERESIS

IV. CONCLUSION AND FURTHER RESEARCH

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

“The ideas of economists and political philosophers, both when they are right and they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.”

Keynes (1973, p. 383)

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

One of these powerful ideas is the NAIRU

- Has been ruling the macroeconomic textbooks over the past 30 years
- Is at the core of mainstream models, and in particular the so-called “new macroeconomic consensus”
- Underlies and dominates national and international policy making (see the publications by the IMF, the OECD and the UE).

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

“Not only is the teaching of NAIRU-based macroeconomics misleading, but attempting to apply it to practice is economically and socially disastrous – the cost if NAIRUvianist macroeconomic policy are very large and avoidable.

It is our objective to persuade fellow economists to reexamine critically the basic assumption of their core theory”.

Storm & Naastepad (2012, p. 1)

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

NAIRUvianism has consequences both for macroeconomic policies and the labour market

1) Friedman's ineffectiveness theorem: fiscal and monetary policies cannot have permanent effects on "natural" or "structural" unemployment and growth.

-> Efforts to push U below the NAIRU would imply accelerating inflation

-> Mechanisms: the money printing required by the economic policies is meant to imply higher money wages and prices (through labour and product market adjustments).

=> Governments and central banks should not try to to promote full employment through expansionary fiscal and monetary policies

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

2) Therefore, the “labour market” should be made more flexible through supply-side oriented policies: deregulation, removal of rigid labour market institutions (“eurosclerosis”)

In this view, actual unemployment is caused by real wages that are too high and rigid.

Causes: excessive LM regulation, redistributive intervention, employment protection legislation (EPL), high taxation, social welfare states.

These causes are meant to be “determinants” of the NAIRU
-> see the “matching models” *a la* PISSARIDES.

I. WHY IS THE NAIRU ISSUE STILL TOPICAL TODAY?

Modern NAIRUvianist theory:

- Ignores Keynes' objection regarding the "second postulate" of the neoclassical theory of employment.
- Uses the "failed metaphor" of an "aggregative labour market" (Galbraith, 1997)
- Has major and disastrous consequences: today's supply-side oriented economic policies: internal devaluations, austerity programs, increased flexibility on the LM, ...

II. THE LNJ ACCOUNT OF THE NAIRU

One of the most popular version of the NAIRU appears in the book by Richard Layard, Stephen Nickell and Richard Jackman (1991).

They make a distinction between the LR NAIRU and the SR NAIRU

- The long-run NAIRU (U^*) is only determined by supply-side factors. It is consistent with stable inflation and correct price and wage expectations.
- The short-run NAIRU (U_s^*) is consistent with stable inflation *within the current period*. It can be influenced by demand factors and is subject to "hysteresis".

II. THE LNJ ACCOUNT OF THE NAIRU

1) The long-run NAIRU is the same thing as the natural rate: "... past events affect the current short-run NAIRU ... but there is no long-term "hysteresis" ... there is a unique long-run NAIRU ... in the end the unemployment rate always reverts ... " (LNJ, p. 10); "... in the long run unemployment is determined by the long-run supply factors ... " (LNJ, p. 16); and "... a key feature of the model is that it is fundamentally of the "natural rate" type: that is, exogenous demand-side factors do not influence the equilibrium ... " (LNJ, p. 369).

II. THE LNJ ACCOUNT OF THE NAIRU

2) The short-run NAIRU emerged as an attempt to rescue the original NAIRU from an early empirical refutation.

Actual unemployment in the U.K. rose from 1982 to 1987, while the wage pressure index (based on the so-called determinants of the NAIRU) turned downwards around 1982.

Hence the gap between actual and estimated equilibrium unemployment $U-U^*$ increased over 1982-87.

According to the NAIRU theory, deflation should have taken place ...

... but as a matter of fact inflation was approximately zero for various measures of inflation!

II. THE LNJ ACCOUNT OF THE NAIRU

The model:

$$(PS) p-w = \beta_0 - \beta_1 U - \beta_{11} \Delta U - \beta_2 \Delta^2 p$$

$$(WS) w-p = \gamma_0 - \gamma_1 U - \gamma_{11} \Delta U - \gamma_2 \Delta^2 p + Z_w$$

$\Delta^2 p$ is the LNJ proxy for the $(p-p^e)$ and $(w-w^e)$ unexpected price and wage terms in the price and wage equations, and Z_w is the index of wage pressure.

