Catastrophic Job Destruction

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DISCLAIMER: The views expressed are our own, and not necessarily the ones of the Bank of Portugal or the Eurosystem.

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Introduction

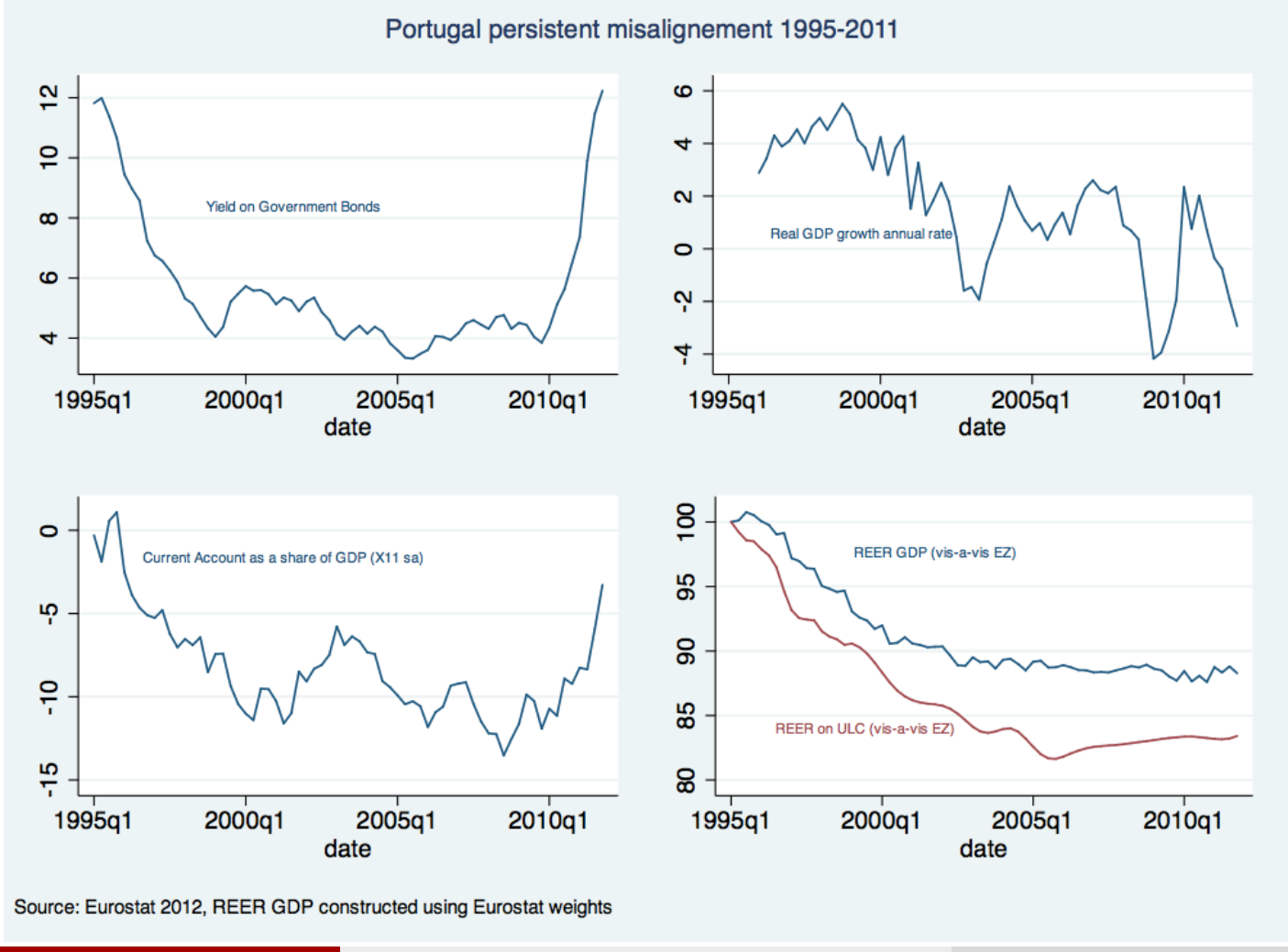
"Portugal is in serious trouble. Productivity growth is anemic. Growth is very low. The budget deficit is large. The current account deficit is very largeIn the absence of policy changes, the most likely scenario is one of competitive disinflation, a period of sustained high unemployment until competitiveness has been reestablished."(Portuguese Economic Journal, Olivier Blanchard, 2007).

Introduction

"...from 1995 to 2001 the large decrease in nominal interest rate (panel 1) fueled an expansion in private expenditure (panel 2) financed by debt (panel 3). The increase in demand pushed nominal labor compensation to run 6 percent per annum, a rate well above productivity, and GDP inflation to increase to 4 percent per annum. The result was a large and rapid loss in competitiveness vis--vis the eurozone partners (panel 4)." (Francesco Franco, 2013)

