“The Great Recession in the U.K. Labour Market: A Transatlantic View”

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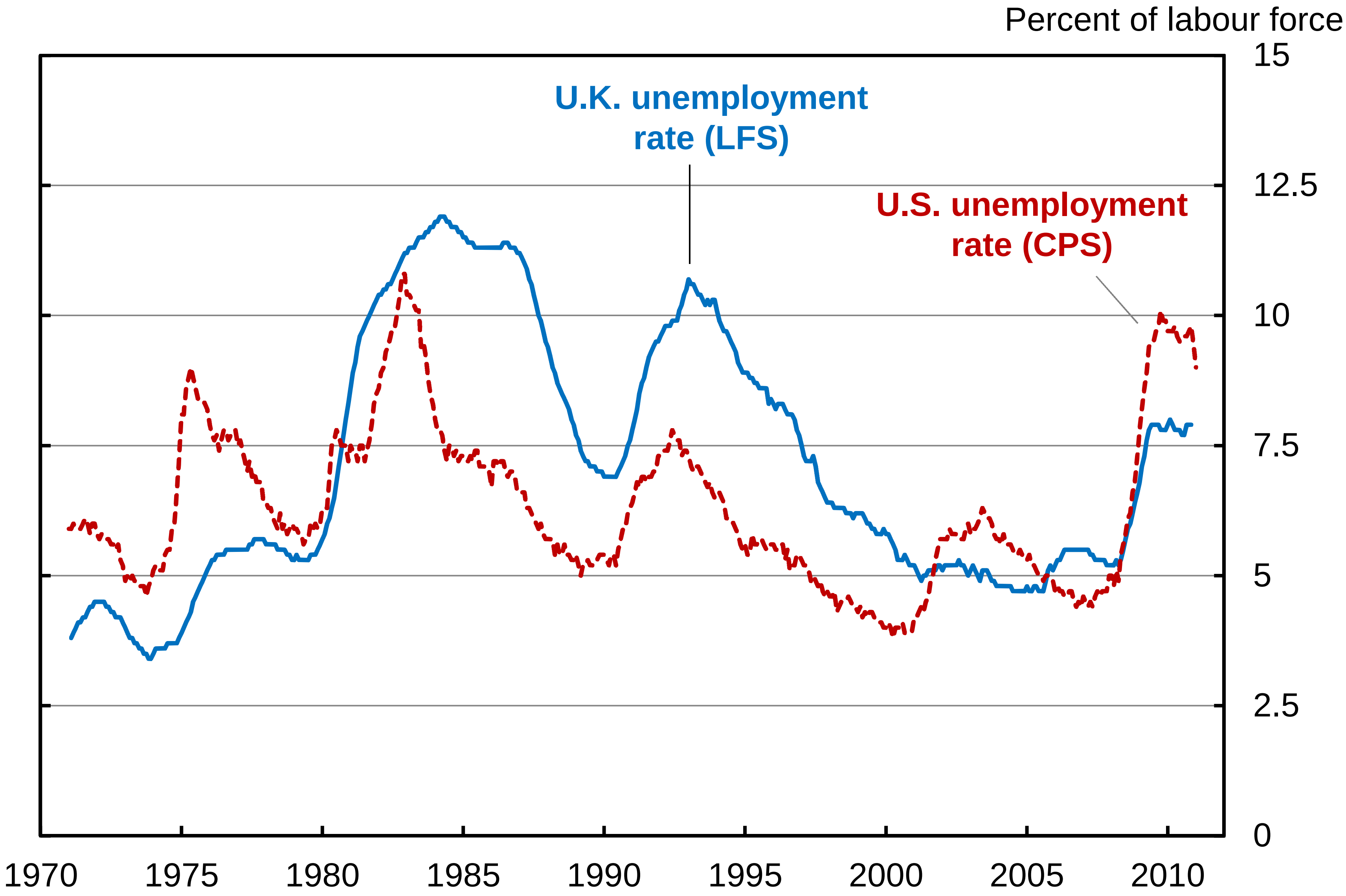
Bank of England, 25 March 2011

U.K. and U.S. unemployment



Ages 16 and over. Sources: ONS, BLS.

Unemployment flows

- Why is looking at unemployment flows useful?
- *Law of Motion for Unemployment:*

$$\Delta U_t = s_t E_{t-1} - f_t U_{t-1}$$

Change in unemployment = inflows – outflows.

- Rearrange:

$$u_t^* = \frac{s_t}{s_t + f_t}$$

"Flow steady state" unemployment rate

The (time-varying) target at which actual unemployment is always aiming.

Unemployment flows

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- *Law of Motion for Unemployment:*

  $$\Delta U_t = s_t E_{t-1} - f_t U_{t-1}$$

  Change in unemployment = inflows – outflows.
- Rearrange:

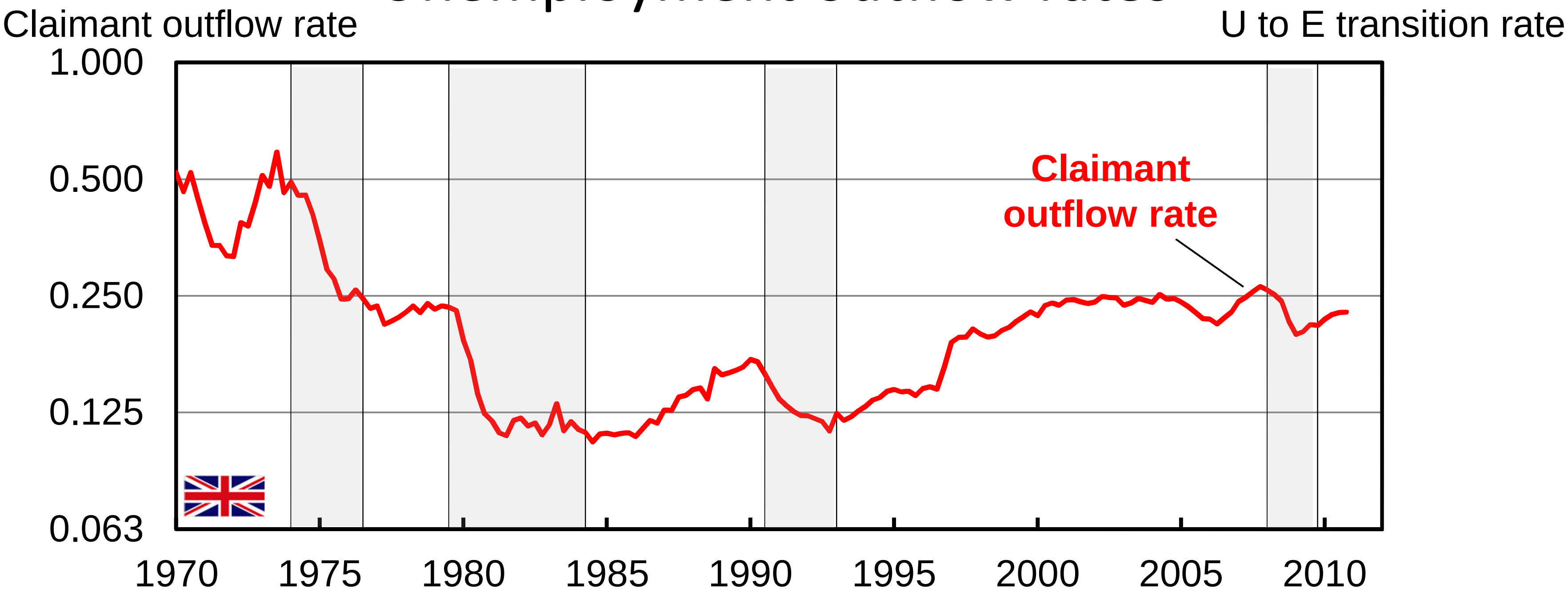
  $$\Delta \ln\left(u_t^*\right) \approx \alpha_t \left[\Delta \ln(s_t) - \Delta \ln(f_t)\right]$$ where $\alpha_t = \left(1 - u_{t-1}^*\right)$

