How important are worker gross flows between public and private sector?

Andri Chassamboulli, Idriss Fontaine, Pedro Gomes

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Abstract

We measure the size of gross worker flows between public and private sector and their importance for the dynamics of public employment over the last two decades in the US, UK, France and Spain. Between 10 and 35 percent of all inflows and outflows of the public sector are from and to private employment. These flows only account for 7 to 25 percent of the fluctuations of public employment.

JEL Classification: E24; E32; J21; J45; J60.

Keywords: Worker gross flows; job-to-job flows; public employment.

Introduction

Given the central policy role that public employment had during the last decade in many advanced economies, a new wave of research constructs search and matching models of unemployment to study the labour market effects of employment, wages and recruitment practices in the public sector. These state-of-the-art models adopt different assumptions regarding the degree of segmentation between the private and the public sector. Gomes (2015, 2018), in the context of a Diamond-Mortensen-Pissarides model, assumes that the two sectors are segmented with workers choosing which sector to search in. This approach emphasizes the role of queues for public-sector jobs and their inefficiencies. The costs of these inefficiencies should be lower if most of the workers queuing up have a job in the private sector or, in other words, if most of the hires in the public sector come from private

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employment. Other studies assume that the unemployed search randomly across the two sectors (Albrecht et al. 2018) but also abstract from direct transitions between the two sectors. A third approach, using the Burdett-Mortensen job-ladder model, gives a bigger role to direct sector-to-sector transitions (Bradley et al. 2017). These different assumptions have implications for the transmission mechanism of employment and wage policies, so uncovering their empirical relevance is critical for the development of the theoretical literature.

Quantifying the size of direct worker flows between the two sectors and understanding their importance for the dynamics of public employment can inform which assumptions are more realistic. Few direct transitions between the two sectors point to more segmentation and place a bigger role on the inefficiencies of long public-sector queues and less on on-the-job search. The empirical literature on worker gross flows has systematically overlooked transitions in and out of the public sector so there is little evidence why one assumption is more relevant than the other, and their relevance may vary across countries.

In an earlier paper, Fontaine et al. (2020) used US, UK, French and Spanish representative labour market surveys to extract the worker gross flows between employment in the two sectors, unemployment, and inactivity for the last two decades. They analysed their importance for fluctuations of unemployment and quantified the value of public-sector job security. We aim, instead, to shed light on the size of worker flows between the two sectors and their importance for fluctuations of public employment.

We document that the large majority of flows into the public sector come from non-employment. Direct flows from the private sector account for 10 to 15 percent of all inflows in France and Spain and 20 to 35 percent in the US and the UK. The magnitudes for the outflows are similar. The importance of the direct flows between sectors for the dynamics of public employment are even lower. They only account for 6 percent of the fluctuations in Spain, 14 in the US and France and 25 in the UK.

Data

The information about the individuals' position in the labor market, sectors (public/private), worker flows and associated transition rates are extracted from each country's representative labour market survey, from which official statistics are drawn: the French *Labour Force Survey* (FLFS), the UK *Labour Force Survey* (UKLFS), Spanish *Labour Force Survey* (SLFS), all at quarterly frequency, and the monthly US *Current Population Survey* (CPS). A detailed description of the four datasets and their treatment is found in Fontaine et al. (2020).

The distinction between public- and private-sector jobs is based on a self-reported variable, which is in accordance with how official statistics in each country are drawn. During the survey, the interviewer asks the individual to classify his employer. In the UK, we include the following categories in our definition of public employment: i) Central Government, Civil Service; ii) Local government or council (incl. police, fire services and local authority controlled schools or colleges); iii) University or other grant-funded educational establishment; iv) Health authority or NHS trust; and v) Armed forces. A similar definition is used for France. For Spain, the survey asks directly whether respondents work for the public or the private sector. For the US, the definition of public sector is working for the government (federal, state or local government).

A problem with a declarative variable is that it could be subject to misclassification of the sector of work. As argued by Fontaine et al. (2020), misreporting of the sector overstates the transitions from public to private sector (and vice versa). For the three European countries, we check whether the transitions between the sectors are spurious by controlling for the tenure of jobs. We validate a direct transition between the two sectors only when the respondent states that he has been working for the same employer for less than three months. Bradley *et al.* (2017) use a similar method.

For the US, we perform two alternative adjustment methods. A natural approach follows the strategy of Fallick and Fleischman (2004), in which we use the question whether the individual is still working for the previous month reported employer. We only validate a transition if workers explicitly respond no to this question. A recent paper by Fujita et al. (2019) argues that a change in the CPS methodology in 2007 created a sudden and sharp increase in the incidence of missing answers to this question which biases the estimation of job-to-job transitions. As such, our preferred approach follows the procedure used by Elsby *et al.* (2015) to adjust the flows between inactivity and unemployment. We calculate the three-period transitions and calculate and remove the fraction of moves between one sector and the other that revert to the initial sector on the following month (remove the P-G-P from P-G flows, and the G-P-G out of the G-P flows).

