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Sophia Fauser & Younga Kim

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Family formation trends and patterns of women's work trajectories in South Korea: determinants and cohort differences

Sophia Fauser ^a and Younga Kim ^b

^aChair of Sociology, University of Bamberg, Bamberg, Germany; ^bSocial policy research division, Korean Labor Institute, Sejong, South Korea

ABSTRACT

We use sequence analysis on data from the Korean Labor & Income Panel Study (1998–2019) to investigate trajectories of women's labour market participation in the eight years after first childbirth. We pay special attention to the type of employment through which mothers participate in the labour market, distinguishing between regular full-time employment, non-regular employment, self-employment, and non-employment. After creating employment sequences, we use cluster analysis to reveal patterns of employment trajectories and average marginal effects derived from multinomial logistic regression to identify women's characteristics on the distinct trajectories. We find that women of younger cohorts are less likely to solely focus on family and childcare in the years after childbirth. However, their chances of steady work in regular jobs did not increase. Instead, they are more likely to be on unsteady pathways, combining childcare with regular or non-regular jobs. Our results suggest that increases in females' employment might be partly attributed to mothers' higher probability to obtain precarious non-regular work.

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Family formation; work trajectories; sequence analysis; cohort differences; non-regular employment

1. Introduction

In recent years, labour force participation is more and more investigated as a dynamic process rather than a static event at a specific point in time (Cabello-Hutt, 2020; García-Manglano, 2015; Lu et al., 2017; Virtanen et al., 2011; Weisshaar & Cabello-Hutt, 2020). With the increasing role of women on the labour market, especially the work trajectories of women and mothers, have caught the attention of researchers (Cabello-Hutt, 2020; García-Manglano, 2015; Killewald & Zhuo, 2019; Lu et al., 2017; Weisshaar & Cabello-Hutt, 2020), as mothers and married women in particular tend to have discontinuous and dynamic careers including various employment statuses and transitions after family formation (Drobnič et al., 1999; Y. Kim, 2015; Stier & Yaish, 2008; Yu, 2002, 2005).

CONTACT Younga Kim  youngakim@kli.re.kr; youngakim@gmail.com  Social policy research division, Korean Labor Institute, #622, C Bldg., Sejong National Research Complex, 370 Sicheong-daero, Sejong, 30147 South Korea

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Coinciding with the stronger labour market attachment of women, family formation timing and patterns have become diverse across many industrialized societies. Women tend to delay marriage and postpone parenthood (Bratti & Cavalli, 2014; Buchmann & Kriesi, 2011; Nicoletti & Tanturri, 2008), while childlessness and singlehood are also increasing (Hayford, 2013; Miettinen et al., 2015). Such demographic trends are summarized as the de-standardization of family formation, suggesting that standard family formation trajectories of early marriage and motherhood are losing ground among younger cohorts (Brückner & Mayer, 2005; Elzinga & Liefbroer, 2007; Studer et al., 2018).

South Korea (hereafter Korea) is not only a prime example for countries experiencing such rapid societal changes (B. S. Lee et al., 2021), it is also a country in which mothers' employment is strongly dependent on family events (Y. Kim, 2015, 2018; Ma, 2013). Korean mothers are traditionally expected to leave the labour market to focus on the upbringing of children (Ma, 2016; Sung, 2003). As their children grow older and become more independent mothers can reinvest in their working career (Damaske & Frech, 2016; Kahn et al., 2014). However, younger cohorts of Korean women increasingly reject traditional gender norms, attain high levels of education, delay family formation, and place more importance on their employment (Ma, 2013). These societal changes should also impact the work trajectories of younger cohorts of Korean mothers.

Besides such large societal changes, the financial crisis that hit East Asia in 1997/1998 had a large impact on Korean society altering the labour market behaviour of younger cohorts. Specifically, the economic recession facilitated the importance of women's employment to guarantee the financial well-being of families (Keuntae Kim, 2017; Lim & Raymo, 2014; Shin, 2013). The shift of younger cohorts from the traditional male breadwinner/ female homemaker gender specialization towards a dual-earner model thus became an economic necessity for many couples, which should especially impact the labour market participation of women who experience their first family formation in more recent decades.

Non-regular forms of employment (the term used for non-standard employment in Korea) such as temporary jobs were widely implemented after the financial crisis (Cho et al., 2008). This labour market flexibilization hit especially female workers of prime-childbearing age. Specifically in the year of 2004 28.8% of men between the age of 25 and 34 and 36.0% of women of the same age were employed on a non-regular job (Keuntae Kim, 2017). It is often argued that 'flexible' non-standard employment can facilitate not only mothers' return to the labour market, but also the reconciliation of work and family responsibilities (Laß & Wooden, 2020; Morris & Vekker, 2001; Wooden & Warren, 2004). However, while these benefits of flexible employment are highlighted in other country contexts, in Korea non-regular jobs are often of low quality due to low pay and limited access to social benefits (Bonneuil & Kim, 2017; Y. Kim, 2015).

For Korean mothers', non-regular jobs are oftentimes the only means to reenter the labour market after they have interrupted their employment for childbirth and want to return to work when their children grow older (Bonneuil & Kim, 2017). Korean mothers' career interruptions are also shown to increase their chance to be self-employed or work as an unpaid family worker (Kim, 2016; Sung, 2002). Accordingly, with the implementation of non-regular jobs, work trajectories among younger cohorts of

Korean mothers might be more dynamic and include various types of employment compared to the work trajectories of older cohorts of mothers.

Not much is known about the type of jobs through which mothers take part in the labour market from a longer-term and cohort-comparative perspective. There are studies on countries other than Korea highlighting the significant cohort differences in employment pathways women take (McMunn et al., 2015; Ramos, 2019; Sun & Chen, 2017; Virtanen et al., 2011; Worts et al., 2013), as well as studies investigating mothers' labour market trajectories after family formation from a dynamic perspective (Cabello-Hutt, 2020; García-Manglano, 2015; Lu et al., 2017; Sun & Chen, 2017). However, most studies focus on the question if mothers take part in the labour market or not, with few distinguishing full- and part-time employment (Killewald & Zhuo, 2019; Lu et al., 2017). Thus, existing studies on the labour force attachment of mothers do not take recent trends of increasing levels of precarious non-standard employment into account (Kalleberg, 2000; Kalleberg & Hewison, 2013).

Our research contributes to the literature by investigating the following research questions for Korea, a country which is not only a prime example for a strong dependency of employment on family events but also for younger cohorts of women rejection of traditional gender norms. Our main research question asks: *How do mothers' employment trajectories in the years after family formation look like in Korea?* More specifically we want to uncover: *What role does non-regular employment play in mothers' labor market pathways? Which individual characteristics are associated with the different patterns of employment trajectories? Are there cohort differences in the pathways mothers take?*

To address these questions, we use panel data from the Korean Labor & Income Panel Study (KLIPS, 1998–2019). We use both variables from the yearly surveys as well as retrospectively collected information to be able to include women from older birth cohorts into our sample. Specifically, we include women who were born between 1940 and 1990, creating five distinct birth cohorts. We apply sequence analysis to holistically investigate the dynamic employment trajectories mothers take in the eight years after first childbirth. Our approach treats labour market status not just as static event, but one that encompasses multiple events over time allowing us to emphasize that labour market participation or non-participation might not be durable. The results contribute to the literature by paying special attention to different forms of employment to reveal through what type of employment mothers participate in the labour market, distinguishing between regular full-time employment, non-regular employment, self-employment, unpaid family work, unemployed and doing family and childcare.