"Innovation" here: the presence of the ΔU term, the coefficients β_{11} and γ_{11} picking up the effects of "hysteresis" in price and wage setting behaviour, respectively.

II. THE LNJ ACCOUNT OF THE NAIRU

A LR NAIRU equilibrium is defined as occurring when $(p-p^e) = (w-w^e) = \Delta^2 p$, i.e. price and wage level expectations are correct, and the rate of inflation is constant.

Without the "hysteresis" term, i.e. setting $\beta_{11} = \gamma_{11}$, or $\Delta U=0$, the equilibrium condition implies a long-run natural rate NAIRU of:

$$U^* = (\beta_0 + \gamma_0 + Z_w) / (\beta_1 + \gamma_1)$$

II. THE LNJ ACCOUNT OF THE NAIRU

The short-run NAIRU is termed U_s^* and is defined as "... that level of unemployment which is consistent with stable inflation *during the current period* ..." (LNJ, p. 382).

The short-run NAIRU is a temporary equilibrium, i.e. one that is not sustainable because of the "hysteresis" effects arising from $\Delta U \neq 0$.

Using this last condition and $\Delta^2 p = 0$, implies:

$$U_s^* = (\beta_0 + \gamma_0 - (\beta_{11} + \gamma_{11})\Delta U + Z_w) / (\beta_1 + \gamma_1)$$

Or

$$U_s^* = U^* - [(\beta_{11} + \gamma_{11}) / (\beta_1 + \gamma_1)] \Delta U$$

II. THE LNJ ACCOUNT OF THE NAIRU

The LNJ short-run NAIRU captures “hysteresis” by having the change in unemployment influence price and wage setting behaviour:

- In the PS equation, this is captured by the ΔU term:

“... the hysteresis effect is generated by employment adjustment costs ... short-run marginal costs increase more rapidly than long-run marginal costs because of the incomplete adjustment of employment in the short-run ... this generates an upward pressure on prices, in response to increases in demand, which is greater in the short run than in the long run... hence we have a positive effect arising from *changes* in demand, as well as the level *effect*...” (LNJ, p. 344).

II. THE LNJ ACCOUNT OF THE NAIRU

- In the WS equation, the $\gamma_{11} \Delta U$, the "hysteresis" effect arises because

"... long-term unemployment reduces the effectiveness of the unemployed as potential fillers of vacancies..." (LNJ, p. 4): "... long-term unemployment both demoralises the individual and is also used by employers as a (biased) screening device ... thus if the average level of unemployment rises, we can expect the average level of ... "effectiveness" of the average unemployed job seeker to fall ... " (LNJ, p. 39).

II. THE LNJ ACCOUNT OF THE NAIRU

Two major issues in the LNJ approach:

- 1) They *postulate* that “hysteresis” influences only the short-run NAIRU: “... there is short-term “hysteresis”, in the sense that past events affect the current short-run NAIRU ... but there is no long-term “hysteresis”: there is a unique long-run NAIRU ... in the end the unemployment rate always reverts ... ” (LNJ, p. 10).
- 2) They offer little by way of formal analysis of what they understand by “hysteresis”, and do not address the issue of whether “partial hysteresis” in the short-run NAIRU is consistent with a non-hysteretic long-run NAIRU.

II. THE LNJ ACCOUNT OF THE NAIRU

Further issues:

- 3) NAIRU models *a la* LNJ are characterized by their “closedness”: the economy ends up in a position fully determined by the structure of the model. Issue (Dutt, 2009).
- 4) The notion of a stable LR NAIRU:
 - Does not allow for any kind of “true uncertainty”
 - Does not allow any kind of increasing returns.
- 5) The results of meta-analyses regarding the NAIRU come to a clear-cut conclusion: it simply does not exist (Stanley, 2004).

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

What LNJ call “hysteresis” is not proper hysteresis or “genuine” hysteresis (Göcke, 2003).