Average worker gross flows

Table 1 summarizes the average quarterly (monthly) worker flows in and out of public employment for the three European countries and the US. While direct transitions between private and public employment are not negligible, most of the transitions into and out of the public sector are from and to non-employment. In Spain, almost all workers leaving the public sector move towards non-employment, with only ten percent of them moving directly into the private sector. Also, less than 12 percent of all workers entering into the public sector where previously employed in the private sector. In France also, around 85 percent of

Table 1: Size of entries and exits in public sector

	US*	**US§**	**UK**	**France**	**Spain**
Entries into public employment					
As a fraction of public employment	0.035	0.029	0.029	0.028	0.054
Shares from					
Unemployment	0.219	0.271	0.303	0.403	0.501
Inactivity	0.410	0.506	0.372	0.443	0.382
Private emp.	0.370	0.223	0.325	0.154	0.116
Exits out of public employment					
As a fraction of public employment	0.037	0.030	0.029	0.029	0.050
Shares to:					
Unemployment	0.179	0.224	0.189	0.283	0.431
Inactivity	0.470	0.587	0.558	0.573	0.471
Private emp.	0.350	0.189	0.253	0.143	0.098

*Note: Data are extracted from the FLFS, UKLFS, SLFS and the CPS. Sample: US (1996-2018), UK (1996-2018), France (2003-2017), Spain (2005-2018). *Elsby* et al. *(2015) adjustment. §Fallick and Fleischman (2004) adjustment.*

workers entering the public sector come from non-employment, while less than 15 percent of public sector exits are towards the private sector.

Direct transitions between employment in the two sectors seem more important in the UK and US, but they are still low relative to transitions from and into non-employment. The two adjustment methods for the US data give different numbers. Using our preferred method, about 35 percent of the workers entering the public sector move directly from the private sector, which is close to the UK number. In both countries, the exits from the public to the private sector are around 25 and 35 percent of total exits. The shares of public sector entries and exits from and to private employment are smaller with using the alternative method. These transitions are also small relative to job-to-job transitions. For instance, in the UK, the direct flows from public to private employment represent only 4.7 percent of all job-to-job inflows in the private sector, much less than the 23 percent share of public employment in total employment. Also, 9.4 percent of all job-to-job transitions are direct transitions between the two sectors. If search was random, we would expect them to represent 35.3 percent ($2 \times 0.23 \times 0.77$).

In all four countries the majority of the outflows from the public sector go into inactivity. Most of the inflow into the public sector comes also from outside the labour force in all countries but Spain, where transitions between unemployment and public employment seem to be more important.

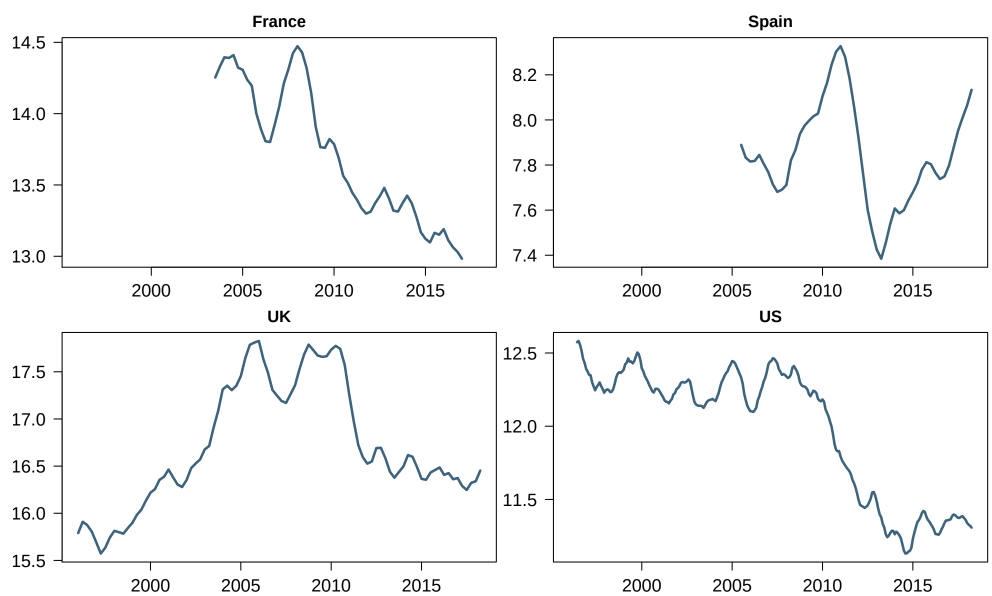
The public sector is very heterogeneous by gender, education and age. We have redone the exercises for different subgroups of workers along these dimensions, as well as for the private sector. These are shown in Appendix. The proportion of sector-to-sector flows are roughly constant across subgroups, slightly more important for men, young and middle age workers and college graduates.