We then use cluster analysis to reveal patterns of employment trajectories, which may also include periods of non-employment, and use average marginal affects (AME) derived from multinomial logistic regression to identify characteristics of the mothers, such as their birth cohort, on the distinct employment paths. This will reveal if the large societal changes undergone by Korea have also manifested in differences in mother's employment trajectories after first childbirth. In particular, our results will complement previous literature in not only revealing if mothers of younger cohorts are less likely to drop out from the labour market after first family formation but also help us understand on which types of jobs mothers participate on the labour market if they are economically active. This is a particular contribution to the literature as job

type is an important aspect of mothers' labour force participation, greatly affecting their economic well-being (Keuntae Kim, 2017; Y. Kim, 2018; Shin, 2013).

2. Background and hypothesis

2.1. The Korean context

While previous research provides important insights into women's work trajectories after family formation outside of Korea and how rapid societal changes may affect them, examining the phenomenon in Korea provides insights about that relationship not otherwise understood by only focusing on advanced, industrialized democracies in Western countries. In the Confucian welfare state of Korea, where the role of women is traditionally largely domestic, mothers are expected to leave the labour market to focus on the upbringing of children (Ma, 2016; Sung, 2003). Furthermore, availability of public childcare used to be scarce: in 2005 only 20% of children below the age of three attended childcare. Of this group only 13% attended public childcare institutions, while 87% visited private facilities (OECD, 2006).

Given the institutional context, married women tend to interrupt their paid employment or exit from the labour market after family formation. When their children reach school age, they return to the paid labour market in their 30s or 40s, leading to a M-shaped labour force participation (Ma, 2013). In recent years, the Korean government undertook extensive efforts to facilitate females' employment after childbirth (Brinton & Oh, 2019; Ma, 2013). For example, paid maternity leave with job protection was introduced in 2001 (Sung, 2003). Additionally, investments into early childhood education and care in percent of GDP rose from 0.11% in 2001 to 0.98% in 2016 (OECD, 2018). Accordingly, the rate of children under the age of three enrolled in childcare institutions rose significantly to 65% in 2019 (OECD, 2021). Such efforts come with the hope that younger cohorts of Korean women display a stronger attachment to the labour market after family formation compared to mothers of older cohorts.

At the same time, like many other industrialized countries, Korea has also experienced large demographic changes. Among younger cohorts delaying marriage becomes more common (B. S. Lee et al., 2021; Statistics Korea, 2020): the average age at first marriage for women has increased from 24.7 in 1990–30.5 in 2019; the average age at first childbirth among women has also increased from 26.2 in 1993–32.1 in 2019 (Statistics Korea, 2020). Furthermore, the total fertility rate has sharply declined from 6.0 in 1960 to 0.92 in 2019 (OECD, 2020).

These changes illustrate that family formation and caring for children become a choice for Korean women of younger cohorts rather than the universal duty it was among older cohorts of women (S.-S. Lee, 2009). These developments are strongly related to changes in traditional family values, as the younger female generation rejects traditional gender roles of being a homemaker and a non-working mother (Ma, 2013). Accordingly, in 2019 76.5% of Korean women between the ages 25–34 have obtained tertiary education, while this only applies to 17.0% of women between the ages 55 and 64 (OECD, 2021b).

When it comes to the labour market participation of married women and mothers in particular, non-regular employment is especially widespread (Bonneuil & Kim, 2017; Y. Kim, 2015). In Korea, the term non-regular employment refers to all types of salaried

jobs that are not regular, full-time permanent jobs, such as fixed-term employment like temporary and daily jobs. Importantly, rather specific to Korea is the fact that the proportion of part-time jobs is very low and that part-time jobs are always fixed-term jobs. Thus, if mothers in Korea wish to combine childcare with part-time employment they can only do so in low-quality non-regular jobs (Nishimura & Kwon, 2016). The alternatives for them would be to drop out of the labour market to solely focus on the upbringing of children or to work in demanding full-time regular jobs in which employers expect the prioritization of work duties over family responsibilities (Brinton & Oh, 2019).

Aside from salaried non-regular employment, self-employment and being an unpaid family worker has to be distinguished from regular employment. These forms of employment are not based on any contract and do not provide a consistent salary paid by employers, thus being referred to as non-salaried work in the Korean context. Among non-salaried workers, unpaid family workers are especially feminized: in 2020, women accounted for 30% of all self-employees, while 84% of unpaid family workers were women (Statistics Korea, 2020). Being an unpaid family worker describes workers who work without pay in a family business, they are usually not covered by labour law or social security regulations. Specifically, according to the International Labour Organization unpaid family work refers to a type of labour, which is generally unpaid, but which supports production for the market. However, compensation might come indirectly through the family income. It is especially widespread among women, particularly those living in households where other members engage in self-employment, specifically in running a family business or in farming (ILO, 2016).

2.2. Mothers' work trajectories after family formation

While the labour force participation of women and mothers was previously often studied and conceptualized as a single static event or transition, such 'snapshots' are now understood to insufficiently capture the dynamic processes of mothers' labour market participation after family formation or patterns in the pathways women take (Florian, 2018a; Hynes & Clarkberg, 2005; Killewald & Zhuo, 2019; Lu et al., 2017). Still, many existing studies on the variety of mothers' employment status mainly examine specific transitions from economic activity to withdrawal (García-Manglano, 2015; Stier & Yaish, 2008), from full-time to part-time employment (Yu, 2005), or from regular to non-regular employment (Drobnič et al., 1999; Yu, 2002). We focus on longer-term trajectories, depicting mothers' labour market participation as a more holistic process, which may include multiple employment statuses and transitions.

Recent discussions about 'flexible', non-regular employment focus on its role in facilitating mothers' participation in the labour market and the reconciliation of work and family responsibilities (Laß & Wooden, 2020; Morris & Vekker, 2001; Wood et al., 2016; Wooden & Warren, 2004). Studies for Korea demonstrate that non-regular forms of employment are particularly widespread among married women and mothers (Bonneuil & Kim, 2017; Y. Kim, 2015). These studies highlight family formation as a major cause of mothers' overrepresentation in non-regular jobs, as well as non-salaried jobs like unpaid family work. In the optimistic picture, these kinds of jobs could give women more flexibility in choosing their workload and schedule compared to the high

demands of a full-time regular job (Laß & Wooden, 2020), or allow women to more easily drop in and out of the work force according to their current preference for work or child-care. Moreover, non-regular jobs could have an integrative effect leading to stable regular positions in the long-run (Korpi & Levin, 2001).

However, in contrast to this optimistic picture, the entrapment perspective sees non-regular workers in cycles of insecure jobs (Kalleberg et al., 2000). Indeed, non-regular jobs in Korea are more likely excluded from statutory benefits and social insurance and discriminated against in wage and working conditions (Shin, 2013). Non-regular employees are thus considered precarious workers in Korea (Bonneuil & Kim, 2017; Y. Kim, 2015). Moreover, since only women covered by employment insurance are entitled to paid maternity and childcare leave, women in non-regular jobs tend to be excluded from enjoying such benefits (Y. Kim, 2018).