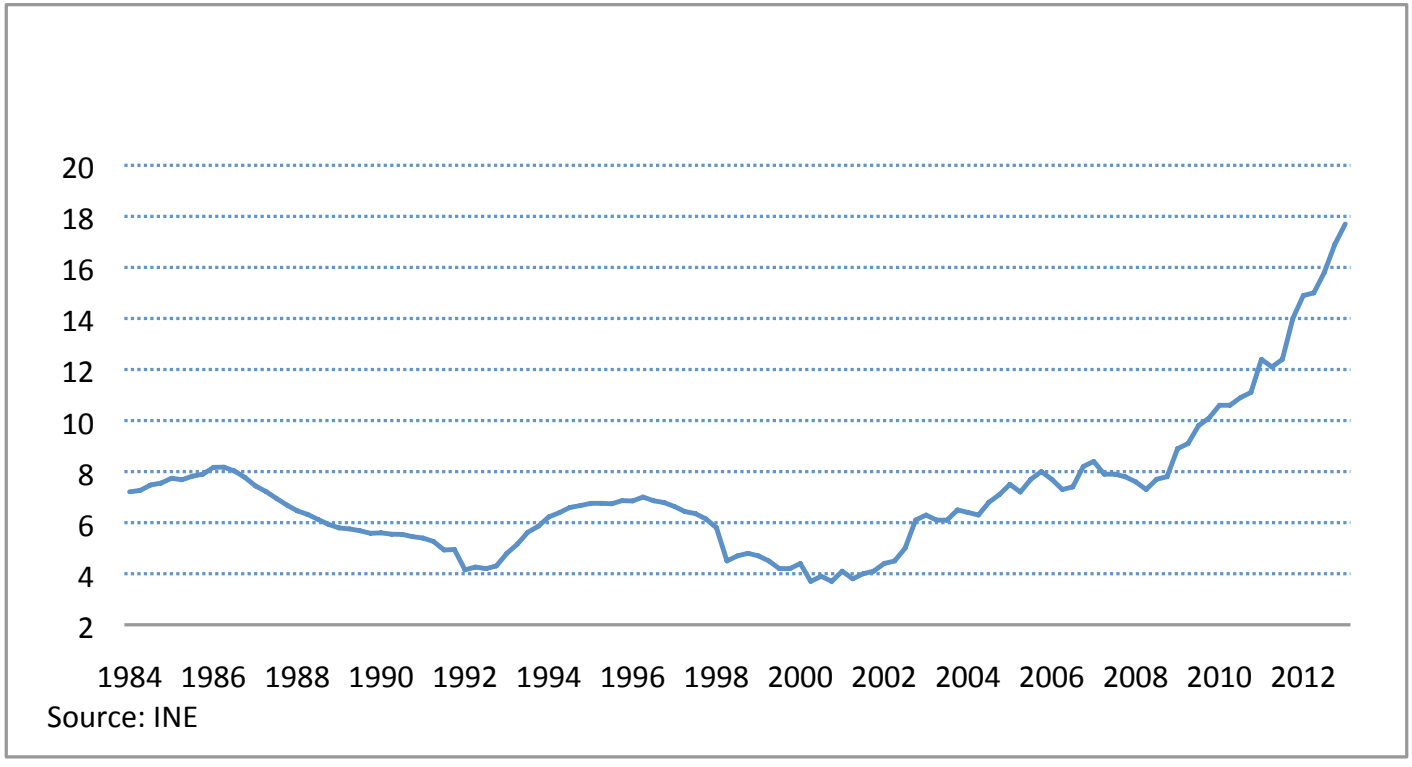
Introduction

Figure : **Portuguese macroeconomic imbalances**



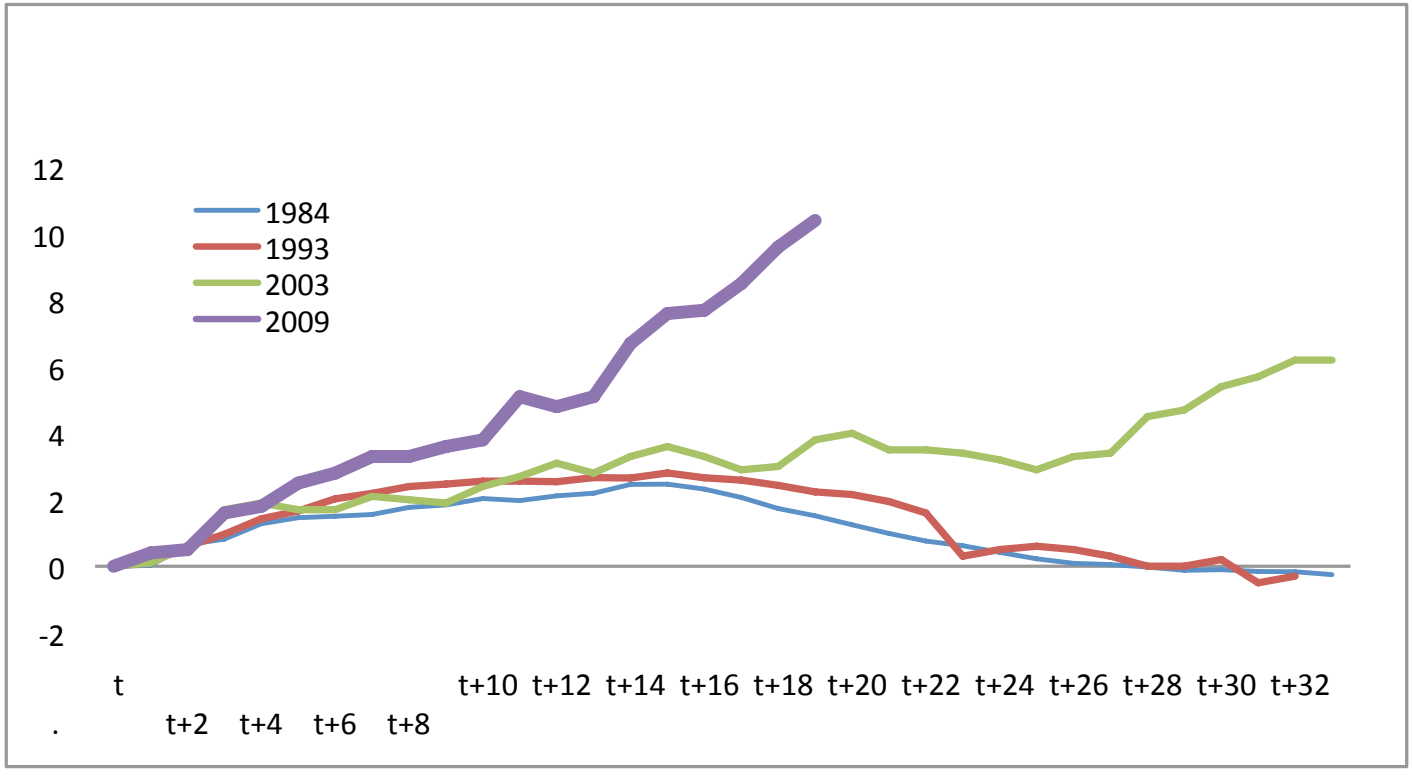
A period of sustained unemployment

Figure : **The evolution of the unemployment rate - Portugal 1984- 2012**



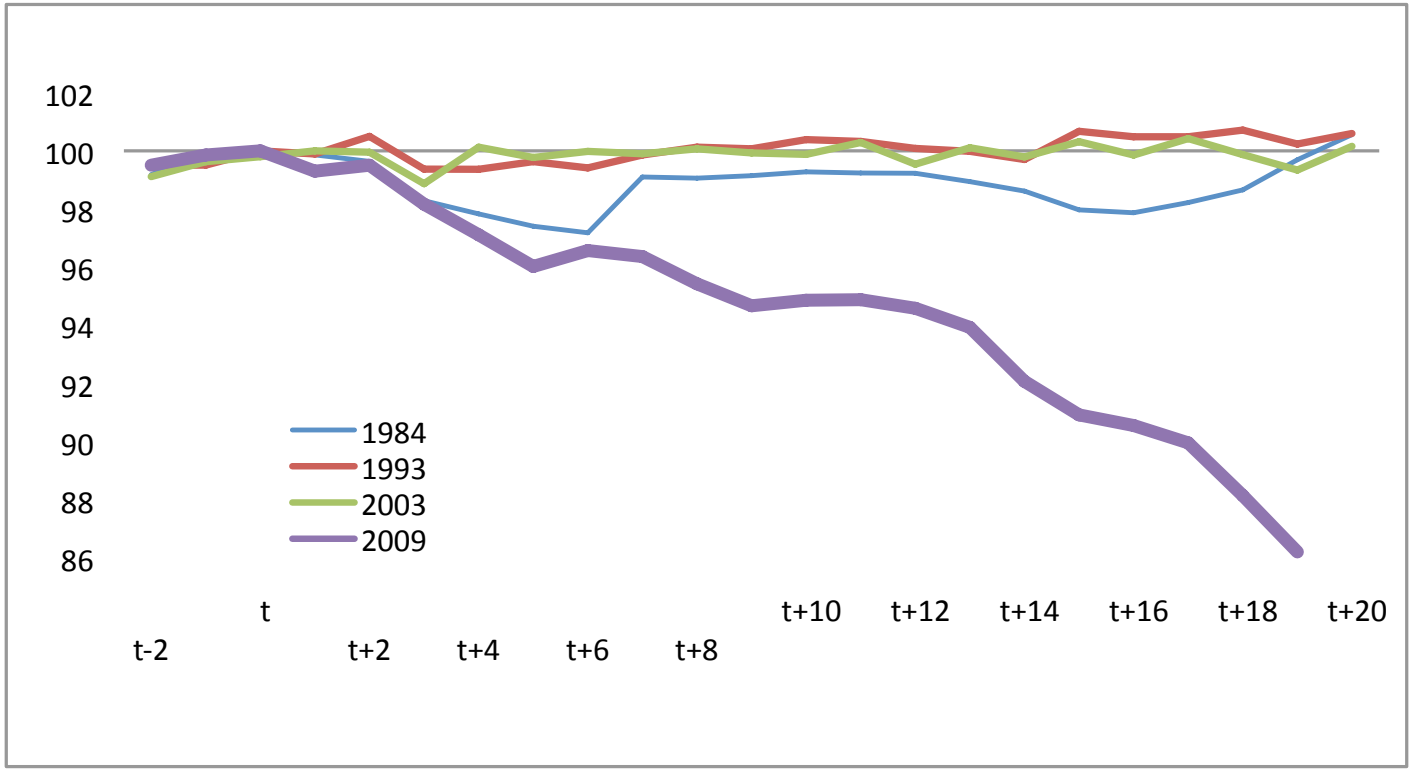
without parallel with other recessions

Figure : **Unemployment rate recovery across recessions Portugal**



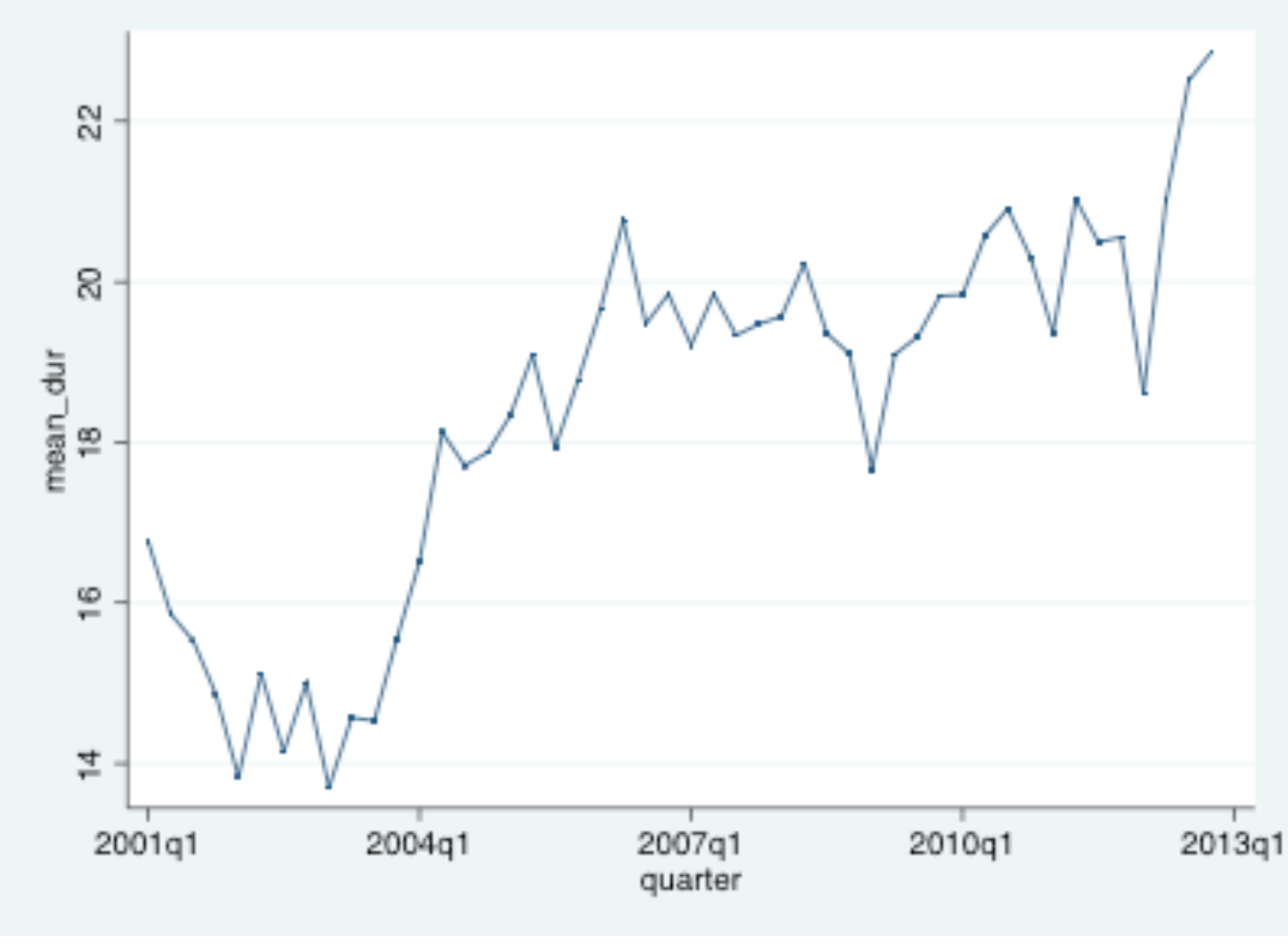
and a severe employment decline

Figure : **Employment rate recovery across recessions Portugal**



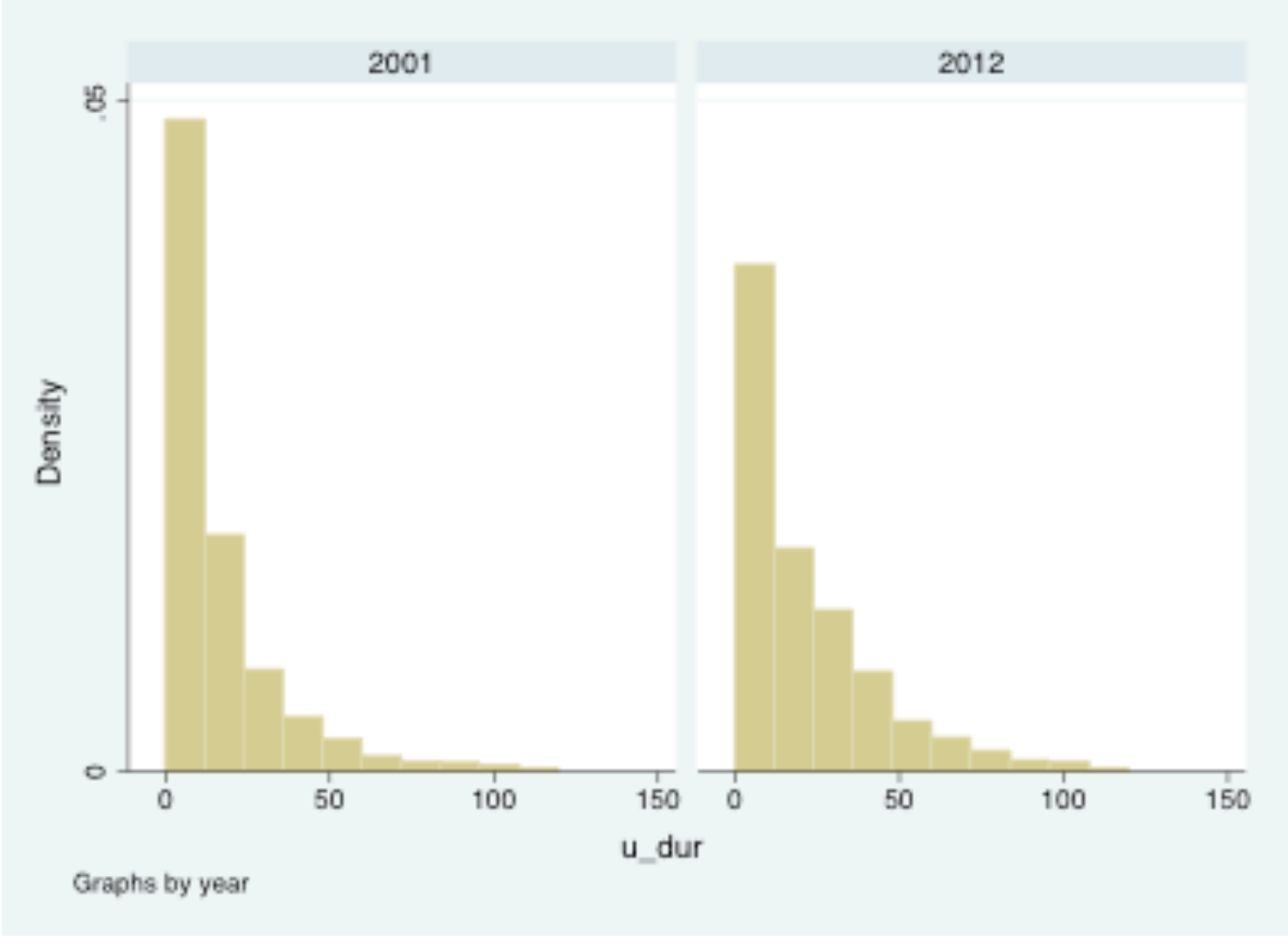
Long-term unemployment sharply increased

Figure : **Mean elapsed unemployment duration**



Elapsed unemployment duration

Figure : **Elapsed unemployment duration**



Unemployment Duration

- Hazard function:

$$h(t) = ph_1(t) + (1-p)h_2(t)$$

$$h(t) = p\lambda_1 + (1-p)\lambda_2$$

- Likelihhod function:

$$L(\lambda_1, \lambda_2, p|t) = \prod_{i=1}^{n} p[e^{-\lambda_1 t_i}\lambda_1] + (1-p)[e^{-\lambda_2 t_i}\lambda_2]$$

