The Economics of Imperfect Labor Markets

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Chapter 11. Unemployment Benefits

Unemployment benefits: What are we talking about?

- Unemployment benefits offer replacement income to workers experiencing unemployment spells. In principle should protect *job seekers* rather than *job holders*
- The first UB system was introduced in the UK in 1911.
- Complex design to discourage opportunistic behavior
  1. Insurance
  2. Incentives

Multidimensional institution

Different features characterize a UB system:

- *Level* of the income transfer compared to the previous (future) wage
- Maximum *duration* for which they can be offered
- *Eligibility* conditions (conditions for access)
- *Entitlement* (rules for duration including sanctions after assessment of search intensity)

Measures of the generosity of UBs

Different features characterize a UB system:

- *Replacement rates*: subsidies as a fraction of the previous (backward looking) or potential (forward looking) earnings
- Replacement rate can be computed *net* or *gross* of taxes
- At different unemployment durations
- For different household characteristics

Unemployment insurance benefits, 2010

	Waiting period (days)	Maximum duration (months)	Payment rate (% of earnings base)	
			Initial	End
Austria	0	9	55	55
Denmark	0	24	90	90
France	7	24	57-75	57-75
Germany	0	12	60	60
Italy	7	8	60	50
Netherlands	0	38	75	70
Spain	0	24	70	60
United States	0	23	53	53

UI benefits for a 40-year old (where benefits are conditional on work history, the table assumes a long and uninterrupted employment record).
AW = Average Worker, who is defined as an adult full-time worker in the private sector whose wage earnings are equal to the average wage earnings of such workers
Source: OECD (2010)

Net Replacement Rates for various earnings levels, family types, durations of unemployment, eligibility for housing benefits; 2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Austria	69	82	54	68	81	56	65	69
Denmark	94	95	76	75	77	75	64	64
France	70	73	67	71	81	67	52	67
Germany	75	77	70	72	88	61	62	72
Italy	68	73	53	70	77	62	0	69
Netherlands	85	84	62	76	80	76	72	80
Spain	75	75	53	74	84	60	33	75
United Kingdom	71	78	51	64	58	45	71	44
United States	52	61	38	50	72	48	37	45

Column (1) Baseline family: Earnings 100% of AW, 2 children, single-earner married couple, initial phase of unemployment but following any waiting period, eligible for social assistance "top-ups"and cash housing assistance. After tax.
Columns (2) to (8) differ from the baseline family in one dimension only:
(2) and (3): Earnings 67% and 150% of AW
(4) and (5): Single parent and two-earner married couple
(6): No children – (7): After 5 years of unemployment
(8): No social assistance "top-ups" or cash housing benefits are available in either the in-work of out-of-work situation

Replacement rates

"Summary measure of benefit generosity"
(OECD, Jobs Study): average of replacement rates in the first two years of unemployment for Average Production Worker (APW) with seniority sufficiently long to yield maximum duration of UBs

Shortcomings of replacement rate measures

- Neglect the coverage of the subsidies (fraction of unemployed receiving the benefit)
- However coverage is partly endogenous (% of youngsters, without work experience)
- Do not consider the entitlement conditions (categorical vs. means-tested)

Adjusting for Coverage

Net Replacement Rates – OECD summary measure of benefit entitlements, 2010

	OECD Summary measure (1)	Coverage of UBs (2)	Adjusted Summary Measure (3)=(1)*(2)
Austria	52	0.86	44.8
Denmark	40.1	1.00	40.1
Germany	43.9	0.74	32.7
Italy	23.4	0.25	5.8
Spain	42.9	0.35	14.9
United Kingdom	29.3	1.00	29.3

Unemployment Insurance principle component

- Benefit depends on payments during past work experience
- Offers provisions proportional to past earnings
- The length of the entitlement period is dependent on the length of the contribution period (but not always).
- Some experience-rating (e.g., in the US) with employers paying more if they use it more intensely

Unemployment Assistance (UA) component of UB

- Accessible independently of (if any) payments during the past working experience
- Flat subsidy: provisions often independent of past earnings
- Entitlement not conditional on the length of the contribution period
- Often means-tested
- Austria: 92% of UB, but means tested (spouse only)

UBs often operate in connection with..

Non-employment benefits (other income transfers to non-employed individuals in working age) such as:

- Social assistance of the last resort (different from unemployment assistance)
- Early retirement (Chapter 6)
- Liberal access to disability benefits
- Sickness benefits

Summarizing evolution of UBs

- Increasing generosity up to the 1980s, especially in Europe. Leveling off or small decline in the 1990s
- Net replacement rate on average 2/3 higher than gross
- Increasing sanctions for refusal of jobs or ALMP
- Relatively low coverage notably in Southern Europe

Theory: A Competitive Labor Market

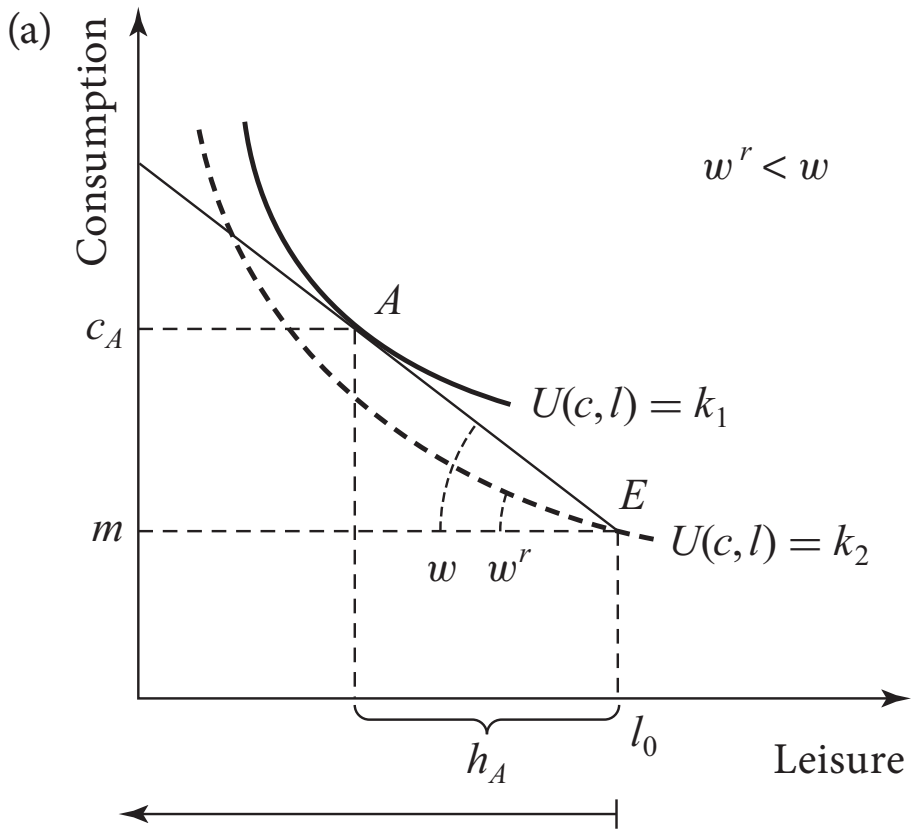
$U = U(c, l)$, U concave in c
risk averse $\Rightarrow$ insurance is valuable