Non-salaried workers are not under an obligation to pay unemployment insurance in Korea. Consequently, mothers working as non-salaried workers accept disadvantage in terms of social benefits and public support. Since unpaid family workers have no direct income from their activity, they are not subject to the mandatory subscription of the national pension system, which leads to high risks of income insecurity after retirement. In spite of their labour market participation, female unpaid family workers are thus less protected by the social security system.

The above descriptions highlight the importance of considering not just if mothers participate in the labour market after first family formation but going beyond that by asking which types of jobs they hold. Are they able to attain regular jobs, which can be considered advantageous in terms of working conditions and pay? Or might it be easier for them to attain non-regular positions and if so do these jobs function as a stepping-stone to regular employment in the long-run or rather lead to cycles of insecure jobs? Asking these questions is just as important as investigations of mothers labour market participation and non-participation, as the ability to maintain stable continuous employment is key in generating more favourable economic outcomes for women (Hotchkiss & Pitts, 2007; Madero-Cabib & Fasang, 2016).

2.3. Determinants of mothers' work continuation after family formation

Previous studies have identified a number of determinants shaping mothers' labour market participation or non-participation after childbirth. These determinants refer for example to mothers' personal and household characteristics and are demonstrated to be relevant not just for mothers' labour market return but also for their longer-term employment pathways (Cabello-Hutt, 2020; Killewald & Zhuo, 2019; Lu et al., 2017). Such characteristics should also impact the type of employment through which mothers participate in the labour market.

Mothers' individual characteristics, such as educational level and labour market experience accumulated before motherhood are a major factor for their continuous labour force attachment (García-Manglano, 2015; Hakim, 2002; Lu et al., 2017; Wood et al., 2016). Especially for married women, previous work experience in paid employment is well known for its role in mother's continued labour market participation (Weishaar & Cabello-Hutt, 2020). Mothers with higher levels of education may benefit from higher earnings, which allow them to afford childcare and return to paid work (Gough &

Noonan, 2013; Lu et al., 2017). Higher education and labour market experience also increase the earnings potential of women, influencing mothers' commitment to return to the labour force (Stier & Tienda, 1992). In contrast, less educated women might earn lower wages and have lower earnings potential, making childcare less affordable for them and reducing the economic benefit of returning to the labour market (Boushey & Wright, 2004; Lu et al., 2017).

We thus expect that mothers with higher human capital endowments and levels of labour market experience are less likely to solely focus on childrearing after first family formation and more likely to return to the labour market (H1a). Moreover, their higher human capital as well as their higher earnings potential should make them more likely to secure regular employment and stay continuously employed in these jobs (H1b). Contrastingly, women with lower human capital endowments should be more likely to experience career trajectories containing more precarious labour market positions such as non-regular or non-salaried work (H1c).

Of course, family formation is usually a couple decision and households as well as partner's characteristics are important factors explaining mothers' labour market participation (Lu et al., 2017). Mothers whose partners provide a good and stable income could choose to focus on childrearing, or they could use these resources for childcare services and instead focus on their employment (Budig & Hodges, 2010; Glauber, 2007). Alternatively, mothers in more advantageous financial situations may not feel the pressure to return to paid employment or they might be more able to afford childcare and thus continue their employment (Dowsett et al., 2008; Stone, 2007). In contrast, single motherhood might come with more financial pressures to continue employment (Lu et al., 2017). Without partner's financial solidarity, single mothers are more likely to participate in the labour market (Muller et al., 2020).

Taking these considerations together, we expect that single mothers are less likely to solely focus on childrearing after first family formation and more likely to return to the labour market (H2a). However, single mothers are somewhat more constrained by child caring demands and this could facilitate non-regular or non-salaried work trajectories after childbirth (H2b), which might allow more flexibility regarding workload and schedule (Laß & Wooden, 2020).

Finally, we expect to find a cohort effect due to the previously discussed rapid societal changes undergone by Korea, with younger cohorts of women prioritizing employment. Further, temporary and daily jobs were only largely implemented after the 1997/1998 financial crisis (Cho et al., 2008) and the recent flexibilization of labour markets also led to rising levels of non-regular precarious work more generally (Esping-Andersen & Regini, 2000; Kalleberg & Hewison, 2013). Some tentative support for this comes from a study by (2020), who finds that after first childbirth unsteady career path combining paid work and childcare are more likely for women of younger cohorts. However, this study does not distinguish between different types of employment.

Therefore, we expect that mothers of younger cohorts are less likely to solely focus on childrearing after first family formation and more likely to reenter the labour market (H3a). Further, younger cohorts may be more likely to follow continuous regular employment paths (H3b). Alternatively, younger cohorts may be more likely to experience career trajectories characterized by non-regular employment after first family formation (H3c).

3. Empirical strategy

3.1. Data

To test these hypotheses, we use data from the Korean Labor & Income Panel Study (KLIPS). The KLIPS is a longitudinal survey of Korean households and collects information on labour market and income activities of household members. For our analysis, it offers three advantages in particular. First, the KLIPS is a long running panel providing data covering 22 years, from 1998 to 2019. Second, it offers not just detailed annual data on individuals' activity status but also on marital status and childbirth. Third, the data include extensive retrospective information on individual's employment history since they were 15 years old, as well as on important family events (i.e. first marriage and first childbirth), allowing us to also study the employment trajectories of older cohorts of women after childbirth, who at the time of the survey might already be retired. However, using retrospective information to be able to study cohort differences comes at the cost that some important measures such as household income and partner's employment status cannot be included in the analysis as they are not measured retrospectively (we discuss this more below).

Our analysis includes all 22 waves of the KLIPS available at the time of our analysis. The sample we use is restricted to mothers for who we have yearly or retrospective information regarding their employment status for eight consecutive years after the year in which they first give birth, enabling us to create eight-year work trajectories. With this observation window, we cover the period of mothers' usual labour market return after their children reach school age (Ma, 2013). By including both yearly and retrospective information we are able to investigate women from a wide range of birth cohorts. Specifically, we include women who were born between 1940 and 1990. Of the 13,678 women who were born in this period, 10,645 give birth to a first child. We exclude women who gave birth to their first child before they were 16 (dropping 23 mothers) or older than 45 (dropping 10 mothers) to exclude very young and very old first-time mothers. Of the remaining first-time mothers 1,532 are observed for the required consecutive eight-year observation window. After listwise deletion of observations with missing values on relevant variables, the restrictions result in a sample of 1,314 individual mothers (10,512 person-year observations), who are observed for an eight-year period between the years of 1957 and 2019.

3.2. Methods

To investigate our hypotheses, we apply sequence analysis, cluster analysis (Blanchard et al., 2014), and regression analysis. Sequence analysis allows us to depict mothers' labour force attachment after family formation as a dynamic succession of states, while cluster analysis creates patterns of mothers' employment trajectories after first childbirth (Lu et al., 2017; Studer & Ritschard, 2016). These patterns of mothers' eight-year employment sequences constitute our outcome of interest.