Genuine hysteresis is a major form of path dependency:

- Important idea within the Kaldorian/Robinsonian tradition: what happens and what we do now determines where we end up (Lang & Setterfield, 2008).
- Crucial for economic policies:
 - If outcomes are path dependent, what happens along the path can affect outcomes
 - So economic policies can affect LR outcomes: nominal variables can affect real variables, even in the long run (Cross, 1995).

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

In the presence of genuine hysteresis:

- The equilibria reached by the system in the “medium” or “long” run will change with the short-run dynamics -> no stable LR NAIRU
- Hence, nominal shocks (demand and economic policy shocks) will have long-lasting effects on the economy.
- The “long-run” equilibrium rate of unemployment will change with the path followed by the system: “history matters.” Multiple, changing equilibria.

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

The benefits of true/genuine hysteresis:

- Micro-foundations:
 - Not based on intertemporal optimization,
 - But on decision making under true uncertainty, and discontinuous adjustments.
- Can be tested empirically (Cross et al, 2000; De Peretti & Lang, 2009) and these tests are rather encouraging.

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

Genuine hysteresis models: two key properties (Krasnosel'skii and Pokrovskii, 1989; Mayergoyz, 1991):

- **Remanence:** the application of two successive shocks of the same magnitude, but of opposite signs, does not bring the system back to its initial position.
- **A selective, erasable memory:** only the non-dominated *extremum* values of the past shocks that have hit the system remain in its memory bank.

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

- Heterogeneous firms
- Context of “true” uncertainty (Keynes, 1921): the capitalists don’t know what the future will look like.
- The firms become active (A_i) or inactive (NA_i), depending on some input variable, for example the rate of capacity utilization.

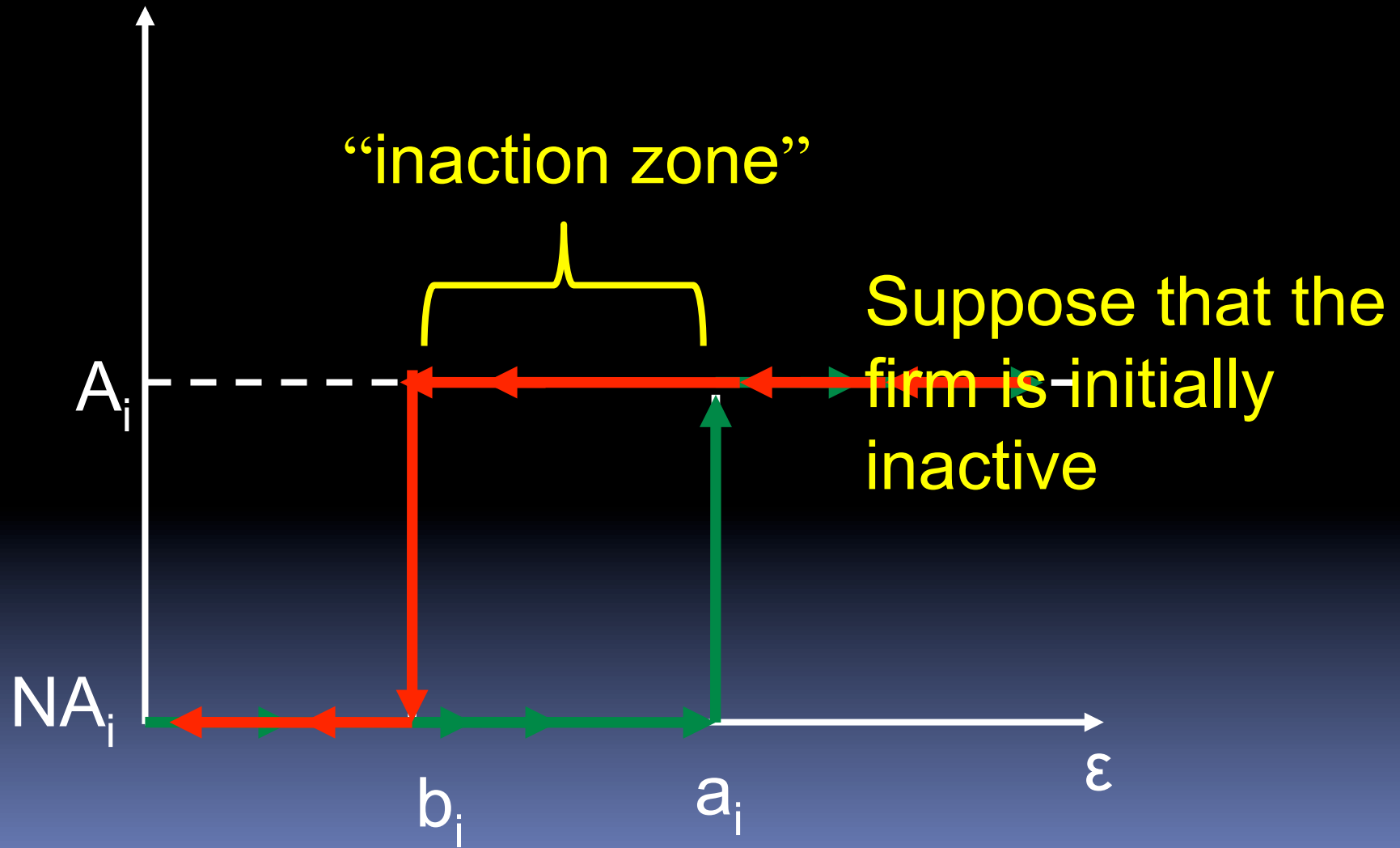
III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