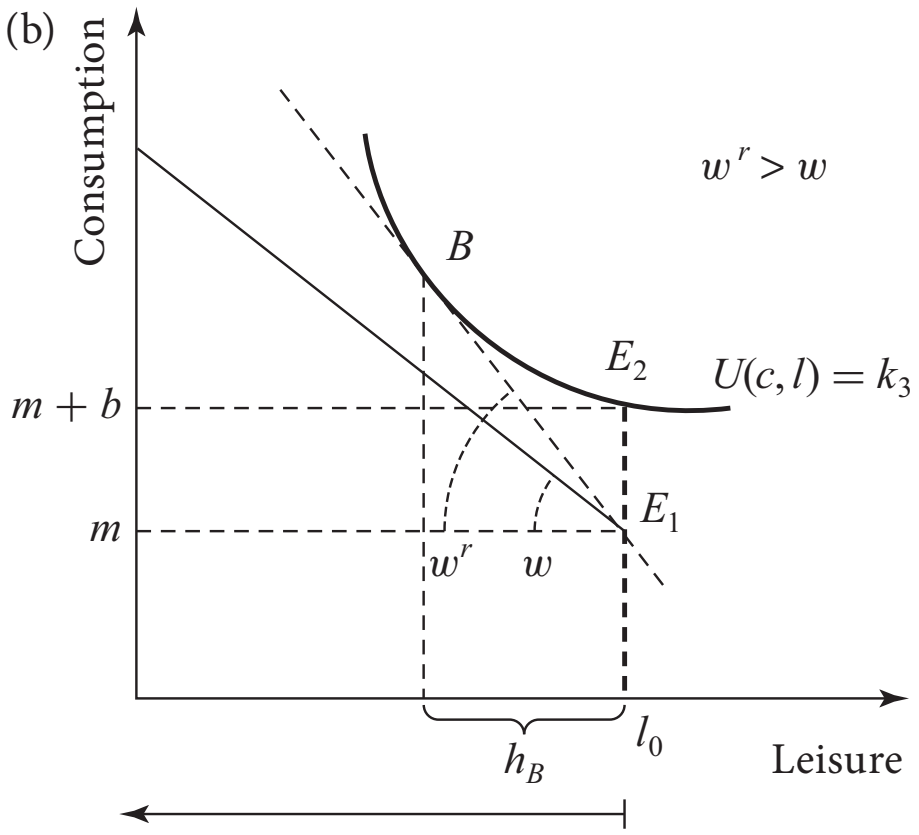
Effects on individual labour supply

- Labor/leisure choice affected by non-work income
- Budget constraint with *spike* in correspondence to 0 earnings
- Substitution effect discourages work
- Negative net wage at low hours
- Increase in the reservation wage of unemployed benefit *recipients*

Benefits have to be financed by taxes

Static reservation wage



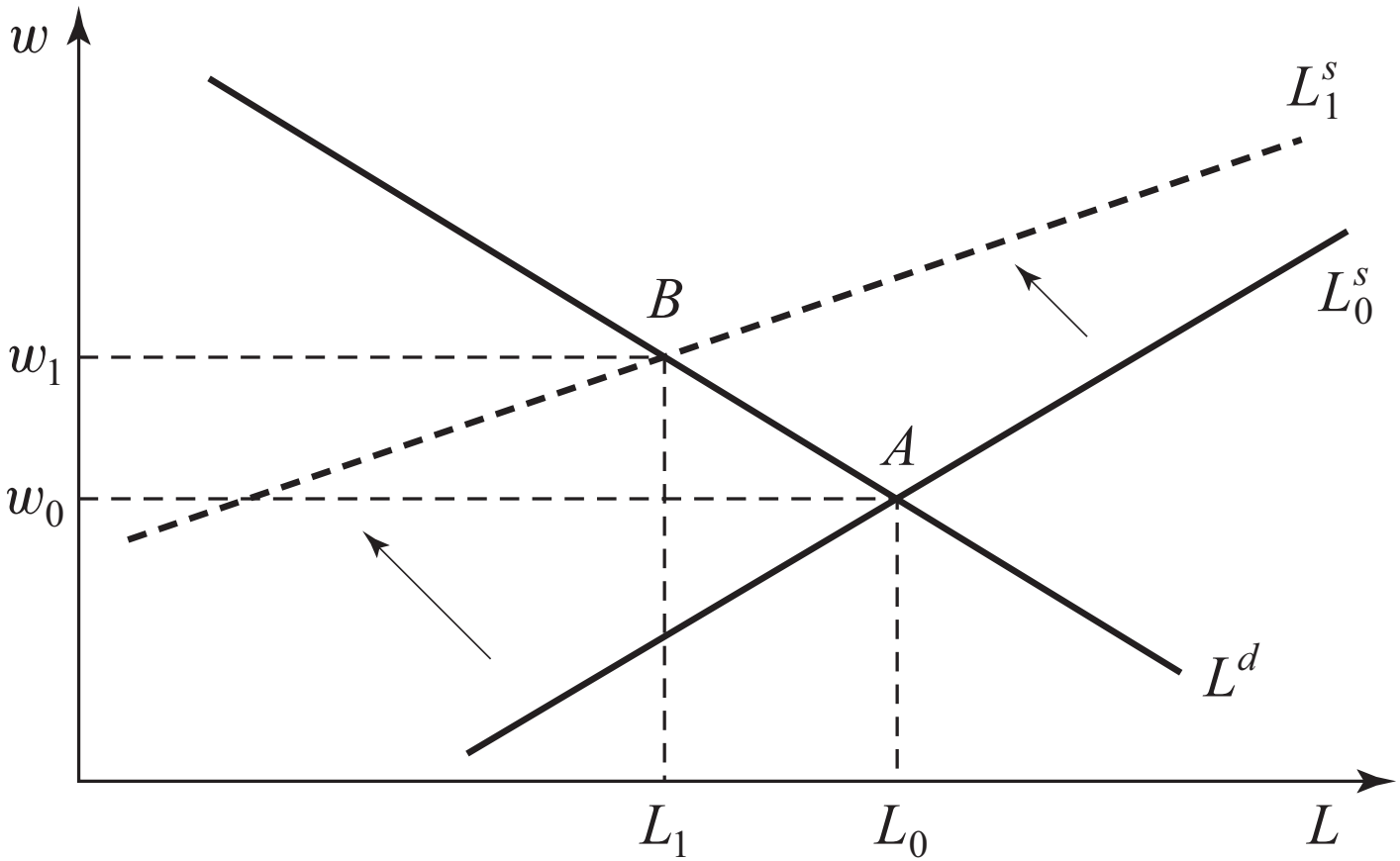


Static Reservation Wage and UB

- w^r as marginal rate of substitution between leisure and consumption: $\frac{U_l(m,l_0)}{U_c(m,l_0)} = w^r$
- Without UB:
  - For any $w > w^r$: $h_A > 0$
  - If $w < w^r$: $h_A = 0$
- With UB=b, non-labor income becomes $m + b$
  - w^r given by $U(m + b, l_0) = U(m + w^r h_B, l_0 - h_B)$
  - Therefore $\uparrow b \rightarrow \uparrow w^r$