In the sequences, we differentiate between six yearly measured employment states: regular employment (i.e. full-time permanent jobs), no-regular employment (i.e. temporary jobs with a predefined fixed duration and daily jobs), self-employment, being an unpaid family worker, being unemployed, or doing family and childcare. The last

category refers to all mothers who are not participating in the labour market, are not enrolled in education, and who name their main activity as doing family and childcare. All mothers who are enrolled in school are excluded from the analysis. The employment states are created with the help of several variables containing information on mothers' labour market participation and employment position. First, mothers are only considered as employed if they are not enrolled in education and if they name working as their main activity. Second, the different types of jobs are distinguished with information on mothers' main job. The sequences are built using both information from the yearly individual questionnaires, as well as if necessary, information from the retrospective work history.

The first step to identify patterns of mother's employment pathways is to measure the distances between the mother's individual sequences. The similarity between each pair of sequences can be determined with various algorithms. Most commonly used is Optimal Matching (OM) which aims at transforming one sequence into the other with the least possible costs (Halpin, 2017; Studer & Ritschard, 2016). The lower the cost of turning one sequence into the other, the higher the similarity between sequences. The researcher can decide the cost of each operation (substitution, deletion, or insertion) applied to change the sequences.

The right choice for the algorithm for aligning the sequences depends on what sequence characteristic the researcher is especially interested in (Studer & Ritschard, 2016). We tried the most common algorithms, Hamming Distance, OM and Time Warp Edit Distance (TWED), which all produced largely similar patterns of career trajectories, before deciding on the TWED with constant substitution costs.

In order to achieve alignment between sequences, the TWED algorithm stretches and compresses the time dimension, instead of using insertion or deletion of sequence states like the OM algorithm (Halpin, 2017). Hence, TWED places more importance on the spell structure of the sequences than other algorithms and is therefore especially suitable for our research question. Obviously, transitioning from family and childcare directly to regular employment should be considered as a distinct pathway from transitioning from family and childcare to regular employment with an intervening spell of non-regular employment. Thus, the order of sequence spells, with one spell referring to consecutive observations in one sequence state, is an important characteristic when investigating mother's employment pathways. The (dis)similarity among all pairs of sequences is summarized in the 'distance matrix', which forms the basis for the cluster analysis, grouping the most similar sequences into distinct patterns of career trajectories.

The clusters are determined with the most commonly applied Wards algorithm (Ward, 1963), which aims to produce homogenous clusters of career trajectories by maximizing the variance between clusters and minimizing the variance within clusters. Choosing the correct number of clusters is not straightforward, so we decide on a cluster solution by taking objective measures and the theoretical meaningfulness of different cluster solutions into account (Aisenbrey & Fasang, 2010; Fuller & Stecy-Hildebrandt, 2015; Studer et al., 2011). Specifically, we employ the average silhouette width and the Calinski–Harabasz index as objective measures to determine the most suitable cluster solution. Both, the Calinski–Harabasz index and the average silhouette width identified four (Pseudo F = 537.74, ASW = 0.570), five (Pseudo F = 573.12, ASW = 0.596), or six (Pseudo F = 537.52, ASW = 0.562) clusters to fit the data best.

After the visual assessment of all these cluster solutions, we decide to use the six-cluster solution as the four and five cluster solution do not separate between mothers who work in continuous regular or non-regular jobs and those who experience intervening spells of family and childcare between these jobs. From a theoretical perspective this distinction is however meaningful and important to answer our research question. While, the six clusters contain varying degrees of heterogeneity, they nonetheless each illustrate a distinct general pattern of employment and non-employment trajectories that can be described. The sequence analysis is done in Stata, utilizing the SADI ado package (Halpin, 2017).

The last step of our analysis uses average marginal effects (AMEs) derived from multinomial logistic regression to relate mothers' individual characteristics as well as their birth cohort to clusters of eight-year employment pathways after first family formation.

3.3. Measures

Independent variables: Mothers' birth cohort constitutes one of our main independent variables of interest. Birth cohort is constructed from mothers' year of birth, distinguishing five periods: 1940–1949, 1950–1959, 1960–1969, 1970–1979, and 1980–1990. Similar birth cohorts have been used in other studies as they broadly include relevant historical events which impact the social and economic setting in which the mothers grew up (Keuntae Kim, 2017).

The first cohort, referring to the 40s, includes women who were born during the end of Japanese colonial rule (1910–1945) and postcolonial period. Since the five-year economic development project started from 1962, they experienced the rapid industrialization from their early working career. However, they maintained traditional family values (Choi, 2018). The second cohort, containing women who were born in the 50s, was born into the Korean War (1950–1953) or the post-war period. During this time Korea tried to recover from the war-inflicted damages to both its society and economy.

The third cohort summarizing women born in the 60s, contains women who were born during Korea's baby boom and into a quickly changing society where the educational system and the economy were rapidly developing. The fourth cohort of mothers born during the 70s was socialized with democratic values but also entered the labour market around the time of the 1997/1998 financial crisis. Finally, the last cohort born in the 80s grew up in a period of rapidly changing gender norms and increasing educational attainment and labour market participation of women. However, they also entered the labour market after the flexibilization of the Korean labour market via the implementation of non-regular jobs.

To test our other hypotheses, we also include other individual characteristics relevant for mothers' labour force participation. We employ women's educational attainment at childbirth ('at least primary', 'lower or upper secondary', 'college/vocational', 'higher tertiary') and their labour market status ('regular job', 'non-regular job', 'self-employment', 'unpaid family worker', 'inactive') in the year before giving birth as measures for their human capital endowments and earnings potential.

We construct a measure for single motherhood to account for financial pressures. We consider women to be single mothers' if they are unmarried at the time of first giving birth and remain so for all years of our observation window. Importantly, these women might

still be in a partnership, however the rate of cohabitation without being married is very low in Korea, especially when the couple also has a child. This is evidenced by the fact that Korea has the lowest rate of births outside of marriage with 2.2% in 2018, compared to the OECD average of 40.7% (OECD, 2018). Although, we recognize that this measure is less than ideal, we might expect financial solidarity to be stronger among married couples. As mentioned earlier, we unfortunately cannot include more detailed measures on the existence of partners or their employment status or on the more general economic situation of the household as we partly rely on retrospective data.

Control variables: We control women's age at first birth, which we centre at the respective cohort means to measure the age of first motherhood relative to the mothers' birth cohorts (Cabello-Hutt, 2020). However, we should note that the results are largely the same when we include age at first birth in categories. Additionally, we include a squared measure of age of first motherhood to uncover possible non-linear effects. We also control for the education of the women's mothers (if not available we use education of the father) ('no degree', 'primary', 'middle school', 'at least high school'), the women's residence at sequence start ('Seoul capital area', 'other metropolitan areas', 'provinces') and the year of sequence start. Table A1 in the Appendix illustrates how the control variables are distributed in each of the six clusters.

4. Results

4.1. Descriptive results of the sequence and the cluster analysis

We first turn to the descriptive results, showing us the six distinct patterns of mother's employment trajectories, revealed by the clustering of the individual sequences (Figure 1). Specifically, we identify a cluster of mothers who are not active on the labour market and instead do mainly *family or childcare*, mothers with a *steady regular job*, mothers who have an unsteady career combining *childcare* and *regular jobs*, mothers who work steadily as *unpaid family workers*, mothers with unsteady careers combining *childcare* and *non-regular jobs*, and lastly mothers who are *steadily self-employed* after family formation.