Drivers of public sector employment

Figure 1 displays the evolution of the public employment as a fraction of the working-age population. With the exception of Spain, public employment has declined over the last decade. We perform a decomposition of the fluctuations of public employment, similar with the unemployment decompositions often performed in the literature. In particular, we adapt a non-steady state decomposition used in Elsby *et al.* (2015) based on a Markov chain. Prior to the decomposition we perform a seasonal adjustment to the time series, an adjustment for margin error and for time-aggregation bias as standard. All details together with a figure with the evolution of the inflows and outflows of public employment are shown in Appendix.

Table 2 shows the contribution of each of the 12 transition probabilities to the variation of public employment for each of the four countries. The bottom part of the table sums up the contributions of flows between the public sector and private employment, unemployment and inactivity, respectively. Consistent with our previous conclusions, direct transitions between the two sectors contribute the least to public employment dynamics. In the US and

Figure 1: Evolution of public employment (percentage of the working-age population)



Note: Data are extracted from the FLFS, UKLFS, SLFS and the CPS. Sample: US (1996-2018), UK (1996-2018), France (2003-2017), Spain (2005-2018).

Table 2: Public employment decomposition

	US*	**US§**	**UK**	**France**	**Spain**
$P \rightarrow G$	6.6	14.8	22.7	10.6	6.8
$P \rightarrow U$	-1.4	-1.8	-2.4	-0.6	-3.7
$P \rightarrow I$	2.8	3.8	1.1	-0.5	1.4
$G \rightarrow P$	8.2	-1.7	3.1	3.1	-0.2
$G \rightarrow U$	27	27.7	16.3	12.5	15.4
$G \rightarrow I$	24.7	25.7	20.7	20.6	17.1
$U \rightarrow P$	-16.3	-22.6	-8	-1.9	-16.5
$U \rightarrow G$	29.6	33.7	38.6	33.6	70.5
$U \rightarrow I$	-0.6	-0.2	-2.9	-0.4	-3
$I \rightarrow P$	-5.3	-7.4	-1.6	0.1	-2.1
$I \rightarrow G$	24.8	27.5	14.2	22.9	15.5
$I \rightarrow U$	-0.1	0.5	-1.8	0	-1.2
Flows between public and private sector					
	14.8	13.1	25.8	13.7	6.6
Flows between public sector and unemployment					
	56.6	61.4	54.9	46.1	85.9
Flows between public sector and inactivity					
	49.5	53.2	34.9	43.5	32.6

*Note: the gross flows series are previously seasonally adjusted, corrected for margin error and time-aggregation bias and detrended with an HP filter with a smoothing parameter of 100000. Numbers in the top half panel of the table report the variance contributions of transition rates to changes in public employment. For instance, the first number of column 2 reads as follows: the private to public employment transition rate accounts for 6.6% of the variations in the US public employment dynamics. Sample: US (1996-2018), UK (1996-2018), France (2003-2017), Spain (2005-2018). *Elsby* et al. *(2015) adjustment. §Fallick and Fleischman (2004) adjustment.*

France their contribution is less than 15 percent, in Spain only about 7 percent, and a bit higher in the UK, about 26 percent. Notice that the results for the US are independent of the adjustment method. In all countries most of the variation in public employment is due to flows between non-employment and public-sector employment, in particular the flows to and from unemployment. This seem to be especially important in Spain, where transitions between unemployment and the public sector account for 70 percent of the variation in public- employment.

1 Discussion

Job-to-job transitions across sectors, although not negligible, are a minority. Insofar there are queues for public-sector jobs, their inefficiencies might be large because the share of public-sector entries from private employment is small relative to that of entries from non-employment. The data also show that flows from and to inactivity are sizable, one dimension that has not been explored by the theoretical literature. Our results also point to some degree of segmentation between the two sectors, which is particularly evident in Spain and France. This is consistent with the different recruitment practices of the public sector. In France and Spain, the general rule is that civil servants are recruited through competitive exams which contributes to the segmentation. In contrast, in the US the majority of federal government jobs are filled through an examination of the applicant's background, work experience, and education, not through a written civil service test. In the UK, there are also no civil service exams, but standard recruitment methods alongside specific entry channels such as apprenticeships, graduate or internship programmes. Such recruitment methods are more consistent with unemployed workers not specifically searching for a public-sector job, but getting one by chance and more frequent switches between sectors.

Our results also point that variance of public employment comes mainly from the inflows rather than the outflows. This suggests that theoretical models should focus more on the hiring dimension of public employment rather than on separations.

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COMPANION APPENDIX

How Important Are Worker Gross Flows Between Public and Private Sector?

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A1 Adjustments applied before running variance decomposition

This section presents adjustments applied to transition rates, namely the margin-error correction and the temporal aggregation correction. Then the variance decomposition method of Elsby *et al.* (2015) is detailed. Based on the raw microdata, we first compute labor market stocks and gross worker flows for each time period t. We then adjust the resulting time series for seasonality using the X-13ARIMA-SEATS Seasonal Adjustment Program of the Census Bureau. After the series are adjusted we compute their transition rates $\tilde{p}_t^{ij}$ with $i \in \{P, G, U, I\}$, $j \in \{P, G, U, I\}$ and $i \neq j$. In particular, let us denote gross worker flows by two consecutive capital letters: the first one is the origin of the flow, the second one its destination. Transition rates $\tilde{p}_t^{ij}$ are the number of individuals who move from state i to state j between $t-1$ and t divided by the number of individuals in state i in period $t-1$. For instance, the private job separation rate to unemployment is: $\tilde{p}_t^{PU} = \frac{PU_t}{P_{t-1}}$.