Effects on the Aggregate Labor Supply

L^s shifts upwards: Higher wage ($\uparrow w$) and lower employment ($\downarrow L$), NO unemployment

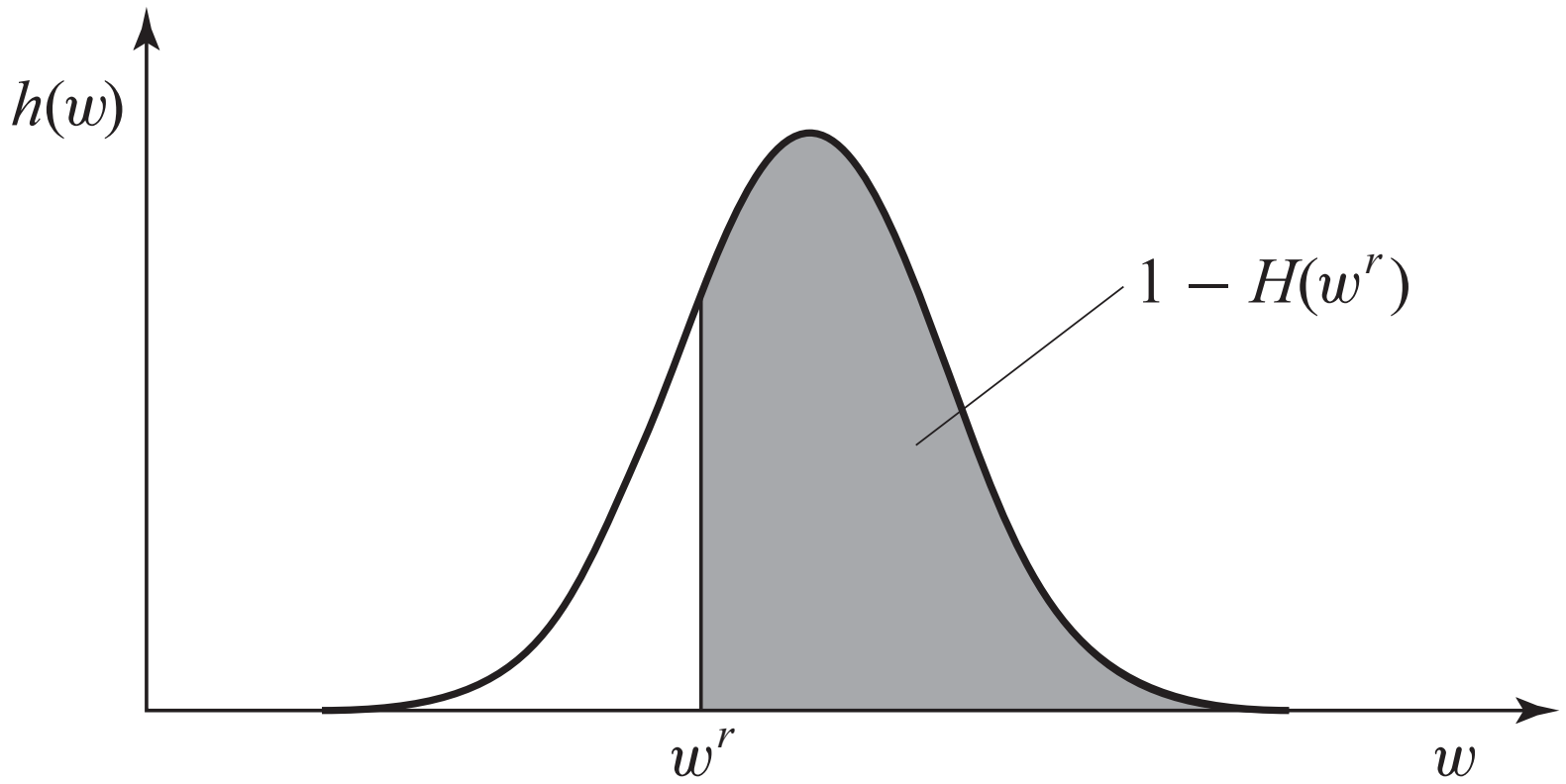


Imperfect Labor Markets – Dynamic reservation wage

Search Theory

- Imperfect information about vacancies and jobs (wages)
- Searching for a wage – wage distribution is known, NOT the exact wage
- Looking for a job is a productive activity
- Trade off: better job, but expensive (long) to search
- Dynamic reservation wage: makes the worker indifferent between continuing to search or accept the job offer
- Reservation wage depends on costs (lower when UBs are present) and benefits: higher wage
- Unlike static reservation wage separates **unemployment** from employment

Dynamic Reservation Wages



Probability of locating a job offer

Imperfect Labor Markets – 4 effects of higher UB

1. *Job search effect* (increases reservation wage and prolongs U duration)
2. *Wage effect* (increases wages through improvement of bargaining position or through an increase in efficiency wage)
3. *Entitlement effect* (increases in participation because UB makes participation more attractive)
4. (*Tax effect*) related to funding of UBs

$\Rightarrow$ may lead to higher quality of post-U jobs (higher wage)

Job search effect

- Job seekers become more choosy. Longer duration of unemployment among UB recipients.
- They only accept job offers involving a higher wage
- This higher (dynamic) reservation wage discriminates between unemployment and employment (unlike the static reservation wage separating employment and non-employment)

Wage effect

- Higher outside option of workers at the bargaining table (bargaining effect)
- Higher wage is required to deter shirking ("efficiency wage" effect). The penalty associated with unemployment is reduced in presence of UBs

Entitlement effect

- UBs increase the value of employment
- More participation in the labor market
- Eligibility requirements increase participation
- Lower reservation wage of job seekers not receiving UBs. Higher job finding rates of unemployed not eligible to UBs.

