On the Evolution of Multiple Jobholding in Canada*

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Abstract

The number of workers who hold more than one job (a.k.a. multiple jobholders) has increased recently in Canada. While this seems to echo the view that non-standard work arrangements are becoming pervasive, the increase has actually been trivial compared to the long-run rise of multiple jobholding that has occurred since the mid-1970s. In this paper, we document this historical evolution and provide a comprehensive account of its underlying dynamics. To this end, we use restricted-access panel micro-data from the Canadian labour force survey to construct transition probabilities in and out of multiple jobholding. We analyze these data through the lens of a trend decomposition that separates out the role of labour market inflows and outflows. The picture that emerges from our analysis is one of continued increases in the propensity of workers to take on second jobs. We argue that changes in technology and preferences could both be responsible for this evolution.

Keywords: Non-standard work; Multiple jobholding; Worker flows; Trend decomposition

JEL codes: E24, J21, J22, J60

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1 Introduction

Participation in non-standard work arrangements has become an object of keen interest among scholars, policy makers, and the general public alike. The usual perception is that these arrangements are increasingly common in modern labour markets.[1] Yet we often lack measurements that span a long period of time to permit a broad view of the trends characterizing non-standard work arrangements. In this paper, we focus on one such work arrangement, namely multiple jobholding, and illustrate the importance of studying its dynamics over the long run. We employ restricted-access panel data to estimate time series that subsequently can be used to account for the evolution of multiple jobholding in Canada over the past forty-five years. The picture that emerges from our analysis is one of continued increases in the propensity of Canadian workers to take on second jobs. Changes in technology and preferences could both be responsible for this evolution, as we argue in this paper.

Key facts of interest are depicted in Figure 1. The employment share of workers who hold more than one job (whom we call multiple jobholders) has increased in the 2010s, but this change appears very modest once put in perspective using data from mid-1970s until today. A crucial first step to interpret the trend in the *stock*, or number, of multiple jobholders is to describe accurately the behavior of the gross worker *flows* that govern its evolution. As is well known at least since Akerlof and Main [1981], a picture of labour market dynamics based on stocks says little about the size and changes of the underlying inflows and outflows.[2] At a more substantive level, looking at worker flows allows to distinguish between two (non-exclusive) explanations for the increase in multiple jobholding: that single jobholders have increased their propensity to take on a second job, or that multiple jobholders have become less likely to give up their second job quickly. After obtaining consistent estimates of inflow and outflow transition probabilities, we devise a statistical decomposition that enables us to disentangle and quantify the role of these two sources of changes.

[1] Non-standard work arrangements encompass a wide spectrum of alternatives to the traditional "Monday–Friday 9am–5pm" work week. Typical examples are flexible scheduling, working from home, project-based employment, and working irregular schedules (for detailed examples, see Hamermesh and Stancanelli [2015] and Mas and Pallais [2017]). Interest in studying non-traditional, flexible work arrangements is largely related to research on the labour market effects of the 'gig economy' (Katz and Krueger [2019]).

[2] See, among numerous references, Darby et al. [1986], Blanchard and Diamond [1990] and Blanchard and Portugal [2001] for early important examples.

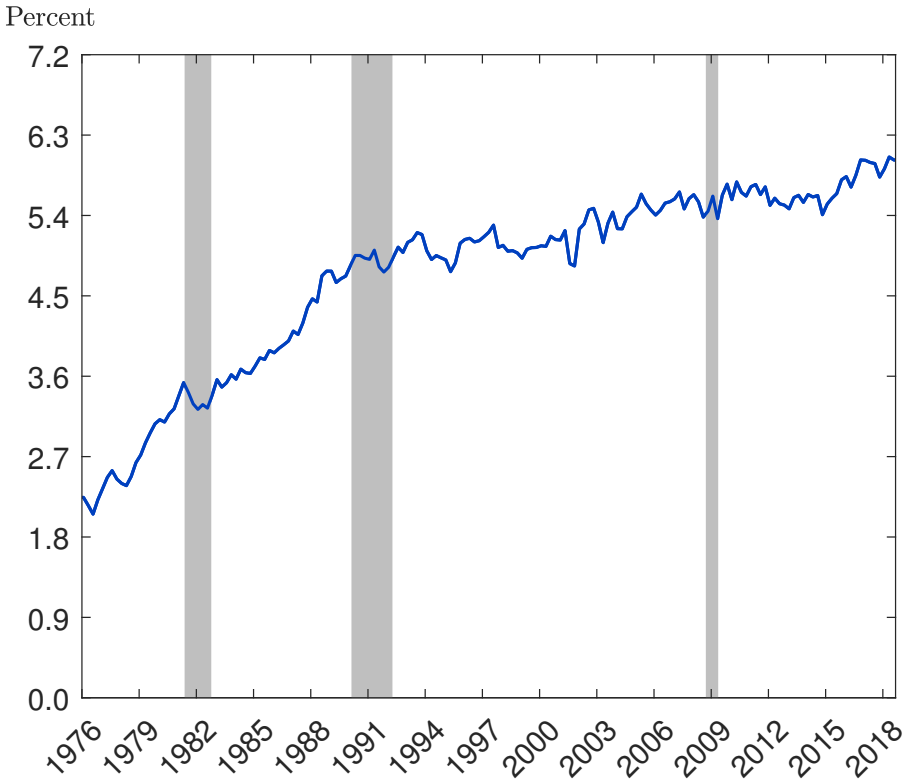


Figure 1: The multiple jobholding share: 1976–2018

Notes: LFS data, 1976 – 2018, time series cleared from seasonal variations. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.

We reach the following conclusions by analyzing data separately for men and women and by distinguishing between full-time and part-time employment. First, during the period from the mid-1970s until the 1990–92 recession, inflows and outflows are both important to understand the rapid increase in multiple jobholding. That is, single jobholders became more likely to take on second jobs, and at the same time multiple jobholders reduced their propensity to give up the second job quickly. The panel structure of the data does not permit us to track individuals over a sufficiently long period of time to control for unobserved heterogeneity, which is a common problem in the 'ins and outs' literature (e.g. Fujita and Ramey [2009], Shimer [2012], Elsby et al. [2015]). Yet we suspect that unobserved heterogeneity could be key to explaining those changes in transition probabilities. That is, the decrease in the propensity to give up the second job may well be driven by a 'mover-stayer phenomenon' if the workers who became more likely to take on second jobs tend to have a longer expected duration of multiple jobholding. Second, from the 1990–92 recession until today, the evolution of multiple jobholding is predominantly explained by the inflows, and especially by the inflow transition probability

of full-time workers. For instance, during the last decade multiple jobholders actually became more likely to give up their second job. *Ceteris paribus*, based on the behavior of outflow transition probabilities, multiple jobholding should have dropped substantially. That change was dwarfed by the continued increases in the propensity of single jobholders (especially full-timers) to take on second jobs. Thus, the evolution of multiple jobholding veils substantial and complex changes in the underlying inflows and outflows, but our statistical decomposition helps us to narrow down the picture to the most relevant source of variation.

What are the most likely explanations for the (hitherto undocumented) continued increases in the propensity of Canadian workers to take on second jobs? In the last section of the paper, we list several patterns which we view as potential candidate explanations. We discuss them informally by drawing auxiliary information from several datasets and by using empirical evidence from the literature. We argue that, holding individuals' demand for working more hours constant, certain changes in technology may have made it easier for workers to do so. These include changes in firms' ability to coordinate different work schedules of employees, enabling employers to provide workers with additional flexibility in hours. On workers' side, lower set-up costs could also be responsible for the rise in the probability to take on a second job. Preference-based hypotheses are plausible too, although our assessment favors the first set of explanations. One such example is that workers' valuation of flexible work arrangements and willingness to diversify their work experience has increased over time.

Our paper contributes to a growing body of literature that documents trends in non-standard work arrangements (Jackson et al. [2017], Katz and Krueger [2019]). Several papers in this vein of literature have highlighted the challenges of measuring such work arrangements; see, e.g. Abraham et al. [2015] and Katz and Krueger [2019]. There is a longer tradition of measurement for the particular example on which we focus on, namely multiple jobholding. In the United States (U.S.) a series of contributions by Hirsch et al. [2016], Hirsch and Winters [2016], Hirsch et al. [2017] has documented several interesting facts to characterize this phenomenon. Lalé [2015, 2016] complemented that work by studying worker inflows and outflows in U.S. data. It is worth mentioning that multiple jobholding has decreased over the past two decades in the U.S. labour market. This change took place following an increase in multiple jobholding

during the 1980s, as reported by Stinson Jr [1990] and Kimmel and Powell [1999]. Kimmel and Powell [1999] also documented the levels and changes of multiple jobholding in Canada between 1981 and 1995. We substantially expand these researches by studying a longer period of time and by constructing estimates of transition probabilities into and out of multiple jobholding. At a substantive level, our paper contributes to studying the motives that govern multiple jobholding, and more generally the paths of adjustment in working hours. Related references include Shishko and Rostker [1976], Krishnan [1990], Paxson and Sicherman [1996], Conway and Kimmel [1998, 2001] and Hlouskova et al. [2017]. In Section 5, we explicitly build on the insights from these studies to provide potential explanations for the changing propensity of workers to take on second jobs.

We strike a note of caution before closing this introduction. Our analysis focuses on a single country and, as has just been noted, some of the trends that we uncover might be specific to that country. The reason we focus on Canada is that, to our knowledge, its labour force survey is the only source of data on multiple jobholding that covers such a long period of time.[3] We take advantage of this feature to offer long-run evidence on this specific example of non-traditional work arrangement. We do not claim that our results generalize to other countries. But since our empirical framework can be easily adapted to study multiple jobholding in other settings, we call on others to use it and enrich the body of evidence about the dynamics of non-standard work arrangements.

The rest of the paper is organized as follows. Section 2 presents the data, definitions and preliminary facts about multiple jobholding in Canada. Section 3 introduces the statistical framework used to construct inflow and outflow transition probabilities and describes their behavior over time. In Section 4, we develop a statistical decomposition that partitions the trends in multiple jobholding into the contribution of the different inflows and outflows. Section 5 takes stock of the results by relating them to a number of labour market changes documented

[3]In the United States, the Current Population Survey (CPS) started collecting information on multiple jobs in January 1994 (Lalé [2015, 2016]). There exist occasional supplements of the CPS (called "Work schedules supplements") which are available for some earlier periods, but they provide information on multiple jobholding only as discrete snapshots. The U.S. Panel Study of Income Dynamics contains annual information on the number of job held in the previous calendar year, starting in 1976. It is however not always clear whether these data measure multiple jobs separately from job-to-job changes that occur over a calendar year (Paxson and Sicherman [1996]). In European countries, most labour force surveys started collecting information on multiple jobholding only recently.

in the literature. The last part of Section 5 concludes.

2 Data, definitions and preliminary facts

This section presents the data, definitions of the main concepts used in the analysis, and a set of preliminary facts about multiple jobholding.

2.1 Data source and frequency

We use Labour Force Survey (LFS) micro-data between January 1976 to December 2018. The LFS is a monthly household survey administered by Statistics Canada. It provides the official measure of unemployment used in the administration of the Employment Insurance program, and is the most timely indicator of the state of the economy. The LFS is conducted nationwide, in provinces and territories. It is designed to be representative of the civilian non-institutionalized population in Canada. Each month, the survey collects labour force information from about 56,000 households for all household members aged 15 and over. It also collects demographic information such as gender, age, education, etc.

The LFS relies on a rotating panel design. Each household is interviewed for six consecutive months, and each month one-sixth of the sample (a panel) is replaced with a new panel. (Statistics Canada [2017]). Thus, about 83 percent of the sample overlap between two adjacent months. This makes the data suitable for matching respondents over time to determine changes in their labour force status. We use the LFS as a series of cross sections to measure labour market stocks and we exploit the rotational structure of the survey to measure flows.

Throughout the analysis, we aggregate the monthly LFS data to the quarterly frequency. Quarterly aggregation serves several purposes. First, Statistics Canada recommends working with LFS data aggregated to the quarterly frequency to obtain more statistically-precise estimates (Bernard and Gellatly [2014], Statistics Canada [2017]). Second, and more importantly, quarterly aggregation enables us to satisfy the data release requirements that apply to the LFS. Indeed, Statistics Canada is prohibited by law (under the *Statistics Act*) from releasing data which would divulge information about any identifiable person. In practice, this means

that estimates that we compute inside the Federal Research Data Centre cannot be released if they are based on cells below a certain size level. A further issue comes from the so-called residuality requirements: the entire month of data estimates is suppressed if there is a single estimate based on a cell below the threshold level. These issues are particularly acute in what concerns our study. Some transitions are relatively 'rare' (for example, transitions from nonemployment to multiple jobholding and vice versa), and as a result they have low counts in the data. By aggregating monthly data into quarterly, we can (partially) offset low counts in some months by higher counts in adjacent months. In addition, we were granted exception requests for data on transition probabilities making the residuality requirements less stringent when looking at certain subgroups of individuals.[4] To sum up, quarterly aggregation not only improves the precision of our estimates, but also allows us to report these estimates without additional transformation of the data.