  Change in log unemployment rate

  ≈ Change in log inflow rate

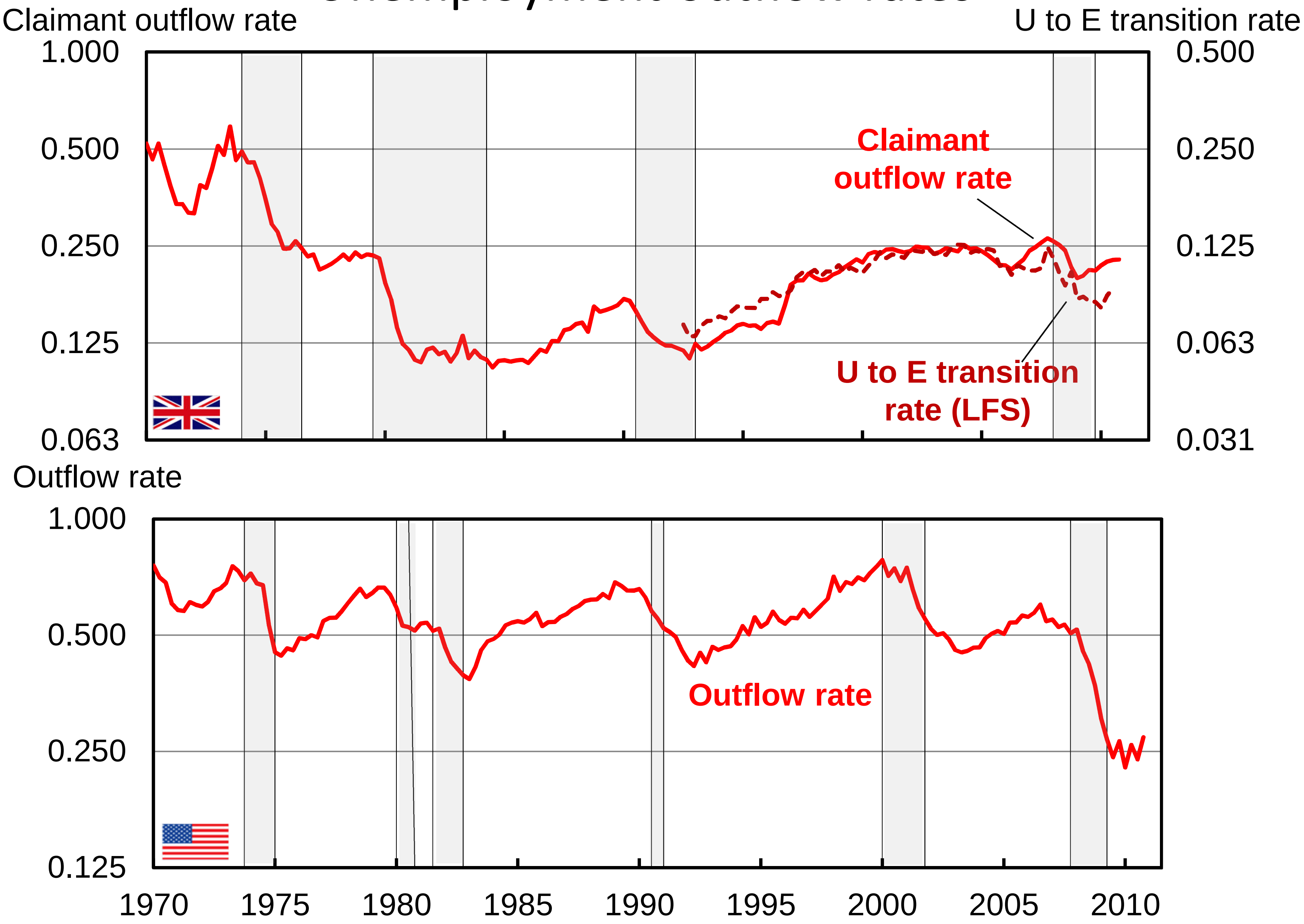
  minus Change in log outflow rate

Unemployment outflow rates



Sources: Authors' calculations using ONS NOMIS, GB (data from Petrongolo and Pissarides (2008) prior to 1983), LFS microdata, and using Shimer's (2007) method on BLS CPS duration data.

Unemployment outflow rates



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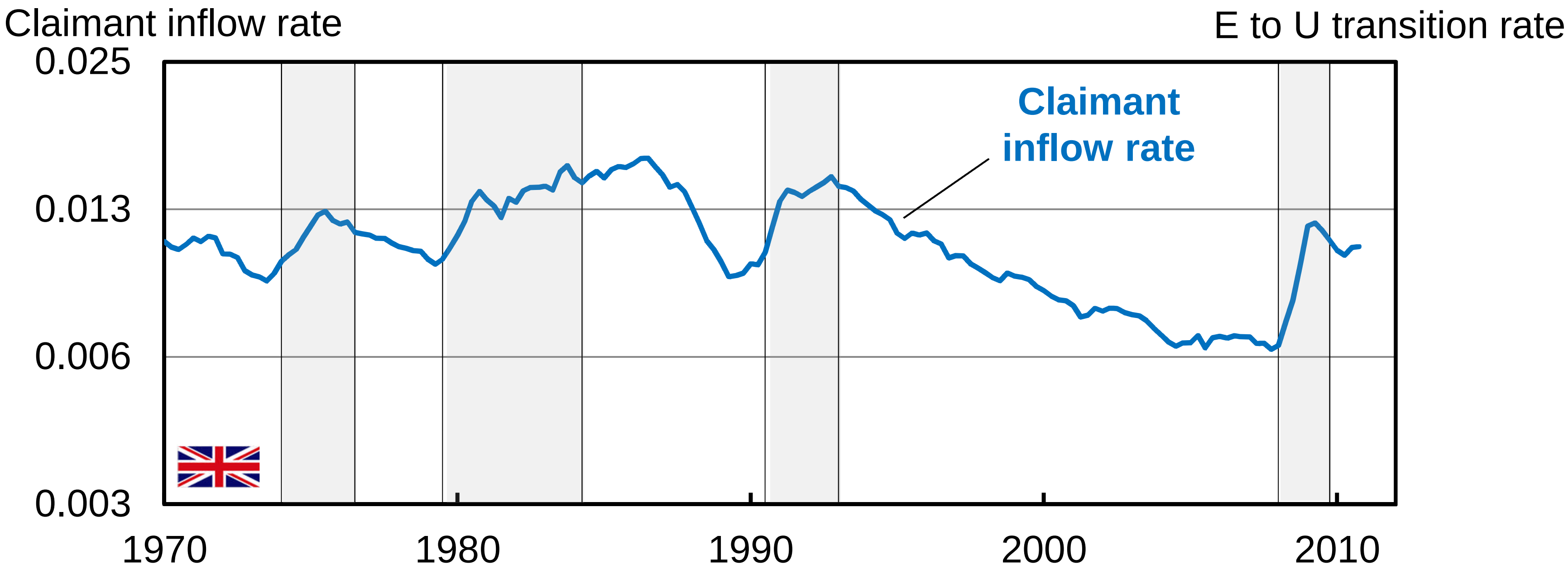
Unemployment inflow rates



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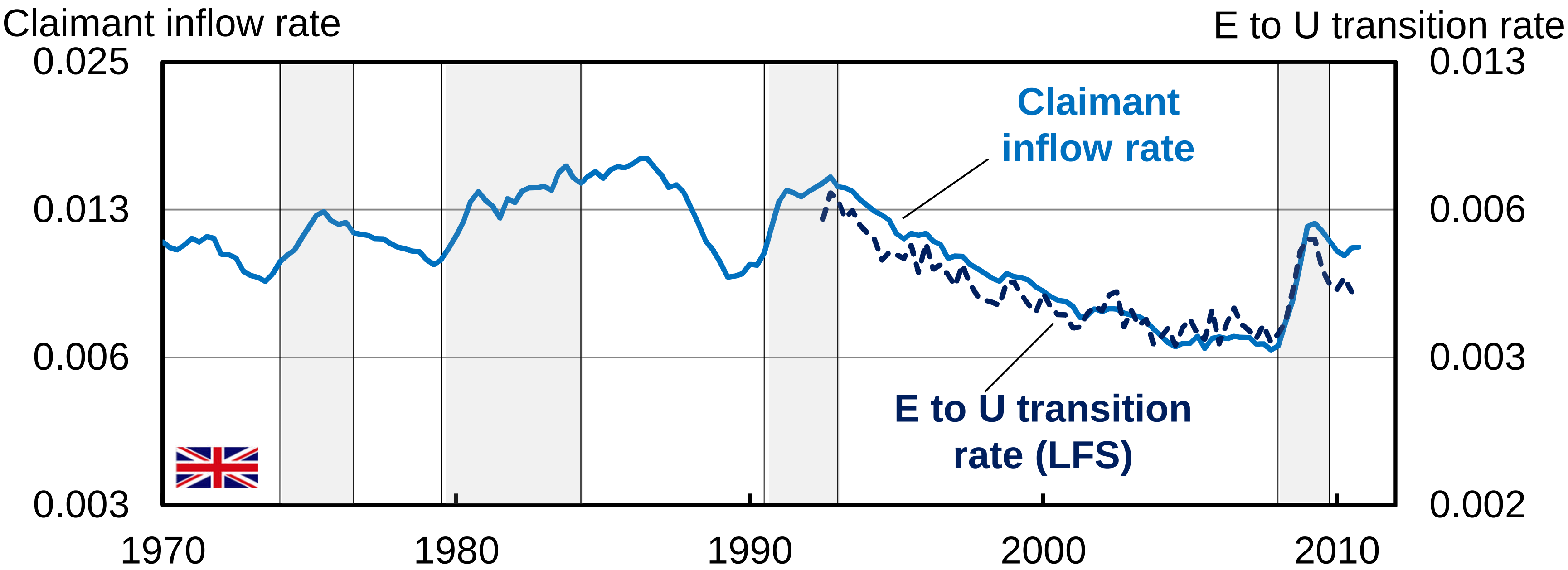
Unemployment inflow rates