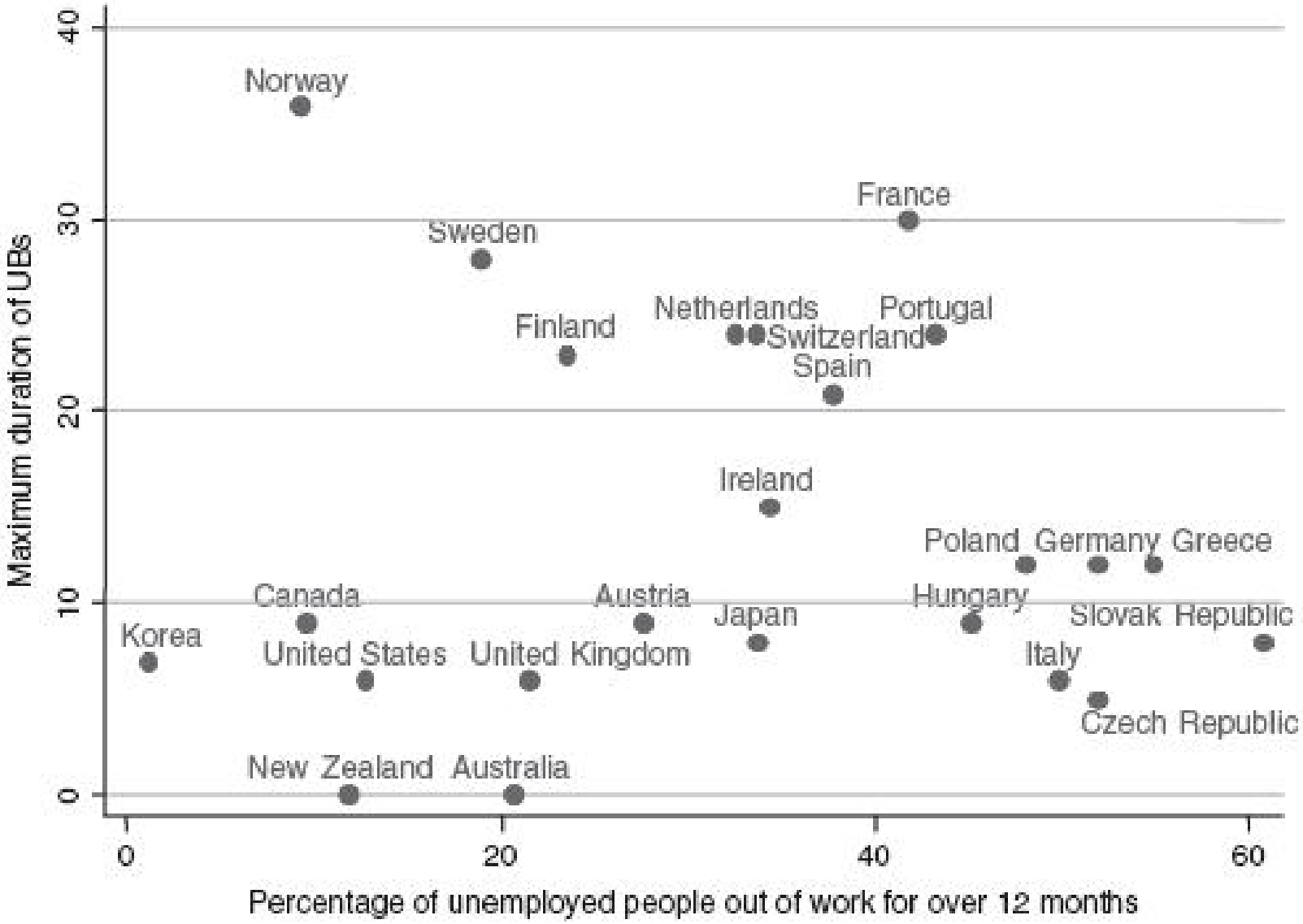
Empirical evidence

- Receipt of benefits increases reported reservation wages
- Longer duration of benefits correlated with longer duration of unemployment
- Unemployment outflows increase just before benefit duration is over
- Presence of spillovers between recipients and non-recipients of UB: also labor supply enhancing effects (as predicted by "entitlement" effect)

UB and unemployment duration

- Level of benefits - elasticity w.r.t. duration: If benefit increases by 1 %, duration increases by x %
  - Layard et al. (1991) 0.2-0.9
  - Carling et al. (2001) Sweden: 1.7
  - Roed and Zhang (2003) Norway: 0.4-0.9
  - Lalive et al. (2006) Austria: 0.4
- Potential benefit duration 1 week longer – actual unemployment longer by
  - Katz and Meyer (1990) US: 0.20 weeks
  - Ham et al. (1998) Czech-Slovak Republics: 0.3-0.9 weeks
  - Van Ours and Vodopivec (2006) Slovenia: 0.2-0.6 weeks more
  - Lalive et al. (2006) Austria: 0.1 weeks