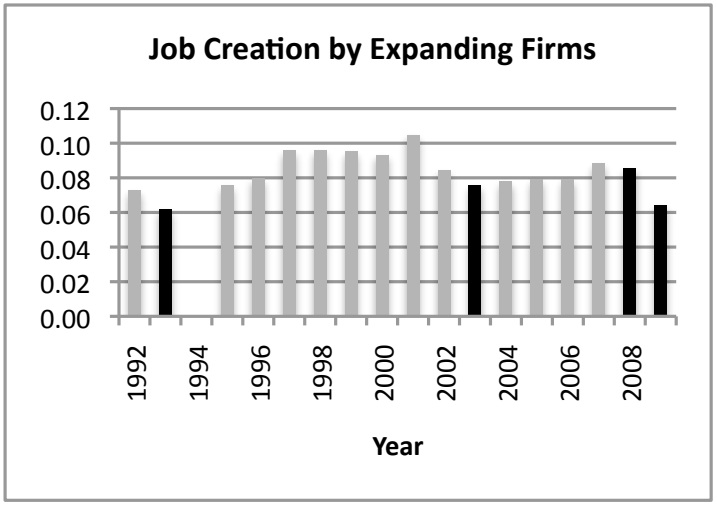
Unemployment duration changes

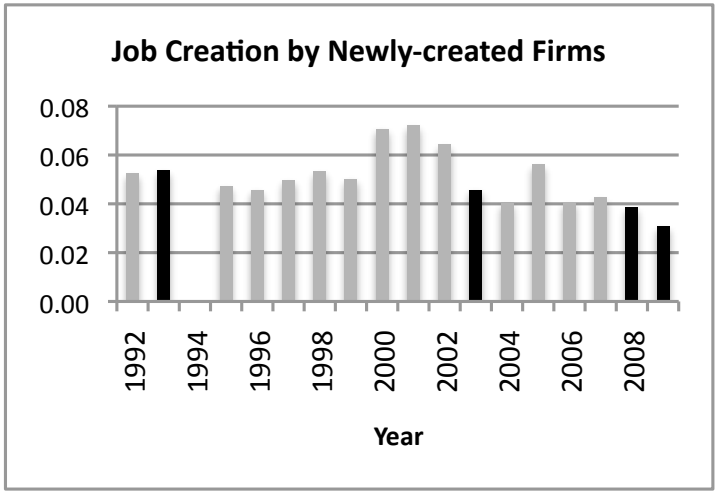
Table : The distribution of unemployment duration

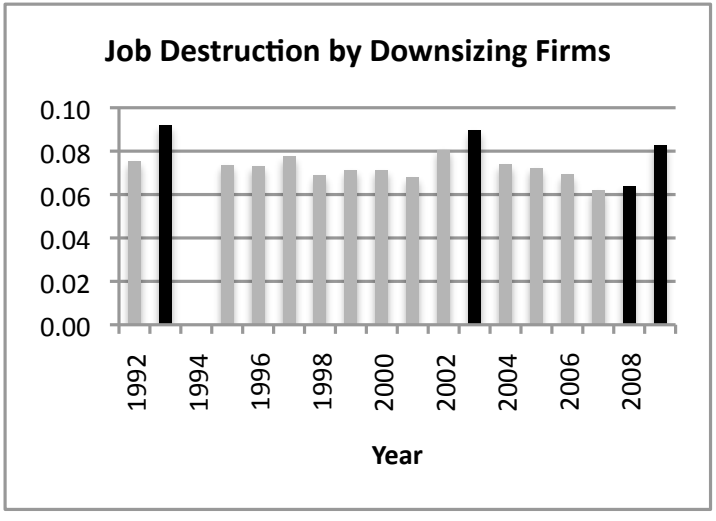
	2001-2002	2011-20012
short-term λ_1	0.158	0.167
	(0.009)	(0.013)
long-term λ_2	0.045	0.044
	(0.001)	(0.001)
fraction of long-term	0.253	0.696
mean duration (months)	10.415	17.549
N	7045	21260

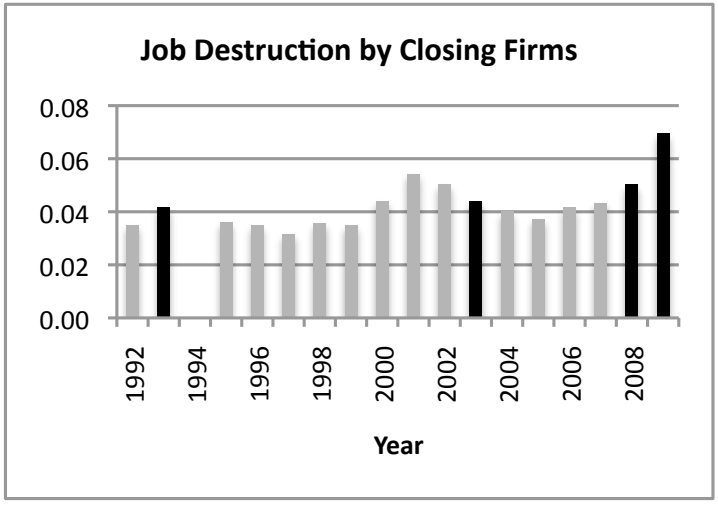
Source: Employment survey, INE.

Job Creation and Job Destruction (1992-2009)









Method

- Jacobson, Lalonde, and Sullivan (1993)

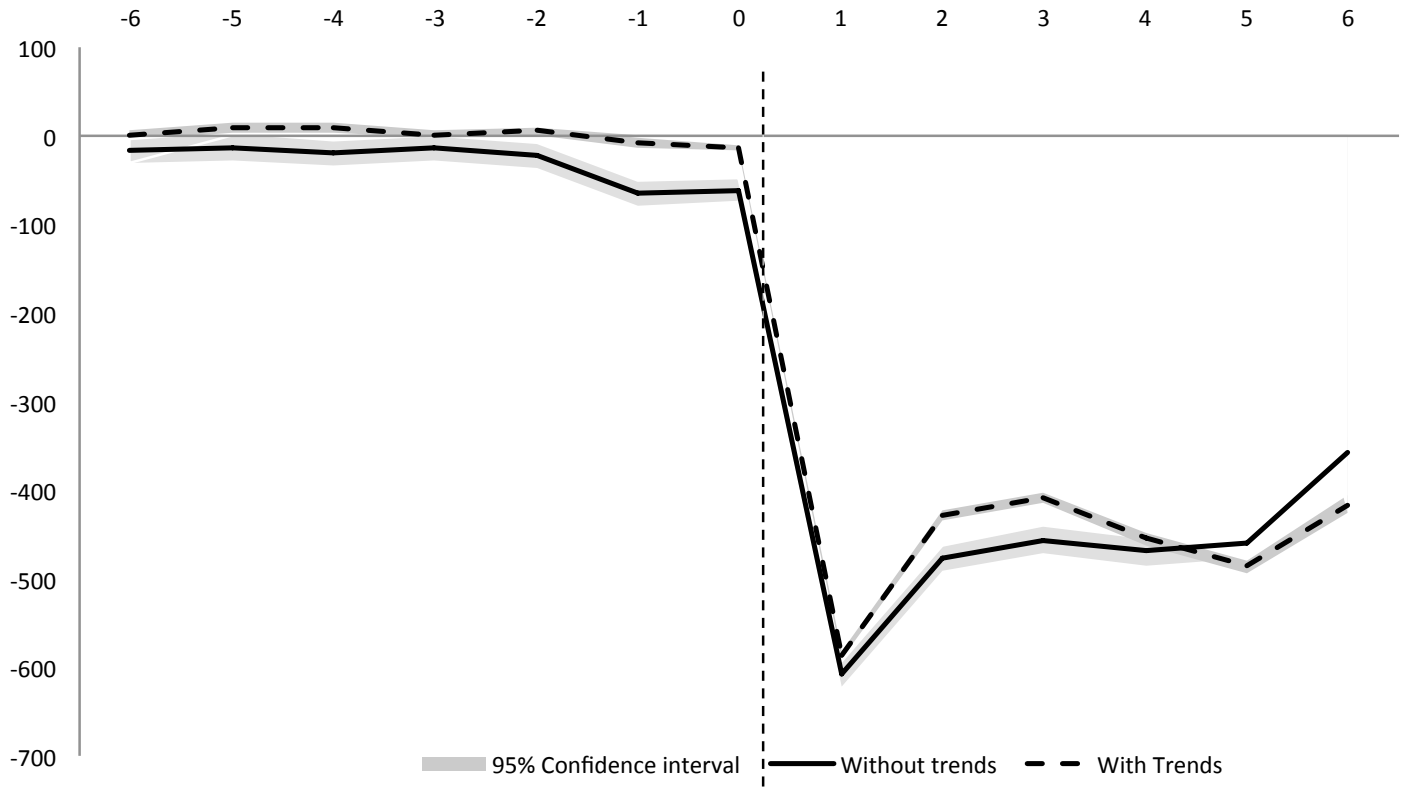
$$logw_{it} = \alpha_i + \gamma_t + \beta X_{it} + \sum_{k \geq -6}^{6} D_{it}^k \xi_k + \epsilon_{it}$$

- Jacobson, Lalonde, and Sullivan (1993) with worker-specific random trends:

$$logw_{it} = \alpha_i + \omega_i t + \gamma_t + \beta X_{it} + \sum_{k \geq -6}^{6} D_{it}^k \xi_k + \epsilon_{it}$$

The Sources of the wage losses of the displaced workers (Raposo, Portugal and Carneiro, 2012)

Figure : **Monthly earnings loss of displaced workers**



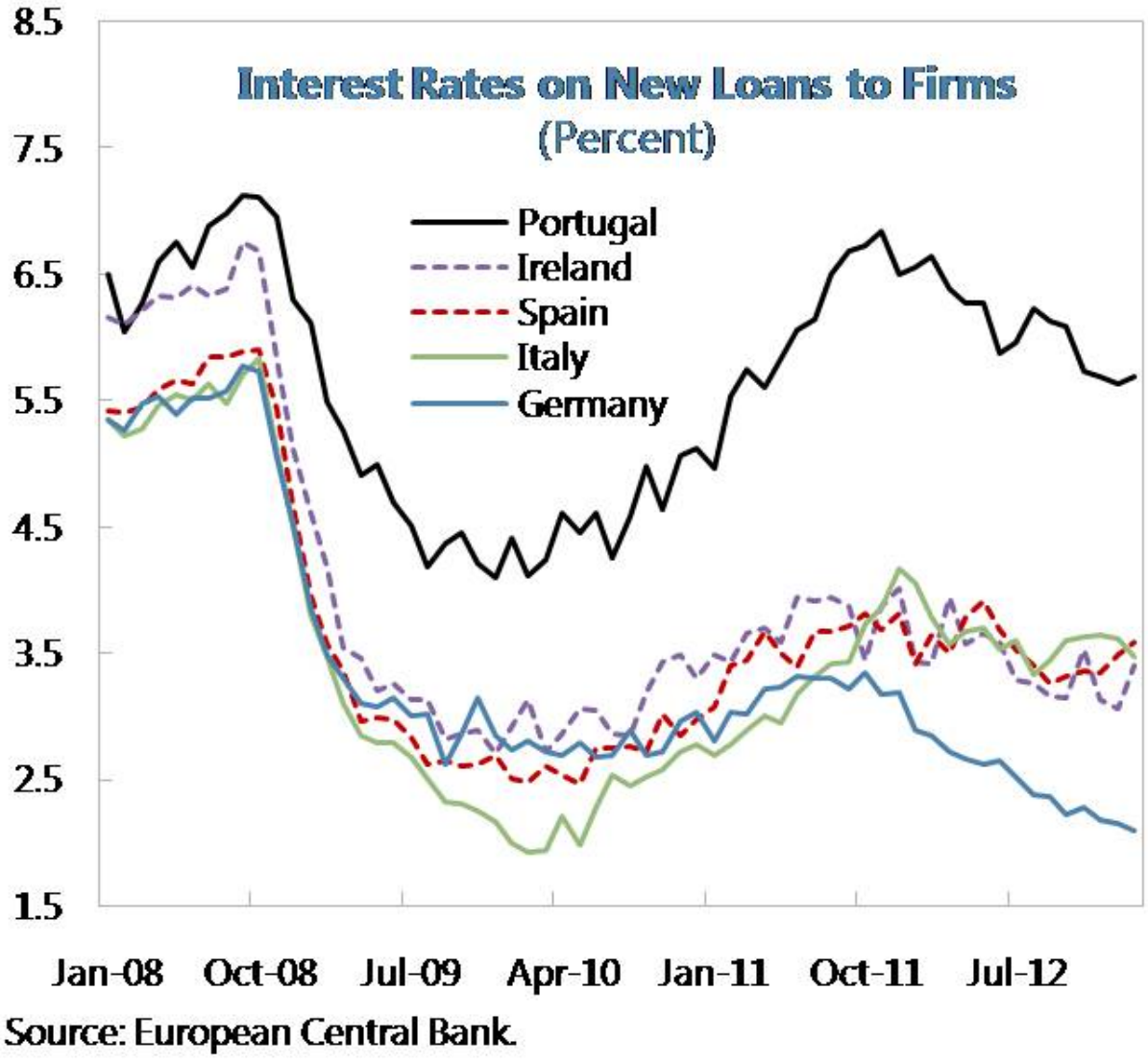
Summary

- Unemployment rates tripled
- Employment declined dramatically
- Unemployment duration lengthen significantly from already high values
- The share of long-term unemployed reached almost 70 percent
- Earning losses of displaced workers are severe and persistent
- Catastrophic destruction of specific human capital of low-skilled workers