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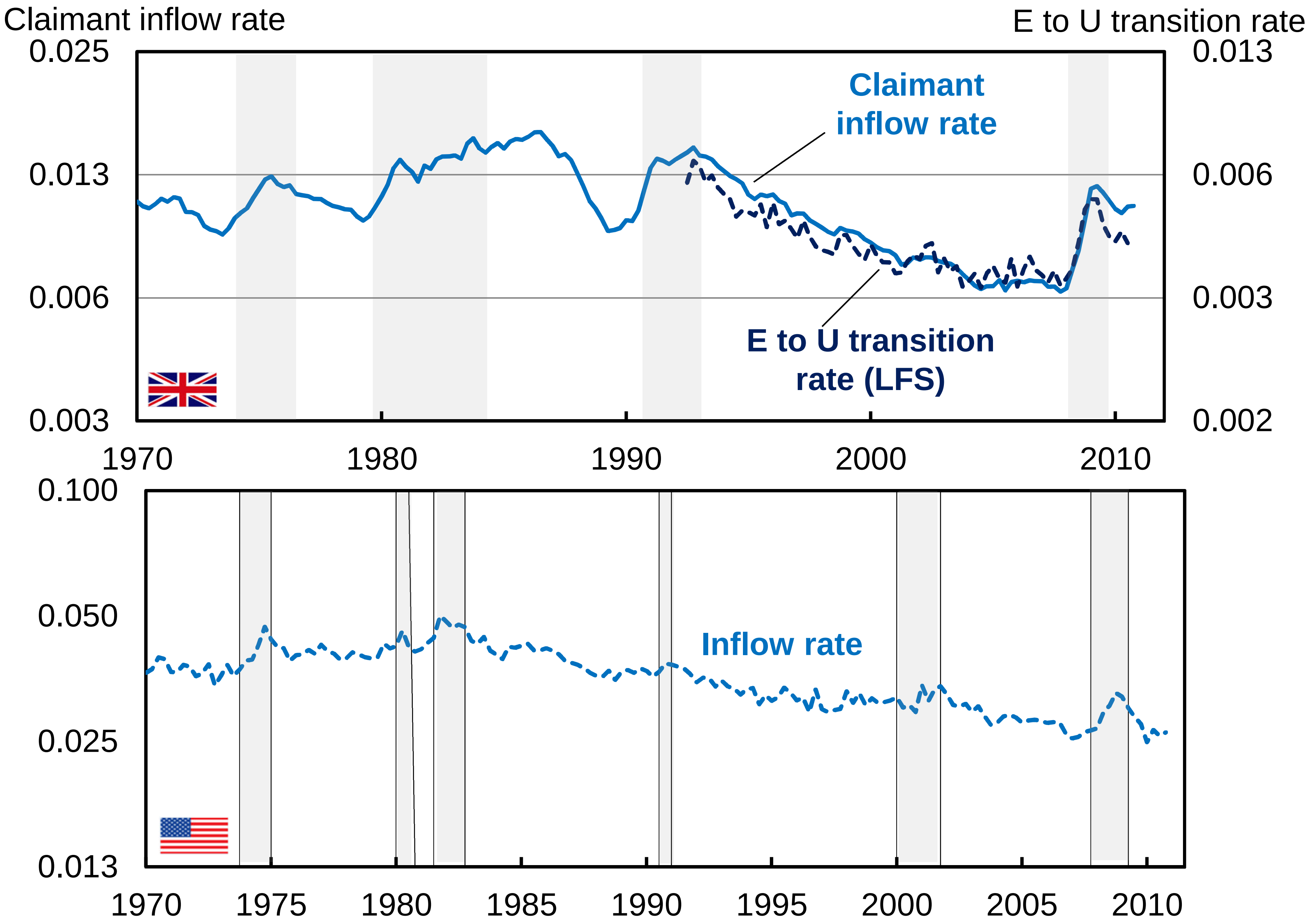
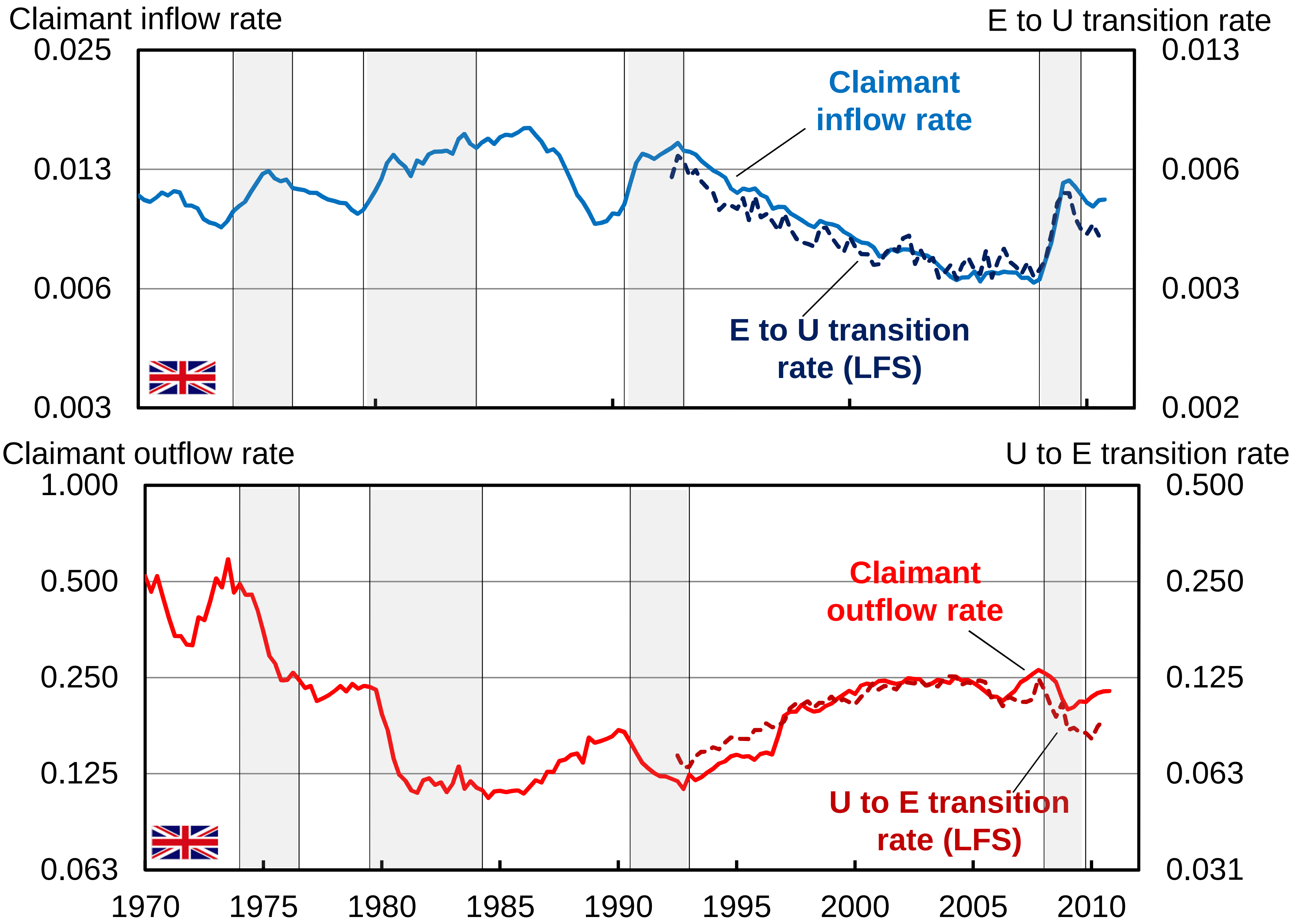
Unemployment inflow rates



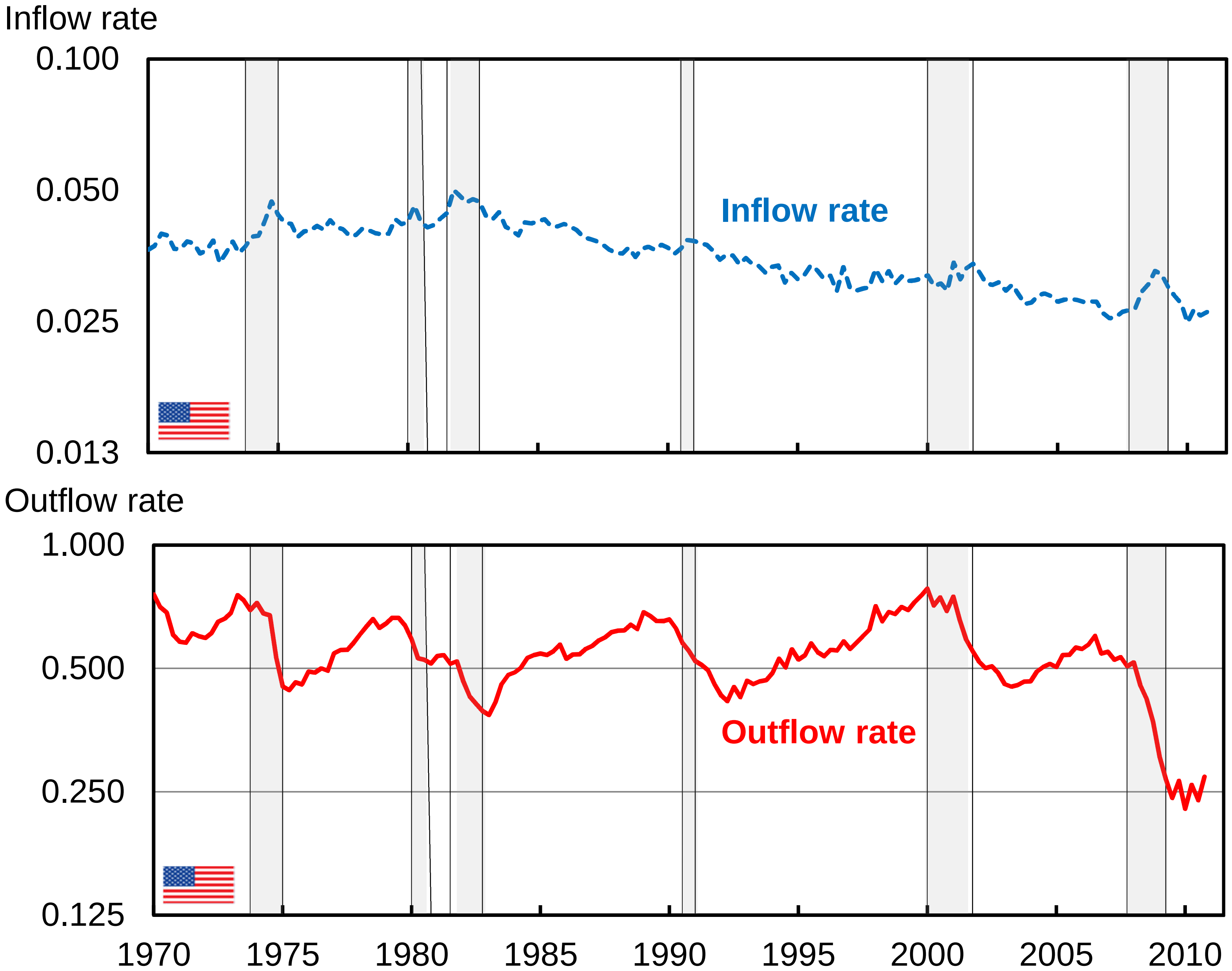
Sources: Authors' calculations using ONS NOMIS, GB (data from Petrongolo and Pissarides (2008) prior to 1983), LFS microdata, and using Shimer's (2007) method on BLS CPS duration data.

U.K. unemployment inflow and outflow rates



Sources: Authors' calculations using ONS NOMIS, GB (data from Petrongolo and Pissarides (2008) prior to 1983).

U.S. unemployment inflow and outflow rates



Sources: Authors' calculations using Shimer's (2007) method based on BLS CPS duration data.

Ins or outs?