A1.1 Adjustment for margin error

The sample design of the *Labour Force Surveys*, but also the adjustment for seasonality, imply that obtained transition rates do not lead to the exact measures of changes of labor market stocks. To deal with this issue, we apply for each time period what the worker flow literature calls the "margin-error" adjustment. This adjustment restricts the estimates of transition rates to be consistent with the observed evolution of the corresponding labor market stocks. In general, this adjustment has only a marginal incidence on the level and the cyclicality of transition rates. We now describe in detail the method.
We denote the vector of labor market stock observed at each period t as follows:

$$S_t = \begin{pmatrix} P_t \\ G_t \\ U_t \\ I_t \end{pmatrix} \tag{A1}$$

Denoting by Δ the first-difference operator, the stock evolution between period t and $t-1$ is:

$$\begin{aligned} \Delta S_t &= \begin{pmatrix} -P_{t-1} & -P_{t-1} & -P_{t-1} & G_{t-1} & 0 & 0 & U_{t-1} & 0 & 0 & I_{t-1} & 0 & 0 \\ P_{t-1} & 0 & 0 & -G_{t-1} & -G_{t-1} & -G_{t-1} & 0 & U_{t-1} & 0 & 0 & I_{t-1} & 0 \\ 0 & P_{t-1} & 0 & 0 & G_{t-1} & 0 & -U_{t-1} & -U_{t-1} & -U_{t-1} & 0 & 0 & I_{t-1} \\ 0 & 0 & P_{t-1} & 0 & & G_{t-1} & 0 & 0 & U_{t-1} & -I_{t-1} & -I_{t-1} & -I_{t-1} \end{pmatrix} \begin{pmatrix} p_t^{PG} \\ p_t^{PU} \\ p_t^{PI} \\ p_t^{GP} \\ p_t^{GU} \\ p_t^{GI} \\ p_t^{UP} \\ p_t^{UG} \\ p_t^{UI} \\ p_t^{IP} \\ p_t^{IG} \\ p_t^{IN} \end{pmatrix} \\ \Delta S_t &= X_{t-1}\mathbf{p}_t \end{aligned} \tag{A2}$$

where p^{ij} (with $i \neq j$) are stock-consistent transition rates. However, from the data we do not observe the matrix of transition rates $\mathbf{p}_t$ but solely the non-adjusted one $\tilde{\mathbf{p}}_t$. To retrieve the former with only information on the later we minimize, as in Elsby *et al.* (2015), the weighted sum of squares of margin-error adjustments under the constraint (A7):

$$\text{minimize}(\mathbf{p}_t - \tilde{\mathbf{p}}_t)^{'}\mathbf{W}_t(\mathbf{p}_t - \tilde{\mathbf{p}}_t), \text{ subject to } \Delta S_t = X_{t-1}\mathbf{p}_t \tag{A3}$$

where $\mathbf{W}_t$ is a matrix proportional to the covariance matrix of $\tilde{\mathbf{p}}_t$ (also called the weighting matrix).[1] Denoting by μ the vector of Lagrange multipliers associated to (A3), we derive that

$$\begin{bmatrix} \mathbf{p}_t \\ \mu \end{bmatrix} = \begin{bmatrix} \mathbf{W}_t & X'_{t-1} \\ -X_{t-1} & 0 \end{bmatrix} \begin{bmatrix} \mathbf{W}_t\tilde{\mathbf{p}}_t \\ \Delta S_t \end{bmatrix} \tag{A4}$$

Since all elements of the right hand side of (A4) are observed, it is quite straightforward to get stock-consistent transition rates.

A1.2 Adjustment for time aggregation bias

The last adjustment we perform is to deal with the fact that discrete transition rates are subject to time aggregation bias. Indeed, the *Labour Force Surveys* we use in this paper allow us to record individual labor market positions at a quarterly frequency (monthly in the US). This discrete time representation of labor market dynamics could miss some transitions since all "infra-period" multiple movements are not observed. The problem is that, within a quarter an individual can make multiple transitions and the matching of observations belonging to two consecutive surveys will catch at most one. To deal with this issue, we follow Elsby *et al.* (2015) and we exploit the relationship governing the "eigenvalue-eigenvector" decomposition of the between the discrete-time and the continuous-time representation of the Markov-chain.