Navigation

- Macroeconomic imbalances
- Evidence on job destruction and other labor market outcomes
- Micro evidence on job destruction amplifying mechanisms:
  - The credit channel
  - The wage rigidity channel
  - The labor market segmentation channel
- Other channels (not addressed)
  - Negative aggregate demand shocks (role of fiscal multipliers)
  - Combination of job security with generous unemployment benefits (Ljungqvist and Sargent)
  - Hysteresis (Blanchard and Summers)

Credit market fragmentation



Empirical strategy

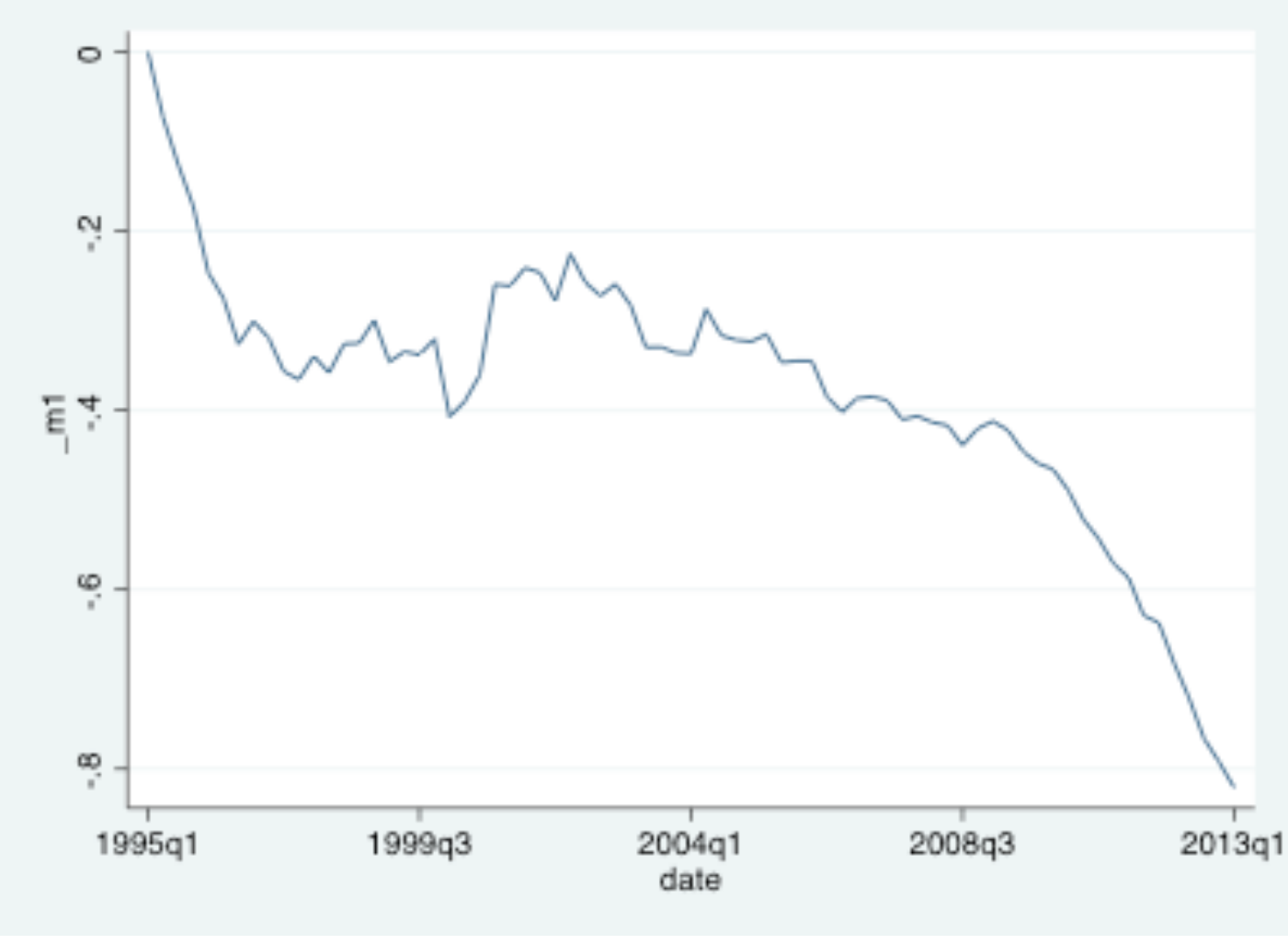
Time trends in the standing debts:

$$log\ Debt_{fbt} = \alpha_{fb} + \gamma_t + \epsilon_{fbt}$$

- $Debt_{fbt}$ denotes the amount of debt of firm f to bank b in quarter t;
- α_{fb} is a firm-bank match specific fixed effect;
- γ_t is a quarter fixed effect;
- ϵ_{fbt} is an idiosyncratic error term.

The credit crunch

Figure : **Time trend in firms debt levels**



Failure function

Failure regression (Probit regression model):

$$Prob(Exit_{ft+1} = 1) = \Phi(\alpha_0 + \alpha_1 log\ Sales_{ft} + \alpha_2 log\ TFP_{ft} + log\ Debt_{ft}$$

$$+\alpha_3 log\ Wages_{ft} + \alpha_4 log\ L_{ft} + +\alpha_5 log\ K_{ft} + \delta_t + \xi_t r_{ft} + \epsilon_{ft})$$

- $Exit_f = 1$ means that firm f exited at year $t + 1$;
- *Sales* is the value of shipments;
- *TFP* is an estimate of total factor productivity;
- Debt is the amount of outstanding debt;
- Wages is the wage bill divided by the number of workers;
- L corresponds to the size of the workforce;
- K corresponds to the amount of capital;
- r is a measure of the the firm-specific interest rate;
- ϵ_{ft} is an idiosyncratic error term.

Exit of firms

Table : The determinants of firm closure (probit regression)

	Coefficient	Standard error
log sales	-0.104	0.018
tfp	-0.293	0.017
log debt	0.160	0.012
log wage	0.131	0.033
log L	0.175	0.018
log K	-0.144	0.011
firm interest rate 2006	1.771	0.260
firm interest rate 2007	1.274	0.245
firm interest rate 2008	1.419	0.223
firm interest rate 2009	2.008	0.220
firm interest rate 2010	3.037	0.218

Source: Informacao Empresarial Simplificad (N=75 525).

Net Job Creation

Pooled OLS:

$$NJC_{ft} = \alpha_f + \alpha_1 log\ Sales_{ft} + \alpha_2 log\ Wages_{ft}$$

$$+\alpha_3 log\ K_{ft} + \alpha_4 TFP_{ft} + \alpha_5 log\ Debt_{ft} + \delta_t + \xi_t r_{ft} + \epsilon_{ft}$$

- L_{ft} corresponds to the number of workers at firm f in year t;
- α_f is the firm fixed effect.

Intensive margin

Table : Net Job Creation (Pooled OLS)

	Coefficient	Standard error
log sales	0.053	0.003
log wage	-0.140	0.007
log capital	-0.052	0.003
total factor productivity	0.060	0.005
log debt	0.005	0.001
firm interest rate 2006	0.023	0.051
firm interest rate 2007	0.038	0.037
firm interest rate 2008	0.034	0.042
firm interest rate 2009	-0.058	0.042
firm interest rate 2010	-0.184	0.051
firm interest rate 2011	-0.221	0.054

Source: Informacao Empresarial Simplificada (N=90 014).

Summary

- Worrying interest rate fragmentation
- Suggestive evidence of credit crunch impacting on firm's the ability to borrow
- Financially distressed firms:
  - Shut-down (1 percentage point, around 20 percent of total closures)
  - Contract employment (1 to 3 percent of total employment)

The arquitetcure of the wage setting system

- There is mandatory minimum wage
- Nominal wage cuts are forbidden since the 1950s
- Unions have monopoly over wage negotiations
- Despite very low unionization rates (less than 10 percent in the private sector)
- Wage negotiations between trade unions and employers associations define wage floors by occupation category (around 30 000 job-titles)
- The wage agreement, by law, solely binds unionized workers and the firms that are members of the employer association
- There are no mechanisms that oblige unions and employers associations to disclose their constituency
- The legal conundrum is circumvented via the use of extension clauses (often to the whole industry) by the Ministry of Employment
- That may last forever
-
- It is hard to conceive what kind of incentive mechanisms are at work

The cyclicality of real wages, Carneiro, Guimarães, and Portugal, AEJ Macro (2012)

$$y_{ijft} = \lambda_i + \theta_f + \gamma_j + \xi cycle_t + \beta X_{ift} + \epsilon_{ijft} \quad (1)$$

- y_{ijft} represents the logarithm of the hourly wage for each individual i, in job j, working for firm f in year t.
- X_{ift} are observed time-varying characteristics of individual i and firm j in year t.
  - Workers time-varying characteristics (age, age squared, seniority, and seniority squared)
  - Firms time-varying characteristics (log of size)
- λ_i is a worker fixed effect
- θ_f is a firm fixed effect
- γ_j is a job-title fixed effect
- ϵ_{ijft} is an idiosyncratic error term

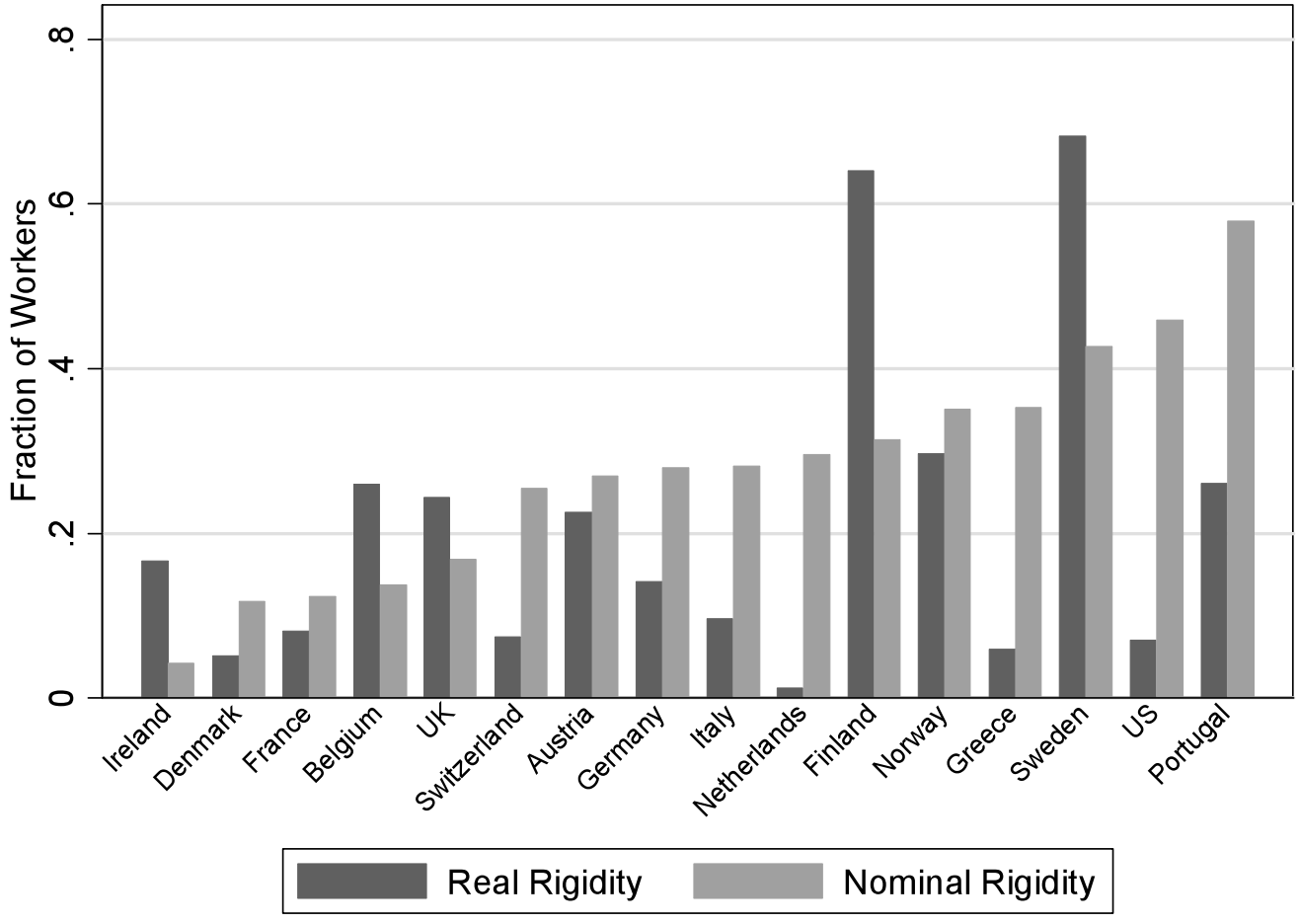
wage cyclicality

Table : Unemployment rates and wage cyclicality (N=30 906 573)