2.2 Definitions

A key operational definition in this paper is that of a multiple jobholder. We follows the LFS definition and count as multiple jobholders those individuals who hold more than one job during the reference week of the survey.[5] The LFS collects information on hours on the respondent's main job and hours on all jobs for those who hold more than one job. The 'main job' (henceforth called 'primary job') is determined by each respondent's own understanding of the term, and in all likelihood this is the job with the greatest number of hours worked.[6] Another important definition of the analysis is that of part-time employment. In labour market statistics, whether a job is considered part-time or full-time depends on the number of hours usually worked at this job. We use a threshold of 30 usual hours to distinguish between part-time and full-time

[4]Our empirical framework implies making a number of adjustments (see Section 3 and Appendix A) such that one cannot infer the value of the underlying stocks and flows in a given quarter from the value of a transition probability in that quarter. In other words, the transition probabilities we report pose no risk of identifying the individuals from the cells used to compute those probabilities.

[5]The reference week of the LFS is usually the week containing the 15th of the month, and LFS interviews are conducted during the week that follows the reference week.

[6]In U.S. CPS data multiple jobholders report the number of jobs they hold in addition to reporting hours on the primary job and hours on all jobs. The vast majority of U.S. multiple jobholders (more than 90 percent) hold 'only' two jobs. Moreover, we observe that the difference between average hours on all jobs vs. on the primary job in the U.S. is roughly the same as that found in Canadian data. This suggests that most multiple jobholders in Canada do not hold more than two jobs.

work. This threshold is standard in Canadian statistics and it does not drive our results.[7]

On the various plots of the paper, we will denote recession periods using gray bands. To identify these episodes, we use dates determined by the C.D. Howe Institute Business Cycle Council (https://www.cdhowe.org/council/business-cycle-council). This council performs functions similar to the Business Cycle Dating Committee of the National Bureau of Economic Research in the United States. They have identified the following recession episodes: 1981Q3–1982Q4, 1990Q2–1992Q2 and 2008Q4–2009Q2. These dates are similar to those determined by the Economic Cycle Research Institute (see https://www.businesscycle.com/).

2.3 Preliminary facts

To provide some preliminary background, Figure 2 reports figures on the number of workers who are not employed (N), single jobholders (S) or multiple jobholders (M). The numbers are averages calculated over the past five years. During this period, there are about 18 million individuals who are employed in a given quarter. Most of them are single jobholders, although multiple jobholders represent a fairly significant number (almost 1 million workers, or 5.46 percent of total employment). During this period, the employment rate is 61.3 percent and there are 11 million workers who are not employed (i.e. unemployed or inactive).

In Figure 2, we also display the average number of workers who move between nonemployment, single jobholding and multiple jobholding between two consecutive quarters. Single jobholders face a non-negligible probability of moving to multiple jobholding: the figure is 2.64 percent per quarter. Also, multiple jobholders are very likely to return to single jobholding in a given quarter (36.8 percent on average). They move to nonemployment with a per-quarter probability of 2.40 percent, which is roughly 50 percent of the job separation rate among single jobholders (5.66 percent). The *levels* of quarterly worker flows between single and multiple jobholding are also not trivial: 450,979 and 362,582 individuals. Last, as one would expect, very few workers who are not employed in a given quarter become multiple jobholders in the quarter that follows; the corresponding probability is 0.19 percent (controlling for time-aggregation bias, as we explain in Subsection 3.1). Nonemployed workers become single jobholders with a

[7]The results based on a 35-hours threshold to define part-time work are available upon request.

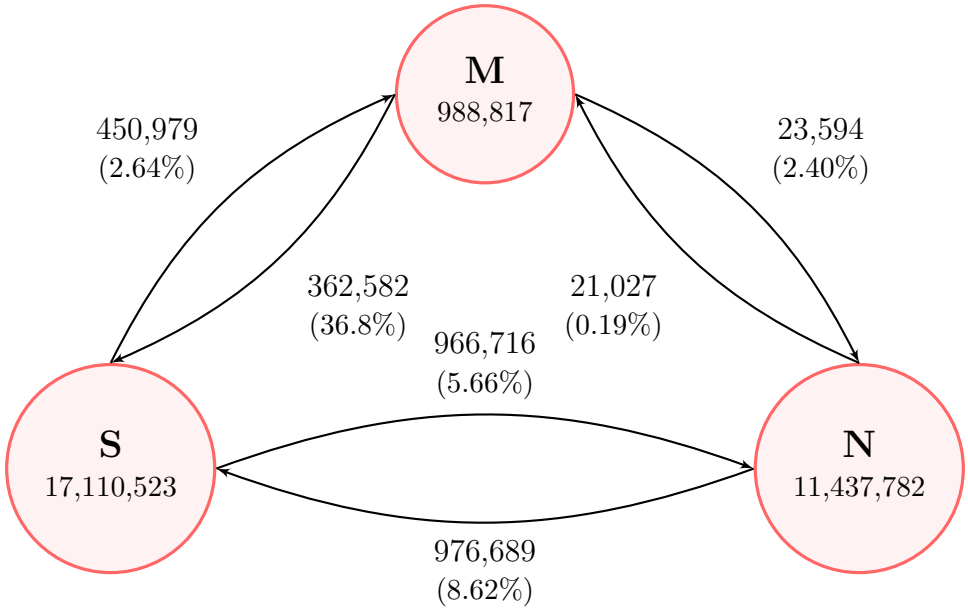


Figure 2: Worker flows across multiple jobholding, single jobholding and nonemployment

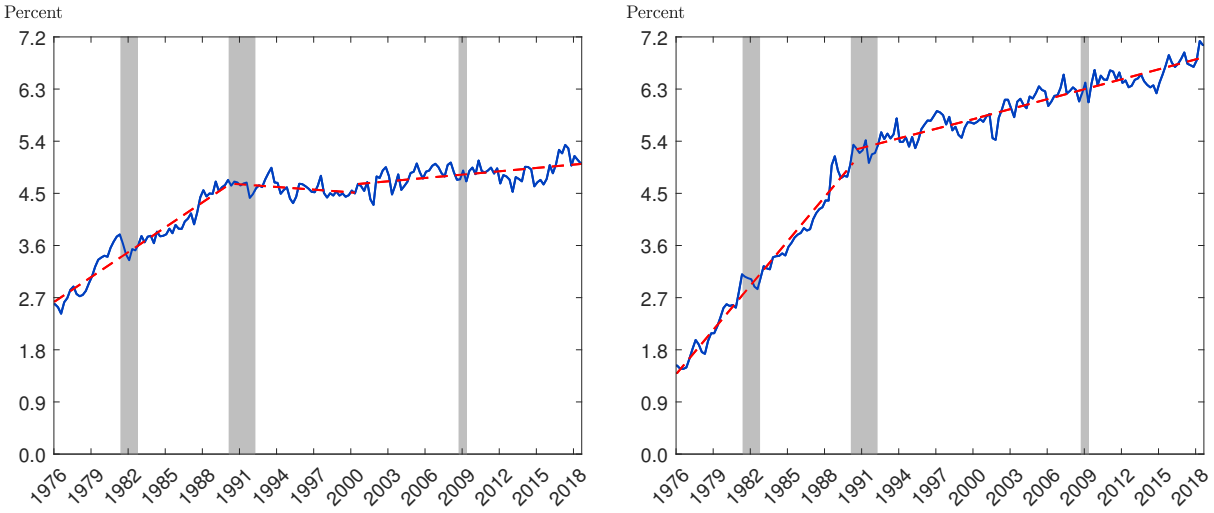
Notes: LFS data, 2013 – 2018. M: multiple jobholding; S: single jobholding; N: nonemployment. The numbers refer to individuals aged 15 and above and are computed as averages over the period 2013 – 2018. The figures in brackets are quarterly transition probabilities.

per-quarter probability of 8.62 percent.[8]

Individual characteristics. Next, Figure 3 reports the multiple jobholding share of male and female workers.[9] In the remainder of the analysis, instead of working with aggregate data, we present results separately by gender. We focus on this partition for two reasons mainly. One, the heterogeneity with respect to the incidence of part-time work (details follow). Two, the different timing of the change in multiple jobholding, which is evidenced in Figure 3. At the beginning of the sample period in 1976, men were more likely to hold multiple jobs (about 2.6 percent) than women (about 1.5 percent). The opposite is true in 2018: the multiple jobholding share is at 7.0 percent among women vs. 5.0 percent among men. The dynamics in between 1976 and 2018 are quite different. First, the increase in multiple jobholding throughout the 1980s was much steeper among women than among men. Second, during the 1990s, multiple jobholding plateaud for men (the OLS linear trend is actually negative) whereas it continued

[8]This number is a weighted average between the probability of moving to single jobholding from unemployment and from inactivity (lumped together into a single category that we call 'nonemployment'), with the weights corresponding to the shares of unemployed and inactive workers in the pool of nonemployment.

[9]The multiple jobholding share is the number of workers who hold more than one job divided by the number of employed workers.



(a) Men **(b)** Women

Figure 3: The multiple jobholding share: Men and women, 1976–2018

Notes: LFS data, 1976 – 2018, time series cleared from seasonal variations. The dashed lines denote the OLS linear trend calculated in each subperiod (1976 to 1990, 1990 to 2000, 2000 to 2018). Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.

to increase for women albeit at a slower rate compared to the 1980s. Third, the multiple jobholding share among men resumed its increase after the turn of the century. On the other hand, the upward trend for women in the 2000s and 2010s seems no different from that in the 1990s.[10] Motivated by this, in the next two sections we split the sample period into three subperiods: 1976–1990, 1990–2000, and 2000–2018. This helps us provide a clearer picture of the changes that took place over time.[11]

In Appendix B, we provide a more detailed analysis of multiple jobholding by worker characteristics in order to complement Figure 3. The lessons from that analysis are as follows. First, the dynamics and differences across genders in Figure 3 are similarly present when we leave out old and young workers and/or when we separate out workers based on their marital status or region of residence. Second, the levels of multiple jobholding vary mainly by educational levels and by worker's primary industry of employment. In particular, multiple jobholding increases with educational attainment (as in Lalé [2015]). Third, and related, the changes over

[10] In Figure 3 for both men and women, the dashed lines display the linear trends calculated over each three subperiods. As can be surmised from Figure 3b, for women the OLS coefficients of the 1990-2000 subperiod are virtually identical to those of the 2000-2018 subperiod.

[11] A more systematic approach to detect potential breaks in the time series is likely to suggest a similar partition of the sample period. Our partition is also motivated by the fact that it yields three subperiods that each comprises only one recession.

time and differences between men and women when we condition by education or industry are essentially similar to those in Figure 3. In sum, the breakdown by gender seems to capture the interesting patterns of the dynamics of multiple jobholding over the sample period. To illustrate and verify this idea, we construct several counterfactual multiple jobholding shares that control for changes in the composition of employment with respect to gender interacted with age, education, marital status or industry. The results, plotted in Figure B1 of the appendix, show almost no difference compared to the actual multiple jobholding share displayed in Figure 1. The reason for this is that, for each gender, the heterogeneity in multiple jobholding across different age, education, marital status and industry groups is quite limited.

Work schedule of the primary job. The distinction between full-time and part-time employment plays an important role in the analyses presented in the next sections. Indeed, whether an individual is working full-time or part-time affects the flexibility with which s/he may combine the primary job with a second job. More generally, part-time employment is a major channel of hours adjustments at the individual level (Borowczyk-Martins and Lalé [2019]), and many theories emphasize the relationship between such hours adjustments and multiple jobholding (Shishko and Rostker [1976], Krishnan [1990], Paxson and Sicherman [1996]). An additional motivation for distinguishing between full-time and part-time work is that we study the data separately by gender, and the incidence of part-time employment varies substantially across the two gender groups.

To describe the data briefly and lay foundations for our empirical framework, let us report the following facts (additional results are available in Tables B1 and B2 of the appendix). First, on average over the sample period, 31 percent of multiple jobholders hold a part-time primary job. In other words, the vast majority of these workers are working full-time on their primary job and adding more hours by holding a second job. Second, there is a significant degree of heterogeneity between men and women regarding this statistics. 71.5 percent of male multiple jobholders hold a full-time primary job while the corresponding figure for female multiple jobholders is 52.4 percent. Third, once again the breakdown by gender seems to capture much of the heterogeneity that may be present in the data. For instance, the work schedule of the first job (full-time or part-time; see Table B2) is quite similar among multiple jobholders who

have a university degree and among workers who have at most 8 years of education.

3 The ins and outs of multiple jobholding

Having described the pools of male and female multiple jobholders, we introduce our empirical framework to measure transition probabilities of entering and leaving these pools. We then analyze the behavior of transition probabilities from mid-1970s until today.