- Each firm has two different thresholds:
 - a_i = switching to activity (hires people)
 - b_i = switching to inactivity (fires people)
- These thresholds exist because opening and closing a business are always costly
- 3 decisions are possible:
 - Switch from NA to A
 - Switch from A to NA
 - Remain in the previous position (A or NA).

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

- Discontinuity: each firm has two different threshold values ($a_i \neq b_i$)
Main reasons :
 - Sunk costs
 - True uncertainty.
- Heterogeneous: different threshold values from one firm to another.
- The economy is hit by positive or negative shocks.

THE BEHAVIOUR OF A "FIRM"



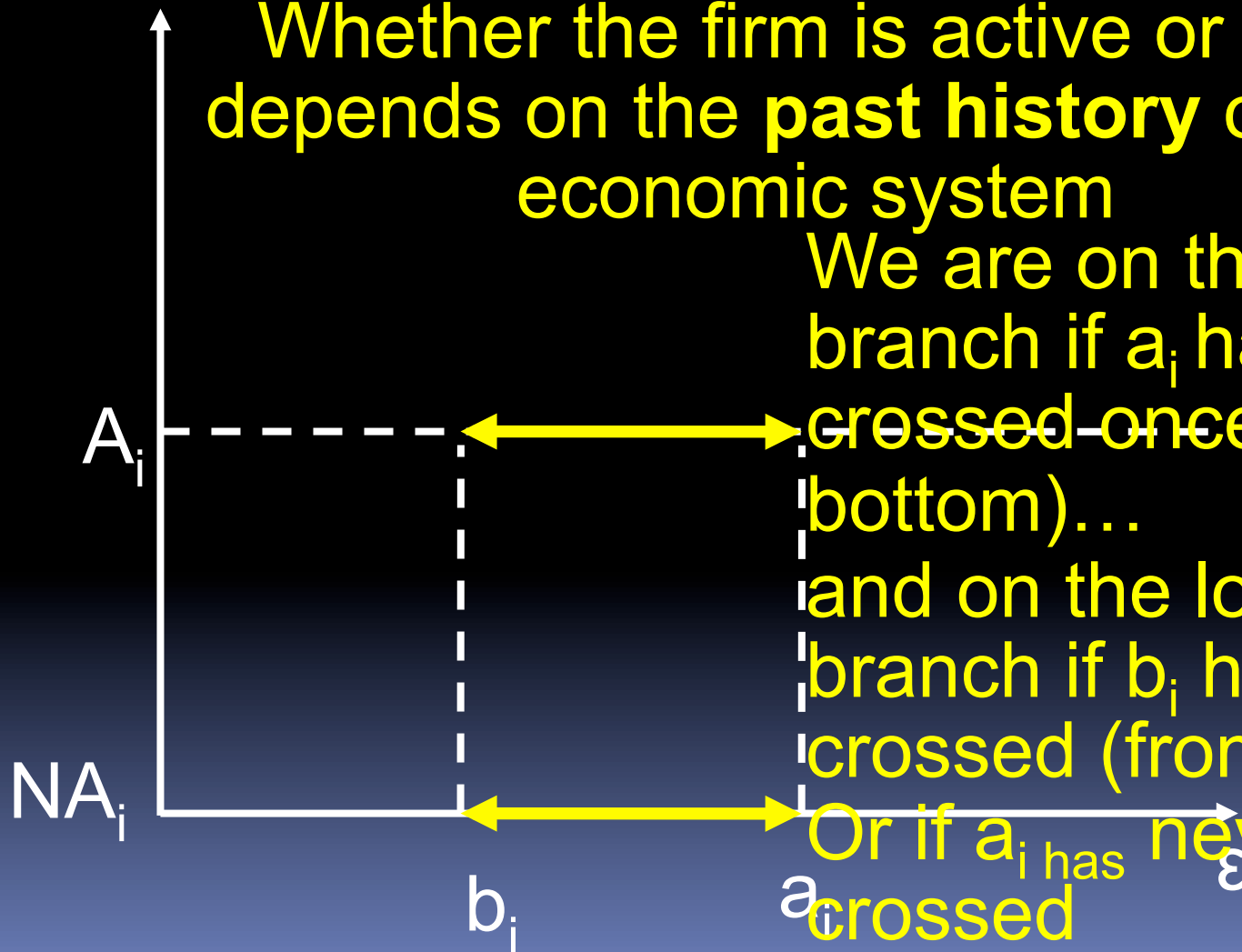
“HISTORY” MATTERS

Whether the firm is active or not depends on the **past history** of the economic system

We are on the upper branch if a_i has been crossed once (from the bottom)...

and on the lower branch if b_i has been crossed (from the top)