	1986-2000	2001-2007
stayers	-2.460	0.002
new-hires	-3.455	-0.341

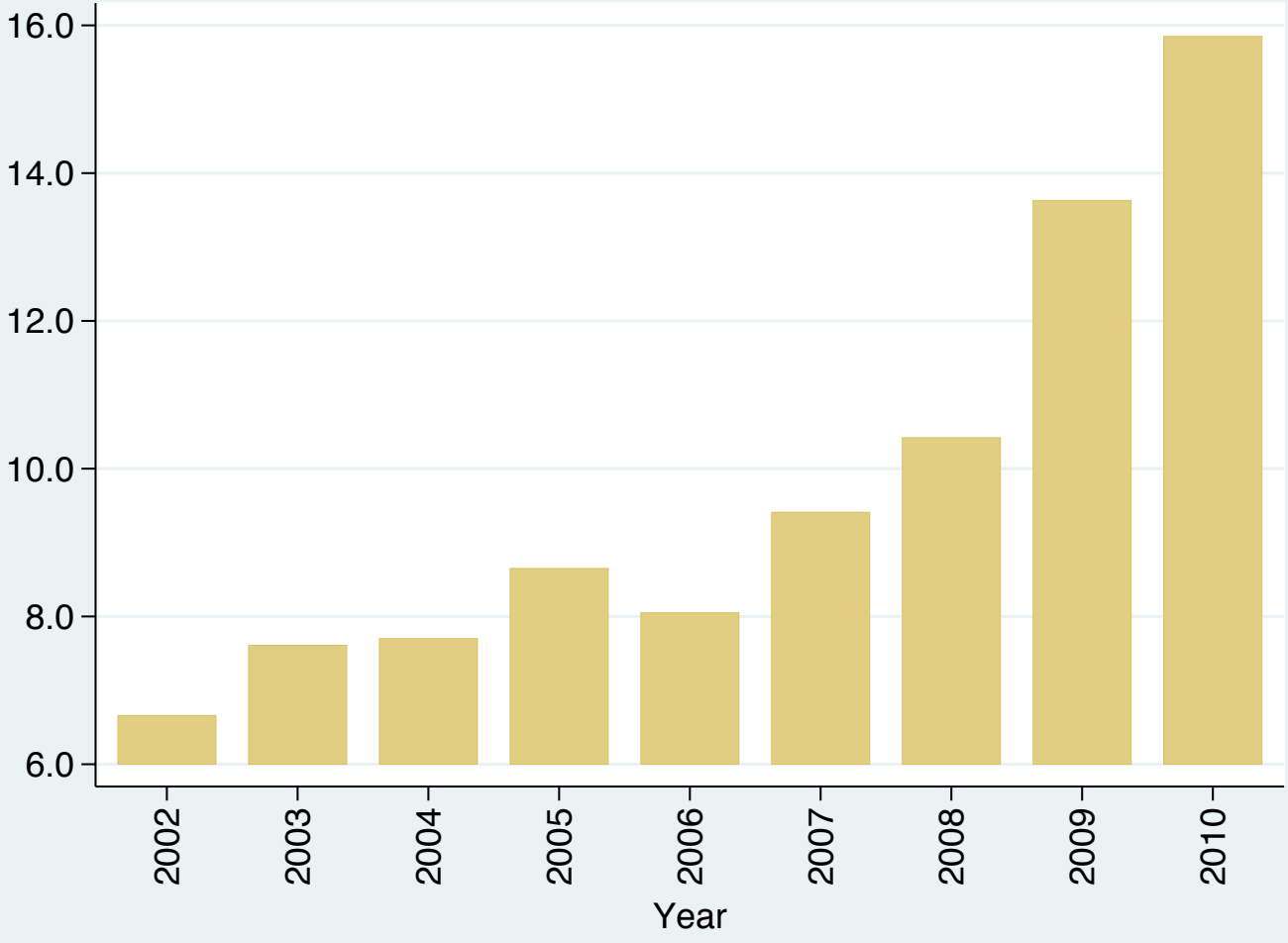
Source: Quadros de Pessoal.

Nominal wage rigidity. International comparison.



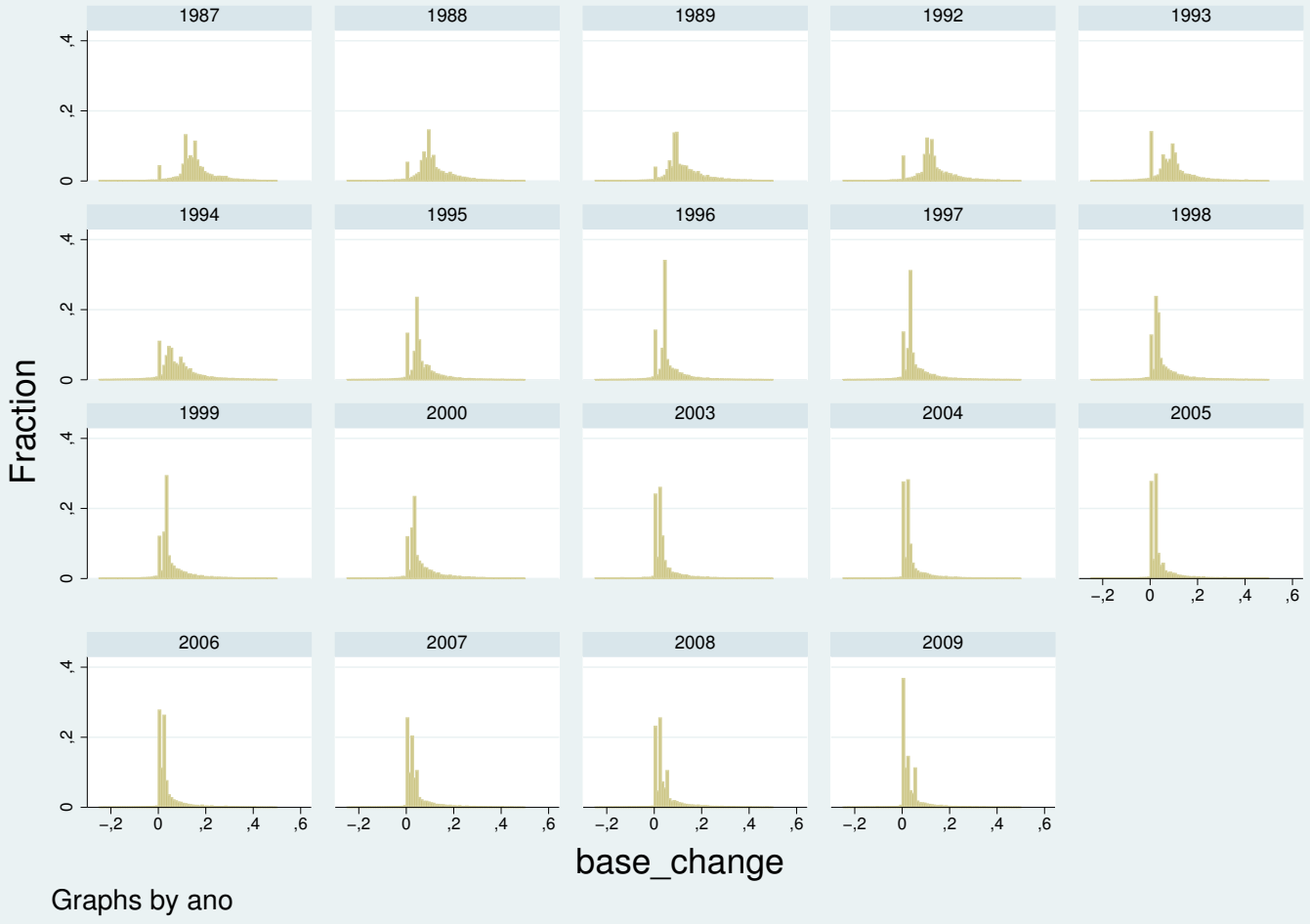
Trends on the incidence of minimum wages