3.1 Empirical framework

We use a stock-flow framework to analyze transitions into and out of multiple jobholding. In each period (i.e. quarter) t, individuals are classified into one of the following states: multiple jobholding with a full-time primary job (F_M), multiple jobholding with a part-time primary job (P_M), single jobholding with a full-time job (F_S), single jobholding with a part-time job (P_S), and nonemployment (N). We let the vector $\boldsymbol{\ell}_t$ contain the number of individuals (stocks) in each of these states:

$$\boldsymbol{\ell}_t = [\ \underbrace{F_M \quad P_M}_{M} \ \underbrace{F_S \quad P_S}_{S} \quad N\ ]'_t, \tag{1}$$

where $M = F_M + P_M$ (resp. $S = F_S + P_S$) is the number of multiple jobholders (resp. single jobholders) in period t. As is standard, the evolution of $\boldsymbol{\ell}_t$ is described by means of a discrete-time, first-order Markov chain:

$$\boldsymbol{\ell}_t = \boldsymbol{X}_t \boldsymbol{\ell}_{t-1}. \tag{2}$$

In this equation, $\boldsymbol{X}_t$ is the stochastic matrix of transition probabilities $p\,(i \to j)$ across labour market states i and j. Each of these transition probabilities is measured by the gross flow of workers from state i to state j at time t divided by the stock of worker in state i at time $t-1$.[12]

We implement several adjustments based on the Markov chain structure of this frame-

[12]Recall from Subsection 2.1 that we work with data aggregated to the quarterly frequency. To calculate flows between, say, quarters Q1 and Q2 in a given year, we proceed as follows. We follow the same respondents in January and April, February and May, March and June and determine their labour force transitions (if any) between each pair of months spanning a quarter. We then add up the three values to calculate the gross worker flows for each type of transition between quarters Q1 and Q2.

work.[13] First, we perform a so-called margin-error adjustment of the transition probabilities (Poterba and Summers [1986], Elsby et al. [2015]). This adjustment reconciles the changes in stocks predicted by the Markov chain with the actual changes in stocks between two consecutive periods.[14] Second, we correct transition probabilities to account for time-aggregation bias. Time-aggregation bias refers to the discrepancy between the transition probabilities measured at discrete intervals and the underlying continuous process which they seek to measure. Specifically, the competing risks structure of the process implies that the discrete-time (quarterly) probabilities miss some of the transitions that occur at a higher frequency. We adapt Shimer [2012]'s continuous-time correction to our setup to address this bias. We refer the reader to Appendix A for a formal presentation of the adjustment procedures.

As we have already mentioned, our interest lies in understanding the behavior of the multiple jobholding share denoted as m_t. To cast the discussion in the context of our five-state Markov chain, observe that m_t is given by

$$m_t = \frac{F_{M,t} + P_{M,t}}{F_{M,t} + P_{M,t} + F_{S,t} + P_{S,t}}. \tag{3}$$

m_t is what we plotted in Figure 1 of the Introduction and in Figure 3 for men and women.

3.2 A closer look at long-run trends

Before analyzing worker flows, in Table 1 we describe the dynamics of m_t in relation to that of two important ratios, namely the share of part-time employment among single jobholders ($\frac{P_{S,t}}{F_{S,t}+P_{S,t}}$) and the share of multiple jobholders who are employed part-time on their primary job ($\frac{P_{M,t}}{F_{M,t}+P_{M,t}}$). The table conveys four results. First, it reiterates, while offering a precise quantification, the finding that men and women's multiple jobholding shares m_t have behaved differently over time. In particular, the increase in multiple jobholding is three time larger for women than for men during the early subperiod (1976 to 1990), and two times larger in

[13] Prior to making these adjustments, we remove systematic seasonal variations using the U.S. Census Bureau's X-13ARIMA-SEATS program (https://www.census.gov/srd/www/x13as/).

[14] Five-sixth of the sample overlap between two adjacent months (see Subsection 2.1), which in principle should result in a 83.3 percent matching rate of respondents between two adjacent months. However, other errors such as sample attrition result in smaller matching rates, typically between 80 to 81 percent.

Table 1: Multiple jobholding and part-time employment shares

Men	1976–2018 Avg.	1976–1990 Avg.	△ (%)	1990–2000 Avg.	△ (%)	2000–2018 Avg.	△ (%)
m_t	4.38	3.69	84.5	4.59	-2.26	4.83	10.8
$\frac{P_{S,t}}{F_{S,t}+P_{S,t}}$	9.79	7.77	54.3	10.2	9.24	11.2	17.7
$\frac{P_{M,t}}{F_{M,t}+P_{M,t}}$	18.5	14.7	22.0	18.7	28.8	21.2	9.69
Women	1976–2018 Avg.	1976–1990 Avg.	△ (%)	1990–2000 Avg.	△ (%)	2000–2018 Avg.	△ (%)
m_t	5.09	3.28	248.7	5.53	10.3	6.32	21.9
$\frac{P_{S,t}}{F_{S,t}+P_{S,t}}$	26.9	26.3	11.0	27.5	4.76	27.2	-5.68
$\frac{P_{M,t}}{F_{M,t}+P_{M,t}}$	47.6	46.4	-5.62	48.2	13.0	48.2	-9.02

Notes: LFS data, 1976 – 2018. m_t: multiple jobholding share; F_S: single jobholding with a full-time primary job; P_S: single jobholding with a part-time primary job; F_M: multiple jobholding working full-time on the primary job; P_M: multiple jobholding working part-time on the primary job. The table reports averages (Avg.) and percentage changes (△ %) over the sample period and over specific subperiods. All table entries are expressed in percent.

the last subperiod (2010 to 2018). Second, the table highlights differences in the incidence of part-time employment across the two gender groups. Men are less likely to work part-time than women, when they work only one job (9.79 percent for men vs. 26.9 percent for women) but also when they hold two jobs (18.5 percent vs. 47.6 percent). Meanwhile, the incidence of part-time work has increased over time among male multiple jobholders ($\frac{P_{M,t}}{F_{M,t}+P_{M,t}}$): the average share of multiple jobholders with a part-time primary job has increased by 50 percent from the first to third subperiod (14.7 vs. 21.2 percent). Those increases were accompanied by changes of about the same magnitude among male workers who hold only one job ($\frac{P_{S,t}}{F_{S,t}+P_{S,t}}$). Third and conversely, the composition of women's employment pool appears to be more stable than that of men. The most noticeable change is the 1990-2000 shift in the composition of multiple jobholding towards women who hold a part-time primary job, but this change is quite modest (a 13.0 percent increase between the years 1990 and 2000). Despite this stable composition, the multiple jobholding share of women has increased substantially over time. Fourth, for both men and women, there is a clear association between working two jobs and holding a part-time primary job. On average, the incidence of part-time work is twice higher among multiple jobholders than among single jobholders.

3.3 The dynamics of multiple jobholding inflows and outflows

Table 2 describes the dynamics of multiple jobholding through its interaction with other labour market states. Figures 4 and 5 complement this table by displaying, respectively, the transition probabilities in and out of multiple jobholding. There are two displayed time series in each plot, except for the plots at the bottom showing a transition to or from nonemployment (N). For instance, in Figure 4 in the top left panel, the dashed line is the probability that a full-time single jobholder (F_S) takes on a second job while holding onto a full-time primary work schedule (F_M). The solid line on the same plot denotes the overall probability that this worker becomes a multiple jobholder, viz. she moves to either F_M or P_M. Clearly, in each plot, the transition probability denoted by the dashed line is the main component of the transition probability denoted by the solid line.

Long-run averages. Each panel of Table 2 reports the averages of inflow and outflow transition probabilities.[15] The bottom row of each panel displays the sum of the inflow (resp. outflow) transition probabilities whose states of origin (resp. destination) exclude multiple jobholding. Three results stand out. The first one is that multiple jobholding is a transitory state of employment. When looking at individuals with a full-time primary job (F_M), about one half (42.8 percent for men, 52.7 percent for women) were in a different state in the previous quarter and a similarly large share leaves in the following quarter (36.9 percent for men, 45.3 percent for women). The figures are higher for multiple jobholders who work part-time on the primary job (P_M). In expected terms (under the assumption of a constant outflow rate), these figures imply that a spell of multiple jobholding in full-time work lasts on average 8.1 months (=1/0.369 quarters) for men and 6.6 months for women. The corresponding figures for multiple jobholding in part-time work are 5.7 months for men and 6.2 months for women. Second, there is a non-negligible share of workers who change status with respect to their primary job upon moving into or out of multiple jobholding. This holds true especially for multiple jobholders with a part-time primary job during the reference week (P_M): the probability that they hold a

[15] $q\,(i \to j)$ denotes the inflow transition probability from state i to j. It is the ratio of the gross flow from state i to j between time $t-1$ and t over the stock of workers in state j at time t. The outflow transition probabilities are the elements of the Markov transition matrix from equation (2).

Table 2: The ins and outs of multiple jobholding: 1976–2018

Men

F_M				P_M			
Inflows		Outflows		Inflows		Outflows	
$q\left(P_M \to F_M\right)$	5.29	$p\left(F_M \to P_M\right)$	4.93	$q\left(F_M \to P_M\right)$	22.5	$p\left(P_M \to F_M\right)$	24.2
$q\left(F_S \to F_M\right)$	36.3	$p\left(F_M \to F_S\right)$	32.2	$q\left(F_S \to P_M\right)$	8.33	$p\left(P_M \to F_S\right)$	11.3
$q\left(P_S \to F_M\right)$	5.32	$p\left(F_M \to P_S\right)$	3.13	$q\left(P_S \to P_M\right)$	49.2	$p\left(P_M \to P_S\right)$	36.7
$q\left(N \to F_M\right)$	1.14	$p\left(F_M \to N\right)$	1.61	$q\left(N \to P_M\right)$	10.1	$p\left(P_M \to N\right)$	4.54
$\sum_{i \neq M} q\left(i \to F_M\right)$	**42.8**	$\sum_{j \neq M} p\left(F_M \to j\right)$	**36.9**	$\sum_{i \neq M} q\left(i \to P_M\right)$	**67.7**	$\sum_{j \neq M} p\left(P_M \to j\right)$	**52.6**

Women

F_M				P_M			
Inflows		Outflows		Inflows		Outflows	
$q\left(P_M \to F_M\right)$	13.1	$p\left(F_M \to P_M\right)$	11.4	$q\left(F_M \to P_M\right)$	12.5	$p\left(P_M \to F_M\right)$	14.6
$q\left(F_S \to F_M\right)$	38.4	$p\left(F_M \to F_S\right)$	35.1	$q\left(F_S \to P_M\right)$	8.25	$p\left(P_M \to F_S\right)$	8.58
$q\left(P_S \to F_M\right)$	12.3	$p\left(F_M \to P_S\right)$	7.73	$q\left(P_S \to P_M\right)$	45.6	$p\left(P_M \to P_S\right)$	35.7
$q\left(N \to F_M\right)$	1.93	$p\left(F_M \to N\right)$	2.45	$q\left(N \to P_M\right)$	5.81	$p\left(P_M \to N\right)$	3.87
$\sum_{i \neq M} q\left(i \to F_M\right)$	**52.7**	$\sum_{j \neq M} p\left(F_M \to j\right)$	**45.3**	$\sum_{i \neq M} q\left(i \to P_M\right)$	**59.7**	$\sum_{j \neq M} p\left(P_M \to j\right)$	**48.2**

Notes: LFS data, 1976 – 2018, quarterly transition probabilities cleared from seasonal variations, margin error and time-aggregation bias. F_S: single jobholding with a full-time primary job; P_S: single jobholding with a part-time primary job; F_M: multiple jobholding working full-time on the primary job; P_M: multiple jobholding working part-time on the primary job; N: nonemployment. The inflow transition from state j to k at time t, denoted $q\left(j \to k\right)$, is the ratio of the gross worker flow from j to k over the stock of workers in state k, i.e. $q\left(j \to k\right) = {}^{\#\{j \to k\}}/_{\#\{k\}}$ with $\#\{.\}$ indicating cardinality, and the numerator and denominator both measured at time t. The outflow transition probabilities are the elements of the Markov transition matrix (see equation (2)). All table entries are averages over the sample period expressed in percent.