Let P_t denote the square matrix of order 4 of discrete time transition rates and H_t its continuous time counterpart. For every time period, we use the eigen-decomposition of P_t such that: $P_t = V_t D_t V_t^{-1}$ where D_t is a diagonal matrix whose elements are the eigenvalues of P_t and V_t the matrix of associated eigenvectors. If the diagonal elements of D_t are distinct, real and non-negative (which is always the case in our samples) there is a unique relationship between the eigenvalues of P_t and H_t. More specifically, if the eigenvalues of H_t are all distinct, we can write H_t such that: $H_t = V_t C_t V_t^{-1}$ where C_t is the log value of D_t. With knowledge of P_t, V_t, and D_t it is straightforward to get C_t, H_t and the underlying hazard rates h_t^{ij}. Last, with estimates of h_t^{ij} in hand, we infer values of time-aggregation adjusted transition probabilities λ_t^{ij} by applying $\lambda_t^{ij} = 1 - \exp(-h_t^{ij})$.

A2 Labor market stock variance decomposition

This section presents the variance decomposition used in the paper. Let us first recall the relationship between labor market stocks and the associated transition rates.

[1] See the appendix of Elsby *et al.* (2015) to see the exact form of the weighting matrix $\mathbf{W}_t$.

$$\begin{pmatrix} P \\ G \\ U \\ I \end{pmatrix}_t = \begin{pmatrix} 1-p^{PG}-p^{PU}-p^{PI} & p^{GP} & p^{UP} & p^{IP} \\ p^{PG} & 1-p^{GP}-p^{GU}-p^{GI} & p^{UG} & p^{IG} \\ p^{PU} & p^{GU} & 1-p^{UP}-p^{UG}-p^{UI} & p^{IU} \\ p^{PI} & p^{GI} & p^{UI} & 1-p^{IP}-p^{IG}-p^{IU} \end{pmatrix}_t \begin{pmatrix} P \\ G \\ U \\ I \end{pmatrix}_{t-1} \tag{A5}$$

Normalizing the working-age population to 1 (such that $P_t+G_t+U_t+I_t=1$), (A5) simplifies to:

$$\underbrace{\begin{pmatrix} P \\ G \\ U \end{pmatrix}_t}_{s_t} = \underbrace{\begin{pmatrix} 1-p^{PG}-p^{PU}-p^{PI}-p^{IP} & p^{GP}-p^{IP} & p^{UP}-p^{IP} \\ p^{PG}-p^{IG} & 1-p^{GP}-p^{GU}-p^{GI}-p^{IG} & p^{UG}-p^{IG} \\ p^{PU}-p^{IU} & p^{GU}-p^{IU} & 1-p^{UP}-p^{UG}-p^{UI}-p^{IU} \end{pmatrix}_t}_{\tilde{P}_t} \underbrace{\begin{pmatrix} P \\ G \\ U \end{pmatrix}_{t-1}}_{s_{t-1}} + \underbrace{\begin{pmatrix} p^{IP} \\ p^{IG} \\ p^{IU} \end{pmatrix}_t}_{q_t} \tag{A6}$$

The steady-state of the latter system is given by: $\bar{s}_t = (I-\tilde{P}_t)^{-1}q_t$. The evolution of labor market stock can be written as:[2]

$$\Delta s_t = A_t \Delta \bar{s}_t + B_t \Delta s_{t-1} \tag{A7}$$

where $A_t = (I-\tilde{P}_t)$ and $B_t = (I-\tilde{P}_t)\tilde{P}_{t-1}(I-\tilde{P}_{t-1})^{-1}$. The first term in (A7) captures changes in labor market stock driven by the contemporaneous changes in transition rates that shift the equilibrium steady-state $\bar{s}_t$. The second term captures remaining changes in current labor market stock that are due to past changes in transition rates. Iterating (A7) backwards, it is possible to write the present change in labor market stock as a distributed lag function of changes in steady-state values and some initial value for the first observed value:

$$\Delta s_t = \sum_{k=0}^{t-1} C_{k,t} \Delta \bar{s}_{t-k} + D_t \Delta s_0 \tag{A8}$$

where $C_{k,t} = \left(\prod_{n=0}^{s-1} B_{t-n}\right) A_{t-k}$, $D_t = \prod_{k=0}^{t-1} B_{t-k}$ and Δs_0 denotes changes in labor market stock observed in the first period of data. Such a representation of the system shows that fluctuations in current labor market stock s_t are governed by changes in the underlying hazard rates h_t^{ij} that affect transition probabilities p_t^{ij} (the elements of A_t and B_t) and the steady state the system is converging at each time period, $\bar{s}_t$. Consequently, to have a mapping between changes in labor market stocks and changes in hazard rates, we take a first-order approximation of the change in steady-state labor market stocks around the lagged value of the flow hazard rates:

$$\Delta \bar{s}_t \approx \sum_{i \neq j} \frac{\partial \bar{s}_t}{\partial h_t^{ij}} \Delta h_t^{ij} \tag{A9}$$

With estimates of transition rates and hazard rates in hand, the computation of $\Delta \bar{s}_t$ can be readily obtained by differentiating the continuous-time analogue of the reduced-state Markov

[2]See Elsby *et al.* (2015) appendix for details.