The biggest cluster we reveal are mothers who are out of the labour market doing *family or childcare* in the eight years after first motherhood. It contains 30.21% of the individual sequences in our sample and mothers in this cluster spent on average 7.32 of the eight years we observe doing family or childcare (Table 1).

The second pattern of employment pathways summarizes mothers who work in *steady regular jobs* after family formation. This cluster contains 16.06% of mothers. In the eight-year period after family formation mothers in this cluster spent on average eight years working in regular full-time permanent jobs.

The third cluster, the *unsteady regular job* cluster, summarizes 14.84% of the sequences and can be best described as mothers whose employment pathways after family formation are characterized by some combination of regular employment and being out of the labour market doing care work. Accordingly, the mothers who follow this pattern spent on average 4.48 years in regular jobs and 2.77 years doing family or childcare.

The fourth cluster contains mothers who follow continuous non-salaried work. Specifically, the *steady family worker* cluster contains 14.16% of the sequences and

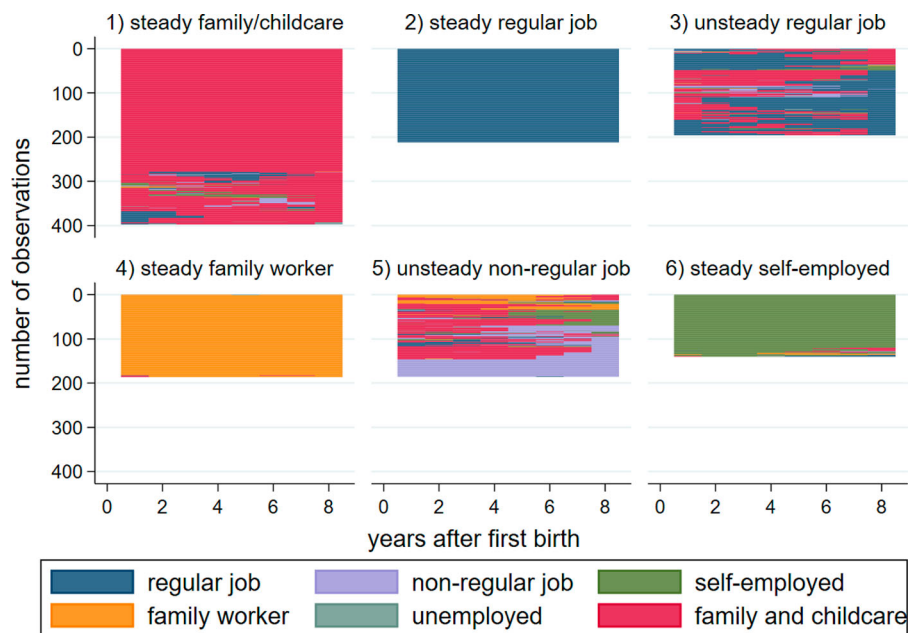


Figure 1. Sequence index plot for clusters of employment trajectories after first birth (KLIPS 1998–2019). Note: Cluster size (1) 30.21%, (2) 16.06%, (3) 14.84%, (4) 14.16%, (5) 14.08%, (6) 10.65%.

Table 1. Average number of years in different states in the eight years after first birth by clusters of employment trajectories and within cluster heterogeneity (entropy), (KLIPS 1998–2019).

Clusters	Regular job	Non-regular job	Self-employed	Unpaid family worker	Unemployed	Family/childcare	Total years	Entropy
Steady family/childcare	0.35	0.12	0.15	0.02	0.04	7.32	8	0.26
Steady regular job	8.00	0.00	0.00	0.00	0.00	0.00	8	0.00
Unsteady regular job	4.48	0.36	0.25	0.06	0.08	2.77	8	0.95
Steady family worker	0.01	0.00	0.00	7.96	0.01	0.03	8	0.02
Unsteady non-regular job	0.50	2.94	0.82	0.79	0.05	2.91	8	0.86
Steady self-employed	0.10	0.04	7.64	0.10	0.01	0.12	8	0.13

includes mothers who mainly work as unpaid family workers in the family business after giving birth. Mothers experiencing this pathway spent on average 7.96 years as unpaid family workers.

The fifth cluster contains mothers who also follow some combination of labour market participation and family/childcare after family formation. When they are not focusing on childcare, the mothers belonging to this *unsteady non-regular job* cluster participate in the labour market mainly via non-regular jobs. It contains 14.08% of the individual sequences and the mothers belonging to this cluster spent on average 2.94 years in non-regular jobs and on average 2.91 years doing family and childcare.

Finally, the sixth and smallest cluster describes women who are mainly *self-employed* after first childbirth. It contains just 10.65% of mothers. The mothers belonging to this cluster spent on average 7.64 years being self-employed after family formation.

These clusters depict varying degrees of labour market participation and attachment of mothers after first childbirth. While we find that roughly 30% of mothers do not return to the labour market, the majority of mother's do participate in the labour market, in some form or another. Overall, we find that approximately 40% of women are able to maintain some type of continuous employment after family formation, but only roughly 16% are able to obtain stable and secure regular employment, with the other roughly 24% working in less secure non-salaried work. Moreover, 30% of mothers follow unsteady employment pathways after family formation.

The two unsteady employment trajectories are also characterized by relatively high within-cluster heterogeneity as indicated by the average entropy (Table 1, last column). Average entropy is an index indicating within cluster heterogeneity of the states that are observed in each year, with a value of 0 signifying that all sequences within a cluster are the same (Halpin, 2017).¹ The relatively high entropy in the two unstable employment trajectories clusters, suggests that the clusters summarizing *unsteady regular job* and *unsteady non-regular job* trajectories are the most complex. However, they still represent a common pattern of combining childcare with regular and non-regular jobs respectively and are thus clearly distinguishable from the other identified patterns of employment pathways.

The higher career volatility of the two unsteady employment clusters is also mirrored in the average number of sequences spells experienced by mothers in these clusters. Remember that consecutive years in the same sequences state are considered as one spell, thus the more employment spells a mother experiences, the more transitions between two employment states she experiences. Specifically, mothers on the *unsteady regular job* career trajectory experience on average 3.04 different employment spells during the eight-year observation window. This number amounts to an average of 2.52 spells for mothers on the *unsteady non-regular* pathway. To put these numbers in perspective, the average number of spells amounts to 1.64 in the *family/childcare* cluster, 1.22 in the *steady self-employment* cluster, 1.04 in the *steady family worker* cluster, and 1 in the *steady regular job* cluster.

Finally, the higher complexity and volatility of the two clusters summarizing unsteady regular and non-regular career paths are also visible when looking at the percentage plot for all clusters (Figure 2). Percentage plots allow a nice visual illustration of the prevalence of the different sequence states at each time point. For mothers following any of the four steady employment trajectories, one sequence state is clearly dominant at each point in time with the vast majority of mothers experiencing the same sequence state in each of the eight years. In contrast, for mothers in the *unsteady regular job* cluster, roughly 50% of mothers focus on family and childcare, whereas another roughly 40% are employed in a regular job in the first year after childbirth.