- 2-state model gives dynamics of steady state unemployment u^*_t in terms of contributions from inflow and outflow rates:

$$\Delta \ln u_t^* \approx \underbrace{\alpha_t \Delta \ln s_t}_{\text{Inflow rate contribution } c_t^{s*}} - \underbrace{\alpha_t \Delta \ln f_t}_{\text{Outflow rate contribution } c_t^{f*}}$$

- And contributions to *variance* of $\ln(u^*_t)$, *beta**:

$$\beta_s^* = \frac{\operatorname{cov}\left(\alpha_t \Delta \ln s_t, \Delta \ln u_t^*\right)}{\operatorname{var}\left(\Delta \ln u_t^*\right)} \qquad \beta_f^* = \frac{\operatorname{cov}\left(-\alpha_t \Delta \ln f_t, \Delta \ln u_t^*\right)}{\operatorname{var}\left(\Delta \ln u_t^*\right)}$$

*Beta** contributions to u^*_t variance

*Beta** *1992q3 -2010q3* ◊	Claimant	*UK* QLFS	BHPS	*US* CPS
Inflow rate	0.52	0.59	0.57	0.22
Outflow rate	0.48	0.41	0.44	0.79
Residual	0.00	0.00	0.00	0.00

◊ BHPS: 1988q4-2008q2.

3-state approach

- *Laws of Motion for U and E:*

$$\Delta U_t = \lambda_t^{EU} E_{t-1} + \lambda_t^{NU} N_{t-1} - \left(\lambda_t^{UE} + \lambda_t^{UN}\right) U_{t-1}$$

$$\Delta E_t = \lambda_t^{UE} U_{t-1} + \lambda_t^{NE} N_{t-1} - \left(\lambda_t^{EU} + \lambda_t^{EN}\right) E_{t-1}$$

- Rearrange:

$$u_t^* = \frac{\lambda_t^{EU} + \lambda_t^{EN} \dfrac{\lambda_t^{NU}}{\lambda_t^{NU} + \lambda_t^{NE}}}{\left(\lambda_t^{EU} + \lambda_t^{EN} \dfrac{\lambda_t^{NU}}{\lambda_t^{NU} + \lambda_t^{NE}}\right) + \left(\lambda_t^{UE} + \lambda_t^{UN} \dfrac{\lambda_t^{NE}}{\lambda_t^{NU} + \lambda_t^{NE}}\right)}$$

$$= \frac{\lambda_t^{EU} + \lambda_t^{ENU}}{\left(\lambda_t^{EU} + \lambda_t^{ENU}\right) + \left(\lambda_t^{UE} + \lambda_t^{UNE}\right)}$$

3-state approach

- *Laws of Motion for U and E:*

$$\Delta U_t = \lambda_t^{EU} E_{t-1} + \lambda_t^{NU} N_{t-1} - \left(\lambda_t^{UE} + \lambda_t^{UN}\right) U_{t-1}$$

$$\Delta E_t = \lambda_t^{UE} U_{t-1} + \lambda_t^{NE} N_{t-1} - \left(\lambda_t^{EU} + \lambda_t^{EN}\right) E_{t-1}$$

- Rearrange:

$$\Delta \ln u_t^* \approx \alpha_t \Big[\omega_t^s \Delta \ln \lambda_t^{EU} + \left(1 - \omega_t^s\right) \Delta \ln \lambda_t^{ENU} - \omega_t^f \Delta \ln \lambda_t^{UE} - \left(1 - \omega_t^f\right) \Delta \ln \lambda_t^{UNE} \Big]$$

where $\lambda_t^{ENU} = \lambda_t^{EN} \dfrac{\lambda_t^{NU}}{\lambda_t^{NU} + \lambda_t^{NE}}$, $\lambda_t^{UNE} = \lambda_t^{UN} \dfrac{\lambda_t^{NE}}{\lambda_t^{NU} + \lambda_t^{NE}}$,

$$\omega_t^s = \lambda_t^{EU} \Big/ \left(\lambda_t^{EU} + \lambda_t^{ENU}\right), \quad \omega_t^f = \lambda_t^{UE} \Big/ \left(\lambda_t^{UE} + \lambda_t^{UNE}\right)$$

Ins or outs?

- 3-state model:

$$\Delta \ln u_t^* \approx \alpha_t \Big[\omega_t^s \Delta \ln \lambda_t^{EU} + \left(1-\omega_t^s\right) \Delta \ln \lambda_t^{ENU}$$

$$-\omega_t^f \Delta \ln \lambda_t^{UE} - \left(1-\omega_t^f\right) \Delta \ln \lambda_t^{UNE} \Big]$$

- Gives $beta^*$ contributions to variance of $\ln(u^*_t)$:

job loss $$\beta_{EU}^* = \frac{\operatorname{cov}\left(\alpha_t \omega_t^s \Delta \ln \lambda_t^{EU}, \Delta \ln u_t^*\right)}{\operatorname{var}\left(\Delta \ln u_t^*\right)}$$

inflows via nonparticipation

$$\beta_{ENU}^* = \frac{\operatorname{cov}\left[\alpha_t \left(1-\omega_t^s\right) \Delta \ln \lambda_t^{ENU}, \Delta \ln u_t^*\right]}{\operatorname{var}\left(\Delta \ln u_t^*\right)}$$

and similarly for job finding UE and indirect outflows UNE.

*Beta** contributions to u^*_t variance

	*Beta**			*Beta**	
	QLFS	BHPS		QLFS	BHPS
Inflow rate	0.59	0.57	*Separation rate*	*0.40*	*0.39*
			Inflow rate via nonparticipation	*0.19*	*0.16*
Outflow rate	0.41	0.44	*Job finding rate*	*0.32*	*0.34*
			Outflow rate via nonparticipation	*0.09*	*0.10*
Residual	0.00	0.00		*0.00*	*0.01*

QLFS: 1992q3-2010q3. BHPS: 1988q4-2008q2.

