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JOB-TO-JOB TRANSITIONS, LABOR FORCE PARTICIPATION, AND THE OUTPUT GAP[‡]

New Evidence on the Cyclicality of Employer-to-Employer Flows from Canada[†]

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Each year a large fraction of workers make a transition between being employed, unemployed, or out of the labor force. Some workers make several such transitions within a single year. These gross worker flows are very large relative to the net change in the number of workers in each labor market state. The magnitudes of various gross worker flows are important indicators of the speed of reallocation in the labor market. The degree to which these gross worker flows change over the business cycle therefore provides information about whether recessions have a "cleansing" effect on the economy—i.e., speed up the reallocation of resources to better uses—or a "sullying" effect—i.e., retard the reallocation of resources. A large theoretical and empirical literature discusses these cleansing and sullying effects (see, e.g., Shleifer 1986; Caballero and Hammour 1996; Barlevy 2002; Foster, Grim, and Haltiwanger 2016).

Gross worker flows are also an important input into the estimation of matching functions, which are a key component of search models of the labor market. Moreover, as these flows are the result of decisions by workers and firms, they provide insight into labor supply and labor market frictions. Much of the literature focuses on flows from employment to unemployment and vice versa. However, a growing literature recognizes the importance of direct employer-to-employer transitions by workers (Nagypal 2008; Krause and Lubik 2006; Kiyotaki and Lagos 2007; Menzio and Shi 2011; Karahan et al. 2017).

Flows of workers directly from one employer to another (EE flows) account for a huge fraction of gross worker flows. These flows therefore plausibly play a fundamental role in the functioning of the labor market. Yet, empirical evidence on employer-to-employer flows is limited for a number of reasons. First, data from most sources extends back a relatively limited period. Second, measuring employer-to-employer flows accurately requires either direct data on when a worker changes jobs or high frequency data on a worker's labor market status (since unemployment spells are often short). Unfortunately, most data sources only measure labor market status at a monthly or lower frequency. This introduces time aggregation bias, as multiple transitions cannot be captured between measurement periods. Moreover, the leading US data sources suffer from important additional measurement issues.

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The Current Population Survey (CPS) only permits estimation of employer-to-employer flows after the 1994 redesign, when the CPS began to ask returning employed respondents whether they still worked for the same employer from the previous period (Fallick and Fleischman 2004). The Longitudinal Employer Household Dynamics dataset (LEHD) starts for all states only in 2000 and suffers from serious time aggregation bias since it reports data only at a quarterly frequency. The Job Openings and Labor Turnover Survey (JOLTS) provides separation and hiring data. However the data only go back to 2000. The SIPP has asked about the identity of the employer from its inception in 1983, which Mazumder (2007) exploits to estimate employer-to-employer flows. However, as is well-known, the SIPP is susceptible to important recall and response bias because respondents are only interviewed every four months. In particular, the SIPP exhibits seam bias: respondents are more likely to record a change between interview periods than within interview periods.

We use administrative data from Canada to shed new light on the cyclicality of gross worker flows. Since 1976, all Canadian employers have been required to issue a Record of Employment (ROE) when a worker separates from a full-time job (part-time workers were added in 1997). This data source has two principle advantages relative to US sources. First, the time period is considerably longer. Second, the data are not subject to time aggregation bias since all separations are recorded, even if the subsequent unemployment or out of the labor force spell is very short.

We combine these data with public-use microdata from the Canadian Labour Force Survey (LFS). This is a monthly survey similar to the US CPS, which allows us to estimate transitions between labor force states. From the LFS we take variables on labor force state, duration of unemployment, duration of joblessness, class of a worker's main job, and job tenure length. Our companion paper contains a more detailed discussion of the data (Nakamura et al. 2018). Our analysis builds heavily on previous analysis of the Canadian labor market by Picot, Lin, and Pyper (1998).