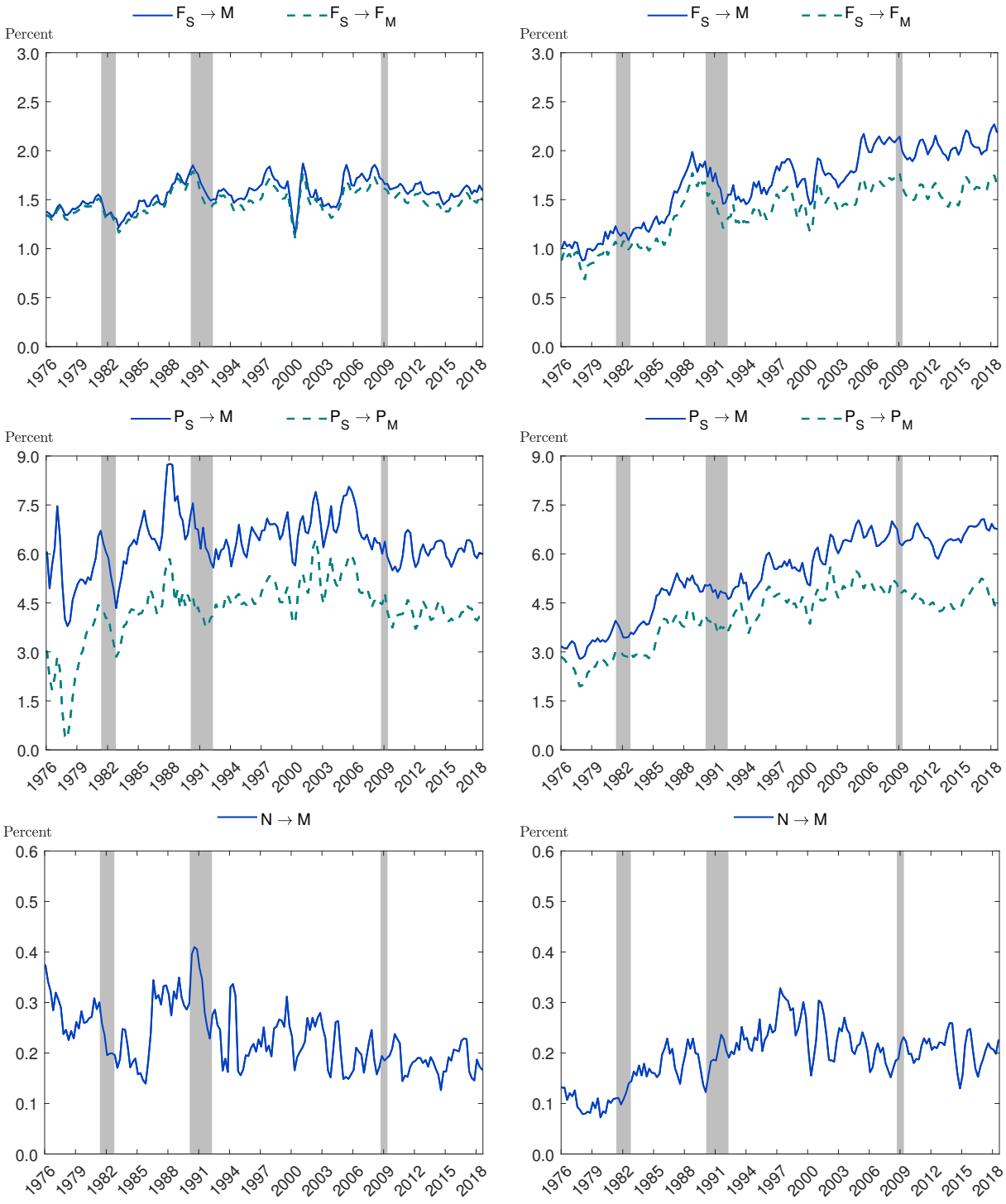
single full-time job (F_S) in the previous quarter or during the quarter that follows is between 8 and 11 percent. Third, transitions between multiple jobholding and nonemployment (N) are mostly negligible. This feature dovetails well with our choice of studying the dynamics of m_t using a framework that lumps together unemployment and inactivity.

Dynamic behavior. By simply comparing the bottom row of each panel in Table 2, we see that in all instances (i.e. for F_M and P_M among both men and women), the inflows have exceeded the outflows over time, resulting in an increase in the multiple jobholding share between 1976 and 2018. However, this tells us little about the dynamics of the transition probabilities in and out of multiple jobholding. Figures 4 and 5 show that these probabilities have moved in diverse directions over the sample period, necessitating close scrutiny.

A first noteworthy pattern in Figure 4 is that transitions from both full-time (F_S) and part-time (P_S) single jobholding have become more frequent over time. This pattern is especially important for female multiple jobholders, whose probabilities to take on a second job have more than doubled since the mid-1970s (their $p\left(F_S \to M\right)$ increases from 1.04 to 2.23 percent, and $p\left(P_S \to M\right)$ from 3.15 to 6.82 percent). An increase in the inflow transition probability implies *ceteris paribus* an increase in the number of multiple jobholders. In other words, Figure 4 offers a first candidate explanation for the upward trends shown in Figure 3: single jobholders have become more likely to take on second jobs. It is beyond the scope of this section to identify the causes of this change, but nevertheless we can provide some observations. A central tenet of the analysis of multiple jobholding is that second jobs help alleviate constraints on hours that workers may be facing in their primary job (see Section 5). Thus, the change could be driven by an increased stringency of the 'hours constraint' motive. Another source of variation could relate to the 'job heterogeneity' motive. Workers may be increasingly valuing a more diverse work experience, which they may acquire by working a second job.

Next, the upper and middle plots of Figure 5 show that the probability to give up the second job has decreased among multiple jobholders with either a full-time (F_M) or part-time (P_M) primary job. The change is quantitatively important for both men and women throughout the sample period.[16] This would generate an increase in the number of multiple jobholders at a

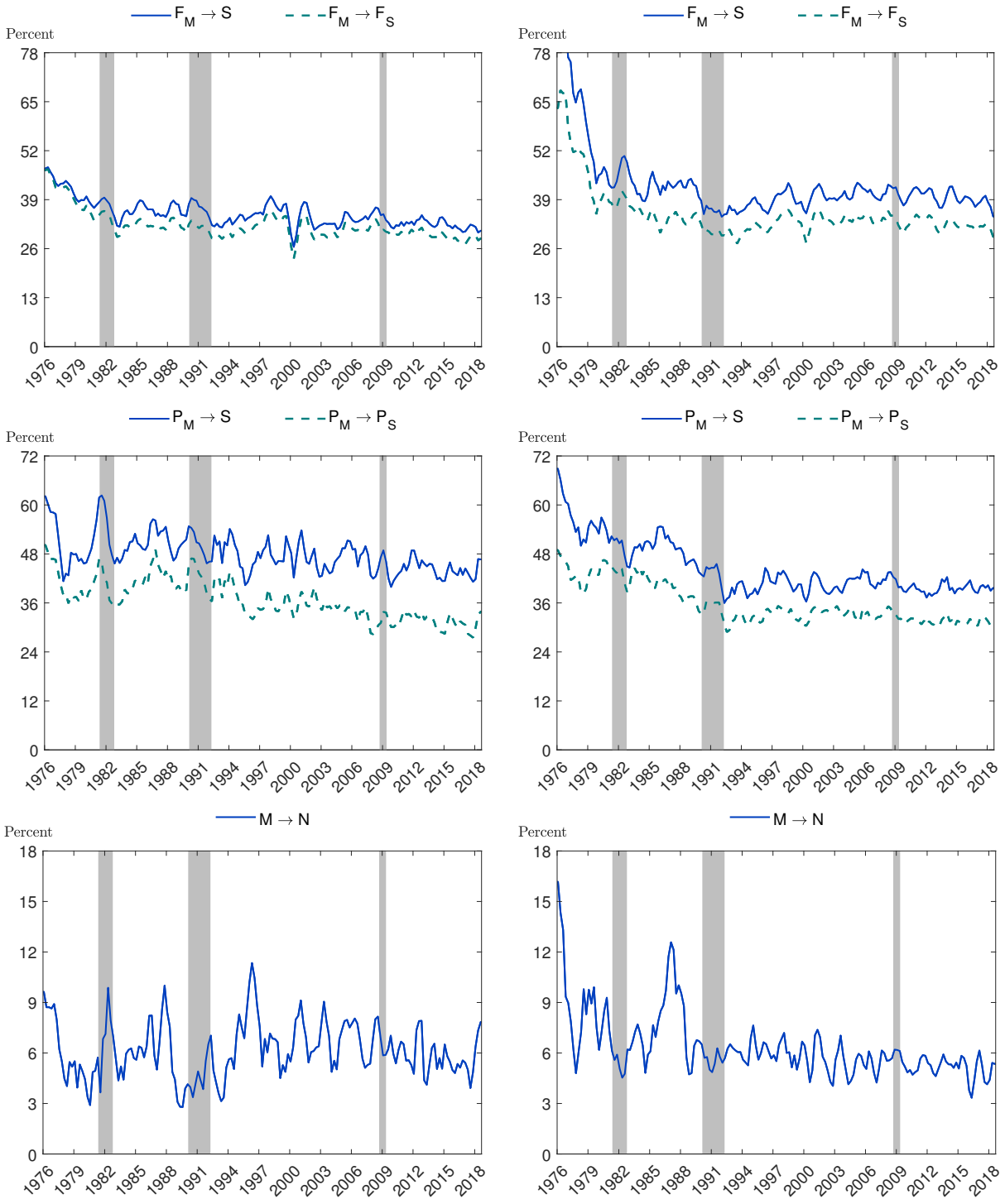
[16]The probabilities to return to single jobholding from holding a full-time primary (F_M) or part-time primary



(a) Men **(b)** Women

Figure 4: Transition probabilities into multiple jobholding: 1976–2018

Notes: LFS data, 1976 – 2018, quarterly transition probabilities cleared from seasonal variations, margin error and time-aggregation bias (see Section 3 and Appendix A for details). All series are smoothed by one-period, two-sided MA averaging. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.



(a) Men **(b)** Women

Figure 5: Transition probabilities out of multiple jobholding: 1976–2018

Notes: LFS data, 1976 – 2018, quarterly transition probabilities cleared from seasonal variations, margin error and time-aggregation bias (see Section 3 and Appendix A for details). All series are smoothed by one-period, two-sided MA averaging. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.

constant inflow rate. Thus, we have a second candidate explanation of the trends in multiple jobholding, namely that these employment episodes have become longer. As we pointed out in the introduction, we think this trend could be driven by self-selection into multiple jobholding. That is, if the flow into multiple jobholding shifts away from workers with a short expected duration of multiple jobholding, then we expect to see a decrease in the probability of returning to single jobholding. This explanation would be consistent with the strengthening of the 'hours constraint' motive if individuals who take on a second job to mitigate the constraint on hours do so less temporarily than, say, workers who hold a second job for noneconomic reasons (see Stinson Jr [1990] and Kimmel and Powell [1999]). It could also be that the type of jobs that workers hold as second jobs are more stable than in the past. For instance, in the U.S. labour market, jobs of very short durations are becoming scarcer (Hyatt and Spletzer [2017]).

4 Dissecting the trends in multiple jobholding

The above discussion identifies two candidate explanations of the trends reported in Figure 3. In this section, we develop a measurement framework that precisely quantifies their contribution to the dynamics of multiple jobholding. By applying this decomposition period by period, we can narrow down the picture to the most relevant source of variation.

4.1 A trend decomposition

We follow a common practice in the 'ins and outs' literature: we focus on steady-state approximations to quantify the role played by the dynamics of the different transition probabilities. The steady-state multiple jobholding share in period t, denoted as $\bar{m}_t$, is the share implied by the contemporaneous values of the flow hazards, which we define momentarily. The reason why it provides a good approximation to the actual multiple jobholding share is that convergence towards the steady state is nearly completed within each quarter due to the high levels of transitions across labour market states – and, as will be shown below, we do find that the

(P_M) job are very high for women in 1976. Our estimates might be imprecise at the beginning of the sample period because of the very small pool of female multiple jobholders (recall that in 1976 only 1.5 percent of employed women were holding a second job).

steady-state and actual multiple jobholding shares track each other closely.