Maximum duration UB vs percentage unemployed



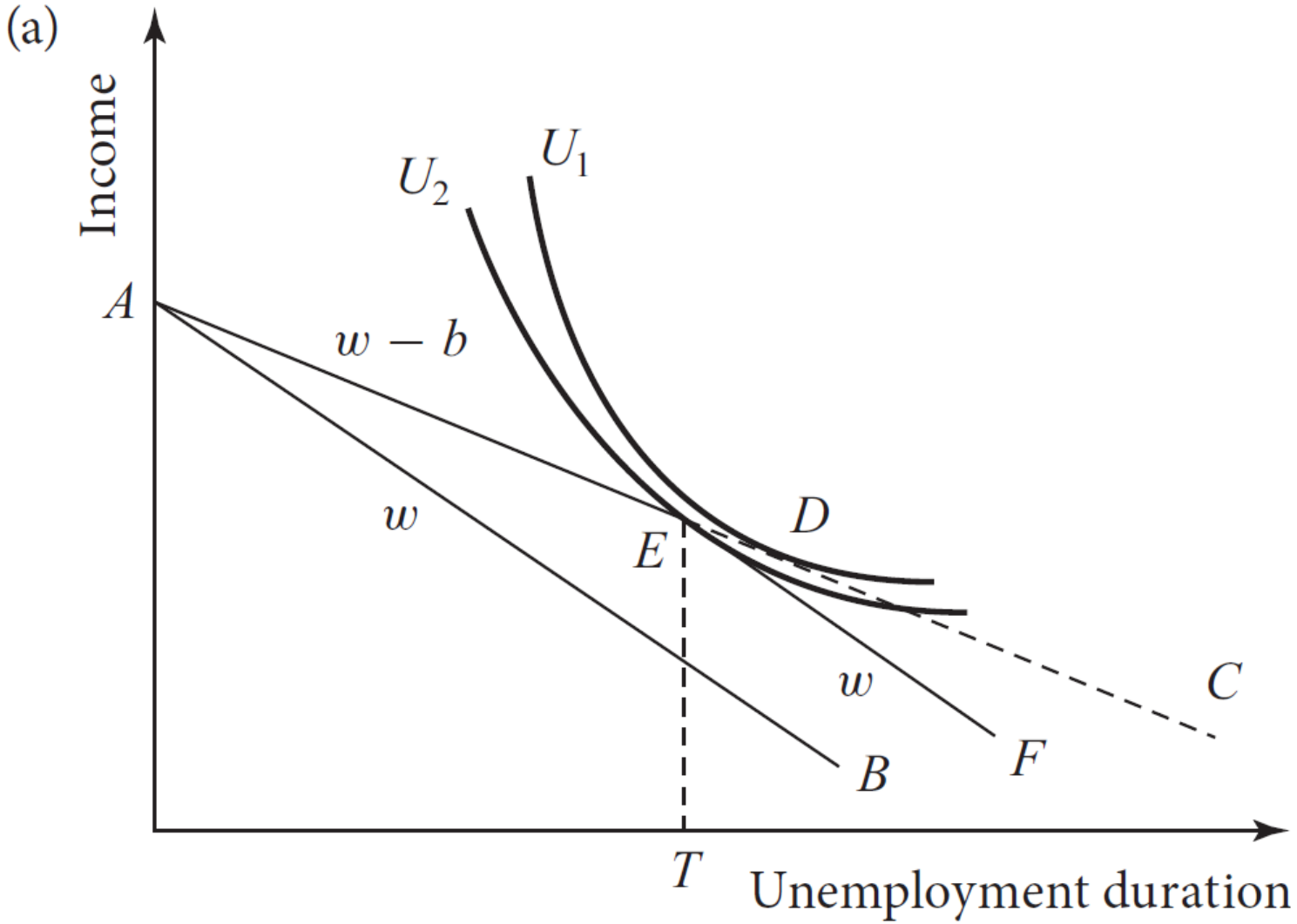
Unemployment hazard rates

- The hazard rate, λ , is the conditional probability of leaving unemployment – the probability that an individual leaves unemployment in the 10th week given that she has been U for 9 weeks
- If λ is constant, then the (unconditional) probability of leaving unemployment in the 10th week = $\lambda(1-\lambda)^9$ where λ is the hazard rate
- Also: “exit rate” or “job finding rate”

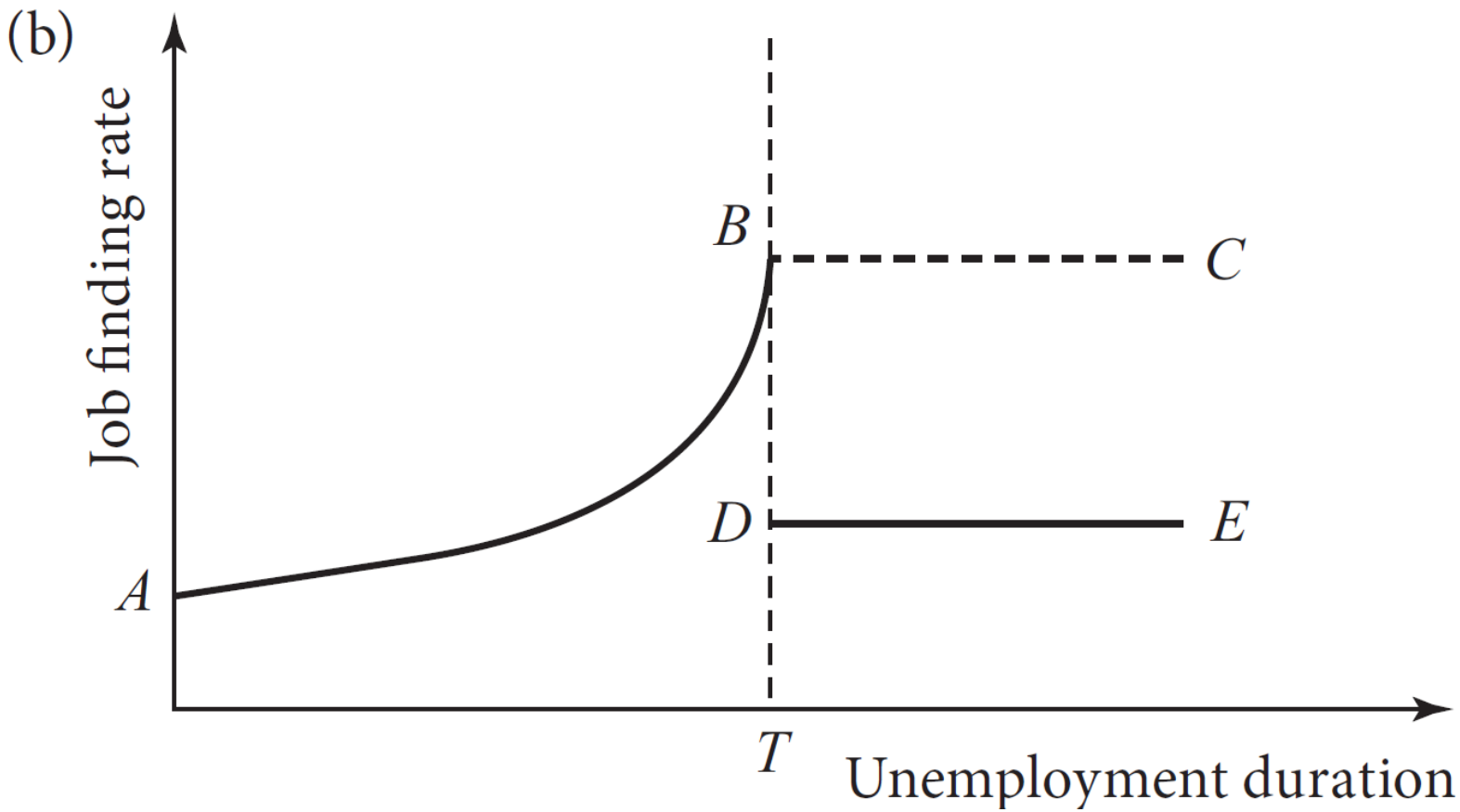
End-of-Benefit Spikes

- Increase in job-finding rates shortly before benefits expire.
- Real or artificial phenomenon?
- Card et al. (2007) for Austria: Unemployment exit rate increases much more than the re-employment hazard rate $\rightarrow$ the spike in unemployment exit rates is due to measurement error
- A static model
- A dynamic model

End-of-benefit Spike – Static Model



End-of-benefit Spike – Dynamic Model



Example: Van Ours & Vodopivec (2006, 2008)

- Reform in Slovenia reducing potential benefit duration
- Maximum benefit duration dependent on previous work experience was reduced:
  3 to 3, 6 to 3, 9 to 6, 12 to 6, 18 to 9,
- October 1998 inflow 1 year before, 1 year after the reform
- Examples 12 to 6: both outflow to job and to other destinations increases