Recession-by-recession decomposition

$$\Delta \ln u_t^* \approx \alpha_t \Delta \ln s_t - \alpha_t \Delta \ln f_t$$

Inflow rate contribution C_t^{s*}

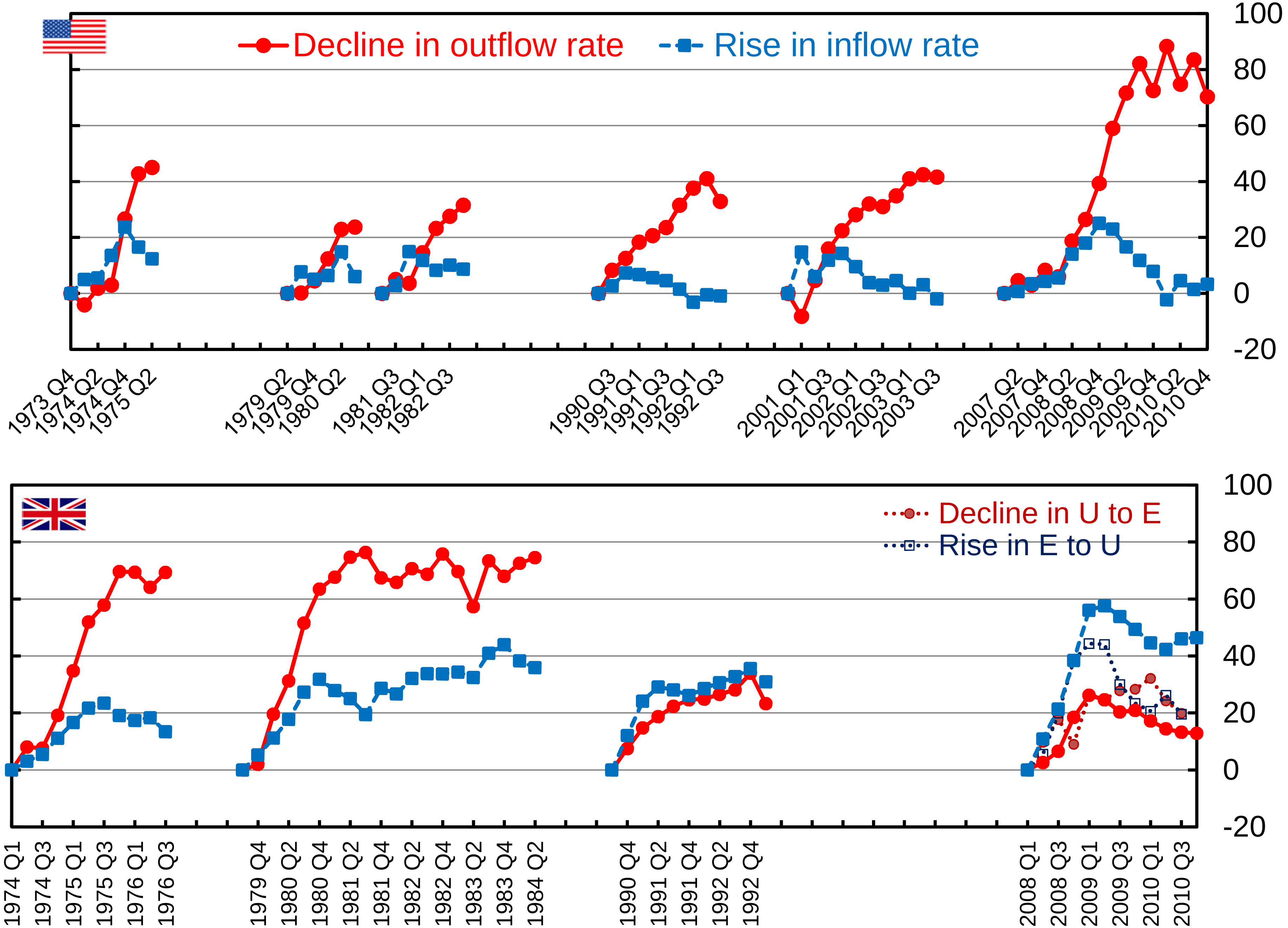
Outflow rate contribution C_t^{f*}

Change in log unemployment rate

≈ Change in log inflow rate

minus Change in log outflow rate

Contributions to U.S. and U.K. unemployment ramp-ups



*Beta** contributions to u^*_t variance

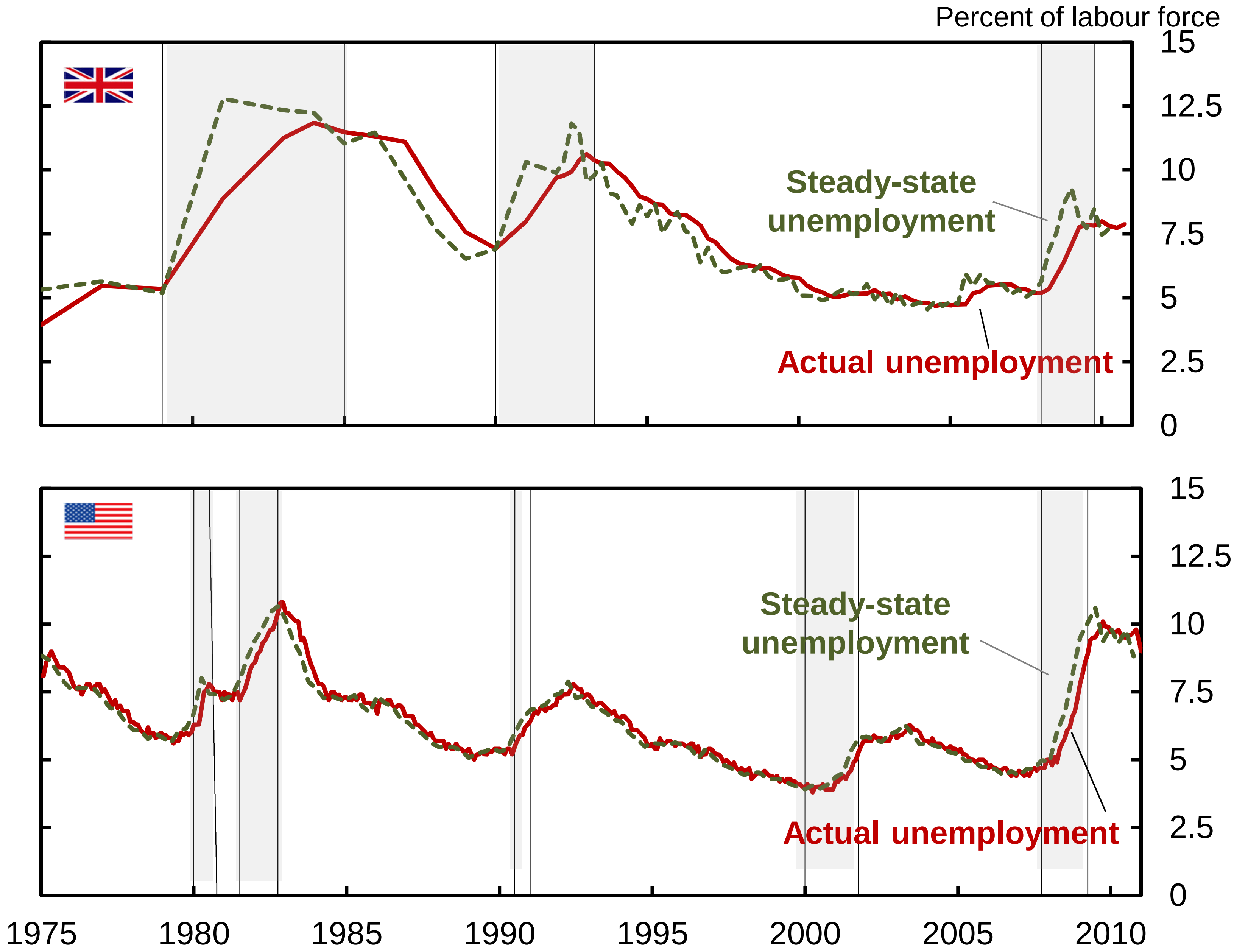
*Beta**	UK *1967q2-2010q4*	US *1970q1-2010q4*
Inflow rate	0.32	0.29
Outflow rate	0.68	0.71
Residual	0.00	0.00

Sources:
UK: Claimant Count. Quarterly averages of monthly adminstrative data from 1983q2. Prior to then, quarterly data from Petrongolo and Pissarides (2008), taken from *Employment Gazette*.
US: Bureau of Labor Statistics aggregate and short-term unemployment data, derived from the Current Population Survey. Quarterly averages of monthly estimates.

Non-steady state decomposition

- What about the *actual* unemployment rate?

Actual and steady state unemployment rates



Sources: ONS LFS, BLS CPS and authors' calculations using Shimer's (2007) method based on duration data.

*Beta** contributions to u_t variance

*Beta** variance contributions to change in log actual unemployment	*1992q3-2010q3*	
	UK QLFS	US CPS
Inflow rate	0.80	0.24
Outflow rate	0.77	0.75
Residual	-0.57	0.01

Non-steady state decomposition

- We can allow for the fact that current unemployment is actually influenced by lagged changes in transition rates.

$$\Delta \ln u_t \approx \rho_{t-1}\alpha_t \left[\Delta \ln s_t - \Delta \ln f_t\right] + \rho_{t-1}\frac{1-\rho_{t-2}}{\rho_{t-2}}\Delta \ln u_{t-1}$$

contributions to ss u dynamics

due to deviations from ss caused by past changes in log s and log f

where $\rho_t = 1 - e^{-(s_t + f_t)}$ and $\alpha_t = \left(1 - u^*_{t-1}\right)$

Non-steady state decomposition

- We can allow for the fact that current unemployment is actually influenced by lagged changes in transition rates.

$$C_t^s = \rho_{t-1} \underbrace{C_t^{s*}}_{\text{contribution to ss u dynamics}} + \rho_{t-1} \underbrace{\frac{1-\rho_{t-2}}{\rho_{t-2}} C_{t-1}^s}_{\text{deviations from ss caused by past changes in log } s}$$

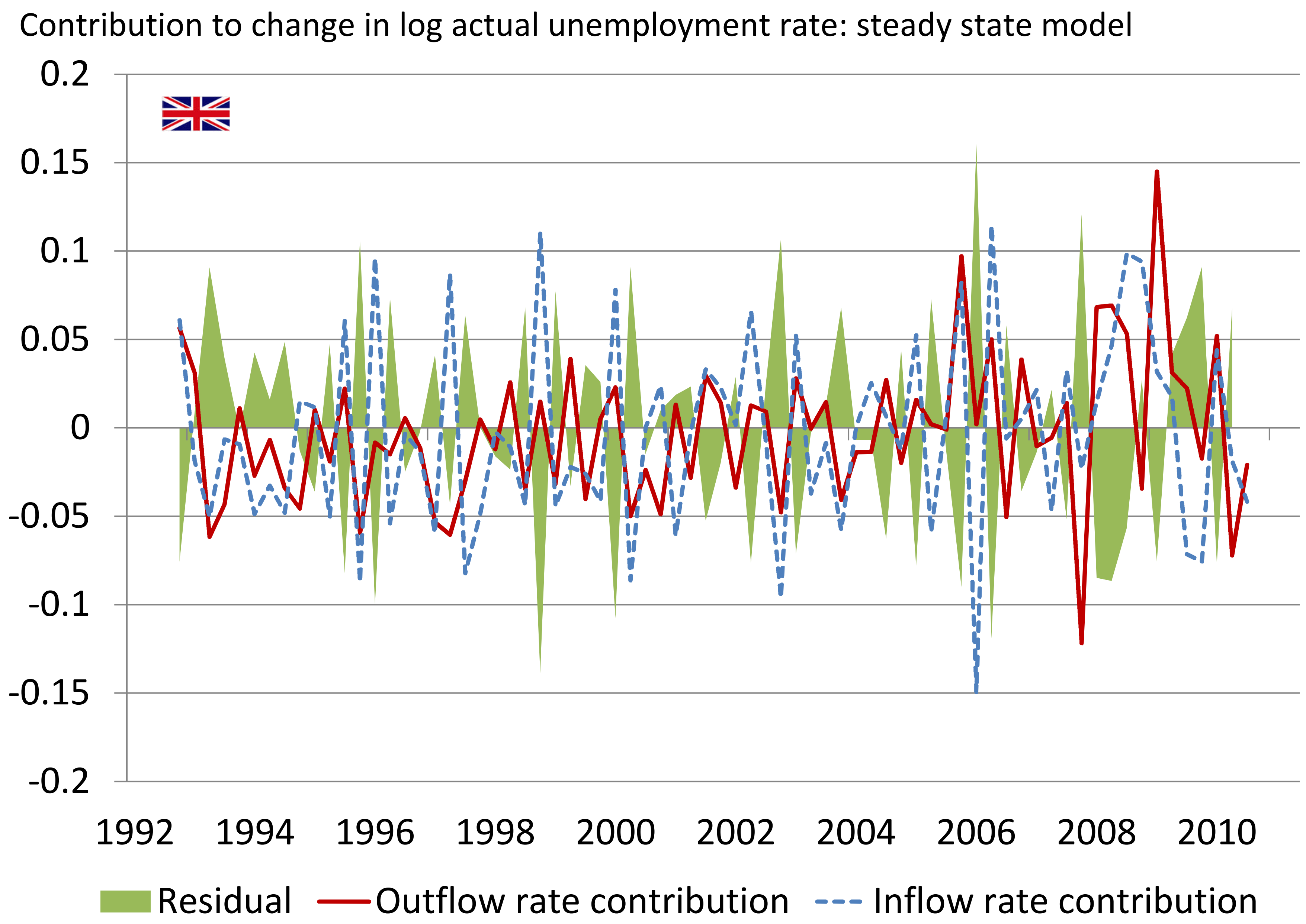
$$\beta_s = \frac{\operatorname{cov}\left(C_t^s, \Delta \ln u_t\right)}{\operatorname{var}\left(\Delta \ln u_t\right)}$$