To make the relationship between $\bar{m}_t$ and the transition probabilities explicit, we start by rewriting the Markov chain of equation (2) as

$$\widetilde{\boldsymbol{\ell}}_t = \widetilde{\boldsymbol{X}}_t \widetilde{\boldsymbol{\ell}}_{t-1} + \mathbf{x_t}. \tag{4}$$

Here we denote by $\widetilde{\boldsymbol{\ell}}_t$ the vector $\boldsymbol{\ell}_t$ normalized by the size of the population aged 15 and above $(F_{M,t} + P_{M,t} + F_{S,t} + P_{S,t} + N_t)$, and by $\widetilde{\boldsymbol{X}}_t$ the matrix $\boldsymbol{X}_t$ rearranged accordingly. Hence, the vector $\mathbf{x_t}$ is: $\left[\begin{array}{cccc} p\left(N \to F_M\right) & p\left(N \to P_M\right) & p\left(N \to F_S\right) & p\left(N \to P_S\right) \end{array} \right]_t'$. It is then possible to define the continuous-time counterpart of equation (4):

$$\dot{\widetilde{\boldsymbol{\ell}}}_t = \widetilde{\boldsymbol{H}}_t \widetilde{\boldsymbol{\ell}}_t + \mathbf{h_t}. \tag{5}$$

In this equation, the elements of $\widetilde{\boldsymbol{H}}_t$ and $\mathbf{h}_t$ are flow hazards, the continuous-time counterparts of the discrete-time transition probabilities.[17] λ^{ij} denotes the flow hazard from state i to state j; λ^{ij} can be computed using the relationship: $p\left(i \to j\right) = 1 - e^{-\lambda^{ij}}$. To illustrate the role of flow hazards, let us write equation (5) in explicit form:

$$\begin{aligned} \left[\begin{array}{c} \dot{\widetilde{F}}_M \\ \dot{\widetilde{P}}_M \\ \dot{\widetilde{F}}_S \\ \dot{\widetilde{P}}_S \end{array} \right]_t = & \left[\begin{array}{cccc} -\sum\limits_{j \neq F_M} \lambda^{F_M j} - \lambda^{NF_M} & \lambda^{P_M F_M} - \lambda^{NF_M} & \lambda^{F_S F_M} - \lambda^{NF_M} & \lambda^{P_S F_M} - \lambda^{NF_M} \\ \lambda^{F_M P_M} - \lambda^{NP_M} & -\sum\limits_{j \neq P_M} \lambda^{P_M j} - \lambda^{NP_M} & \lambda^{F_S P_M} - \lambda^{NP_M} & \lambda^{P_S P_M} - \lambda^{NP_M} \\ \lambda^{F_M F_S} - \lambda^{NF_S} & \lambda^{P_M F_S} - \lambda^{NF_S} & -\sum\limits_{j \neq F_S} \lambda^{F_S j} - \lambda^{NF_S} & \lambda^{P_S F_S} - \lambda^{NF_S} \\ \lambda^{F_M P_S} - \lambda^{NP_S} & \lambda^{P_M P_S} - \lambda^{NP_S} & \lambda^{F_S P_S} - \lambda^{NP_S} & -\sum\limits_{j \neq P_S} \lambda^{P_S j} - \lambda^{NP_S} \end{array} \right]_t \\ & \times \left[\begin{array}{c} \widetilde{F}_M \\ \widetilde{P}_M \\ \widetilde{F}_S \\ \widetilde{P}_S \end{array} \right]_t + \left[\begin{array}{c} \lambda^{NF_M} \\ \lambda^{NP_M} \\ \lambda^{NF_S} \\ \lambda^{NP_S} \end{array} \right]_t . \end{aligned} \tag{6}$$

[17] The upper dot on $\widetilde{\boldsymbol{\ell}}_t$ in the left-hand side of equation (5) denotes its first-order time derivative. Notice that on the right-hand side of this equation, $\widetilde{\boldsymbol{H}}_t$ multiplies the time-t vector $\widetilde{\boldsymbol{\ell}}_t$ whereas $\widetilde{\boldsymbol{X}}_t$ multiplies the vector of stocks from time $t-1$ in equation (4).

At the steady state, equation (5) yields the following relationship between the stocks in vector $\widetilde{\boldsymbol{\ell}}_t$ and the underlying flow hazards:

$$\bar{\widetilde{\boldsymbol{\ell}}}_t = -\widetilde{\boldsymbol{H}}_t^{-1}\mathbf{h}_t. \tag{7}$$

One can then approximate each steady-state stock at time t, say $\bar{\widetilde{\ell}}_t$, with a Taylor expansion:

$$\bar{\widetilde{\ell}}_t - \bar{\widetilde{\ell}} \approx \sum_{i \neq j} \frac{\partial \bar{\widetilde{\ell}}_t}{\partial \lambda^{ij}} \left(\lambda_t^{ij} - \lambda^{ij}\right). \tag{8}$$

The notations without the time subscript t denote the mean of a variable and $\frac{\partial \bar{\widetilde{\ell}}_t}{\partial \lambda^{ij}}$ are partial derivatives. The last step is to relate the deviation of stocks from their respective mean to the evolution of the steady-state multiple jobholding share. By totally differentiating the steady-state counterpart of equation (3), we have:

$$d\bar{m}_t = \frac{\left(d\bar{F}_{M,t} + d\bar{P}_{M,t}\right)(1 - \bar{m}_t) - \left(d\bar{F}_{S,t} + d\bar{P}_{S,t}\right)\bar{m}_t}{\bar{F}_{M,t} + \bar{P}_{M,t} + \bar{F}_{S,t} + \bar{P}_{S,t}}, \tag{9}$$

where the letter d denotes the deviation of a stock from its mean. Then, we can combine equations (8) and (9) to construct counterfactual changes in the multiple jobholding share driven by changes in each flow hazard. Also, owing to the linearity of equation (8), we can construct counterfactual changes driven by changes in a *group* of flow hazards (e.g. the inflows, the outflows, etc.) by simply adding the individual counterfactual time series.

4.2 Understanding period-by-period changes

Our decomposition focuses on the steady-state multiple jobholding share, $\bar{m}_t$. Table 3 suggests this focus is well justified. The table reports the correlation in levels between m_t and $\bar{m}_t$, and the correlation between first-differenced data (recall that the frequency of the data is one quarter). In all instances the correlations are very high, indicating that our decomposition accounts for the bulk of the variation of multiple jobholding over time.[18]

[18] Although we do not pursue this route here, we can repeat the analysis using the time series cleared from their high-frequency variations – for instance, by applying a Hodrick–Prescott filter to the data. The results, which are available upon request, are robust to these modifications.

Table 3: Accuracy of the steady-state approximation

Men	1976–1990	1990–2000	2000–2018
$\mathbb{C}\text{orr}\,(m_t, \bar{m}_t)$	0.963	0.787	0.731
$\mathbb{C}\text{orr}\,(\Delta m_t, \Delta \bar{m}_t)$	0.854	0.875	0.864
Women	1976–1990	1990–2000	2000–2018
$\mathbb{C}\text{orr}\,(m_t, \bar{m}_t)$	0.990	0.735	0.844
$\mathbb{C}\text{orr}\,(\Delta m_t, \Delta \bar{m}_t)$	0.845	0.866	0.824
# quarters	60	44	76

Notes: LFS data, 1976 – 2018. m_t: multiple jobholding share; $\bar{m}_t$: steady-state multiple jobholding share; Δ: first-difference operator. The table reports correlations coefficients ($\mathbb{C}$orr) and the number of quarters (# quarters) used to calculate these coefficients in each subperiod.

We use the framework developed in the previous subsection to understand the trends (or lack thereof) of men's and women's multiple jobholding share over the three subperiods, 1976–1990, 1990–2000, and 2000–2018. Specifically, for each subperiod beginning in period t_0 and ending in t_1, we use equation (9) to compute various counterfactual changes, $D\bar{m}$, defined by:

$$D\bar{m} = \sum_{\tau=t_0}^{t_1} d\bar{m}_\tau. \tag{10}$$

As we have already noted, we can compute the counterfactuals driven by a specific flow hazard or by a group of flow hazards.

Empirical results. The results of our trend decomposition are displayed in Table 4. To illustrate how the table works, let us describe the entries of the column labeled '1976–1990' in the panel for men. Between 1976 and 1990, the evolution of the transition probability $p\,(F_S \to M)$ *per se* implies a change of men's multiple jobholding share by 0.90 percentage points (pp.). The corresponding figure for $p\,(P_S \to M)$ is 0.38 pp., and the figure for $p\,(N \to M)$ is 0.15 pp. Adding up the changes driven by all inflow probabilities ($F_S \to M$, $P_S \to M$ and $N \to M$), the impact is a change by 1.43 pp. of the multiple jobholding share. On the other hand, the predicted change based on the behavior of $p\,(F_M \to S)$ is an increase by 1.03 pp. while $p\,(P_M \to S)$ generates a decrease by -0.17 pp. The cumulated effect of the outflow probabilities

to the multiple jobholding share is an increase by 0.95 pp. Next, we add up the changes implied by the transition probabilities. Together they result in a change of the multiple jobholding share by 2.39 pp. This is very close to the change of the actual multiple jobholding share during this period, namely 2.31 pp. (an 84.5 percent increase).

The first remark about Table 4 concerns the fit of the counterfactual time series. As can be seen at the bottom of each panel, the changes based on the behavior of the inflows and outflows capture the differences in the size of long-run changes between men and women, which we highlighted in Subsection 2.3, as well as its timing. That is, the increase of multiple jobholding is more important among women than among men, is very large during the first subperiod, and is interrupted for men during the period going from 1990 to 2000. Next, we note that, with exception of the intermediary subperiod, the inflow transition probabilities contribute to raising the multiple jobholding share. This is in line with the discussion from Subsection 3.3. The outflow transition probabilities, on the other hand, increase the multiple jobholding share in the first two subperiods but not in the third one (the period from 2000 to 2018). During the 1990s, their effect is entirely offset by the negative contribution of the inflow transition probabilities among men. Indeed, the outflows would have generated an increase in men's multiple jobholding share by 1.06 pp., but multiple jobholding actually decreased because of the dynamics of the inflows. This pattern was less pronounced among women: their multiple jobholding share continued to increase in the 1990s because the negative contribution of the inflows was 'only' -0.13 pp.

Next, we analyze Table 4 separately by gender. For men, the bulk of the increase (60 percent) in multiple jobholding between 1976 and 1990 is explained by the inflows: they account for a 1.43 pp. increase out of the 2.39 pp. change. During the second and third subperiods, the inflows even overpredict the change of the multiple jobholding share. They predict a decrease by -1.30 pp. (vs. -0.24) during the 1990s and an increase by 0.65 pp. from 2000 to 2018 (vs. 0.42 pp.). Thus, their contribution is dampened by the dynamics of the outflows. Clearly, in all three subperiods changes in the propensity of single jobholders to take on second jobs is the main driver of men's multiple jobholding share. For women during the first subperiod, there is an even split between the inflow and outflow contributions. The inflows explain 52 percent

Table 4: Counterfactual changes in the multiple jobholding share

Men	1976–1990	1990–2000	2000–2018
$D\bar{m}\,(F_S \to M)$	0.90	-0.96	0.67
$D\bar{m}\,(P_S \to M)$	0.38	-0.16	-0.02
$D\bar{m}\,(N \to M)$	0.15	-0.17	0.01
$\sum_{i \neq M} D\bar{m}\,(i \to M)$	1.43	-1.30	0.65
$D\bar{m}\,(F_M \to S)$	1.03	1.01	-0.22
$D\bar{m}\,(P_M \to S)$	-0.17	0.19	-0.00
$D\bar{m}\,(M \to N)$	0.10	-0.14	-0.02
$\sum_{j \neq M} D\bar{m}\,(M \to j)$	0.95	1.06	-0.24
$\sum_{i,j \neq M} D\bar{m}\,(i \to j)$	**2.39**	**-0.24**	**0.42**
Women	1976–1990	1990–2000	2000–2018
$D\bar{m}\,(F_S \to M)$	0.95	-0.30	0.94
$D\bar{m}\,(P_S \to M)$	0.72	0.13	0.59
$D\bar{m}\,(N \to M)$	0.09	0.04	0.02
$\sum_{i \neq M} D\bar{m}\,(i \to M)$	1.76	-0.13	1.55
$D\bar{m}\,(F_M \to S)$	0.90	-0.03	-0.01
$D\bar{m}\,(P_M \to S)$	0.59	0.31	-0.04
$D\bar{m}\,(M \to N)$	0.12	-0.02	-0.00
$\sum_{j \neq M} D\bar{m}\,(M \to j)$	1.61	0.26	-0.06
$\sum_{i,j \neq M} D\bar{m}\,(i \to j)$	**3.37**	**0.13**	**1.50**

Notes: LFS data, 1976 – 2018. $D\bar{m}$: counter-factual change in the multiple jobholding share; F_S: single jobholding with a full-time primary job; P_S: single jobholding with a part-time primary job; $S = F_S + P_S$: single jobholding; F_M: multiple jobholding working full-time on the primary job; P_M: multiple jobholding working part-time on the primary job; $M = F_M + P_M$: multiple jobholding; N: nonemployment. For each time series the table reports average changes in levels, calculated as the difference between the average over the last year and first year of each subperiod. All table entries are percentage points.

of the 3.37 pp. increase of women's multiple jobholding share between 1976 and 1990. During the 1990s, their role is quantitatively less important than that of the outflows. This is the only instance in the table where this occurs. Between 2000 and 2018 on the other hand, the dynamics among women is entirely explained by the inflows, which predict a 1.55 pp. increase to be compared with the 1.50 pp. change of the multiple jobholding share. Overall, the picture that emerges is that continued increases in the propensity of single jobholders to take on second jobs is the predominant driver of men's and women's multiple jobholding share.