Figure : **Incidence of minimum wages (1992-2010)**



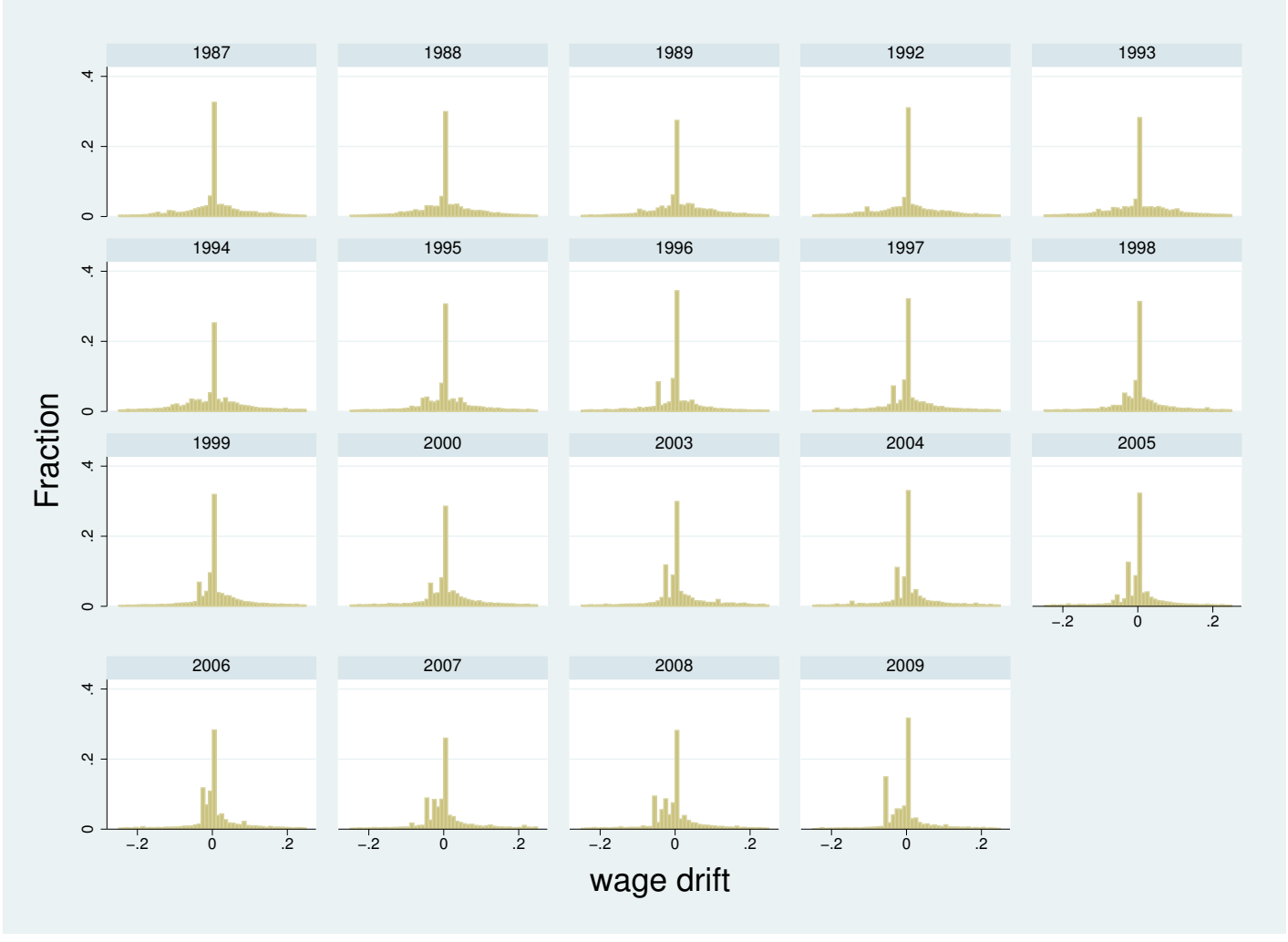
Nominal wage change distribution

Figure : **Source: Quadros de Pessoal 1986-2009**

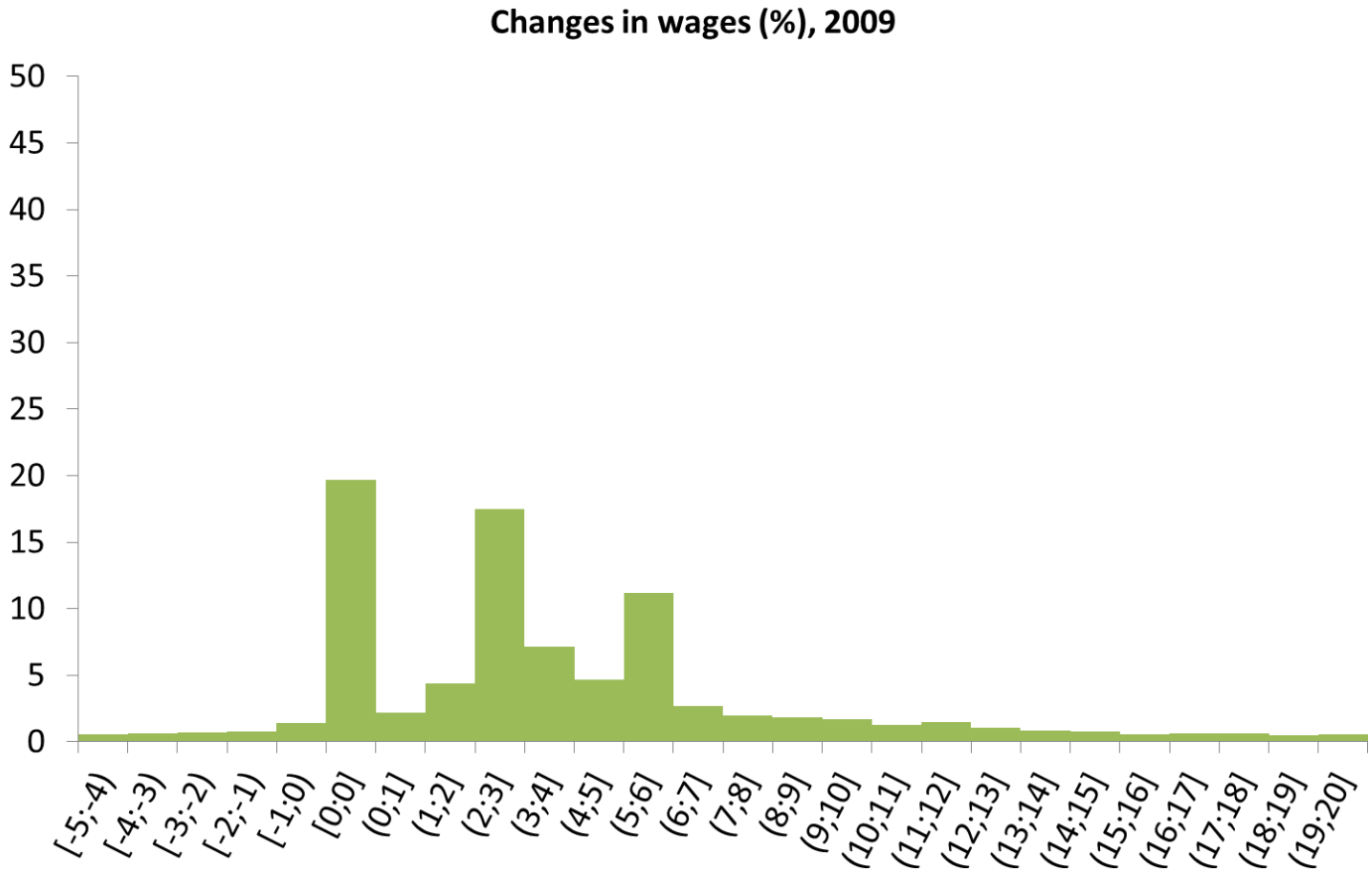


Wage drift distribution

Figure : **Source: Quadros de Pessoal 1986-2009**

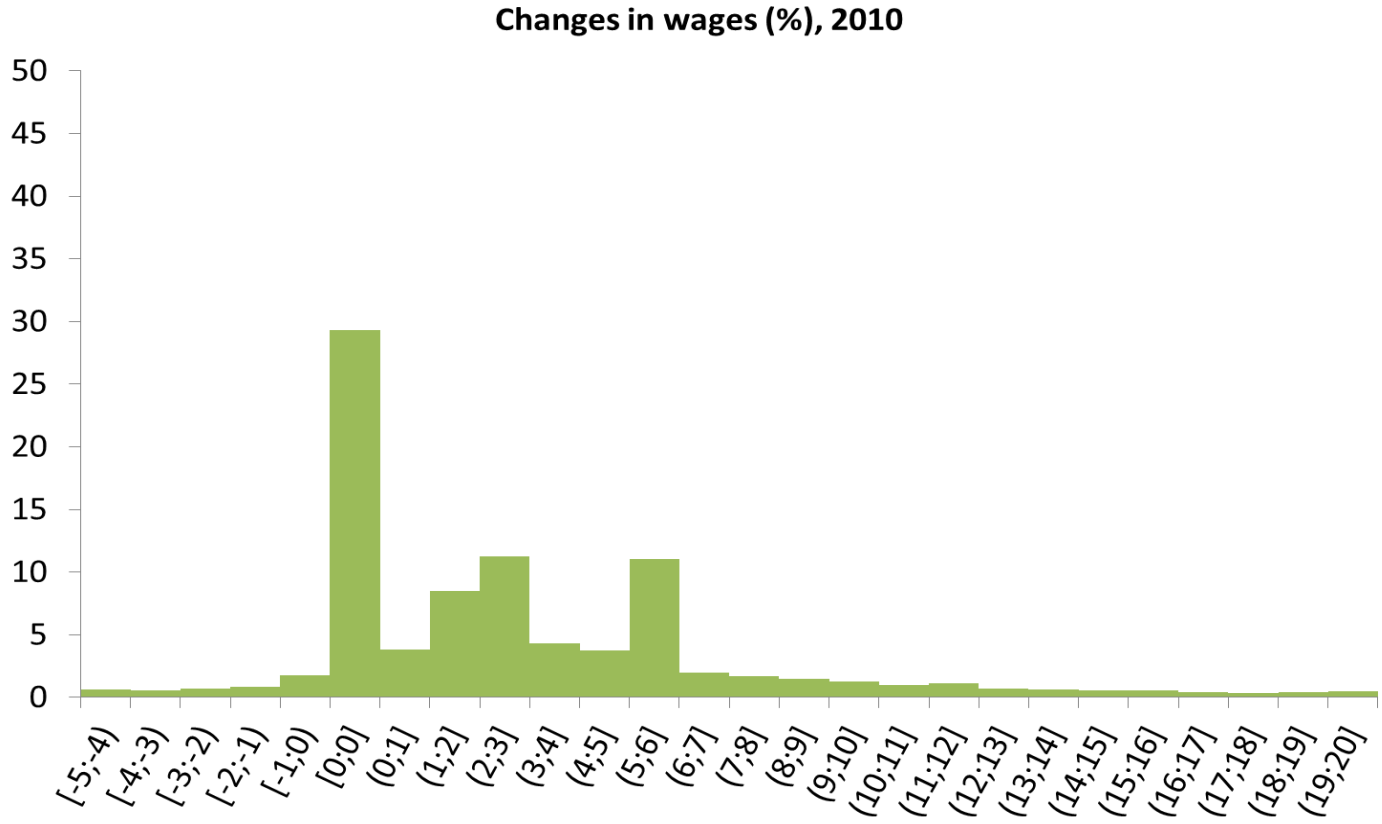


Wage freezes are widespread



Source: Social Security, GEE.

and increased with the downturn

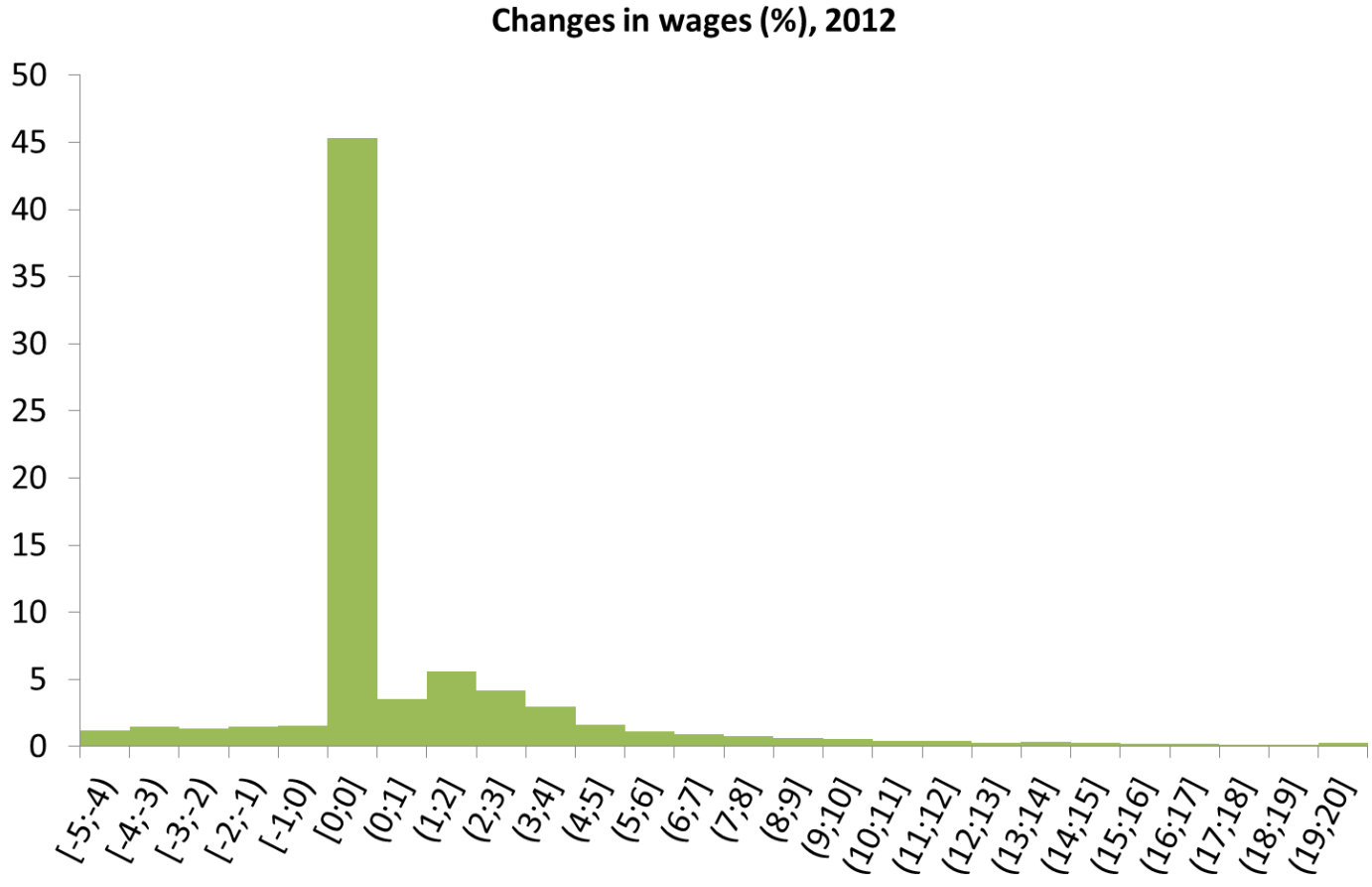


Source: Social Security, GEE.

