

Parental Co-residence and Women's Labor Force Attachment

Hao Wang

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Abstract

This paper examines the impact of young adults' moving back to their intact household on the employment status of female household members, using evidence from the 2020, 2019, 2018, and 2014 SIPP (Survey of Income and Program Participation) data. We use fixed effects and mixed effects model that regress individual women's monthly average number of hours worked per week on the recent change in the number of young adults present in the household. We find no statistical significant impact of young adults' migration on female household members' labor force attachment. This paper provides insight for policymakers on the subsidy programs in recessions in which the composition of households change unexpectedly. This paper also provides insights regarding the gender equality situation in households.

1 Introduction

1.1 Background

The topic of parental co-residence as a mechanism to help young adults maintain well-being has been studied extensively in recent decades. Young adults tend to return to their original household and co-reside with their family to seek financial support and emotional well-being in spells of recession (e.g. Clemens and Axelson, 1985; Card and Lemieux, 1997; Kaplan, 2012; Wiemers, 2014).

The Covid 19 pandemic witnessed not only the increased time household members spend in their houses, but also saw the change in household size and composition— while members of the household spend more and more time at home, persons belong to the household but spend their majority of time outside, especially college students and young adults, also tend to return to their intact households and co-reside with their family. Facing economic difficulties, it is a common practice for young adults to move back home in order to reduce living expenses and seek emotional support (Kaplan, 2012). Researchers are concerned that as household members spend more and more time at home, the situation of female household members tends to worsen— as women take more responsibility in household production as expected by the traditional gender norms, scholars worry that they have to sacrifice their opportunity to work in the market (Alon et al., 2020).

This paper analyzes the change in living arrangements of young adults and the consequent change in female household members' employment. By studying the impact of young adults' co-residence with family on the employment status of female household members, this paper provides insight for policymakers on the subsidy programs in times like Covid pandemic when a large portion of college students and young working adults return to their home, causing the composition of households to change unexpectedly. This paper also provides insights regarding the gender equality situation in households, providing empirical information for firms and policy makers who adopt options that help female members in households with

changing composition and aid them on employment issues.

1.2 Literature Review

This paper’s literature review consists of three parts: the review of researches on the living arrangements of young adults especially during spells of economic downturns, the review of papers that analyze the influence of household composition on women’s employment, and the review of recent studies on the socioeconomic status of women in family households during the pandemic.

1.2.1 Living Arrangements of Young Adults

A number of studies have found that young adults tend to co-reside with their parental family in order to seek economic and emotional well-being during recessions and/or unemployment. Card and Lemieux (1997) examined young workers’ response to changes in the labor market, including living arrangements, educational decisions, and labor supply using “comparable micro data sets” from the Current Population Survey (CPS) and the Canadian Census. Card and Lemieux used an linear regression probability model to estimate the effect of changes in local wages and labor market demand, along with individual characteristics like age, religion etc., on various young workers’ outcomes, including the probability of co-residing with their parents. Card and Lemieux’s estimation result showed a negative association between local labor market situation and the probability of living with parents for both young men and women in the U.S. and Canada— in regions with low wage and depressed labor demand, young adults are more likely to co-reside with their original household. Card and Lemieux’s finding is consistent with our hypothesis that during the economic recession caused by the pandemic, young adults tend to co- reside with their parents in response to poor labor market conditions.

While the majority of studies emphasize the correlation between co-residence and economic conditions like aggregate employment, Wiemers (2014) switched the focus to dynam-

ics of young adults’ living arrangements in responses to changes in employment— by using the 1996, 2001, 2004, and 2008 SIPP panel data, Wiemers was able to study the flows of young adults leaving and returning their original household, successfully distinguishing “boomeranging” young adults and those who have been living in the parental household since birth. Thanks to the nature of SIPP as a panel data, Wiemers was able to track the transitions in both employment and living arrangements by marking those who experienced a change in employment status between period t and $t + 1$ as *becoming* unemployed and those who experienced a change in living arrangements between t and $t + 1$ as *becoming* doubled up. Wiemers estimated the effect of becoming unemployed on co-residence by regressing the probability of moving in with others on becoming unemployed, individual characteristics including gender, race, marital status, education, etc., as well as fixed effects for individuals using a linear logistics model, finding becoming unemployed significantly increase the likelihood of moving into doubled up living arrangements. Although Wiemers only focused on the individuals who move between living arrangements, their use of SIPP panel data and feature engineering of becoming unemployed/doubled up provides beneficial insights future researches which put an emphasis on the changes in household compositions and the changes in employment status.