Our approach distinguishes between full-time and part-time work when individuals hold either one or several jobs. This helps us refine the picture just described. As can be seen in Table 4, among men the dynamics of the inflows is overwhelmingly explained by the behavior of full-time workers (F_S), and similarly the outflows are driven by the behavior of workers whose primary job is full-time (F_M). Among women, the changes are more balanced between those occurring among part-time and full-time workers. For instance, during the last subperiod the increased propensity of full-time female workers to take on a second job predicts an increase by 0.94 pp. The corresponding figure among part-timers is 0.59. Therefore these transition probabilities explain respectively two thirds and one third of the increase in women's multiple jobholding share. These observations illustrate, again, the usefulness of having this rich measurement framework. On a similar note, a strength of our statistical decomposition is that it detects changes that are partly masked by the 'stock-flow fallacy' illustrated in Table 4. That is, in several subperiods, the changes in stocks are actually lower than the changes implied by the gross flows taken in isolation. The decomposition exactly quantifies those differences.

5 Discussion and concluding remarks

We documented long-run increases in the shares of multiple jobholders among employed men and women in Canada. These are no measurement artifacts: the trends are not accounted for by compositional changes or time-aggregation bias. We devised a statistical procedure to disentangle the role of several sources of changes in multiple jobholding. That procedure showed that the main driver is the prolonged increase in the propensity of single jobholders to take on

second jobs. In this last section, we overview a list of candidate explanations. Before doing so, we should make clear that this list is by no means meant to provide final answers; it is intended to motivate further work looking at the sources of the changing propensity of single jobholders to take on second jobs. Ideally, one would address this by using data on workers' stated reasons for holding several jobs. There used to exist such data for Canada, namely the Survey of Work arrangements conducted in 1991 and 1995, but unfortunately Statistics Canada has since discontinued this survey.[19] Absent these data, we can only offer indirect evidence and speculate on what the underlying sources of changing multiple jobholding inflows might be.

We structure the discussion below around the two main explanations of multiple jobholding identified in the literature. One, the hours constraints that individuals may face in their primary job (Shishko and Rostker [1976], Krishnan [1990], Paxson and Sicherman [1996]). Two, the 'job heterogeneity' motive, which may reflect the enjoyment that workers derive from a job that is different from their main job (Conway and Kimmel [1998, 2001]) or workers' willingness to diversify their skills (Panos et al. [2014], Pouliakas [2017]). In line with these explanations, while in labour force surveys most workers report holding more than one job for economic reasons, noneconomic reasons also play a significant role. For instance according to Kimmel and Powell [1999], the split between economic and noneconomic reasons in Canada is roughly two-third/one-third.[20] Economic reasons include: 'meet regular household expenses', 'pay off debts', 'buy something special', and 'save for the future'. Noneconomic reasons include: 'gain experience/build business' and 'enjoys the work of the second job'.

The role of hours constraints. Kahn and Lang [1995] report that in the 1986 Survey of Work Reduction supplement of the LFS, 34.2 percent of workers would like to increase their hours and 17.3 percent would prefer to work fewer hours.[21] In the 2017 Bank of Canada Survey of Consumer Expectations, about a tenth of respondents would like to work more hours, with

[19] See http://www23.statcan.gc.ca/imdb/pIX.pl?Function=getThemeSV&PItem_Id=97413&PCE_Id=438&PCE_Start=01010001&CItem_Id=97413&CCE_Id=445&CCE_Start=01010001&lang=en.

[20] See Table 7 in Kimmel and Powell [1999]. The authors use data from the Canadian Survey of Work arrangements conducted in 1991 and 1995 that we mentioned earlier.

[21] In an insightful discussion of survey data on workers' stated reasons for holding several jobs, Kahn and Lang [2001] explain that, both in Canada and the U.S., most workers who are dissatisfied with their hours would like to work more, not fewer hours. In Europe, the data seem to suggest that the proportion of dissatisfied workers who would prefer to reduce hours is higher.

higher reported willingness for more hours among part-time workers (60%) than among full-time (6%) workers (see Gosselin and Khan [2015] for details about the survey).[22] Workers may choose to take on a second job in order to increase their total hours. In line with this observation, we find evidence suggesting that 'job packaging' may have become more common. Indeed, the secular decrease in hours per worker in Canada masks substantial heterogeneity, and in particular increases in hours per worker in the lower tail of the hours distribution.[23] In Plots B2a and B2b of the appendix, we show that hours per worker have declined in the aggregate and among full-time workers since 1976. But they have increased among part-time workers and even more so among involuntary part-time workers, both single and multiple jobholders (Plots B2c and B2d).[24] Hours worked at all jobs by involuntary part-time multiple jobholders are coming closer to the hours worked by full-time single jobholders. These observations suggest that falling hours might not be welcome by all workers, and that some might prefer to work more hours and achieve to do so by piecing together several jobs.

What are the factors that may be changing the extent of hours constraints and lead to an increase in the probability of taking on a second job? On the one hand, holding individuals' demand for working more hours constant, it may be that they are increasingly able to do so due to changes in technology. For instance, it is likely that changes in workforce management technologies make it easier to coordinate different work schedules of employees nowadays. As a result of these changes, employers might be able to provide workers with additional flexibility in hours in their primary job, facilitating the combination with a second job (Figure B3 in the appendix shows increase in the share of part-time, hourly-paid and temporary employment over time).[25] In a similar fashion, the increased availability of remote work from home is expected to contribute positively to this trend. Related, long-run changes in the industry-occupation

[22]Interestingly, many part-time workers would like to work more hours while at the same time remaining employed as part-time workers. As a result, the involuntary part-time employment rate from the LFS understates the incidence of involuntarily low hours.

[23]The downward trend in hours per worker in the aggregate might be driven by compositional effects coming from increasing participation of women in the labour force, population aging and the shift towards services-producing industries. That is, average hours by women, senior workers, and workers in services-producing industries are lower than those by men, prime-age individuals and workers in goods-producing industries.

[24]In the LFS, involuntary part-time workers are individuals who are willing and available to work full-time and report being employed part-time because they cannot find a full-time job.

[25]This is a change on the demand side, but ultimately its impact on the multiple jobholding share is mediated by workers' ability and willingness to hold a second job in order to increase hours.

mix of the cross section of employment could imply that workers are increasingly employed in primary jobs that offer a more flexible work schedule (see Appendix B).[26]

On the worker's side, several factors are expected to affect the extent and role of hours constraints. First, while the shift towards part-time, hourly and temporary employment has probably increased hours flexibility for employers and some workers, it may also have motivated some workers to take on second jobs. This is likely because part-time and hourly paid jobs are associated with lower hours worked (Figure B4) and also lower earnings than full-time and salaried positions. Recent subdued wage growth in Canada (Brouillette et al. [2017]) may represent an additional factor motivating some workers to increase their earnings through additional employment.[27] Second, working on a second job is likely to entail additional commute time, fatigue, set-up costs, etc. Some of these costs may have decreased over time due to technological improvements. A telling example is the advent of the 'online gig economy', which makes it easy for workers to 'turn on' a second job at their own will.[28] A third plausible, supply-side factor is that workers' demand for non-standard and flexible work arrangements may have increased over time. Kimmel and Powell [1999] cite evidence for Canada consistent with this explanation. They report that women may be increasingly willing to combine together several jobs in order to deal with various responsibilities such as child care or elder care. Thus preferences may also be changing the way individuals address different types of hours constraints. However, it remains difficult to distinguish pull and push factors in taking on additional jobs, including informal 'gig' work. For example, Kostyshyna and Luu [2019] report that a large share of workers would switch their informal 'gig' hours to formal hours for the same pay and participate in informal work due to weak economic conditions.

The role of job heterogeneity. The role of the 'job heterogeneity' motive is more difficult to assess since we do not have data that cover the nature of both the primary and second jobs

[26] One caveat, however, is that we find little support for explanations based on compositional changes. For data availability reasons, we are only able to check whether compositional changes in the industry structure of employment could drive the trends in multiple jobholding. We find that that these are extremely limited. We have little reasons to believe that this result would be overturned by data on workers' occupation of employment.

[27] We do observe an increase in the multiple jobholding share since 2014Q4, coinciding with the impact of oil price correction and the slowdown in wage growth.

[28] According to Abraham et al. [2015] and Katz and Krueger [2019], employment in the 'online gig economy' is not well measured by standard labour force surveys. Beyond the issue of measurement error, we should note that the role of the 'online gig economy' hypothesis is difficult to reconcile with the timing of the upward trends in multiple jobholding, which started in the mid-1970s.

of individuals and how these have evolved over time. With this caveat in mind, we point out the following observations.

Firstly, there may be a reduced role of economic reasons for holding multiple jobs, and consequently a relatively larger role for noneconomic reasons. The reason for this is that earnings in the primary job are likely more responsive to changes in hours nowadays. Indeed, performance-pay, work bonuses and related pay schemes have become more common, making earnings more elastic to worker's effort on the job. We also observe an increase in the shares of hourly-paid employees (Figure B3 in the appendix) which should contribute to a trend in the same direction. Moreover, hourly-paid workers have lower hours compared to salaried workers (Figure B4 in the appendix), and, consequently, have more time available to devote to a second job.[29] Just like the factors listed in the previous paragraphs, these developments would work through an increase in the probability that a single jobholder moves into multiple jobholding.

There are two additional observations suggesting that job heterogeneity can play a role in the dynamics of multiple jobholding flows that we documented. The first one is based on recent evidence on informal gig work activities (that come in addition to the first job of individuals). When asked about their motivation for participating in such activities, a very large share of individuals (62 percent) report doing do 'just for fun / as a hobby'; see Kostyshyna and Luu [2019]. This is much higher than the 15-17 percent share of respondents who hold more than one job because they 'enjoy the work of the second job' in the Survey of Work arrangements analyzed by Kimmel and Powell [1999]. The numbers are not strictly comparable, but this suggests that the type of work provided by the 'gig economy' might be more compatible with the 'job heterogeneity' motive. It may also be that workers' preferences have evolved over time and put a greater weight on the non-pecuniary aspects of work. Second, there is evidence that working on a second job is very effective in acquiring new skills. Perhaps reflecting this, Kostyshyna and Luu [2019] report that respectively 14 and 11 percent of workers who engage in informal 'gig' work do so to maintain existing job-related skills and to acquire new job-

[29] However, as mentioned above, part-time workers are more likely to report wanting to work more hours than full-time workers. On the one hand, increases in part-time, hourly and temporary employment may indicate a higher flexibility or ability to take on additional jobs. But on the other hand, it may suggest that a larger share of workers need to boost their hours and earnings through additional jobs if they cannot increase hours with their main employer.

related skills. The motive for diversifying skills may have grown over time as long-term career jobs become less frequent, requiring greater adaptability over the working lifetime. Thus, the increased role of job heterogeneity might also reflect the precautionary behavior of workers facing more uncertain working trajectories.

Conclusion. From mid-1970s until today, single jobholders in Canada have become more likely to work at a second job. As a result, the multiple jobholding share has increased substantially. In this paper, we documented these evolutions, provided a comprehensive account of the underlying role of the inflows and outflows of multiple jobholding, and we established a list of candidate explanations. Our empirical findings can be useful to calibrate and assess quantitatively models that examine these explanations. We believe this is an important endeavor for future research.

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Appendices

A Correction procedures

Our time series of stocks and gross worker flows are subjected to several adjustments. We first correct the raw data for two discontinuities created by methodological changes in the LFS. Then we filter out systematic seasonal variations using the U.S. Census Bureau's X-13ARIMA-SEATS program. Using the filtered time series, we divide the gross flow of workers from state i to state j at time t by the stock of worker in state i at time $t-1$ to obtain the time-t transition probability $p\left(i \to j\right)$. Then we adjust the set of transition probabilities to account for margin error and time aggregation.

Changes in LFS data. There are discontinuities in the raw data of gross worker flows in 1994 and 2000. The dates coincide with significant revisions in the methodology of the LFS (Usalcas and Kinack [2017]). In 1994, paper and pencil questionnaires were replaced by computer-assisted interviewing. In 2000, centralized computer-assisted telephone interviewing was adopted, and more importantly the individual survey weights were changed from a generalized regression to composite estimate survey weights. There is no standardized method to address these data discrepancies, so we simply correct them by using multiplicative adjustment factors. For each raw time series of gross worker flows, we calculate adjustment factors by taking the ratio of the mean value for the years before and after the 1994 and 2001 discontinuities.

Margin error. The goal of margin-error adjustments is to address the discrepancy between the stocks and gross worker flows data. The stocks are computed using cross-sectional data 'only'. On the other hand, the gross worker flows require longitudinal linking, and therefore their measurement suffers from sample attrition, imperfect matching, etc. The margin-error adjustment reconciles the changes in stocks predicted by the gross flows data with the actual changes calculated using cross-sectional data.