The combination of the ROE data and the LFS data allow us to construct an estimate of employer-to-employer flows in Canada from 1978–2016. The basic idea is that employer-to-employer flows are equal to total hires less the sum of unemployment-to-employment (UE) flows and flows from being out of the labor force into employment (OE). The ROE data give us estimates of total separations. We can use this in combination with estimates of changes in employment to get estimates of total hires. We can use the LFS data to estimate the sum of the UE and OE flows.

As a first step, we use the LFS data to construct monthly estimates of the stock of employment E_t, unemployment U_t, and those out of the labor force O_t, as well as the number of people that are newly unemployed U_t^s, newly non-employed (unemployed or out of the labor force), and the intersection of those that are newly unemployed and newly non-employed, which is an estimate of the flow from employment to unemployment f_t^{EU}. We then employ a three-state extension of the method proposed in Darby, Haltiwanger, and Plant (1985) to estimate transition probabilities between labor market states.

Let p^{XY} denote the probability of moving from employment state X to employment state Y. For example, p^{EU} denotes the probability of moving from employment to unemployment. Consider the following five accounting identities:

$$(1)\qquad U_{t+1} = U_t + E_t p_t^{EU} + O_t p_t^{OU} - U_t(p_t^{UE} + p_t^{UO}),$$

$$(2)\qquad E_{t+1} = E_t + U_t p_t^{UE} + O_t p_t^{OE} - E_t(p_t^{EU} + p_t^{EO}),$$

$$(3)\qquad U_{t+1}^s = E_t p_t^{EU} + O_t p_t^{OU},$$

$$(4)\qquad N_{t+1}^s = E_t(p_t^{EU} + p_t^{EO}),$$

$$(5)\qquad f_t^{EU} = E_t p_t^{EU}.$$

As we show in more detail in Nakamura et al. (2018), these five equations provide us with almost enough restrictions to solve for the six probabilities: p^{UE}, p^{EU}, p^{EO}, p^{OE}, p^{UO}, p^{OU}. We need one more restriction to solve the system. We assume that the probability of a transition from labor force inactivity to employment, p^{OE} is constant. Given this assumption, we can bound p^{OE} by noting that p^{UO} and p^{UE} should

be non-negative. This yields our baseline assumption that $p^{OE} = 0.006$, the approximate midpoint of the boundary values. We set p^{OE} at the boundary values in Nakamura et al. (2018) and show it makes little difference for our results. Note that our assumption on p^{OE} does not affect our estimates of the employer-to-employer flow. We can pin down the sum of flows from unemployment and inactivity into employment without this assumption, just not the breakdown between the two parts. Also, we can directly estimate p^{EU} from the data and use this to solve for p^{OU} and p^{EO} without reference to p^{OE}.

Given the transition probabilities we have estimated above, we can estimate the employer-to-employer rate using the equation

$$(6) \quad H_t = p^{EE}E_t + p^{UE}U_t + p^{OE}O_t - f_t^{se},$$

where H_t is the number of jobs found, p^{EE} is the employer-to-employer rate, and f_t^{se} is new entrants into self-employment. The latter must be subtracted from the employment inflows estimated from the LFS data as the self-employed are not covered by the ROE data. We estimate f_t^{se} as the number of individuals whose main job is considered self-employment and whose self-employment tenure is one month or less.

We estimate the total number of jobs found using the identity

$$(7) \quad E_t^i = E_{t-1}^i - S_{t-1} + H_{t-1},$$

where S_{t-1} is the number of separations as measured in the ROE data and E_t^i is the number of employed persons covered by the ROE data. This procedure implicitly assumes that each worker has only a single job. In addition to total job separations, we can directly measure layoffs, quits, and other types of separations from the ROE data.

Following Shimer (2012), we assume that all transitions follow a Poisson process such that the continuous rate $\tilde{p}_t$ can be computed from the discrete rate p_t according to the formula $\tilde{p}_t = -\log(1 - p_t)$. We apply this transformation to all rates we compute and only report the transformed rates, although the difference is negligible. Unlike Shimer we do not make a distinction between "rates" and "probabilities" and use the terms interchangeably to refer to the continuous rates.