1.2.2 Household Composition and Women’s Employment

A large number of research have studied the effect of household characteristics on women’s employment, with the majority focusing on the presence and number of children. Felmlee (1993) found the number of children is positively associated with the likelihood of women leaving labor market. However, little study has analyzed the effect of household composition, especially the age, gender, and employment composition of all household members, on the employment status of women in the U.S. Spierings (2014) analyzed the association of women’s employment and household composition in Muslim countries, in which women share more burden on home production and have less access to the labor market. Using survey data

from 1997–2008 for twenty-eight Muslim countries available through Database Developing World (DDW), Spierings regressed the employment status of women between the ages 15 and 49 on marital status, number of adult men and women in the household, relationship to household head, the number and gender ratio of children, the presence of elderly, as well as the number and gender ratio of siblings. Spierings’ findings are in line with conventional beliefs— marriage, child-breeding, the number of adult men and the presence of elderly negatively correlate with women’s employment, and the number of women in the household have a positive correlation with women’s employment as each women has a lighter housework burden on average. Although Spierings’ study focuses only on Muslim countries in which gender conventions differ from those in the U.S., it provides insight on the relationship between women’s employment and household composition in ethnic groups with a strong patriarchal presence in U.S communities.

1.2.3 COVID-19 and Women’s Employment

Since the beginning of the pandemic, scholars have believed the crisis would disproportionately impact women (Alon et al., 2020). In order to test the conventional hypothesis that women will decrease labor supply as household members, especially children, spend more time at home, Collins et al. (2021) regressed the number of hours individuals in the household on the presence of children aged 1–5, 6–12 and 13–17, using CPS panel data on dual-earner parents from March, April and May 2020. Collins et al. found that mothers experienced a reduction in weekly working hours of between 1.5 to 2.6 hours while witnessing only about 1% decrease in fathers’ working hours. Although our paper does not focus on child breeding, the influence of the presence of older children age between 13-17 on women’s employment suggests that the returning of family members at relatively young ages might impose similar effects that increase the gender gap in labor supply. The limitations of Collins et al.’s study is that they focused only on households with one father and one mother. Larger, multi-generational families are not considered in this and a number of similar studies. This

gap allows us to extend the context to women’s employment in larger, more complex families with more home labor burdens including meal preparation at a large scale and taking care of the elderly.

1.3 Contribution

This paper aims to examine the impact of young adults’ moving back to their intact household on the employment status of female household members. We contribute to literature in multiple directions. Firstly, given the background of the Covid pandemic and work-from-home arrangements, while the majority of scholars have studied the impact of the increase in hours household members spend at home, few studies have taken a perspective on the influence of change in household size and composition on the well-being, especially the employment situation of female household members. This study fills the gap by focusing on the change in size of a specific aged group, and the consequential impact brought by the change in household composition. Secondly, while a number of researches have investigated on the topic of parental co-residence, the majority emphasize the employment status of the returning children (e.g. Grundy, 2000; Kofman, 2015), This paper fills the gap by switching the focus from the returning children to the female household members in the original family.

1.4 Hypothesis

Hypothesis 1: The returning of young adults negatively impacts the employment status of female household members.

Hypothesis 2: The total number of young adults in the household negatively impacts the employment status of female household members.

2 Data

2.1 SIPP Data

Due to the sheer size of 2020 household data available at the time of writing, to address the research questions, this paper uses the 2020 SIPP (Survey of Income and Program Participation) panel data. The 2020 SIPP data includes monthly household-based individual-level survey results covering a representative sample of population from January to December 2019. The SIPP data measures a wide scope of topics, including household composition, education, employment, fertility etc. Among the more than 5200 variables present in the SIPP data, our variables of interest are household and person id, month id, age, race, sex, parental status, household size, and individual’s monthly average number of hours worked per week.

2.2 Sample Construction

Since this paper focuses on the employment of women, we filter the SIPP panel using the following conditions: (1) the individual presents in all 12 months throughout the year; (2) the sex of the individual is female; (3) the individual is older than 35 years old and younger than 66 years old; (4) the number of children of the individual remains constant throughout the reference year. We include the conditions due to the following concerns: first, although SIPP keeps tracking individuals who move to a new location, we refrain from including individuals who move because moving is likely to significantly influence individuals’ labor supply, and that individuals who move lack the interaction with the young adults who move back, since they are no longer in the household. Second, considering the difficulties transgender individuals face in the labor market (Mizock and Mueser, 2014), we only include individuals with female sex throughout the 12 month¹. Third, we filter individuals age between 36 to 66. The maximum number of 66 is the full retirement age in the U.S., and

¹SIPP encodes sex with the binary ESEX variable, where 1=Male, 2=Female.

we set the minimum age— which is also the cutoff age between young adults and sampled women— to be 36 following literature of Spierings (2014), where the maximum age of young adults is 35. Last, we refrain from including individual women who have given birth to children during the survey year in order to avoid the significant influence of pregnancy and child breeding on employment that has been extensively studied (Felmlee, 1993).

Applying the filters allows us to avoid factors that involve education attendance, retirement, and child breeding that significantly impact an individual’s labor attachment. After filtering, the data contains monthly survey results of 10,809 individuals from 10,331 households. The total number of observations is 129708, this is 12 times the number of individuals, since the sample data set only consists of women who are present the full year in the household.