The starting point of margin-error adjustment is the Markov chain structure that underlies

our approach in Section 3. For convenience, we repeat equation (2) here:

$$\boldsymbol{\ell}_t = \boldsymbol{X}_t \boldsymbol{\ell}_{t-1}. \tag{A.1}$$

In this equation, $\boldsymbol{\ell}_t$ is a vector of the stocks in each of the states of the Markov chain, and $\boldsymbol{X}_t$ is a stochastic matrix. We follow Elsby et al. [2015] and rewrite the dynamics of changes in stocks in the following way:

$$\Delta\boldsymbol{\ell}_t = \boldsymbol{S}_{t-1}\boldsymbol{p}_t. \tag{A.2}$$

$\boldsymbol{p}_t$ is a column vector containing all time-t $p\left(i \to j\right)$ such that $i \neq j$, and $\boldsymbol{S}_{t-1}$ is a conformable matrix of stocks in the previous period. At this point we only have at hand unadjusted transition probabilities, which we denote as $\widehat{\boldsymbol{p}}_t$. In equation (A.2) on the other hand, $\boldsymbol{p}_t$ denotes the 'true', i.e. stock-consistent transition probabilities. We recover $\boldsymbol{p}_t$ by minimizing the weighted sum of squares of margin-error adjustments under the constraint of equation (A.2), i.e. we solve:

$$\min \left(\boldsymbol{p}_t - \widehat{\boldsymbol{p}}_t\right)' \boldsymbol{W}_t^{-1} \left(\boldsymbol{p}_t - \widehat{\boldsymbol{p}}_t\right) \text{ s.t. } \Delta\boldsymbol{\ell}_t = \boldsymbol{S}_{t-1}\boldsymbol{p}_t. \tag{A.3}$$

In this minimization problem, $\boldsymbol{W}_t$ is a weighing matrix proportional to the covariance matrix of $\widehat{\boldsymbol{p}}_t$ (see Elsby et al. [2015] and Borowczyk-Martins and Lalé [2018]). The solution of this minimization problem, $\boldsymbol{p}_t$, is a function of $\widehat{\boldsymbol{p}}_t$, $\boldsymbol{S}_{t-1}$, $\Delta\boldsymbol{\ell}_t$, which we have already computed.

Time-aggregation bias. The idea behind the adjustment for time-aggregation bias is explained in Section 3. Our adjustment procedure is based on the continuous-time correction developed by Shimer [2012]. We describe it here briefly for completeness.

To maintain consistency with the notations of Section 4, denote by $\boldsymbol{H}_t$ the continuous-time analog of $\boldsymbol{X}_t$. It is known that if the eigenvalues of $\boldsymbol{H}_t$ are all distinct, then $\boldsymbol{H}_t$ can be written as: $\boldsymbol{H}_t = \boldsymbol{V}_t\boldsymbol{C}_t\boldsymbol{V}_t^{-1}$, where $\boldsymbol{C}_t$ is a diagonal matrix of eigenvalues and $\boldsymbol{V}_t$ is the matrix of associated eigenvectors. Furthermore, one can show that $\boldsymbol{X}_t$ can be decomposed as: $\boldsymbol{X}_t = \boldsymbol{V}_t\boldsymbol{D}_t\boldsymbol{V}_t^{-1}$, where $\boldsymbol{D}_t$ is a diagonal matrix whose elements are the exponentiated eigenvalues in $\boldsymbol{C}_t$, and that this relationship is unique if the eigenvalues of $\boldsymbol{D}_t$ are, in addition to distinct, real and nonnegative. These relationships can be used to obtain time series of

estimates of the adjusted hazard rates λ_t^{ij}. So, in every period t, we compute the eigenvalues of the discrete transition matrix $\boldsymbol{X}_t$ and check whether they are all distinct, real and nonnegative. We then take their natural logarithm to obtain the eigenvalues of the continuous-time analogue $\boldsymbol{H}_t$. Finally, we compute λ_t^{ij}, and use the relationship: $p_t\left(i \to j\right) = 1 - e^{-\lambda_t^{ij}}$ to obtain a series of time-aggregation adjusted transition probabilities.

B Additional results

Table B1 reports the average levels and dynamics of the multiple jobholding share among several subgroups: we split the data by worker's age, educational attainment, marital status, primary industry of employment and region of residence. In Table B2, we adopt the same partitions to describe the share of multiple jobholders who work part-time on the primary job. The main takeaways from Tables B1 and B2 are summarized in Subsection 2.3. In a nutshell, the key patterns of the dynamics of multiple jobholding shown in these tables are well captured by the partition by gender used in our analysis.

Tables B1 and B2 also provide a few additional details. First, there is a nonnegligible degree of heterogeneity when we distinguish between different industries (similar to Kimmel and Powell [1999]). This holds true especially for the share of multiple jobholders who work part-time on the primary job (Table B2). Much of this heterogeneity is likely to be driven by differences in the mix of occupations across industries. Unfortunately, we do not have a consistent occupational classification over the whole sample period that would enable us to split the data by occupations. Second, differences across regions as well as across urban vs. rural areas are quite limited. This is somewhat in contrast with evidence for the U.S., where it appears that multiple jobholding decreases substantially with city size (Hirsch et al. [2017]).

Compositional changes. To investigate further the role played by heterogeneity in the dynamics of the multiple jobholding share, we look at the effects of compositional changes. Specifically, we construct counterfactual multiple jobholding shares that control for changes in the composition of employment with respect to gender interacted with age (15 to 24 years;

Table B1: The multiple jobholding share

	1976–2018	1976–1990		1990–2000		2000–2018	
	Avg.	Avg.	△ (%)	Avg.	△ (%)	Avg.	△ (%)
Gender:							
Men	4.38	3.69	84.5	4.59	-2.26	4.83	10.8
Women	5.09	3.28	248.7	5.53	10.3	6.32	21.9
Age:							
15-24 years	5.39	3.50	205.2	6.17	20.7	6.60	14.0
25-34 years	4.76	3.60	112.2	5.17	4.81	5.55	18.8
35-44 years	4.64	3.86	110.9	4.99	-11.4	5.13	17.5
45-54 years	4.19	3.33	93.6	4.44	-2.25	4.81	20.3
55 years and above	3.40	2.49	68.3	3.43	19.4	4.15	25.8
Education:							
0-8 years	2.71	2.63	50.1	2.66	-11.2	2.85	6.03
Secondary school	4.07	3.06	133.7	4.57	2.07	4.70	7.89
Some post secondary education	4.98	4.04	136.2	5.51	-4.97	5.51	12.4
University degree	5.48	4.76	96.9	5.81	-8.18	5.92	15.9
Marital status:							
Married or cohabiting	4.29	3.47	105.7	4.73	-2.56	4.77	15.1
Widowed, divorced or separated	4.83	3.41	164.4	5.16	-4.40	5.91	17.9
Never married	5.04	3.52	179.9	5.54	8.29	6.09	14.6
Industry:							
Agriculture	7.68	6.80	76.5	8.55	-8.47	7.96	-5.86
Other primary	3.02	2.82	127.8	3.58	-12.6	2.88	-17.6
Construction	3.09	2.91	86.1	3.44	-22.0	3.04	5.72
Manufacturing	2.69	2.32	107.2	2.88	-17.6	2.92	27.3
Transportation	3.94	3.39	110.4	4.46	-12.0	4.17	-10.6
Wholesale trade	3.90	3.45	143.3	4.57	-25.1	3.93	11.2
Retail trade	4.45	3.18	149.8	5.09	18.9	5.19	3.81
Finance, insurance, real estate	3.78	2.86	168.6	4.07	-13.1	4.43	6.71
Professional, technical and management services	4.59	3.84	142.9	4.88	-2.09	5.05	27.9
Educational and health services	6.50	4.48	142.0	7.08	12.9	7.97	11.5
Recreation, accommodation and food services	5.18	3.70	145.9	5.51	9.61	6.30	22.2
Public administration	4.24	3.63	112.7	4.76	-8.87	4.50	11.8
Region and CMA(*)**:**							
Atlantic	3.58	2.54	74.5	3.70	12.6	4.44	26.7
Québec, excl. Montréal	3.31	2.42	120.2	3.30	4.33	4.10	45.0
Montréal QC	3.71			3.12	8.88	4.07	43.5
Ontario, excl. Toronto	4.92	3.63	158.2	5.54	-3.70	5.72	13.7
Toronto ON	4.27			3.72	-8.04	4.59	27.9
Prairie provinces	6.37	5.21	129.4	7.77	-5.68	6.60	-7.51
British Columbia, excl. Vancouver	5.32	3.40	191.1	6.30	20.3	6.46	3.61
Vancouver BC	5.28			5.13	13.7	5.35	24.1

Notes: LFS data, 1976 – 2018. (*): The Census metropolitan area (CMA) data is available only starting in 1987. The The table reports averages (Avg.) and percentage changes (△ %) of the multiple jobholding share over the sample period and over specific subperiods. All table entries are expressed in percent.

Table B2: Share of multiple jobholders working part-time on the primary job

	1976–2018	1976–1990		1990–2000		2000–2018	
	Avg.	Avg.	△ (%)	Avg.	△ (%)	Avg.	△ (%)
Gender:							
Men	18.5	14.7	22.0	18.7	28.8	21.2	9.69
Women	47.6	46.4	-5.62	48.2	13.0	48.2	-9.02
Age:							
15-24 years	50.0	39.8	26.7	52.2	25.8	57.3	2.17
25-34 years	26.2	20.3	44.3	27.8	29.2	30.2	4.49
35-44 years	25.3	19.8	80.2	27.7	24.2	28.8	-4.65
45-54 years	25.4	19.2	51.8	27.5	39.5	29.7	-8.68
55 years and above	31.0	25.2	16.4	31.5	29.8	35.6	2.47
Education:							
0-8 years	26.7	19.4	54.8	28.8	37.4	31.8	6.20
Secondary school	35.0	26.8	42.0	36.8	30.3	41.0	3.12
Some post secondary education	29.3	25.7	10.3	29.8	32.2	32.1	2.71
University degree	28.2	21.3	56.9	29.9	30.9	33.2	-4.00
Marital status:							
Married or cohabiting	26.7	20.6	64.3	28.8	30.3	30.9	-4.74
Widowed, divorced or separated	27.4	23.3	-7.49	28.5	34.7	30.5	-7.45
Never married	41.0	35.4	6.56	42.5	24.2	44.8	1.80
Industry:							
Agriculture	24.4	23.6	16.7	25.3	10.9	24.2	5.60
Other primary	7.96	5.22	85.5	9.98	89.4	9.29	-6.76
Construction	15.9	12.8	196.3	17.6	25.7	17.7	-28.4
Manufacturing	9.14	6.69	55.3	9.89	73.7	10.8	-6.75
Transportation	24.9	20.6	31.9	26.3	6.96	27.7	5.38
Wholesale trade	15.3	12.9	69.5	17.7	-11.5	15.9	21.2
Retail trade	44.6	38.0	28.4	46.9	21.0	49.1	-6.14
Finance, insurance, real estate	24.9	19.9	-6.47	28.0	53.9	27.4	-7.86
Professional, technical and management services	29.2	25.7	-10.6	30.2	31.5	31.4	-6.58
Educational and health services	38.8	33.6	47.1	41.6	13.8	41.7	-12.1
Recreation, accommodation and food services	42.2	36.3	6.27	41.9	23.3	47.3	8.24
Public administration	16.4	13.8	59.9	18.5	6.05	17.4	11.2
Region and CMA(*)**:**							
Atlantic	29.1	23.6	44.1	31.8	17.3	32.3	-5.48
Québec, excl. Montréal	33.8	23.6	102.4	36.8	39.1	41.0	-12.2
Montréal QC	38.4			35.3	25.5	40.3	9.85
Ontario, excl. Toronto	32.4	24.6	35.3	34.6	43.0	37.8	-1.15
Toronto ON	30.9			29.5	19.8	31.7	15.9
Prairie provinces	27.8	23.9	31.7	29.7	13.2	30.1	-5.28
British Columbia, excl. Vancouver	36.2	30.8	26.0	37.2	36.5	40.3	-13.0
Vancouver BC	35.5			32.9	45.7	37.1	-6.53

Notes: LFS data, 1976 – 2018. (*): The Census metropolitan area (CMA) data is available only starting in 1987. The table reports averages (Avg.) and percentage changes (△ %) of the share of multiple jobholders working part-time on the primary job over the sample period and over specific subperiods. All table entries are expressed in percent.

25 to 54 years; 55 years and above), education, marital status or industry (agriculture and other primary; construction, manufacturing and transportation; trade; finance, insurance, real estate, professional, technical and management services; other service industries and public administration). Letting g denote the subgroups in a given partition, the multiple jobholding share is

$$m_t = \sum_g \omega_{g,t} m_{g,t}, \tag{B.4}$$

where $\omega_{g,t}$ is the employment share of subgroup g at time t, and $m_{g,t}$ is g's own multiple jobholding share. To study compositional changes, we calculate counterfactual m_t's by holding the $\omega_{g,t}$'s constant over time (we fix them to their sample mean).

The four plots in Figure B1 compare the actual multiple jobholding share (denoted by the dashed line) with the counterfactual time series (denoted by the solid lines). Plot B1b shows that the increase in average educational attainment contributes positively to the increase in the multiple jobholding share, since multiple jobholding is higher among more educated workers. And Plot B1d indicates a positive role for the shift in employment towards service industries, as workers employed in these industries are more likely to be multiple jobholders (Kimmel and Powell [1999] find similar results). Overall, there is very little difference between the two time series displayed in each plot of Figure B1.