Although, there is no clear time trend, the percentage of mothers employed on a regular job increases to roughly 75% percent in the last year of observation. Similarly, more than 50% of mothers belonging to the *unsteady non-regular job* cluster focus on family/childcare in the first year of observation, while the remaining roughly 50% are to a large part employed in non-regular jobs. Here, a clear time trend is visible with



Figure 2. Percentage plot for clusters of employment trajectories after first birth (KLIPS 1998–2019). Note: Cluster size (1) 30.21%, (2) 16.06%, (3) 14.84%, (4) 14.16%, (5) 14.08%, (6) 10.65%.

the share of mothers focusing on family/childcare steadily decreasing over the years to roughly 10% in the last year of observation. Instead, more than 50% of mothers in this cluster are working in non-regular jobs in the eighth year after giving birth and more than 25% work in non-salaried jobs (i.e. self-employment and unpaid family work).

4.2. Predictors of employment pathways

To test our hypotheses of how individual characteristics are associated with different employment trajectories, we derive average marginal effects (AME) from multinomial logistic regression. In these models, the membership in any of the clusters of (non-)employment pathways serve as our dependent variable. Estimating AMEs allows us to investigate how mothers' individual characteristics as well as their birth cohort affect the probability to experience the different pathways (Table 2).

First, we focus on how the probabilities to experience the different employment pathways change for mothers of different birth cohorts. Accounting for education, previous work status, and age at first motherhood, all of which have changed considerably over the last decades, we see that mothers of younger cohorts are less likely to be entirely out of the labour market in the period after family formation compared to women born between 1940 and 1949. More specifically, mothers born in the 1950s are 35 percentage points less likely to only focus on family and childcare after giving birth ($p < .05$). This probability drops a little to 26 percentage points ($p < .01$) for the cohort of mothers born between 1960 and 1969 and then rises again for the next two cohorts. Compared to mothers born in the 1940s, mothers born in the 1970s are 29 percentage points ($p < .01$), and mothers born in the 1980s are 33 percentage points ($p < 0.5$) less likely to be completely inactive on the labour market in the eight years following first childbirth.

Table 2. Average marginal effects (AME) obtained from multinomial logistic regression for the predicted probability of cluster membership (KILPS 1998–2019).

	Steady family/childcare AME(se)	Steady regular job AME(se)	Unsteady regular job AME(se)	Steady family worker AME(se)	Unsteady non-regular job AME(se)	Steady self-employed AME(se)
Birth cohort (<i>ref: 1940/49</i>)						
1950/59	−0.347** (0.169)	0.090 (0.077)	0.203 (0.170)	0.013 (0.014)	0.034 (0.041)	0.007 (0.013)
1960/69	−0.256*** (0.094)	−0.040 (0.078)	0.207*** (0.059)	0.008 (0.030)	0.053** (0.027)	0.028 (0.027)
1970/79	−0.287*** (0.101)	−0.008 (0.097)	0.144*** (0.011)	−0.008 (0.061)	0.106*** (0.041)	0.054 (0.066)
1980/90	−0.331*** (0.121)	−0.006 (0.115)	0.120*** (0.028)	0.027 (0.073)	0.169** (0.072)	0.021 (0.054)
Education (<i>ref: at least primary</i>)						
Lower/upper secondary	0.029 (0.122)	−0.019 (0.062)	0.018 (0.090)	−0.002 (0.012)	−0.023 (0.082)	−0.004 (0.020)
College/Vocational	−0.012 (0.124)	0.003 (0.064)	0.083 (0.093)	−0.001 (0.017)	−0.062 (0.084)	−0.011 (0.023)
Higher tertiary	−0.053 (0.124)	0.025 (0.064)	0.080 (0.092)	−0.008 (0.018)	−0.023 (0.085)	−0.022 (0.023)
Previous job (<i>ref: regular job</i>)						
Non-regular job	−0.045 (0.052)	−0.505*** (0.029)	−0.099* (0.053)	−0.014 (0.009)	0.690*** (0.064)	−0.028** (0.014)
Self-employed	−0.025 (0.048)	−0.505*** (0.029)	−0.175*** (0.038)	−0.010 (0.010)	0.024 (0.039)	0.690*** (0.053)
Family worker	−0.086* (0.046)	−0.505*** (0.029)	−0.107* (0.060)	0.460*** (0.062)	0.253*** (0.071)	−0.014 (0.019)
Inactive	0.306*** (0.033)	−0.385*** (0.053)	−0.096*** (0.027)	0.087 (0.062)	0.102*** (0.029)	−0.015 (0.017)
Single at birth	−0.246*** (0.062)	0.233*** (0.055)	−0.028 (0.052)	0.019 (0.014)	0.012 (0.051)	0.010 (0.012)
Age at childbirth	−0.003 (0.005)	0.004 (0.003)	−0.008* (0.004)	0.001 (0.002)	0.003 (0.004)	0.003 (0.002)
Age at childbirth squared	−0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
N	397	211	195	186	185	140

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, models also control for education of women's mothers, year of sequence start and household residence at sequence start.

The probability to follow any of the two unsteady work trajectories increased over time. A clear trend over time is visible for the unstable employment trajectory combining non-regular jobs and childcare. Compared to mothers born in the 1940s, mothers born in the 1950s are not more likely to experience an unsteady career trajectory containing periods of non-regular jobs and childcare. One explanation is that these women had their first child before the 1997/1998 financial crisis and the widespread implementation of non-regular jobs. Indeed, in our sample the average year of first childbirth for mothers from this cohort is 1979.67 (SD = 5.48). In contrast, mothers of younger cohorts are visibly more effected by the spread of non-regular jobs. Specifically, mothers born in the 1960s are 5 percentage points more likely ($p < .05$), mothers born in the 1970s are 11 percentage points more likely ($p < .01$), and mothers born in the 1980s even 17 percentage points more likely ($p < .01$) to experience unstable non-regular jobs after first childbirth.

However, we do not find any evidence that the probability to attain continuous regular employment after family formation has increased for younger birth cohorts compared to the reference birth cohort. While surprising, this finding is in line with previous studies for the Chilean case (Cabello-Hutt, 2020).

We also expect human capital endowments to influence the employment pathways of mothers after first childbirth. Looking at educational attainment, we see that higher education increases the probability that mothers work in steady or unsteady regular jobs after giving birth and decreases the probability of mothers to be continuously out of the labour market or work unsteadily in non-regular jobs. Surprisingly, none of these effects reaches statistical significance.

However, we do find clear effects when we examine women's work status before entering motherhood. For example, compared to mothers who worked in a regular job before their transition to motherhood, women who worked in a non-regular job before giving birth are 69 percentage points more likely to experience unsteady non-regular employment after first family formation ($p < 0.01$), but they are less likely to experience stable or unsteady regular employment or be self-employed. Moreover, women who were inactive before becoming mothers are 31 percentage points more likely to continuously stay inactive focusing on family and childcare after giving birth ($p < 0.01$). Additionally, compared to mothers who previously held a regular job, they are more likely to experience unstable non-regular work ($p < 0.01$).

Marital status at birth and in the years afterward is also likely to impact mother's labour market behaviour. We expect mothers who are single at birth and who remain single during the whole observation window to be under more financial pressure, while also facing higher child caring constraints, which we expect to increase single mothers' tendencies to be employed in 'flexible' non-regular jobs or be self-employed. While the effects for the probability to experience the unsteady non-regular employment or the steady self-employment pathway go in the expected direction, they are not statistically significant. However, we do find that single motherhood increases mothers' probability to work in steady regular employment by 23 percentage points ($p < 0.01$). Furthermore, single motherhood decreases the probability that women are continuously out of the labour force focusing on family and childcare by 25 percentage points ($p < 0.01$).