Or if a_i has never been crossed

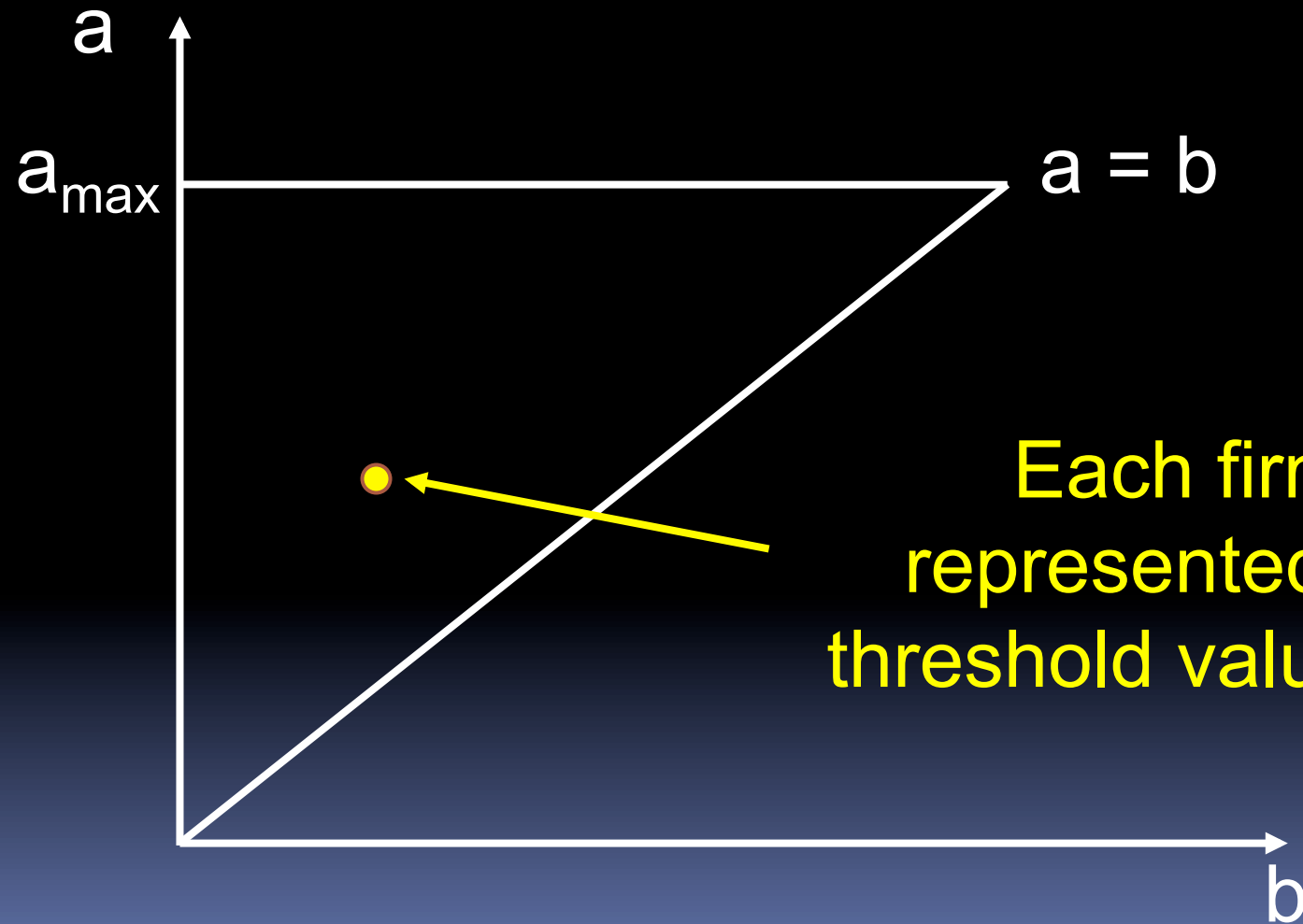


III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

At the **macroeconomic** level:

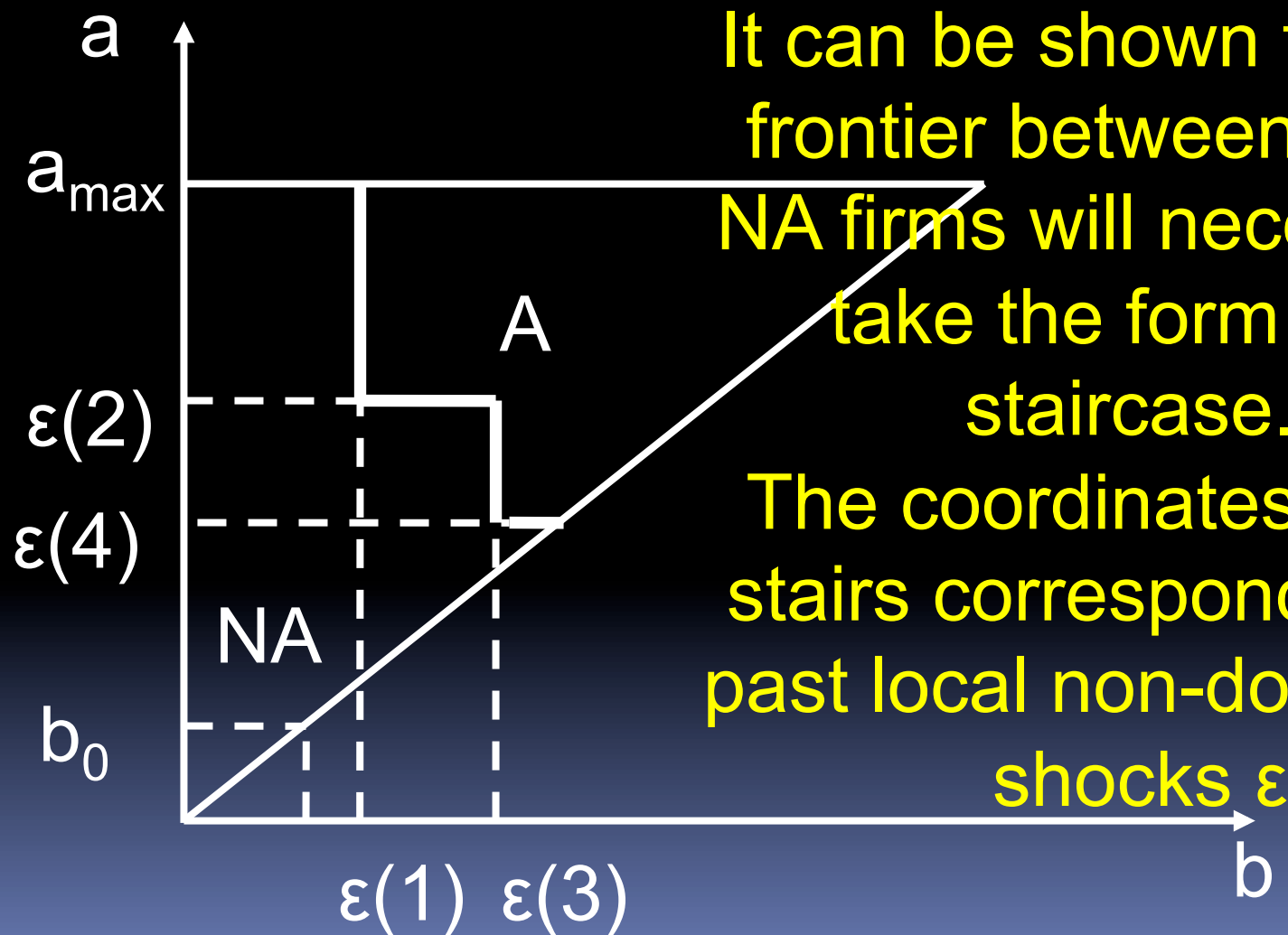
- Numerous firms
- Characterized by their two switching values.
- Heterogeneous: significant variations in the switching values.