Significantly

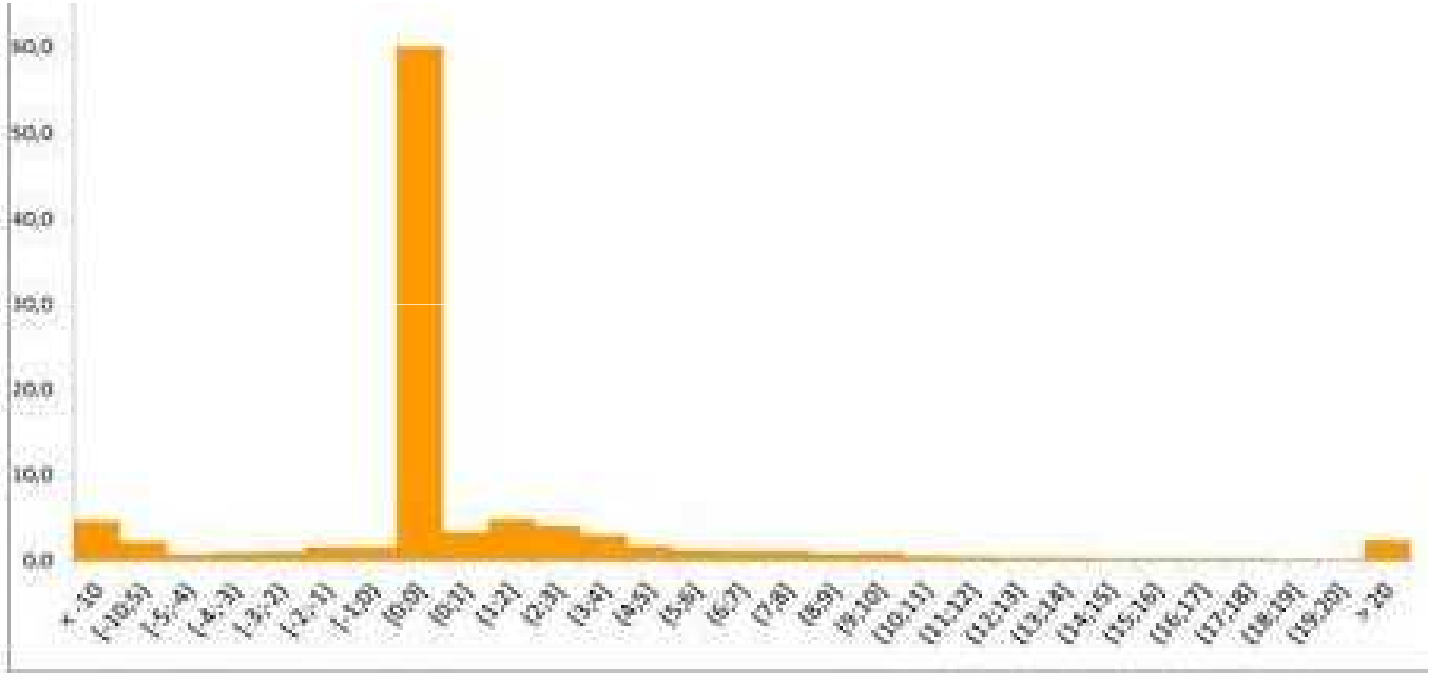
Source: Social Security, GEE.

Very significantly!



Source: Social Security, GEE.

Even more in 2013!



Leading to a severe destruction jobs

Table : Wage rigidity and labor market flows at the firm level. (N=2 228 854)

	hiring rate	separation rate	net job creation	failure rate
Wage freeze	-0.160	0.0001	-0.160	0.236
	(0.003)	(0.003)	(0.014)	(0.013)
Minimum wages	-0.026	0.022	-0.048	0.225
	(0.003)	(0.001)	(0.004)	(0.021)

Note: Other regressors were also included: log wage, log sales, and a set of year dummies.

Source: Carneiro, Portugal, and Varejao (2013)

as in the case of "upward wage rigidity"

Table : Bargained wages and labor market flows at the firm level (FE estimation)

	hiring rate	separation rate	net job creation	failure rate
Wage bill increase	-0.079	0.029	-0.107	0.393
	(0.005)	(0.013)	(0.006)	(0.010)

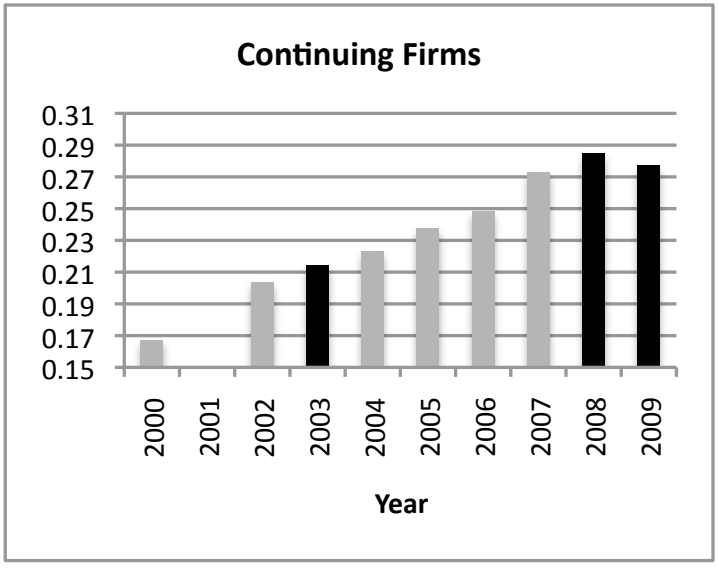
Note: Other regressors were also included: mean firm wage, firm age, firm market share, and a set of year dummies

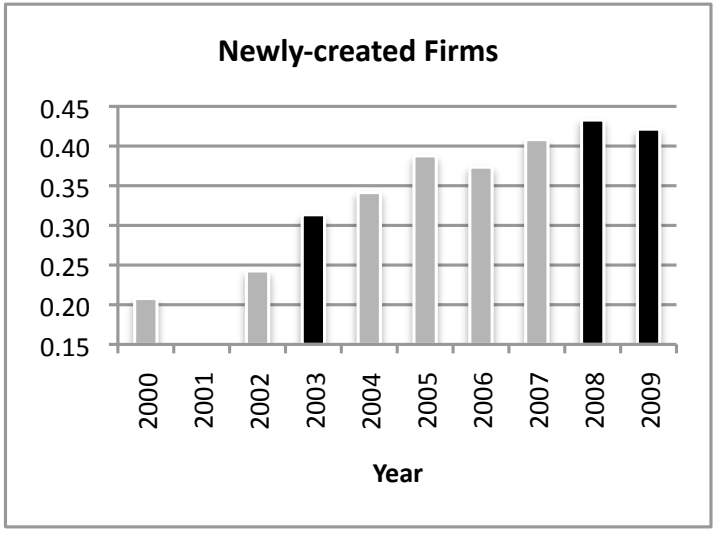
Source: Martins, Guimaraes, and Portugal (2013)

Summary

- Downward nominal wage rigidity is severe
- The wage setting system accentuates DNWR
  - through extension mechanisms
  - leading to nearly 30 000 wage floors
- Minimum wage hikes were triggered before the crisis
- Wage freezes generalized to unprecedented levels
- Real wage cyclicality faded
- Suggestive evidence that external wage restriction led to job destruction

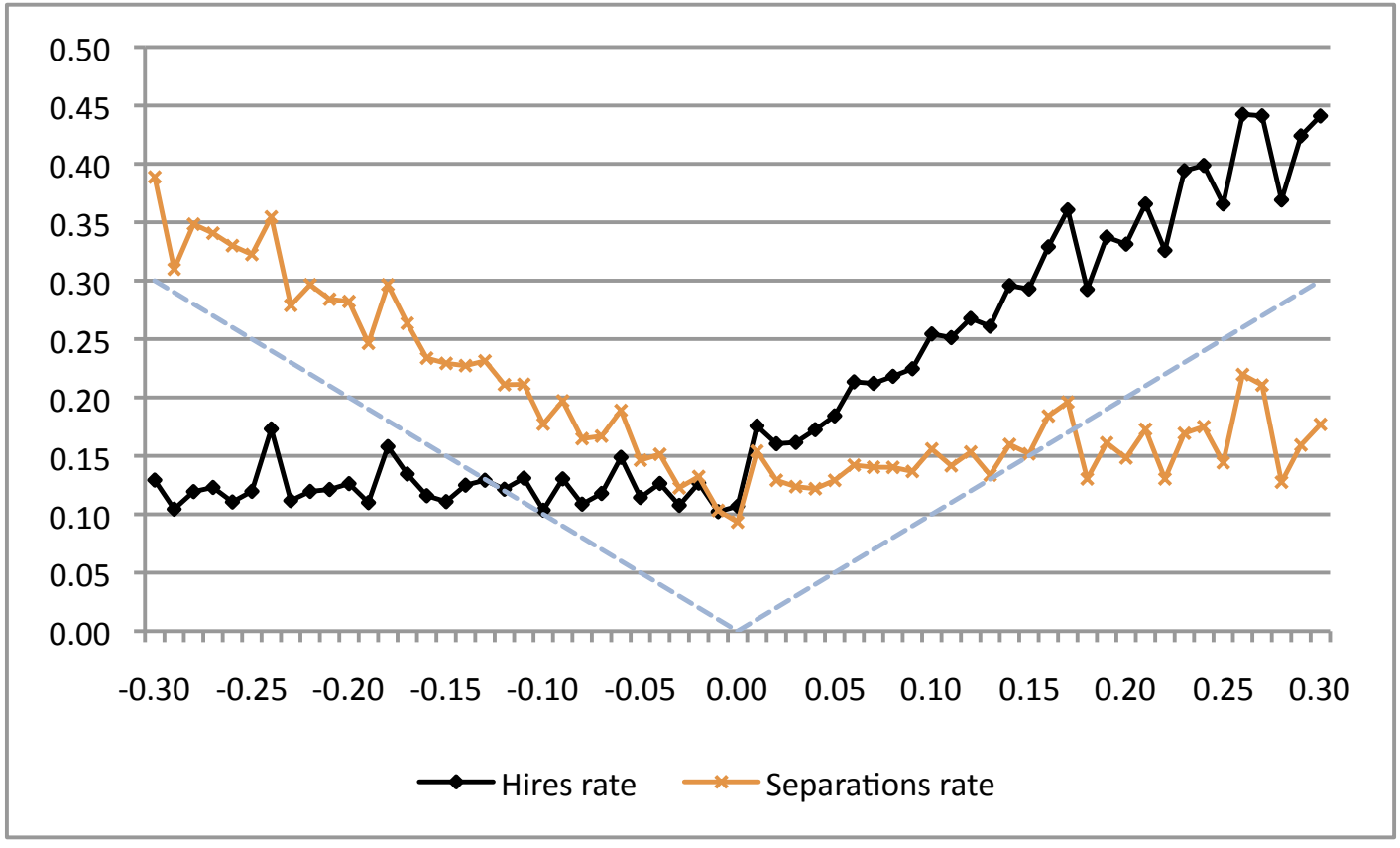
Share of temporary employment in total employment