Monthly exit rate vs months of unemployment

Duration of unemployment (months)

Men	Experience (years)	PBD		Median duration (months)			
		Before	After	Before	After	△	△△
1	1 – 2.5	3	3	3.8	3.5	-0.3	
2	2.5 – 5	6	3	4.2	3.7	-0.5	-0.2
3	5 – 10	9	6	5.8	4.2	-1.6	-1.3
4	10 – 15	12	6	7.0	4.9	-2.1	-1.8
5	15 – 20	18	9	9.2	5.6	-3.6	-3.3
Av. 2–5				6.0	4.5	-1.5	-1.2

Quality of post-unemployment jobs

Wage change after – before (%)

Men	Experience (years)	PBD		Wage change (%)			
		Before	After	Before	After	△	△△
1	1 – 2.5	3	3	12.5	9.0	-3.5	
2	2.5 – 5	6	3	17.2	11.4	-5.8	-2.3
3	5 – 10	9	6	16.3	12.8	-3.5	0.0
4	10 – 15	12	6	16.1	12.7	-3.4	0.1
5	15 – 20	18	9	16.6	13.6	-3.0	0.5
Av. 2–5				16.5	12.6	-3.9	-0.4

Job loss within a year (%)

Men	Experience (years)	PBD		Job loss within a year (%)			
		Before	After	Before	After	△	△△
1	1 – 2.5	3	3	51.2	48.8	-2.4	
2	2.5 – 5	6	3	47.2	46.1	-1.1	1.3
3	5 – 10	9	6	43.2	44.4	1.2	3.6
4	10 – 15	12	6	46.6	43.0	-3.6	-1.2
5	15 – 20	18	9	42.1	43.0	0.9	3.3
Av. 2–5				44.8	44.1	-0.7	1.7

Van Ours & Vodopivec (2006, 2008)

Reduction of Potential Benefit Duration:

- Reduces actual unemployment durations
- Doesn't affect the quality of post-unemployment jobs
- Having longer to search for jobs had zero marginal effect on productivity
- Suggests that UB generate strategic opportunistic behavior

Lalive et al. (2006)

- 1989 policy change in Austria
- Making UB more generous for some groups, but not for others
- Age and earnings-specific changes in RR & PBD
- RR: 4-5 %-points $\uparrow$
- PBD 30 $\rightarrow$ 39 weeks for age group 40-49
- PBD 30 $\rightarrow$ 52 weeks for age group 50+

Lalive et al. (2006)

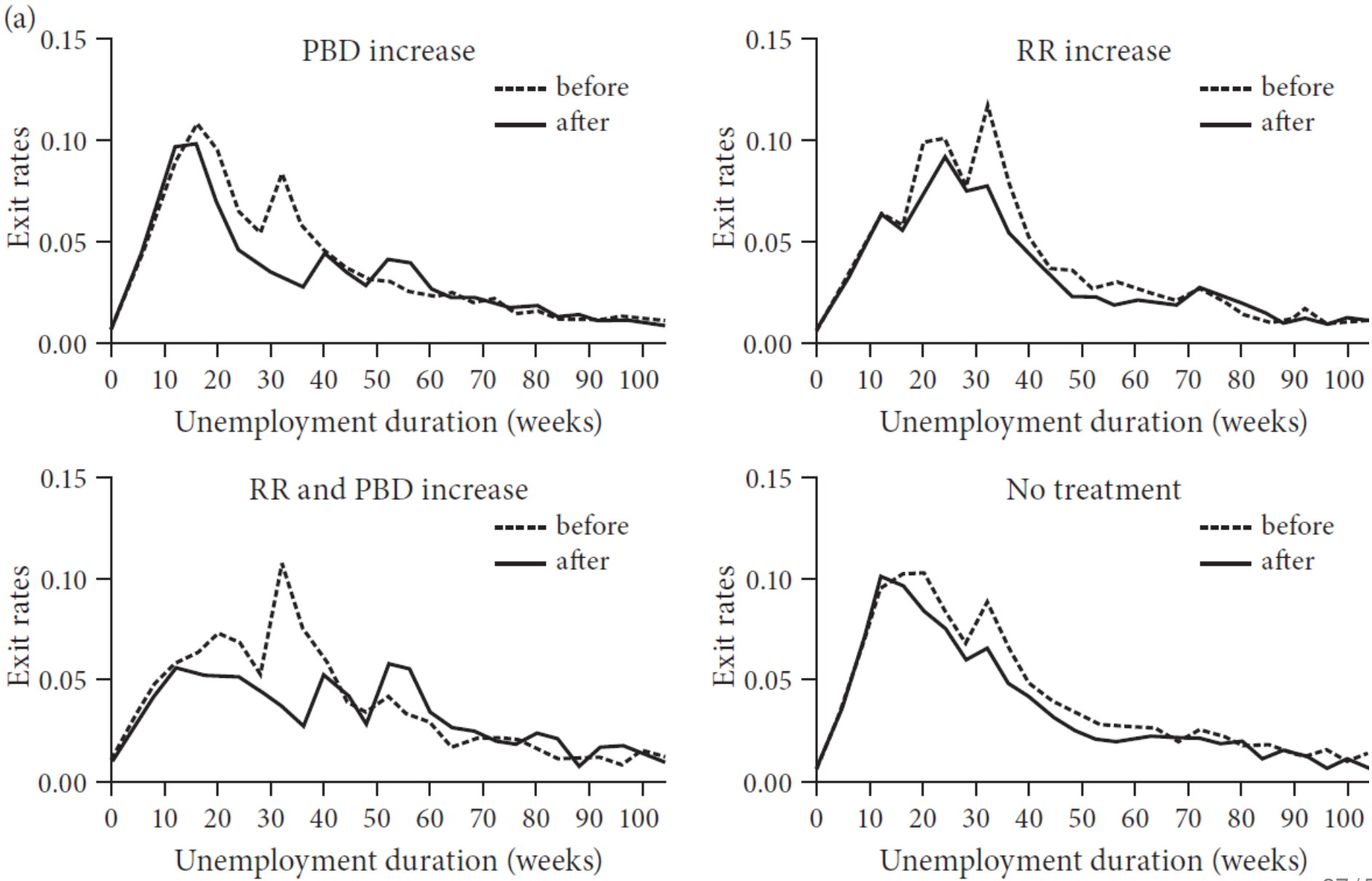
Lalive et al. (2006)

Monthly income	Younger than 40 years Work experience		40 years and older Work experience	
	Low	High	Low	High
$<$ 12,610 AS	RR↑	RR↑	RR↑	PBD+RR↑
$\geq$ 12,610 AS	Control	Control	Control	PBD↑