MAYERGOYZ'S DIAGRAM



Each firm is represented by its threshold values, (b, a)

MAYERGOYZ'S DIAGRAM: THE STAIRCASE PARTITION



It can be shown that the frontier between A and NA firms will necessarily take the form of a staircase.

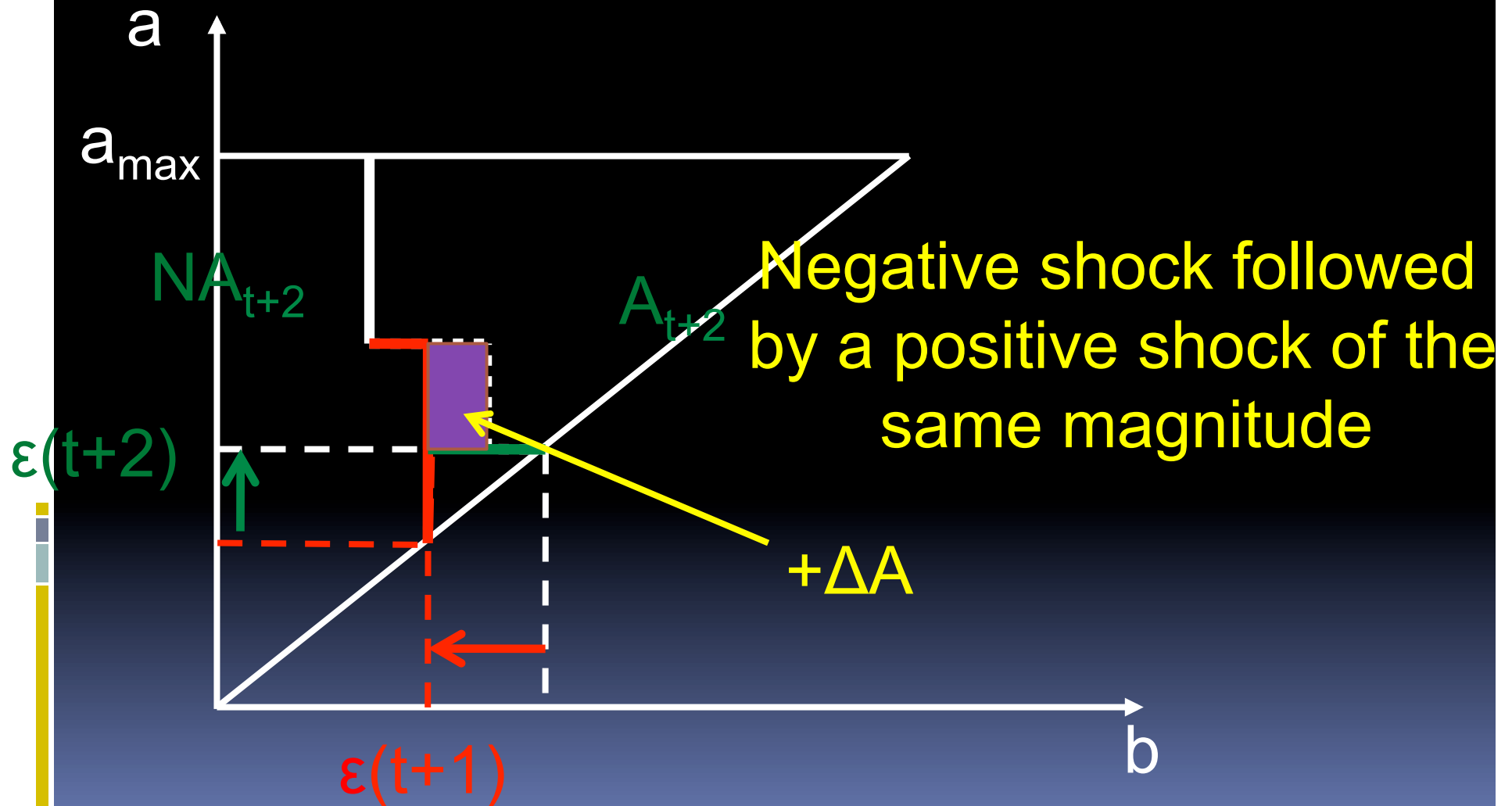
The coordinates of the stairs correspond to the past local non-dominated shocks ϵ

III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

Remember the properties at the macro level:

- The memory is **selective and erasable**: only non-dominated shocks remain in the memory bank of the system.
- **Remanence effect**: two different shocks of the same size but of opposite signs will **never** bring the economy **back to its initial position**, whatever the importance of these shocks.

MAYERGOYZ'S DIAGRAM: THE REMANENCE EFFECT



III. AN ALTERNATIVE: “GENUINE” HYSTERESIS

Therefore, the unemployment rate depends on the subdivision of firms between the active and inactive ones.

This subdivision is determined by the past extremum values of input shocks:

$$U_t = \iint_A w(\alpha, \beta) d\alpha d\beta - \iint_{NA} w(\alpha, \beta) d\alpha d\beta$$

IV. CONCLUSION AND FURTHER RESEARCH

“Partial hysteresis”, which is the distinguishing feature of the “short-run NAIRU” proposed by LNJ, is not hysteresis at all.

Hysteresis implies a permanent though selective memory of input shocks, not the short-run effects that disappear in the long run initially proposed by LNJ and still embedded in the NCM models.

IV. CONCLUSION AND FURTHER RESEARCH

Further research:

- 1) Recent empirical papers on the NAIRU *impose* dynamic homogeneity rather than *testing* for it (Lang & Setterfield, 2013).

A necessary condition for the existence of a NAIRU is dynamic homogeneity: the Phillips curve should be homogenous of degree one in lagged and/or expected inflation.

But contemporary approaches to estimating the NAIRU typically *assume* rather than *test* for dynamic homogeneity, thus assuming (rather than testing for) the existence of a NAIRU.

IV. CONCLUSION AND FURTHER RESEARCH

Further research:

2) Recent developments in agent based modeling (ABM) in economics are promising:

Sepecher (2011): a world of "true uncertainty" (*a la* Keynes) where firms "simply don't know" what the future will hold.

Bounded rationality *a la* Simon, routines, habits.

In this environment, investment will necessarily be hysteretic, as long as there are sunk cost (Dixit, 1992).