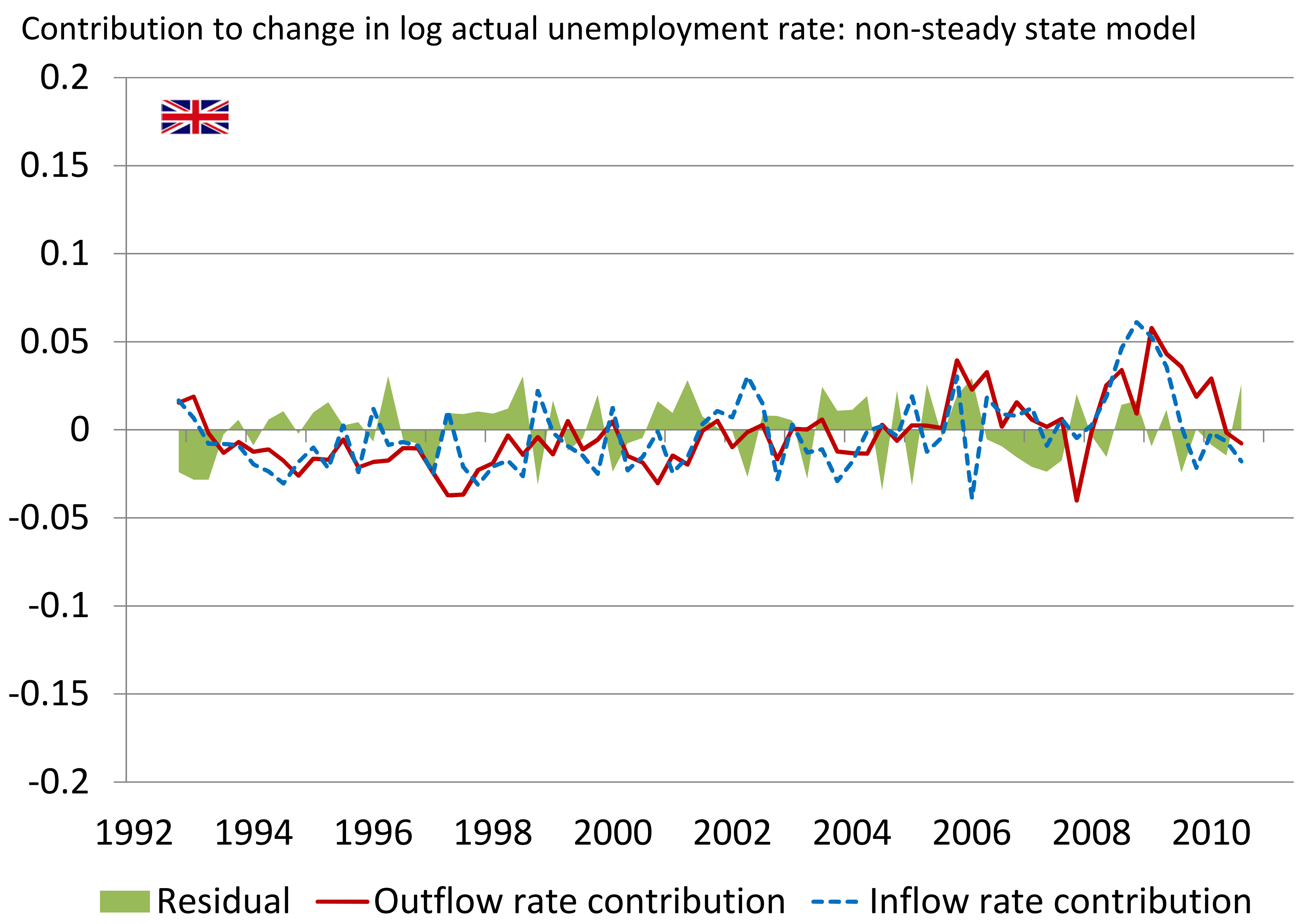
and similarly for C^f_t and β_f.

Beta contributions to u_t variance

	Beta		*Beta*
Inflow rate	0.46	*Separation rate*	0.40
		Inflow rate via nonparticipation	0.06
Outflow rate	0.44	*Job finding rate*	0.32
		Outflow rate via nonparticipation	0.11
Initial condition	0.01		0.01
Residual	0.08		0.08

Source: QLFS: 1992q3-2010q3.


Contribution to change in log actual unemployment rate: steady state model
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
Residual
Outflow rate contribution
Inflow rate contribution


Contribution to change in log actual unemployment rate: non-steady state model
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
Residual
Outflow rate contribution
Inflow rate contribution

Current versus past transition rates

- Rearrange expression for change in log actual unemployment rate to separate influence of current innovations in transition rates from the autoregressive elements:

$$\beta_{cur} = \frac{\operatorname{cov}\left(\rho_{t-1}\left(C_t^{s*} + C_t^{f*}\right), \Delta \ln u_t\right)}{\operatorname{var}\left(\Delta \ln u_t\right)}$$

$$\beta_{past} = \frac{\operatorname{cov}\left(\rho_{t-1}\frac{1-\rho_{t-2}}{\rho_{t-2}}\left(C_{t-1}^{s} + C_{t-1}^{f}\right), \Delta \ln u_t\right)}{\operatorname{var}\left(\Delta \ln u_t\right)}$$

Current versus past transition rates

Proportional (actual u) contribution of:	*1992q3-2010q3* UK QLFS	*1970q1-2010q4* US
Current transition rate changes	0.60	0.89
Past transition rate changes	0.40	0.11

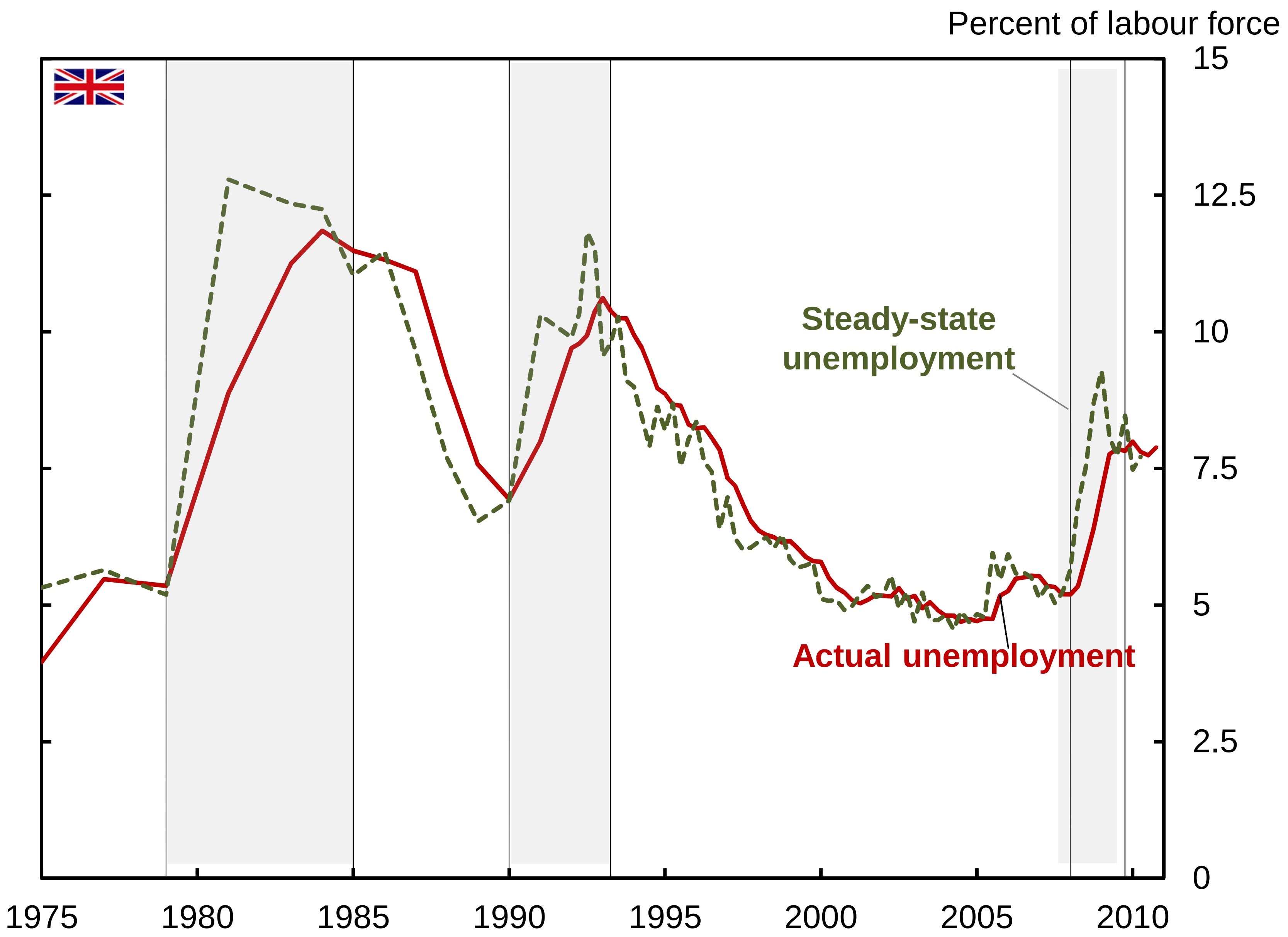
Prospects

1. Has the labour market fully adjusted to recession shocks?
2. How efficiently is the labour market matching workers and firms?
3. How likely is it that the U.K. will again experience persistently high long-term unemployment?