chain (A6). The latter is given by:

$$\dot{s}_t = \underbrace{\begin{pmatrix} -h^{PG} - h^{PU} - h^{PI} - h^{IP} & h^{GP} - h^{IP} & h^{UP} - h^{IP} \\ h^{PG} - h^{IG} & -h^{GP} - h^{GU} - h^{GI} - h^{IG} & h^{UG} - h^{IG} \\ h^{PU} - h^{IU} & h^{GU} - h^{IU} & -h^{UP} - h^{UG} - h^{UI} - h^{IU} \end{pmatrix}_t}_{\tilde{F}_t} s_t + \underbrace{\begin{pmatrix} h^{IP} \\ h^{IG} \\ h^{IU} \end{pmatrix}_t}_{g_t} \tag{A10}$$

The continuous-time expression of the system's steady state is so $\bar{s}_t = -\tilde{F}^{-1} g_t$ and matrix algebra allows us to compute elements of equation (A9) analytically.

Using the observed values of Δh_t^{ij} in equation (A9), we are now able to obtain time series of counterfactual changes in labor market stocks driven by current and past change in hazard rates. All these elements in hand, combined with the linearity of equation (A9), yield to the following decomposition of variance:

$$var(\Delta s_t) \approx \sum_{i \neq j} cov\left(\Delta s_t, \sum_{k=0}^{t-1} C_{k,t} \frac{\partial \bar{s}_{t-k}}{\partial h_{t-k}^{ij}} \Delta h_{t-k}^{ij}\right) \tag{A11}$$

Given expression (A11), one can compute the share of variance of changes in any given labor market stock accounted for by variations in any hazard rate. As an example, if one were interested by the contribution of changes in the private to public sector hazard rate (h^{PG}) to changes in public employment, one could compute:

$$\beta_G^{PG} = \frac{cov\left(\Delta G_t, \sum_{k=0}^{t-1} C_{k,t} \frac{\partial \bar{s}_{t-k}}{\partial h_{t-k}^{PG}} \Delta h_{t-k}^{PG}\right)}{var(\Delta G_t)} \tag{A12}$$

Table A1: Entries and exits in private employment

	US*	**US**§	**UK**	**France**	**Spain**
Entries into private employment					
As a fraction of private employment	0.039	0.037	0.042	0.045	0.079
Shares from					
Unemployment	0.424	0.440	0.467	0.562	0.617
Inactivity	0.511	0.531	0.482	0.413	0.371
Public emp.	0.065	0.029	0.051	0.025	0.012
Exits from private employment					
As a fraction of private employment	0.040	0.038	0.039	0.044	0.077
Shares to					
Unemployment	0.362	0.374	0.382	0.471	0.553
Inactivity	0.575	0.594	0.546	0.503	0.430
Public emp.	0.063	0.032	0.072	0.026	0.016

Note: Data are extracted from the FLFS, UKLFS, SLFS and the CPS. Sample: US (1996-2018), UK (1996-2018), France (2003-2017), Spain (2005-2018). **Elsby* et al. *(2015) adjustment.* §*Fallick and Fleischman (2004) adjustment.*

Table A2: Entries and exits in public sector, disaggregated, US*

	Male	Female	16-29	30-49	50-64	Below HS	HS	College
Public empl. (over pop.)	0.104	0.134	0.064	0.137	0.156	0.024	0.083	0.192
Entries								
Over public emp.	0.033	0.040	0.084	0.029	0.026	0.089	0.048	0.029
Shares from								
Unemployment	0.200	0.220	0.212	0.216	0.206	0.317	0.209	0.211
Inactivity	0.360	0.417	0.430	0.351	0.421	0.510	0.405	0.384
Private emp.	0.440	0.363	0.358	0.433	0.373	0.172	0.385	0.405
Exits								
Over public emp.	0.032	0.039	0.078	0.028	0.030	0.081	0.047	0.029
Shares to								
Unemployment	0.180	0.189	0.181	0.203	0.166	0.293	0.188	0.178
Inactivity	0.451	0.506	0.510	0.425	0.538	0.548	0.494	0.473
Private emp.	0.369	0.306	0.310	0.372	0.296	0.159	0.317	0.349

Note: Data are extracted from the CPS (1996-2018). * *Elsby* et al. *(2015) adjustment.*

Table A3: Entries and exits in public sector, disaggregated, US§

	Male	Female	16-29	30-49	50-64	Below HS	HS	College
Public emp. (over pop.)	0.104	0.135	0.065	0.137	0.156	0.025	0.083	0.192
Entries								
Over public emp.	0.024	0.032	0.071	0.021	0.019	0.072	0.038	0.022
Shares from								
Unemployment	0.268	0.273	0.250	0.292	0.273	0.383	0.265	0.274
Inactivity	0.482	0.519	0.506	0.475	0.558	0.617	0.514	0.498
Private emp.	0.250	0.208	0.245	0.233	0.169	0.000	0.220	0.228
Exits								
Over public emp.	0.026	0.033	0.068	0.022	0.024	0.067	0.039	0.023
Shares to								
Unemployment	0.225	0.224	0.203	0.259	0.205	0.348	0.225	0.220
Inactivity	0.562	0.600	0.574	0.542	0.663	0.652	0.591	0.583
Private emp.	0.213	0.176	0.222	0.199	0.132	0.000	0.184	0.198

Note: Data are extracted from the CPS (1996-2018). §Fallick and Fleischman (2004) adjustment.