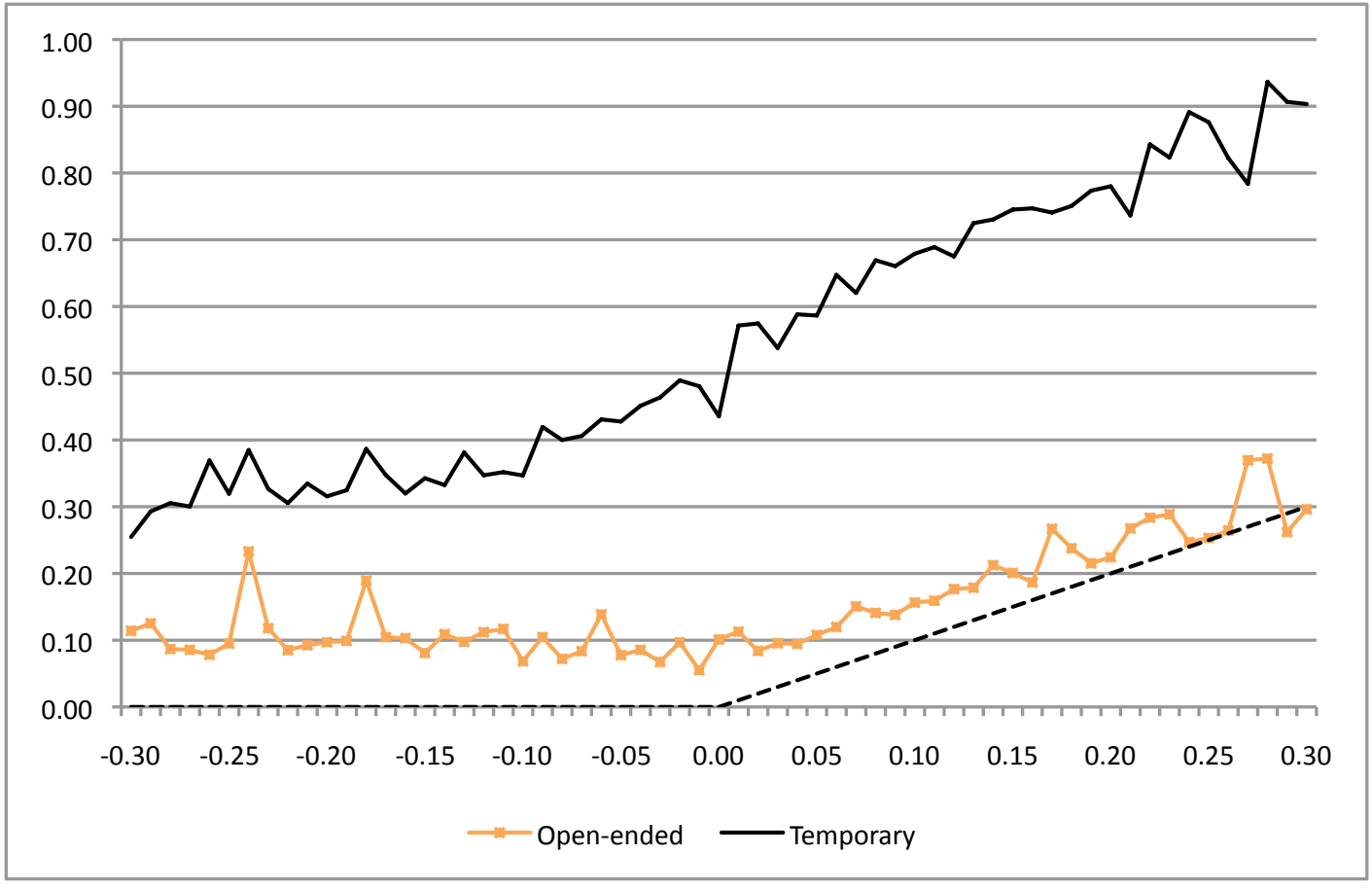
Labor market segmentation channel

Figure : **The relationship of hires and separations to net employment variation**



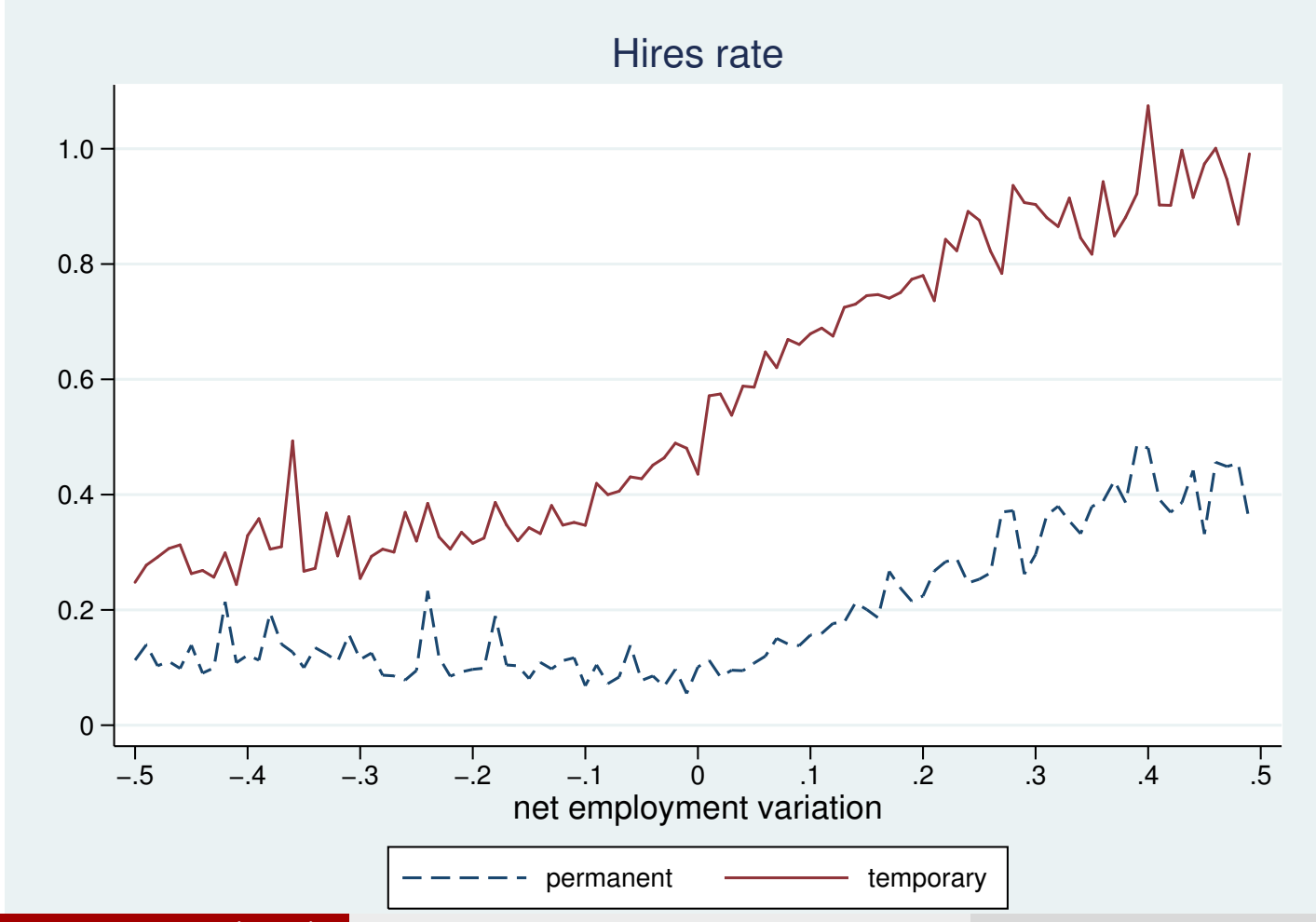
Labor market segmentation channel

Figure : **The relationship of hires to net employment variation, by contract type**



The labor market segmentation channel

Figure : **The relationship of separations to net employment variation, by contract type**



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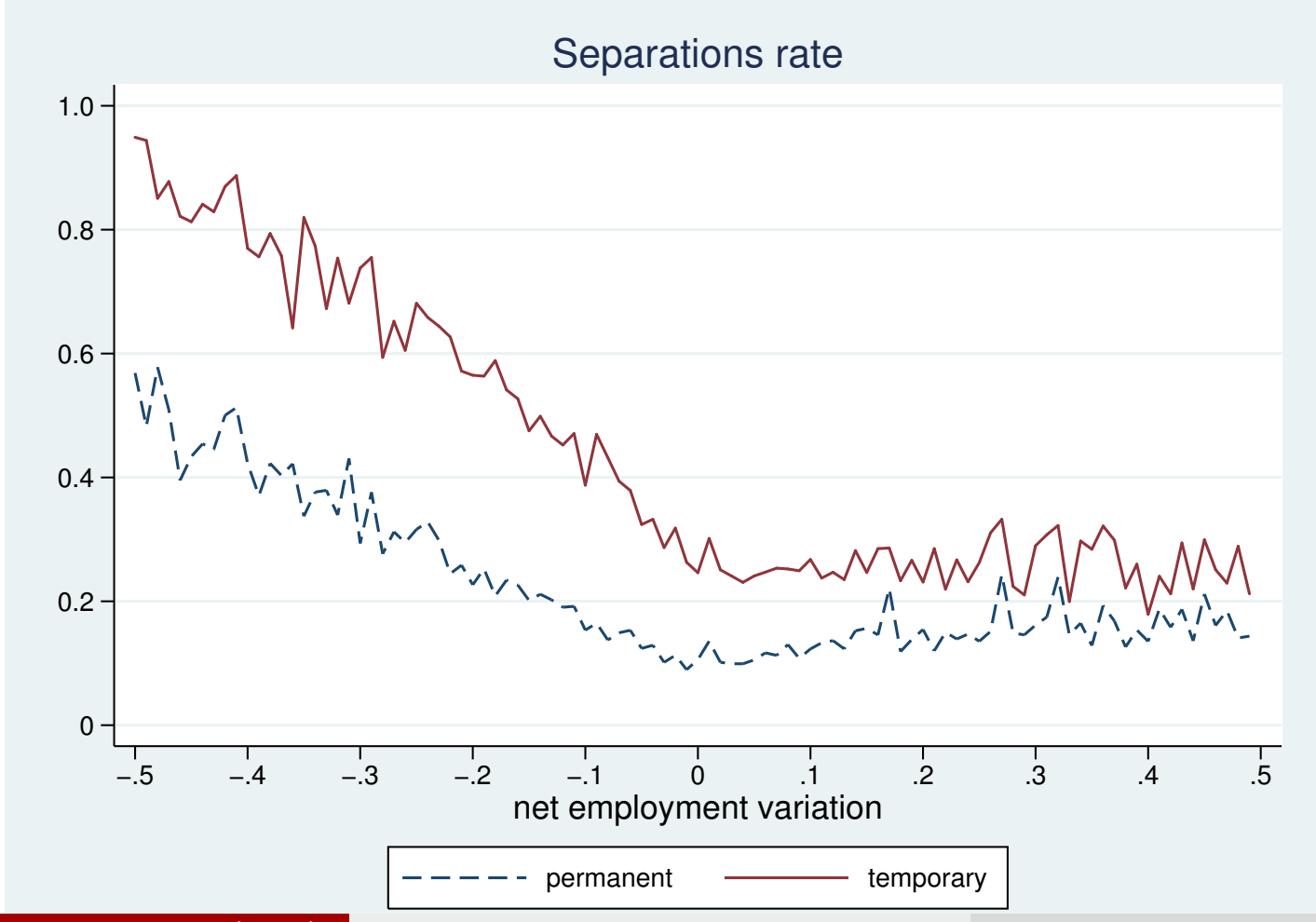

Employment adjustment

$$x_{ft} = \alpha_f + \beta_t^n \Delta L_{ft} \; I(\Delta L_{ft} < 0) +$$
$$\beta_t^p \Delta L_{ft} \; I(\Delta L_{ft} > 0) + \epsilon_{ft}$$

- x_{ft} corresponds to either the hire rate or the separation rate of firm f in year t;

Employment adjustment

Table : Negative employment variation (Firm FE)

	Temporary contracts		Open-ended contracts	
	Hires	Sep.	Hires	Sep.
$-\Delta$L base year	0.163	-0.935	-0.062	-0.779
$-\Delta$L 2004	0.176	-0.192	0.025	-0.061
$-\Delta$L 2005	0.216	-0.197	0.051	-0.071
$-\Delta$L 2006	0.374	-0.223	0.176	-0.057
$-\Delta$L 2007	0.336	-0.210	0.178	-0.058
$-\Delta$L 2008	0.373	-0.210	0.188	-0.074
$-\Delta$L 2009	0.497	-0.250	0.216	-0.051

Source: Quadros de Pessoal.

Summary

- High differences between firing costs between open-ended and fixed-term contracts
  - increased the number of temporary workers
  - leading to excessive worker churning
- Suggestive evidence that fixed-term contracts speeded up job destruction by facilitating job separations in recessions

Conclusions

- Job destruction
  - flows into unemployment
  - long-term unemployment
  - human capital destruction

  Three mechanisms seemed to play a role:
  - credit channel
  - wage rigidity channel
  - labor market segmentation channel
- What can be done?
  - fiscal devaluation (missed)
  - reduce labor costs through social security taxes (at least for low-wage workers)
  - reduce labor market segmentation through single contracts for new hires
  - credit constraints?