Table 1—Average Gross Worker Flows

	Mean	Corr w/U
Job finding	0.027	−0.58
EE	0.018	−0.50
UE	0.007	−0.64
OE	0.002	—
Job separations	0.026	−0.28
EE	0.018	−0.50
EU	0.004	0.41
EO	0.005	0.17
Layoffs	0.011	0.59
Quits	0.006	0.70
Other	0.009	−0.07
OU	0.012	0.17
UO	0.009	−0.30

Notes: The first column reports time-series averages of each worker flow as a fraction of the working age population in Canada. The second column reports the correlation of the corresponding transition probabilities with the unemployment rate. We have detrended the unemployment rate using an HP-filter with $\lambda = 10^6$. The sample period is 1978–2016.

Our main results are presented in Table 1 and Figure 1. Table 1 presents the average magnitude of gross jobs found, gross separations, and their various component flows as a fraction of the working age population in Canada. The second column shows the correlation of the corresponding transition probabilities with the unemployment rate. On average 2.7 percent of the Canadian working age population found a new job each month during our sample period, while 2.6 percent separated from a job each month. Our first main result is that a large majority of these flows are employer-to-employer flows, i.e., workers transitioning from one job to another without an intervening spell of unemployment or exit from the labor force. The average employer-to-employer flow was 1.8 percent of the Canadian working age population during our sample period. This implies that roughly two-thirds of all gross worker flows in Canada have been employer-to-employer transitions. Our estimates of the share of employer-to-employer flows in gross worker flows is considerably larger than those of Fallick and Fleischman (2004) based on CPS data for the United States over the sample period 1996–2003. Their estimates suggest that employer-to-employer flows account for only about 40 percent of gross flows.

Our second main result is that employer-to-employer flows are highly procyclical.

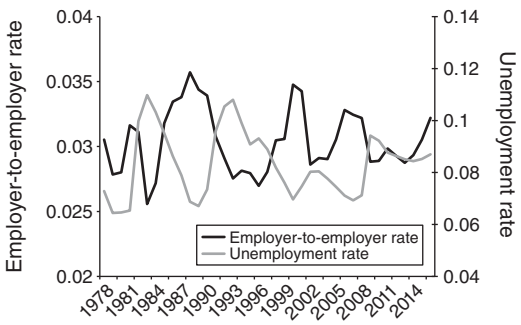

FIGURE 1. EMPLOYER-TO-EMPLOYER RATE

Note: The series are detrended using an HP-filter with $\lambda = 10^6$.

Figure 1 plots the employer-to-employer rate and the unemployment rate over our sample period. The employer-to-employer rate displays large swings that are highly negatively correlated with the unemployment rate. The second column of Table 1 reports that the correlation of the employer-to-employer flow with the unemployment rate is -0.50. This result is consistent with earlier studies that have found that employer-to-employer flows are procyclical (Fallick and Fleischman 2004; Mazumder 2007; Bjelland et al. 2011). However, our sample period is much longer than in these other studies, which means that our ability to assess cyclicality is much greater.

Our third main result is that the large size and procyclicality of employer-to-employer flows swamps the countercyclicality of EU and EO flows, which implies that total job separations are procyclical. We see in Table 1 that EU and EO flows are highly countercyclical. A related fact also reported in Table 1 is that layoffs are highly countercyclical. However, since these flows are modest in size relative to employer-to-employer flows, the overall job separation rate is procyclical.

The fact that the total job separation rate is procyclical implies that recessions may have a sullying effect on the labor market. Our results suggest that a strong labor market lubricates the flow of workers between firms. When a recession strikes, these employer-to-employer flows dry up to a large extent, and workers become stuck in their current jobs (those that don't lose their jobs, that is). If employer-to-employer flows improve match quality, our results imply that recessions have a sullying effect on the labor market.

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