Additional figures. To complement Section 5, we display figures based on calculations we made using LFS data and data from the Survey of Payroll, Employment and Hours (SEPH):

- Figure B2 reports weekly hours per worker in the aggregate and in full-time and part-time employment, distinguishing between hours on all jobs and hours on the primary job for multiple jobholders. The sample includes both men and women.

- Figure B3 reports the employment share of part-time workers, temporary workers, and workers who are paid by the hour. Information on hourly-paid workers come from SEPH data Cansim Table 281- 0048 starting in 2001. The sample includes both men and women.

- Figure B4 reports weekly hours per worker among salaried workers and hourly-paid workers. The sample includes both men and women.

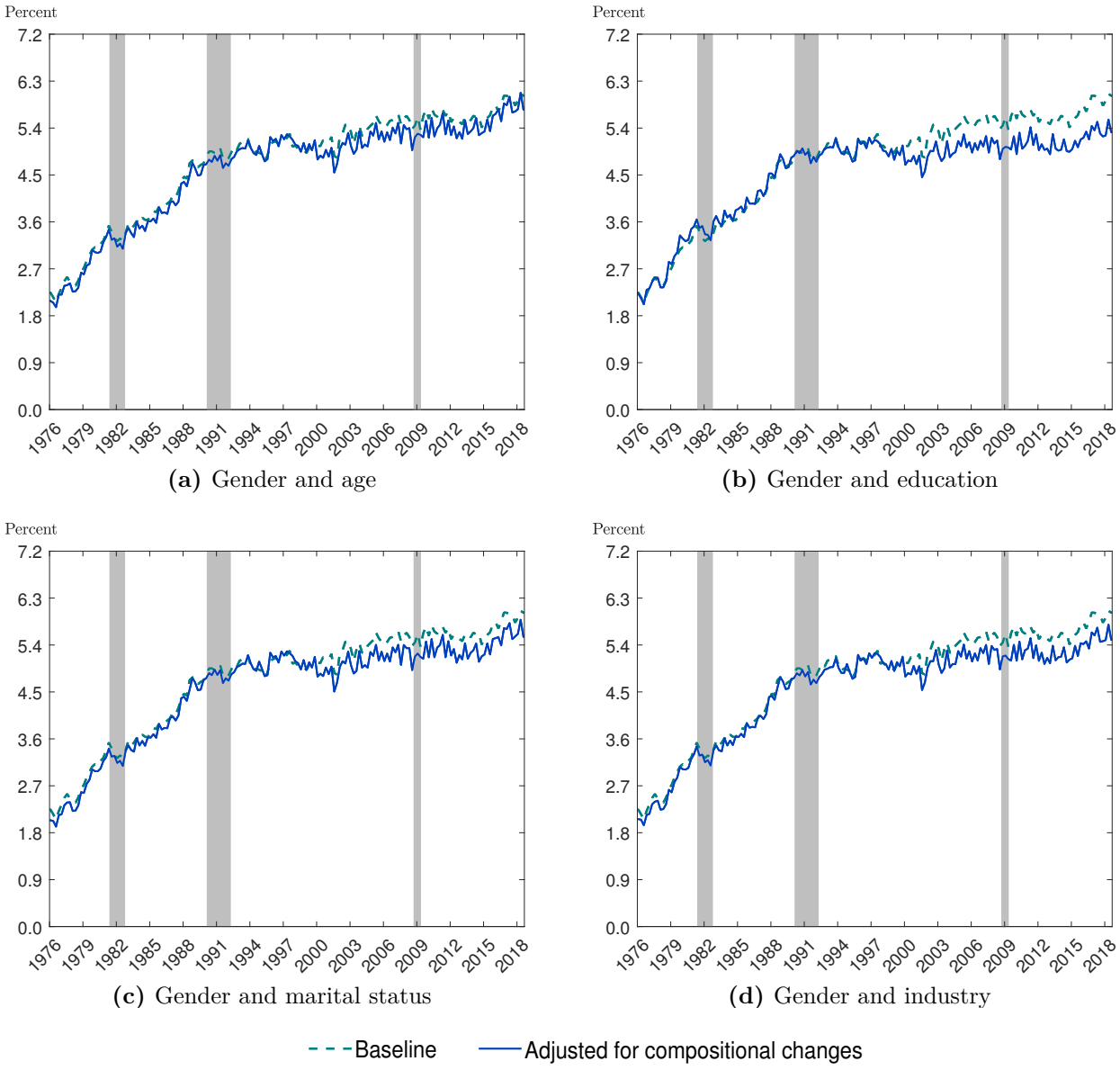
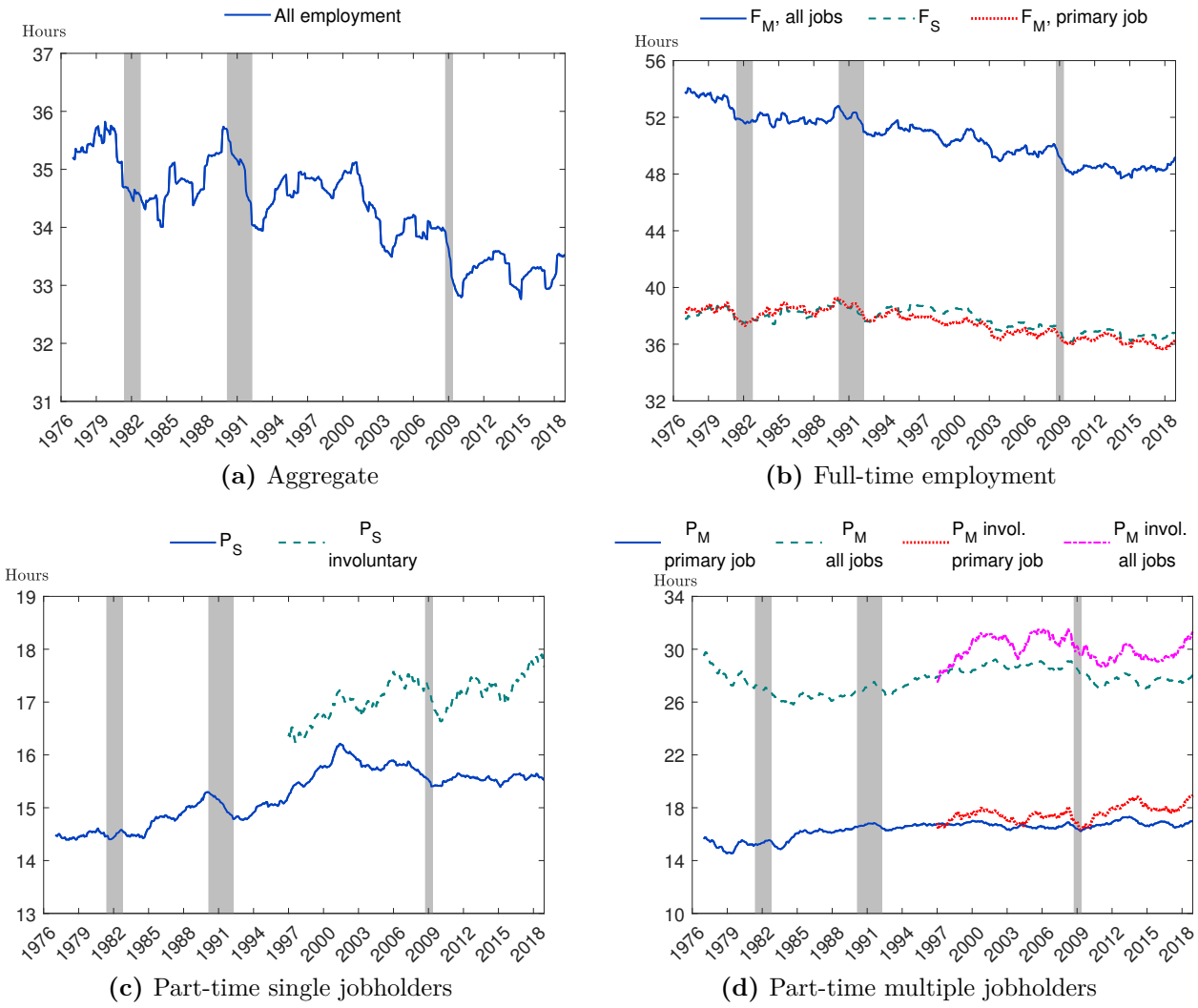


Figure B1: The multiple jobholding share: Controlling for compositional changes

Notes: LFS data, 1976 – 2018, time series cleared from seasonal variations. The dashed lines denote the baseline multiple jobholding share plotted in Figure 1. The solid lines denote counterfactual multiple jobholding shares that control for changes in the composition of employment. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.



(a) Aggregate **(b)** Full-time employment

(c) Part-time single jobholders **(d)** Part-time multiple jobholders

Figure B2: Hours worked, primary vs. all jobs, in full-time and part-time employment

Notes: LFS data, 1976 – 2018. F_S: single jobholding with a full-time primary job; P_S: single jobholding with a part-time primary job; F_M: multiple jobholding working full-time on the primary job; P_M: multiple jobholding working part-time on the primary job; Invol.: involuntary part-time work. All series are smoothed using a 12-month moving average. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.

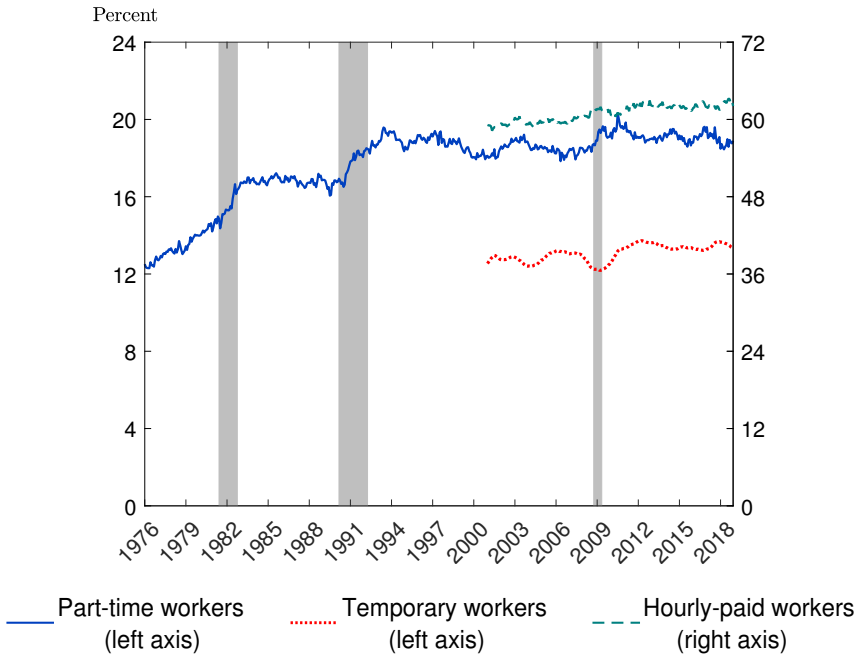


Figure B3: Part-time, temporary and hourly-paid workers

Notes: LFS data, 1976 – 2018 on the left axis, SEPH data, 2001-2018 on the right axis, time series cleared from seasonal variations. All series are smoothed using a 12-month moving average. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.

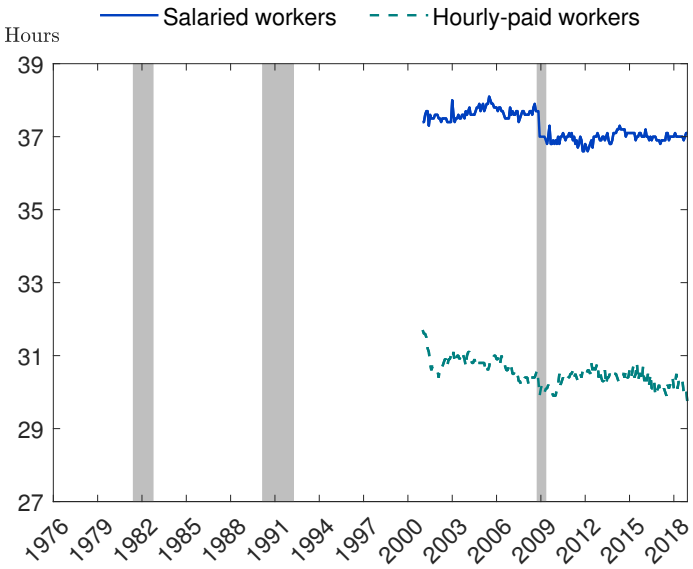


Figure B4: Hours worked, salaried vs. hourly paid workers

Notes: SEPH data, 2001-2018, time series cleared from seasonal variations. All series are smoothed using a 12-month moving average. Gray-shaded areas indicate recession periods identified by the C.D. Howe Institute Business Cycle Council.