Lastly, looking at age at first childbirth (centred at the cohort mean), we find that with increasing age at first motherhood, the probability to experience the unsteady regular job

trajectory decreases ($p < 0.10$). Moreover, age at first childbirth has a positive, but insignificant effect on the probability to work steadily in a regular job and a negative, but insignificant effect on the probability to be out of the labour force. The lack of statistical significance is surprising, as mothers who delay family formation are expected to have more time to invest in their human capital prior to motherhood, which should increase their employment chances after family formation or even their opportunities to stay attached to the labour market during their childbearing years (Florian, 2018a; Gough & Noonan, 2013; Muller et al., 2020). Moreover, delaying childbirth (or marriage) is often seen as an indicator for strong attachment to paid work (Hank, 2004; Y. Kim & Rizzi, 2020; Pienta et al., 1994) as previous studies find that a strong attachment to paid work delays marriage and fertility (Koelet et al., 2015; Sun & Chen, 2017; Wood et al., 2016).

As we also include a measure of previous work experience, it might be that we explain the effect of delayed motherhood away (Florian, 2018b). We thus run the models again without controlling for this variable but the effects for delayed motherhood remain largely unchanged.

4.3. Sensitivity analysis

The results of the last two sections give insights into the employment trajectories after first motherhood. By relying on yearly employment data, we are able to cover the period of mothers' usual labour market return after their children reach school age (Ma, 2013). Of course, it can also be argued that mothers experience a lot of labour market volatility in the immediate time around childbirth which can only be uncovered using monthly employment data. While, we are interested in mothers' longer-term employment trajectories, zooming into the labour market behaviour of mothers in the months leading up to first birth and the months after first birth can also uncover potentially valuable insights (Lu et al., 2017). Although the KLIPS does allow the construction of monthly employment information, covering an observation window of eight years with monthly data is not possible as the resulting sample size is too small for substantive analysis.

Still, we can use this feature of the KLIPS to uncover more detailed, but shorter employment sequences, complementing the less detailed, but longer employment trajectories revealed in the main analysis. Specifically, we examine monthly employment sequences from 12 months before women first give birth to 36 months after they first give birth (i.e. 48 months in total). When constructing these monthly sequences, it is important to note that we can only rely on mothers' job history, which does not contain any information for the months in which mothers are not employed. Thus, we have no information on what happens between two employment periods if they have a time gap between them. If these gaps happen around the months of first childbirth, we can only assume that mothers dropped out of the labour market to focus on childbearing and -rearing.

Figure 3 illustrates clusters of mothers' pre- and post-birth monthly employment trajectories, where all employment gaps are categorized as 'inactivity'. Most clusters look quite similar to the ones uncovered with yearly employment data. There is a cluster of mothers who are mainly labour market inactive around first childbirth, presumably



Figure 3. Sequence index plot for clusters of monthly employment trajectories 12 months before and 36 months after first birth (KLIPS 1998–2019). Note: The red line illustrates the month of first childbirth. Cluster size (1) 29.4%, (2) 23.5%, (3) 22.4%, (4) 11.5%, (5) 8.3%, (6) 4.9%.

focusing on family and childcare and a cluster of mothers working mainly in regular jobs, mothers who mainly work as family workers and mothers who are mainly self-employed. We also find a cluster of mothers who work in either regular or non-regular jobs before giving birth but withdraw from the labour market after first childbirth. However, in contrast to the yearly data, we find a cluster of mothers who are already labour market inactive in the months leading up to childbirth, but who return to the labour market on various kinds of jobs in the months after giving birth. While these results certainly offer interesting insights into mothers' labour market behaviour in the more immediate time around childbirth, the permanency of labour market returns or withdrawals as well as the steadiness of employment over the following years can only be assessed when looking at longer-term employment sequences.

Choosing an observation window of eight years to investigate these longer-term sequences might be considered as too strict of a sample definition. As another robustness check we thus consider only six years after women first give birth. This increases the sample size by 248 cases. The best cluster solution are again six clusters and most clusters look quite similar to the ones revealed for the eight-year observation window (not presented). There are again clusters of steady family/childcare, steady self-employment, and steady family work after childbirth. There is also a cluster of mothers working mainly in regular jobs after birth, however this time it also includes periods of family and childcare for some women. The last two clusters look more different compared to the eight-year clusters. First, there is a cluster of mothers who work continuously in non-regular jobs after childbirth. Second, there is a cluster illustrating more turbulent careers, containing mothers who work in regular jobs, and to a lesser extent in non-regular jobs and self-

employment, in between periods of family and childcare. Despite these marginal differences in the cluster solutions, it seems that overall the revealed clusters are fairly robust against different specifications of the observation window with mainly the unsteady pathways being subject to some variation.

Another issue that has to be kept in mind when reviewing the above results of the multinomial logistic regression is that, due to right censoring, the youngest birth cohort (1980/1990) does not include women giving birth for the first time above a certain age. Specifically, the highest age at which mothers of this cohort can give birth and still be included in the analysis is 31, with the mean age of first childbirth being 27.1 in this cohort. To make sure that our findings are not biased by including mainly mothers who give birth at younger ages for the last cohort, we ran sensitivity analysis. Specifically, we ran the multinomial logistic regression again on a sample which excluded mothers belonging to the youngest cohort who gave birth to their first child before the age of 27. The results of this sensitivity check were largely similar to the ones presented above.

5. Discussion and conclusion

Like many other industrial societies, Korea experienced large societal changes in the last decades, especially concerning females' labour market and family formation behaviour. In this study, we adopt a sequence analysis approach to investigate the labour force participation of Korean women in the eight years after first family formation from a longer-term and dynamic perspective. Besides, revealing the employment pathways of mothers, we are especially interested in cohort differences in the pathways women take, as well as the role of non-regular employment for mother's labour force participation. The six patterns of employment trajectories we reveal highlight the advantages of our approach. Investigating eight-year pathways, we find that a large proportion of mothers follow unsteady career pathways after family formation (about 30%). The mothers following these trajectories are especially likely to be misclassified if labour market participation or return is only considered at a single point in time (Cabello-Hutt, 2020).

Moreover, by distinguishing non-employment from regular employment as well as various types of more precarious work such as non-regular employment, we highlight the importance of a more nuanced investigation of mother's labour participation. While our results suggest that only about 30% of mothers do not take part in the labour market after family formation, only 16% of mothers are able to stay continuously attached to the labour market working in secure regular employment. Additionally, mothers' employment sequences after first childbirth are polarized between steady regular working careers and unsteady non-regular careers or non-salaried jobs, which is consistent with previous literature showing that Korean women's salaried jobs are polarized between well-paid stable jobs and low-paid unstable jobs (Bonneuil & Kim, 2017).

This finding is of particular importance as non-regular and non-salaried workers are in a precarious situation in Korea, being excluded from statutory benefits and less protected by social insurances and discriminated against concerning wages as well as working conditions (Y. Kim, 2015; Keunju Kim et al., 2019). Moreover, especially

secure and continuous employment generates favourable retirement outcomes for mothers (Hotchkiss & Pitts, 2007; Madero-Cabib & Fasang, 2016; Möhring, 2018).