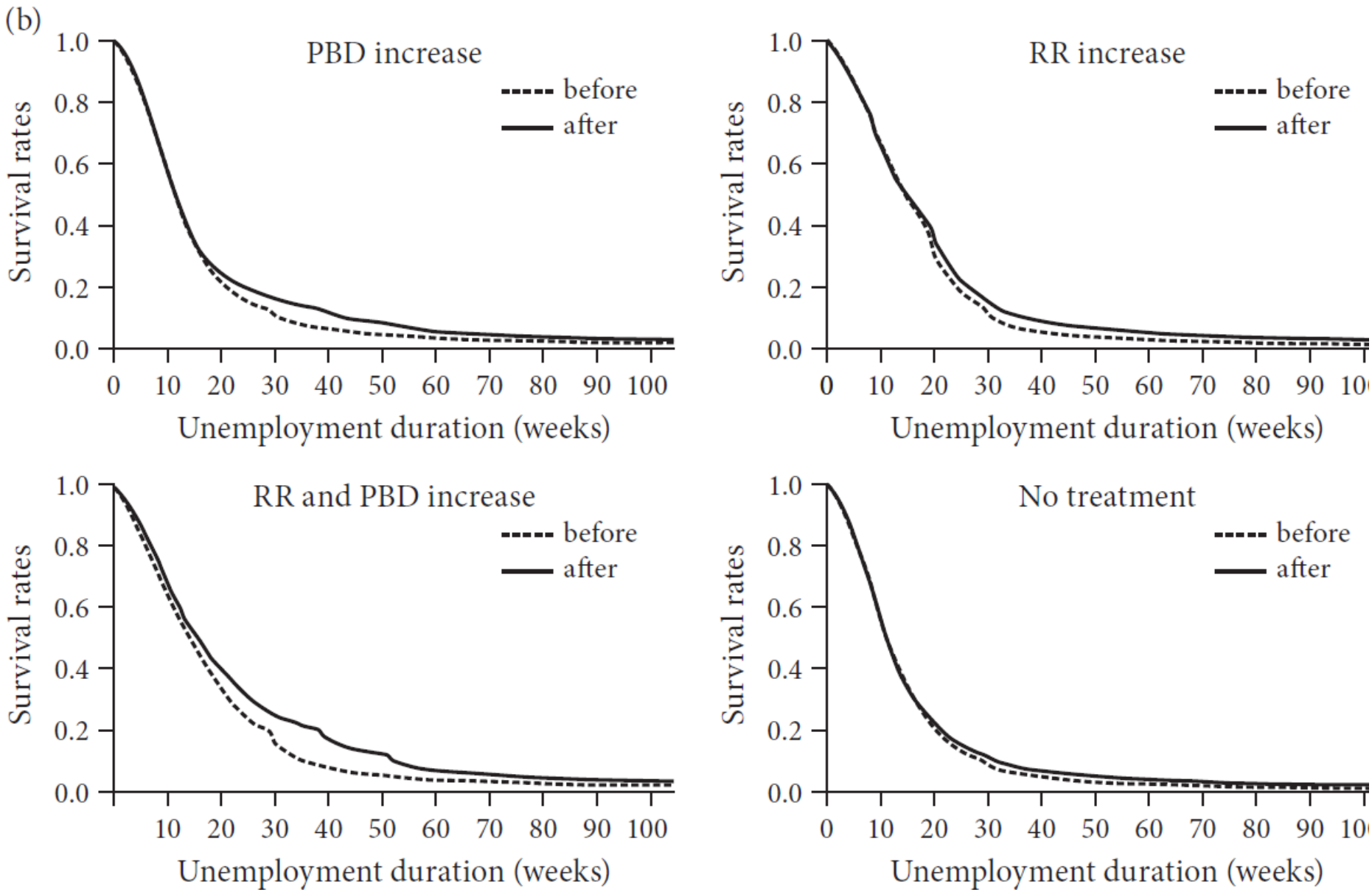
Average U-duration

Weeks of U	Before August 1989	After August 1989	△	△△
PBD	16.3	18.7	2.4	1.1
RR	17.8	20.0	2.2	0.9
PBD & RR	19.0	23.5	4.6	3.3
Control group	15.2	16.5	1.3	

Exit rates - 4 groups



Survivor functions - 4 groups



Conclusions Lalive et al. (2006)

- Prime age workers: PBD extension: +0.35 days/week - older workers: +0.70 days/week
- Simulations costs:
  - With unchanged behavior
  - Behavioral responses
- RR: 10% behavioral effect
- PBD: 20-50% behavioral effect = more effective to influence job search behavior

Positive side of UBs

- Incentives to accept also risky jobs (precarious or with temporary spells) for the outsiders
- May improve mobility in economies experiencing structural change if in the declining sector there is wage compression
- Entitlement effect may also decrease the reservation wage and reduce unemployment
- insurance aspect
- liquidity constraint removed
- post-U job may be better

Policy endogeneity

- Extended duration of unemployment. Benefits often granted as policy response to crises
- Regionally adjusted UBs in the US (Card and Levine, 2000)
- Austrian Regional Extended Benefits Program (Lalive-Zweimueller, 2002): benefits extended from 30 up to 209 weeks

Empirical findings

- Policy endogeneity is significant
- Estimates of the effects of UB duration on long-term unemployment is likely to be biased upwards
- Yet it is still there: in Austria increase in benefit duration from 30 to 209 weeks reduces the transition to jobs by 17% (40% without correcting for endogeneity), increasing expected unemployment duration by 9 weeks

Moral Hazard vs. Liquidity & Optimal Provision of UI

Chetty, 2008

- Robust evidence that ↑b →↑ unemployment duration: **moral hazard**, wage $w - b$ instead of w
- Alternative explanation: job losers cannot smooth consumption perfectly (failure in credit & insurance mkts): **liquidity constraint**
  - ↑UI, ↑consumption when unemployed, ↓job search incentives
- Evidence that increases in benefits have much stronger effects on duration for liquidity-constrained households
- From a normative standpoint it would be better to address directly the market failure, that is, (imperfect credit & insurance mkts)

Trade-offs in the provision of UB

- Reduced incentives to work
- Fiscal costs

- Better risk sharing (with risk-averse workers) Increase in welfare
- Spillovers: workers encouraged to take risky, high-productivity, jobs
- Subsidy to job search, matching efficiency. Acemoglu-Shimer: there can be productivity gains by raising UB in the US to European levels

Possible private provision of unemployment insurance?