Table A4: Entries and exits in public sector, disaggregated, UK

	Male	Female	16-29	30-49	50-64	Below HS	HS	College
Public emp. (over pop.)	0.117	0.218	0.102	0.207	0.172	0.080	0.181	0.299
Entries								
Over public emp.	0.028	0.030	0.079	0.020	0.017	0.033	0.032	0.023
Shares from								
Unemployment	0.326	0.287	0.282	0.329	0.285	0.339	0.283	0.318
Inactivity	0.329	0.396	0.378	0.315	0.493	0.361	0.370	0.371
Private emp.	0.346	0.317	0.340	0.356	0.222	0.300	0.347	0.311
Exits								
Over public emp.	0.029	0.029	0.051	0.018	0.036	0.036	0.030	0.025
Shares to								
Unemployment	0.233	0.161	0.217	0.221	0.127	0.189	0.189	0.175
Inactivity	0.478	0.605	0.442	0.450	0.763	0.596	0.553	0.578
Private emp.	0.289	0.234	0.341	0.329	0.110	0.215	0.258	0.246

Note: Data are extracted from the UKLFS (1996-2018).

Table A5: Entries and exits in public sector, disaggregated, France

	Male	Female	16-29	30-49	50-64	Below HS	HS	College
Public emp. (over pop.)	0.108	0.165	0.074	0.176	0.141	0.096	0.130	0.225
Entries								
Over public emp.	0.025	0.030	0.100	0.100	0.011	0.029	0.043	0.021
Shares from								
Unemployment	0.404	0.403	0.354	0.354	0.414	0.474	0.330	0.382
Inactivity	0.436	0.448	0.498	0.498	0.480	0.380	0.517	0.456
Private emp.	0.161	0.149	0.149	0.149	0.105	0.146	0.153	0.163
Exits								
Over public emp.	0.026	0.030	0.077	0.077	0.027	0.033	0.038	0.022
Shares to								
Unemployment	0.300	0.275	0.328	0.328	0.145	0.327	0.248	0.253
Inactivity	0.541	0.592	0.500	0.500	0.797	0.557	0.612	0.564
Private emp.	0.159	0.133	0.172	0.172	0.058	0.116	0.140	0.182

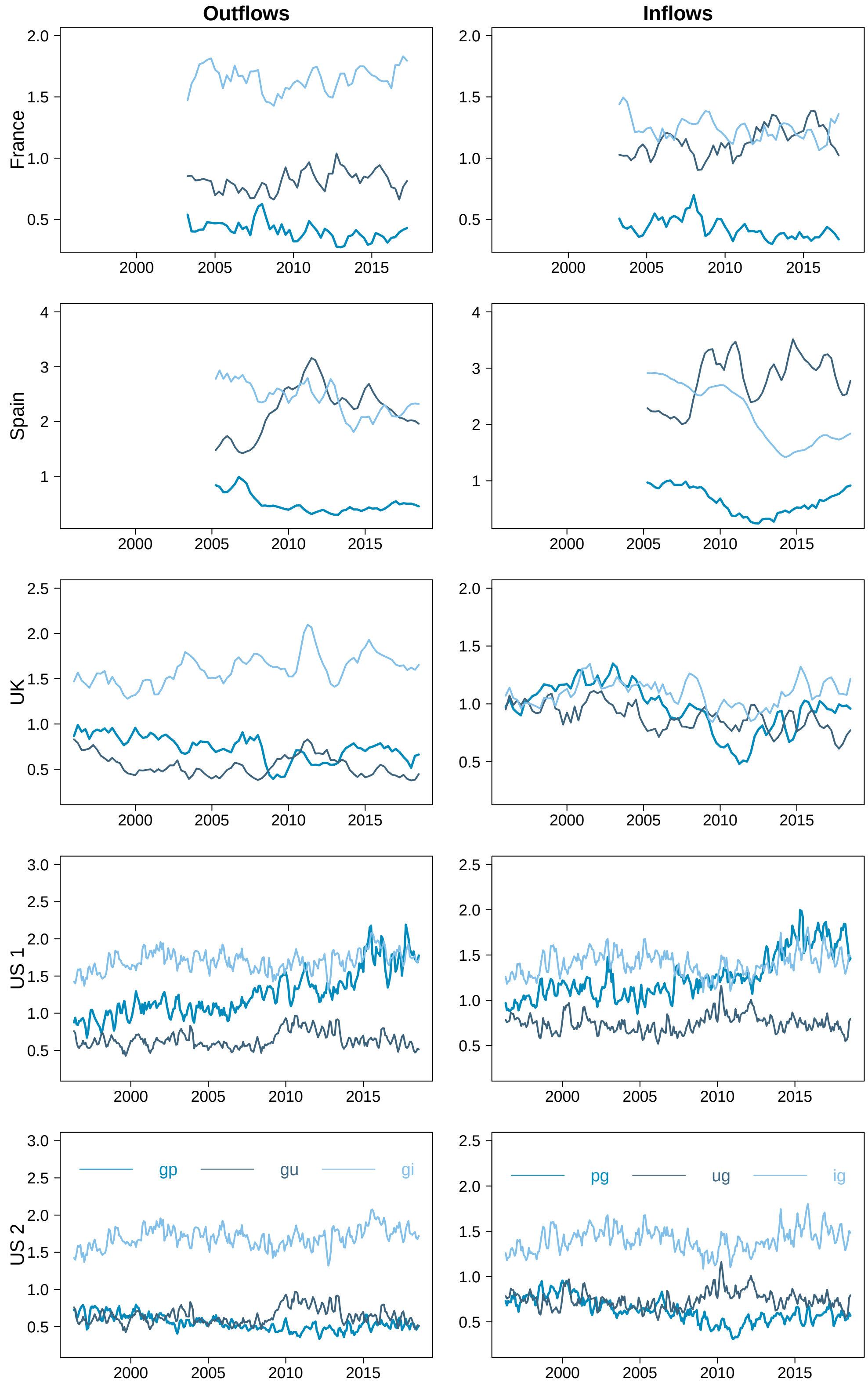
Note: Data are extracted from the FLFS (2003-2017).