In line with the notions of path dependencies (Damaske & Frech, 2016; Dannefer, 2003), we find that women's work status before first childbirth has a strong impact on their employment trajectories after family formation. Compared to women who hold a regular job before childbirth, mothers with any other work status are less likely to be able to obtain steady regular work after childbirth (H1b). Moreover, mothers who worked in non-regular or non-salaried jobs before childbirth are more likely to continue working in such precarious positions (H1c). Somewhat surprisingly however, we find no clear evidence that mothers with higher human capital endowments or previous work experience are less likely to be continuously out of the labour market after family formation (H1a).

We find that single mothers are less likely continuously inactive after family formation (H2a), which might be due to higher financial pressures faced by them (Lu et al., 2017). Moreover, single mothers are more likely to have steady regular jobs. It seems that their stable labour market career allows them to stay single and raise their child on their own. However, we find no clear evidence that single mothers are more likely to follow non-regular employment pathways after family formation, which might allow them more flexibility in the combination of work and care responsibilities (H2b).

Finally, results from our multinomial logistic regression show that mothers of younger cohorts are overall more attached to the labour market after family formation, as they are less likely than older cohorts to be permanently out of the labour market (H3a). However, we do not observe that the chances of mothers to secure stable regular jobs increased over time (H3b). We also find clear evidence for an increasing role of non-regular employment for mother's labour force participation across the different cohorts (H3c). Specially, the results for the work trajectory combining childcare and unsteady non-regular jobs are in line with the timing of the implementation of non-regular jobs after the financial crisis. It is important to mention that we find no evidence that women on these pathways can utilize unsteady non-regular employment as a stepping-stone to more secure regular jobs. However, with our approach we cannot investigate if these women might place more importance on job flexibility than on employment security.

When reviewing these results, it is important to consider several limitations besides those already addressed in the sensitivity analysis. First, our analytical approach of relying on retrospective information does not allow us to take detailed information on partner or household characteristics into account, which go beyond our self-constructed indicator for single motherhood. However, the economic situation of the household should also be important in shaping mothers employment trajectories. On the one hand, families with lower household income might feel more financial pressure causing mothers to quickly return to the labour market (Lleras, 2008). On the other hand, these financial constraints might also keep mothers from participating in the labour market as childcare services become less affordable (Kimmel, 1998; Schulman, 2000).

Second, the KLIPS does unfortunately not contain any subjective work attitude measures, although this factor is likely also important for mothers' employment trajectories as work-oriented women tend to attach greater importance to their paid work as their status in the labour market plays an important role for them in terms of self-

actualization (Hakim, 2002; Wood et al., 2016). Future studies should thus try to include these factors that are missing in our study to further test the robustness of our findings. Lastly, it is also important to note that by focusing on mothers only, we exclude childless women from our analysis, who may show especially high levels of labour market attachment (Schmitt, 2012).

Despite these limitations, our results make an important contribution to the literature, highlighting that increasing rates of female labour force participation over time do not tell the whole story. While, mothers of younger cohorts are less likely to be out of the labour market in the period after first family formation, they still face constraints in obtaining stable and advantageous regular jobs. The results also suggest that younger cohorts of mothers are more likely to work in unstable and less secure non-regular jobs. The increases in mothers' labour force participation might therefore be partly attributed to the growth of precarious employment (Cabello-Hutt, 2020). Lastly, the results highlight the importance of previous labour market experience for mother's chances of attaining favourable continuous regular employment. These findings have implications for the economic inequality among genders as well as labour market disadvantages faced by mothers in particular.

Declarations

Note

1. The maximum value of entropy is determined by the length of the sequences and the number of sequence states (Gabadinho et al., 2011). In our sample entropy ranges from 0 to 2.16.

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Data availability statement

The data that support the findings of this study are available from the Korean Labor Institute. Restrictions apply to the availability of these data, which were used under license for this study. Data supporting the findings of this study are available from the authors with the permission of the Korean Labor Institute.

ORCID

Sophia Fauser  <http://orcid.org/0000-0002-9992-2659>

Younga Kim  <http://orcid.org/0000-0001-8108-4880>

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Appendix

Table A1. Descriptive statistics by women's (non-)employment pathways (KLIPS 1998–2019).

	Steady family/child-care	Steady regular job	Unsteady regular job	Steady family worker	Unsteady non-regular job	Steady self-employed
Birth cohort						
1940/49	0.50%	11.37%	0.00%	51.61%	7.03%	41.43%
1950/59	0.25%	22.27%	1.03%	32.26%	5.95%	22.86%
1960/69	8.06%	17.54%	13.33%	12.90%	15.68%	21.43%
1970/79	72.54%	41.71%	65.54%	2.15%	54.05%	13.57%
1980/90	18.64%	7.11%	20.00%	1.08%	17.30%	0.71%
Education						
At least primary	0.76%	5.21%	0.51%	62.37%	10.81%	45.00%
Lower/upper secondary	41.81%	27.96%	26.15%	31.72%	44.86%	37.14%
College/vocational	27.20%	20.38%	29.74%	2.69%	15.68%	5.00%
Higher tertiary	30.23%	46.45%	43.59%	3.23%	28.65%	12.86%
Previous job Regular job	12.59%	95.73%	46.67%	1.61%	12.43%	4.29%
Non-regular job	1.01%	0.00%	3.59%	0.00%	24.86%	0.00%
Self-employed	1.51%	0.00%	1.54%	0.54%	3.24%	92.86%
Family worker	0.50%	0.00%	2.05%	96.77%	8.11%	1.43%
Inactive	84.38%	4.27%	46.15%	1.08%	51.35%	1.43%
Single motherhood						
Yes	0.25%	40.28%	3.08%	48.92%	12.97%	35.00%
Age at childbirth						
Mean (SD)	29.35 (3.65)	27.79 (3.68)	28.86 (3.49)	23.72 (3.23)	28.10 (4.25)	26.07 (5.08)
Mother's education						
No degree	7.56%	22.75%	8.21%	77.96%	24.86%	65.71%
Primary	35.01%	38.39%	37.95%	16.67%	37.84%	16.43%
Middle school	28.46%	18.96%	25.13%	3.23%	21.08%	8.57%
At least high school	28.97%	19.91%	28.72%	2.15%	16.22%	9.29%
Year sequence start						
Mean (SD)	2005.78 (4.82)	1994.29 (12.78)	2004.92 (5.60)	1975.56 (10.26)	1999.83 (12.06)	1981.93 (14.33)
Residence sequence start						
Seoul capital area	37.78%	44.55%	46.15%	22.04%	35.68%	30.71%
Other metropolitan area	20.65%	21.33%	21.03%	17.74%	15.14%	19.29%
Provinces	41.56%	34.12%	32.82%	60.22%	49.19%	50.00%
Number of kids ^a						
Mean (SD)	1.97 (0.66)	1.77 (0.65)	1.84 (0.59)	1.66 (0.98)	1.96 (0.62)	1.63 (0.67)
Total N %	397 30.21	211 16.06	195 14.84	186 14.16	185 14.08	140 10.65

^aNot included in the analysis, measured at final observation period (year 8), only available for respondents who's employment trajectory is not measured retrospectively ($N = 859$).