- No because moral hazard and adverse selection. Asymmetric information.
- Workers can alter the probability of losing a job
- Private insurance would ask for premiums selecting only workers with higher than average risk
- Risk pooling problem: risks are correlated (e.g., during recession)

Optimal design of UBs

- Public provider faces the same moral-hazard problems (as compulsory contributions, less adverse selection), related to the non-verifiability of search effort.
- Ways to reduce disincentives to seek jobs:
- Low replacement rates, declining with unemployment duration. Administrative pressure on recipients (help and hassle). Offer of slots in ALMPs as a way to elicit effort
- Financial incentives to the take-up of jobs: premiums for early take-up and in-work benefits

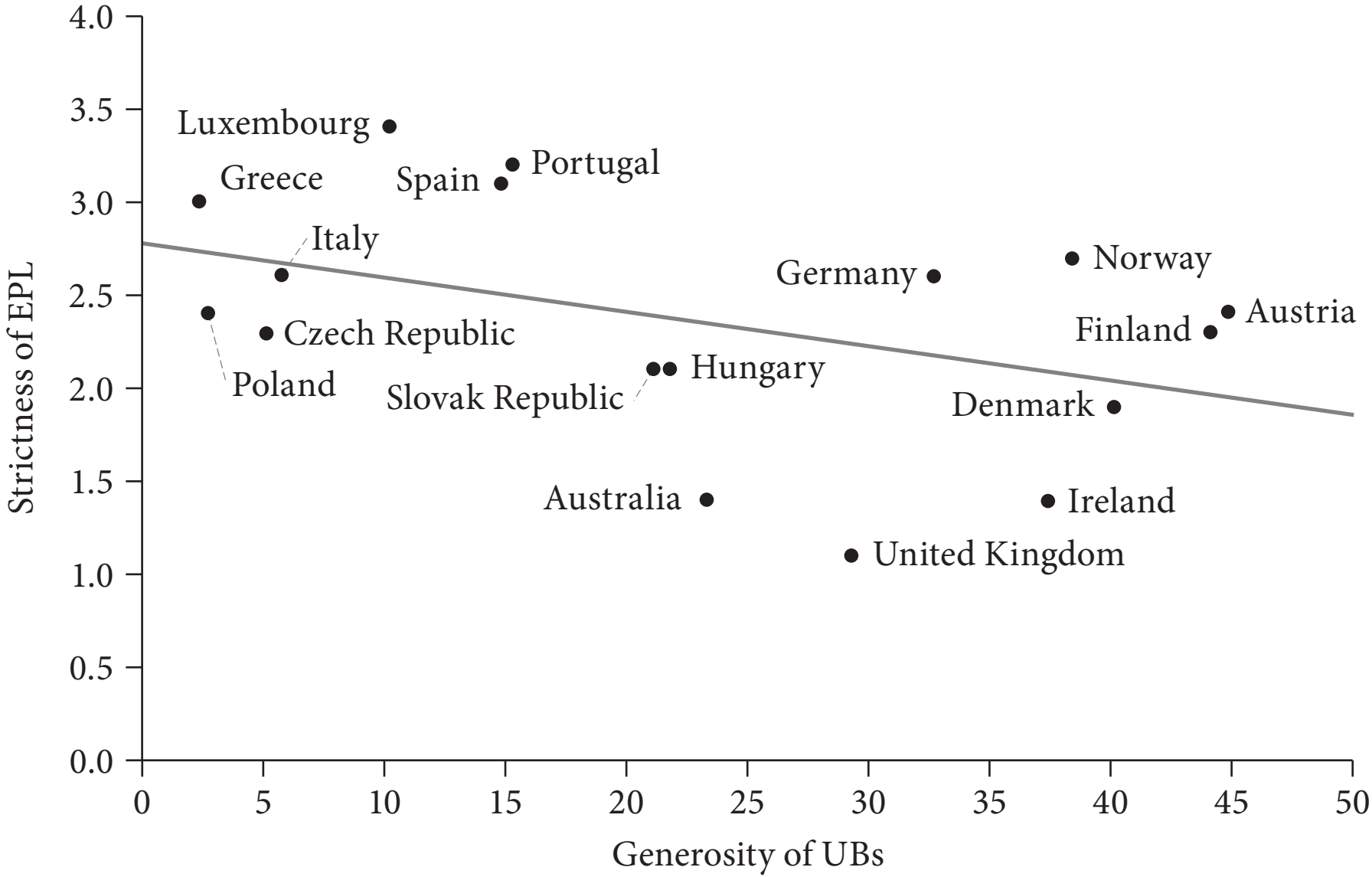
Interaction with Other Institutions

- UB similar function to EPL: to protect workers against uninsurable labor market risk: 3 key differences:
  1. EPL protects only those who have a job
  2. EPL do not impose a tax burden on workers, UB financed trough payroll taxes
  3. Under EPL, it is the employer offering replacement income, while UB are risk-sharing devices imposing a fiscal externality on all workers and employers

$\rightarrow$ appropriate adjustment of UB and EPL. They are not perfect substitutes + Political-Economic reasons
$\rightarrow$ Flexicurity: Low EPL and generous UB (e.g. Denmark)

- ALMP can reduce moral hazard associated with UBs
- Interaction with payroll taxes

Generosity of UB and Strictness of EPL



Source: OECD (2010)

UB as an automatic stabilizer during recessions

Vroman, 2010

- In recessions, ↑unemployment→↓consumption→↓economic activity even further
- UI automatically increases during recessions, to maintain workers' purchasing power & break the negative cycle
- Usually, response comes from changes in legislation
- Is UI an effective stabilizer? Evidence from US, 2008-2009 recession:
  - The regular UI program closed about 10.5% of real GDP shortfall caused by recession
  - Further 8.5% closed by extended benefits
  - Overall, UI program closed 18.3% of the gap in real GDP caused by recession
- Stronger stabilization power during 2008-2009 recession as compared to other crises, as extended benefits' response has been particularly strong
- Still stronger in Europe

Why do UBs exist?

- Properly designed UBs improve the allocation of human capital and thus, foster economic growth
- However, UBs should not be too generous in order not to discourage job search altogether and generate stagnant unemployment pools.
- The most relevant issues do not concern whether or not a country should have a UB system, but how the system should be designed along its several dimensions. Difficult to reform once in place.

Review questions

1. Why do replacement rates offer an incomplete measure of the generosity of unemployment benefits?
2. How does the introduction of a UB system affect labor force participation?
3. What type of relationship do we expect to observe between generosity of unemployment benefits and structural change?
4. How and why does an increase in the potential benefit duration affect the outflow from unemployment?
5. Explain the essential differences between the concept of “reservation wage” in labor supply theory and in job search theory.

Exercise

A worker is looking for a job. His marginal revenue from job search is $MR = 50 - 1.5w$, where w is the wage offer at hand, whereas his marginal cost of job search (in presence of unemployment benefits) is $MC = 5 + w$.

1. Provide an interpretation to MR and MC curves: why is MR a negative function of the wage at hand? What does the intercept of MC represent? And its slope?
2. What is the worker's reservation wage?
3. Suppose unemployment benefits are cut, such that the marginal cost of search increases to $MC = 20 + w$. What is the new reservation wage? Will the worker accept a job offer at 15 euros?