Table A6: Entries and exits in public sector, disaggregated, Spain

	Male	Female	16-29	30-49	50-64	Below HS	HS	College
Public emp. (over pop.)	0.069	0.080	0.035	0.108	0.117	0.009	0.050	0.190
Entries								
Over public emp.	0.046	0.062	0.197	0.046	0.031	0.202	0.073	0.038
Shares from								
Unemployment	0.531	0.472	0.440	0.557	0.442	0.415	0.527	0.475
Inactivity	0.338	0.423	0.419	0.319	0.457	0.442	0.369	0.388
Private emp.	0.131	0.105	0.141	0.124	0.101	0.143	0.103	0.137
Exits								
Over public emp.	0.044	0.055	0.155	0.040	0.036	0.197	0.069	0.033
Shares to								
Unemployment	0.456	0.414	0.447	0.517	0.307	0.361	0.457	0.415
Inactivity	0.430	0.499	0.399	0.380	0.612	0.484	0.444	0.484
Private emp.	0.113	0.087	0.154	0.103	0.081	0.155	0.100	0.100

Note: Data are extracted from the SLFS (2005-2018).

Figure A1: Evolution of flows in and out of public employment (percentage of public employment)



Note: Data are extracted from the FLFS, UKLFS, SLFS and the CPS. Sample: US (1996-2018), UK (1996-2018), France (2003-2017), Spain (2005-2018). US^1 Elsby et al. *(2015) adjustment. US^2 Fallick and Fleischman (2004) adjustment.*

Table A7: Private-sector employment decomposition

	United States*	**United States§**	**United Kingdom**	**France**	**Spain**
$P \rightarrow G$	2.7	-1.4	1	-1.4	-1.6
$P \rightarrow U$	35.8	37	27.1	26.5	37.1
$P \rightarrow I$	-15	-15.2	3.4	7.7	-10.8
$G \rightarrow P$	-2.7	0.7	8.9	0.8	1.1
$G \rightarrow U$	1.8	2.1	2.4	0.7	-1.1
$G \rightarrow I$	1.5	0.9	-0.8	1.4	0.5
$U \rightarrow P$	81.4	82.5	28.5	48.7	84.8
$U \rightarrow G$	-4.6	-5.3	7.1	-0.4	-4
$U \rightarrow I$	-17.9	-18.1	-0.2	-6.9	-28.3
$I \rightarrow P$	32.7	33.5	25.2	18.4	31
$I \rightarrow G$	-1.6	-2.4	0.7	0	0.5
$I \rightarrow U$	-14.2	-14.3	-3.2	4.6	-9.3
Relative contributions (sum to 100)					
Flows between public and private sector					
	0	-0.7	9.9	-0.6	-0.5
Flows between private sector and unemployment					
	117.2	119.5	55.6	75.2	121.9
Flows between private sector and inactivity					
	17.7	18.3	28.6	26.1	20.2

*Note: the gross flows series are previously seasonally adjusted, corrected for margin error and time-aggregation bias and detrended with an HP filter with a smoothing parameter of 100000. Numbers in the top half panel of the table report the variance contributions of transition rates to changes in public employment. For instance, the first number of column 2 reads as follows: the private to public employment transition rate accounts for 6.6% of the variations in the US public employment dynamics. Sample: US (1996-2018), UK (1996-2018), France (2003-2017), Spain (2005-2018). * Elsby* et al. *(2015) adjustment. §Fallick and Fleischman (2004) adjustment.*