1. Adjustment to shocks

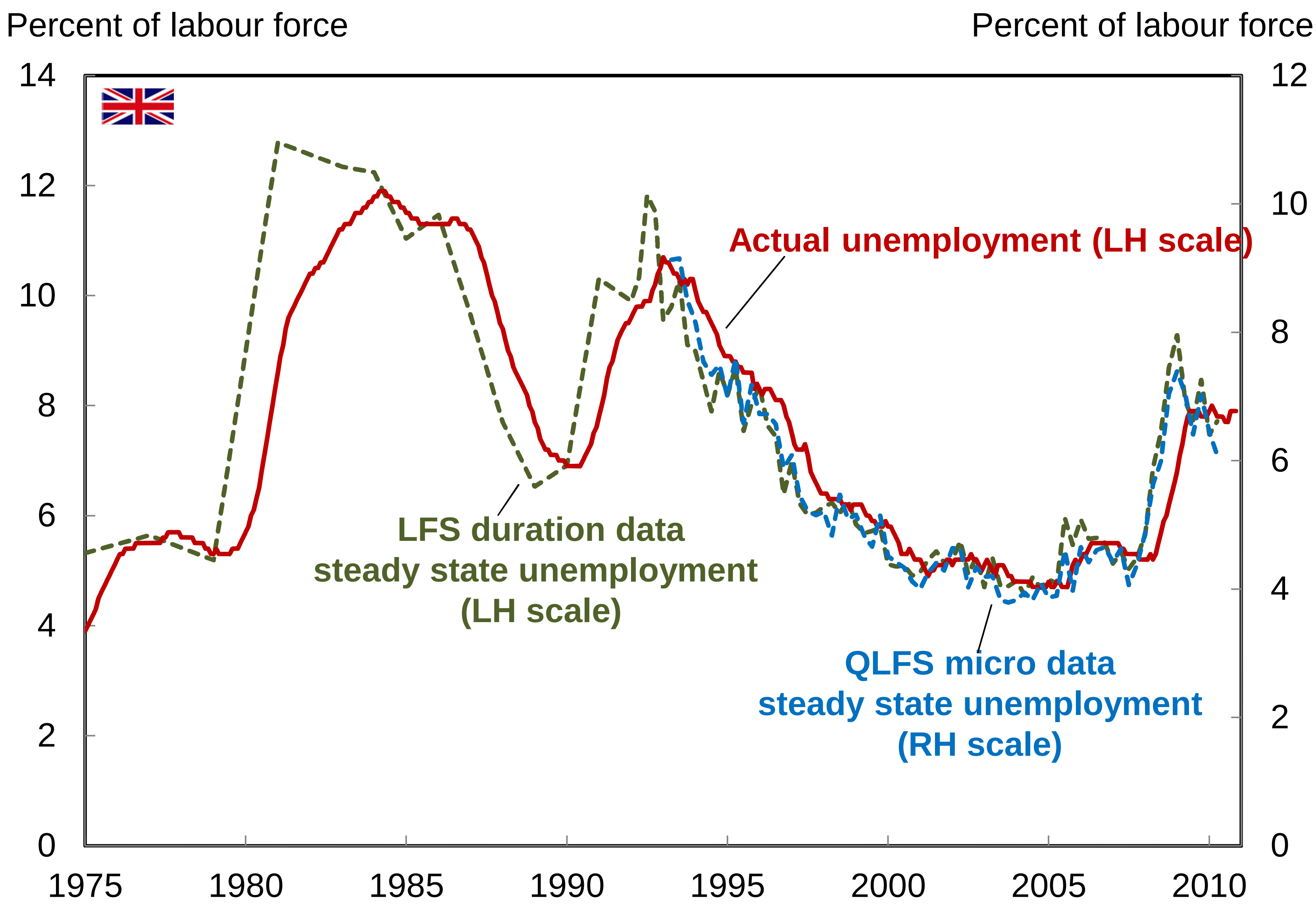
- Shocks to inflows or outflows change the ‘flow steady state’ unemployment rate at which the economy would settle, in the absence of further shocks.
- Because actual unemployment is always converging towards the moving target of flow steady state unemployment, flow steady state unemployment acts as a *leading indicator* for actual unemployment.

U.K. actual and steady state unemployment rates



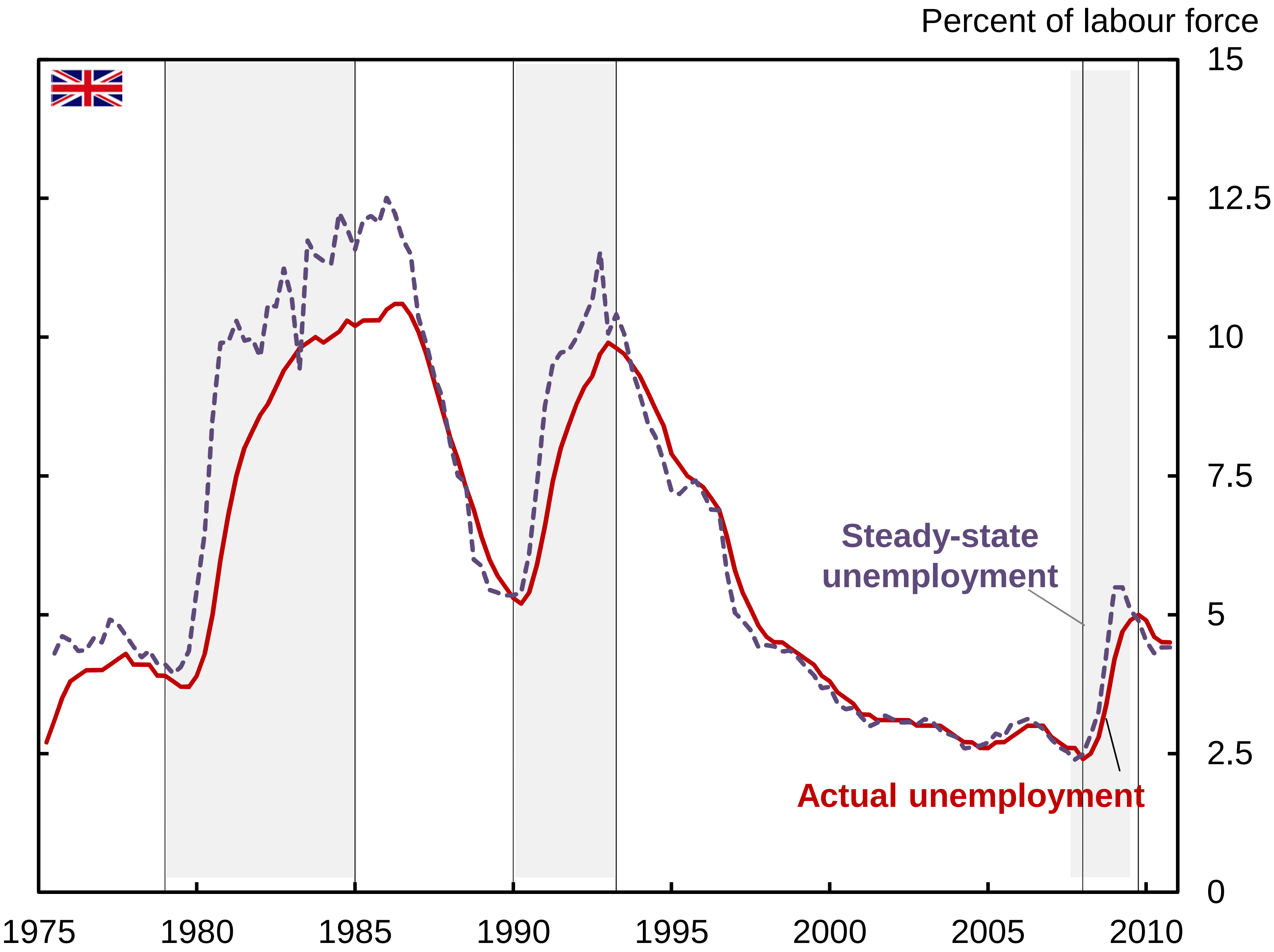
Sources: ONS LFS and authors' calculations using Shimer's (2007) method based on ONS LFS duration data.

U.K. actual and steady state unemployment rates



Sources: ONS LFS, authors' calculations using Shimer's (2007) method based on LFS duration data, and LFS/QLFS micro data.

U.K. actual and steady state unemployment rates



Source: Claimant Count administrative data on registered unemployment, inflows and outflows.

2. Matching efficiency

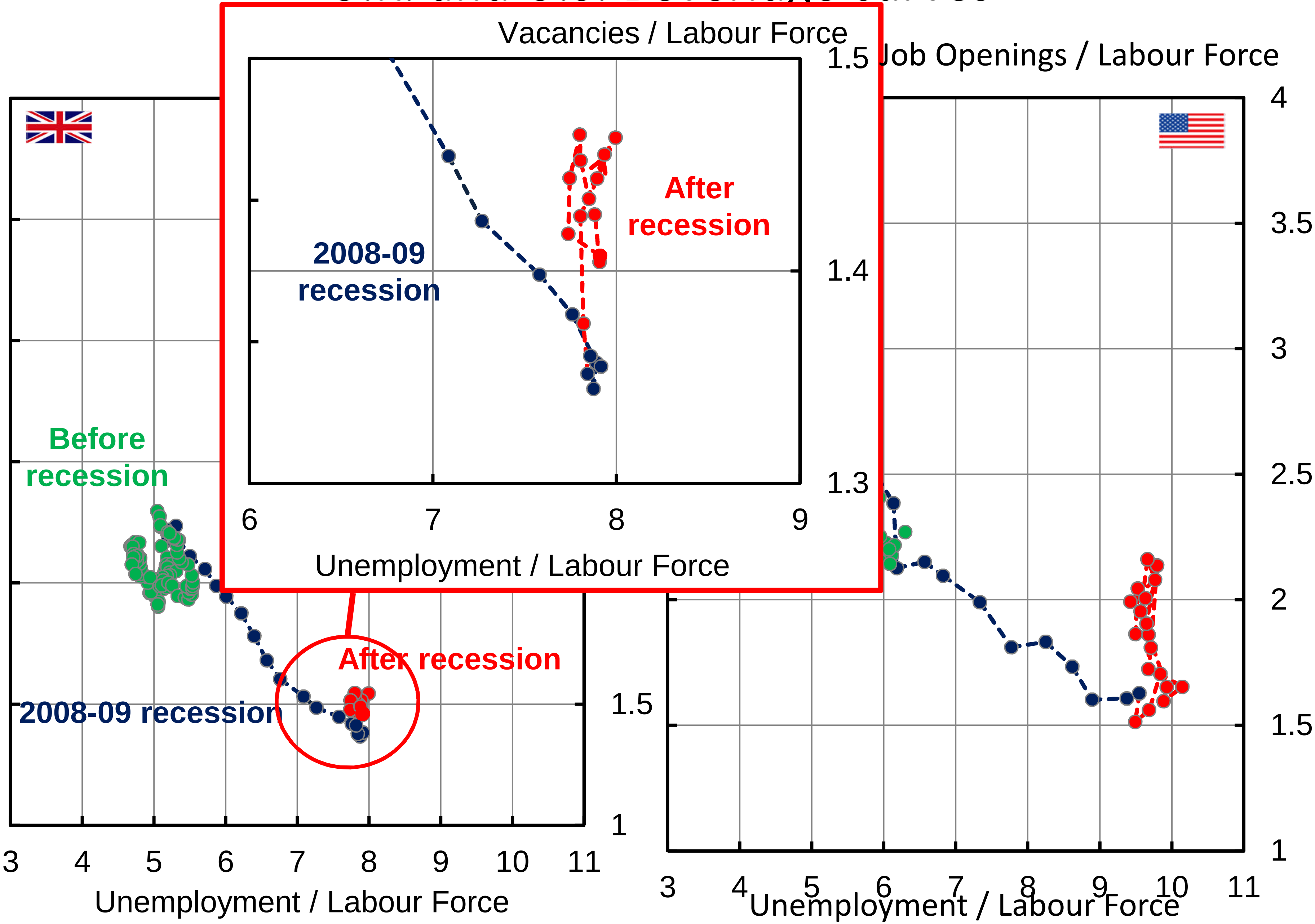
A reduction in unemployment is predicated on two conditions:

1. Are job openings being created?
2. How effectively will such job openings be filled?

U.K. and U.S. Beveridge curves

Sources: Authors' calculations using ONS Vacancy Survey and ONS LFS and BLS JOLTS and CPS.

U.K. and U.S. Beveridge curves

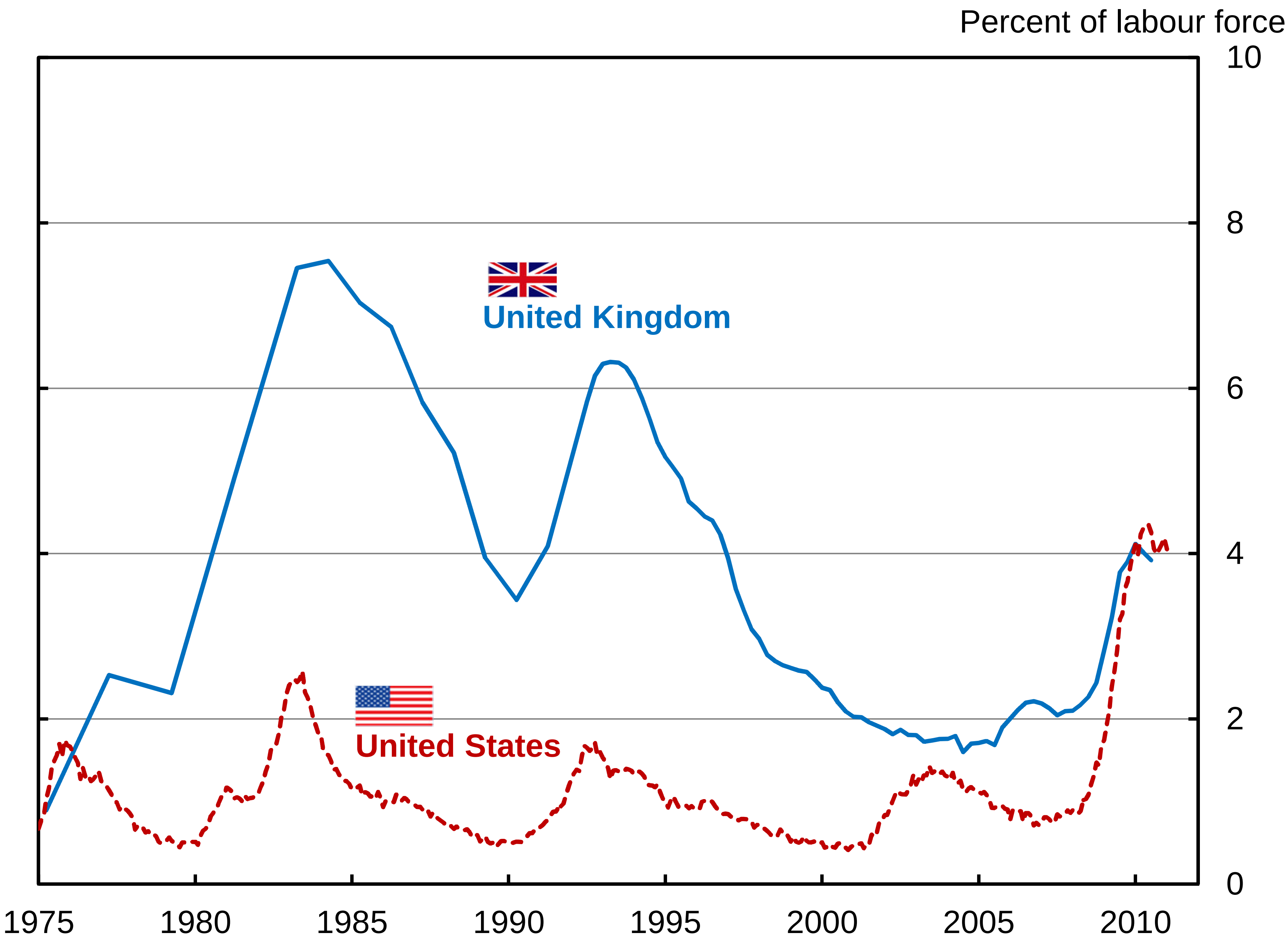


Sources: Authors' calculations using ONS Vacancy Survey and ONS LFS and BLS JOLTS and CPS.

3. Long-term unemployment

- The huge decline in the U.S. outflow rate has a corollary in an unprecedented rise in U.S. long-term unemployment.

UK and US long-term unemployment rates

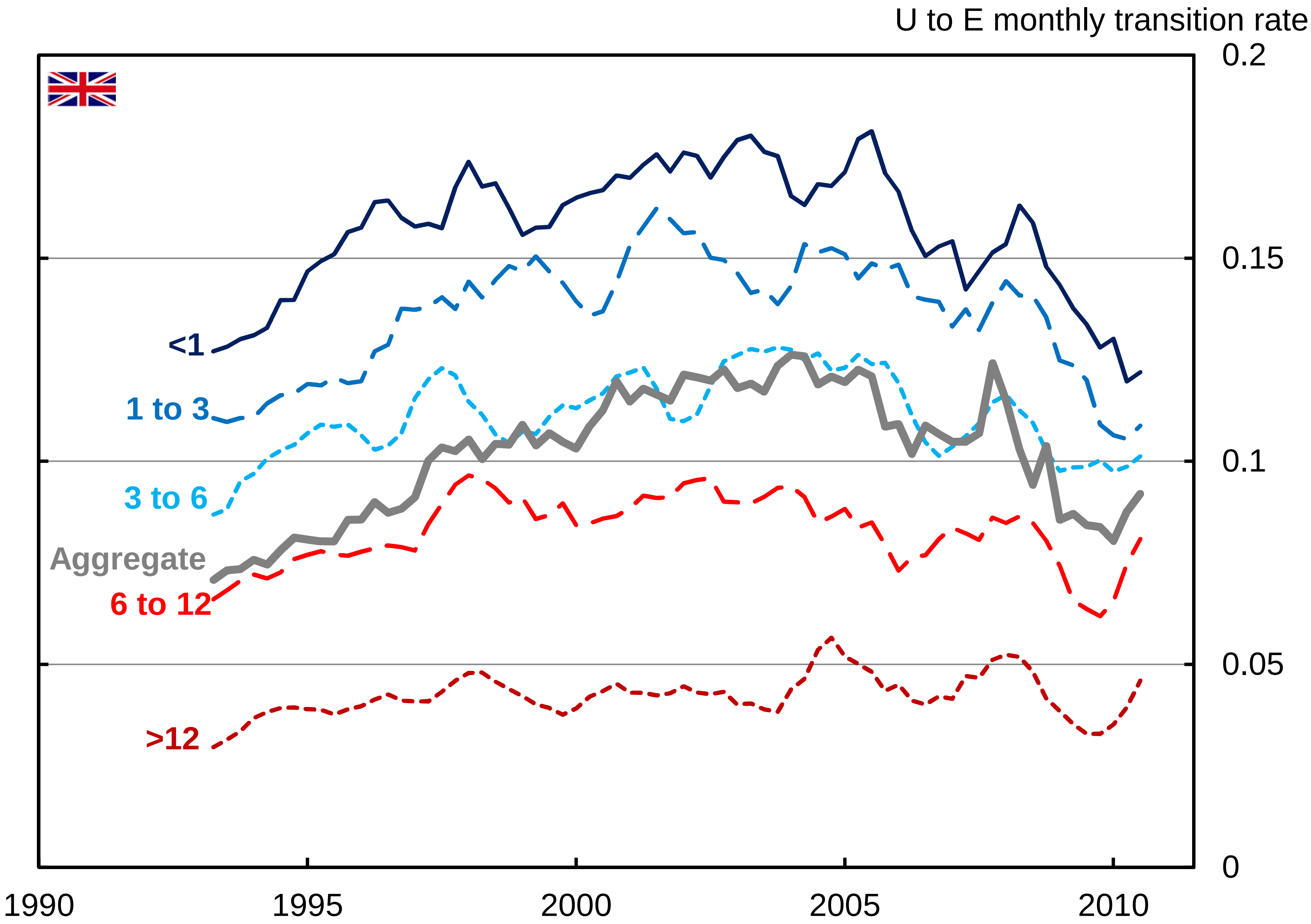


Sources: Authors' calculations using ONS LFS micro data and BLS CPS duration data.

3. Long-term unemployment

- The huge decline in the U.S. outflow rate has a corollary in an unprecedented rise in U.S. long-term unemployment.
- It is possible to predict future long-term unemployment by looking at current unemployment of various durations and how outflow rates vary across durations.

Job finding rates by unemployment duration



Sources: Authors' calculations using ONS LFS micro data.

Summary and conclusions

- This recession, U.K. unemployment was driven by a sharp rise in job loss rates – but the inflow rate peak was lower than in previous recessions, and job losses have slowed more quickly.
- U.K. job finding rates have held up remarkably well.
- Consequences:
  - U.K. unemployment rate has risen less than in past recessions, and less than in the U.S.
  - U.K. long-term unemployment has not risen as far as in previous recessions, or as far as in the U.S.

Summary and conclusions

- The U.K. labour market seems to have adapted fully to the shocks of the recent recession.
- There are possible signs of lower matching efficiency, but it is difficult to be sure, as vacancy creation has been low.
- Low outflow rates from short-term unemployment give some cause for concern. However, there has been a substantial recovery in job finding rates by the long-term unemployed. These two constitute a reduction in duration dependence.