2.3 Measuring the Migration of Young Adults

In order to measure the moving of young adults into and out of their intact households, after filtering the data, we generate a variable that tracks the monthly change in the number of young adult household members for each individual since the last three months. We define young adults as individuals who age above 18 and below 36. We set the maximum age to be 35 following literature (Spierings, 2014). Using the statistics from the last three months allows the model to capture the lasting effect of the migration of young adults. We do not expect the moving of young adults to impact their parents employment immediately, even if parents make the decision to quit their jobs following their children’s return, it is plausible to expect the parent will not quit as soon as their children return, but rather weeks after the return, leaving ample time to complete current work and administrative procedures prior to departure. Moreover, we do not expect the impact to be persistent, as we expect household members to eventually adjust their employment after the initial shock, and partially restore their labor supply in order to maintain financial well-being and in reaction to the increased living cost brought by the additional members. Therefore, we measure the migration of

young adults using the monthly change in the number of young adult household members for each individual since the last three months. Future versions of this paper may include lagged variables of change in the number of young adults each month from the previous one and two months.

2.4 Summary Statistics

Table 1 shows the summary statistics of the age, number of household members, number of young adults, the change in the number of young adults, as well as the monthly average number of hours worked per week of women in the sample.

Table 1: Summary Statistics						
		Mean	Std. Dev.	Min	Max	N/n/T-bar
<i>Age</i>	overall	52.3016	8.985579	36	66	129708
	between	.	8.98596	36	66	10809
	within	.	0	52.3016	52.3016	12
<i>Members</i>	overall	2.959848	1.577657	1	14	129708
	between	.	1.561334	1	13.58333	10809
	within	.	.2268102	-3.706818	7.209848	12
<i>YoungAdults</i>	overall	.4663321	.8167167	0	8	129708
	between	.	.813155	0	8	10809
	within	.	.076559	-1.367001	1.966332	12
$\Delta YoungAdults$	overall	-.0058516	.0811688	-2	1	129708
	between	.	.0400124	-.5	0	10809
	within	.	.0706224	-1.839185	1.160815	12
<i>HoursWork</i>	overall	24.13784	21.39567	0	99	129708
	between	.	20.72377	0	99	10809
	within	.	5.323204	-36.36216	78.22117	12

The age of sampled women ranges between 36 to 66, with a mean of 52.30. The second data, number of household members counts all the person, including the sampled women herself, in the household that the sampled women lives in. The number of household members ranges between 1 to 14, with a mean of 2.96. From the mean number it is plausible to suggest that in the sample, the majority of the women are in conjugal families that consist of a couple and, not necessarily their children. Households in the sample have 0.466 young adult that

ages between 18 to 35. The small number of young adults who migrate in to and out of the sample households indicates that the majority of young adults in the sample households are those “failed to launch”— who have never leave their intact households since their birth. The monthly average number of hours worked per week ranges from 0 to 99. 0 indicates that the individual is unemployed or is out of labor force. The maximum is limited by the encoding of the SIPP data. All numbers equal or greater than 99 are encoded as 99 in the SIPP data. We do not expect the inaccuracy of outliers to significantly impact the accuracy of this papers analysis, since the vast majority of individuals work between 0 to 40 hours per week. The mean weekly number of working hours per week is 24.14, indicating that the sampled individuals on average work part time.

3 Empirical Strategies

This section lays out the empirical strategies we use to examine the causal impact of the migration of young adults on the employment of women household members. Thanks to the panel structure of the SIPP data, we are able to rule out the individual and time fixed effects and thus establish causality. The empirical models listed below are based on the assumption of exogeneity and the absence of reversal causation. We do not expect the employment of women in the household to influence the migration of young adults. We will examine the assumptions in later sections of the paper.

3.1 Fixed Effects Model

This paper proposes a very simple fixed effects model:

$$\begin{aligned} HoursWork_{it} = & \beta_1 Members_{it} + \beta_2 YoungAdults_{it} + \beta_3 \Delta YoungAdults_{it} + \\ & \beta_4 YoungAdults_{it} \times \Delta YoungAdults_{it} + \alpha_i + \gamma_t + \epsilon_{it} \quad (1) \end{aligned}$$

where $Members_{it}$ is the total number of household members, $YoungAdults_{it}$: number of young adults in the household, $\Delta YoungAdults_{it}$ is the change in the number of young adults since the last three month. Individual fixed effect— the personal characteristics that vary across individuals but constant over time, is controlled by α_i ; Month fixed effect— the characteristics change over time but same for every individual in the sample, is controlled by γ_t . $YoungAdults_{it} \times \Delta YoungAdults_{it}$ is an interaction term, which measures the influence of the total number of young adults on the impact of the migration of young adults on the weekly number of working hours of women in the household.

3.1.1 Fixed Effects Model: Result

Running the fixed effects model on the sample data from 2020 SIPP, we find the following result shown in table 2. The regression method finds none of the four independent variables have a coefficient that is statistically significant at 5% or 10% level.

Table 2: Fixed Effects Regression Result

VARIABLES	<i>HoursWork</i>
<i>Members</i>	0.0694 (0.169)
<i>YoungAdults</i>	-0.555 (0.543)
$\Delta YoungAdults$	0.963 (0.655)
Interaction	-0.0223 (0.381)
Individual Fixed Effect	Yes
Month Fixed Effect	Yes
*** p<0.01, ** p<0.05, * p<0.1	

3.2 Mixed Effects Model

The fixed effects model assumes the impact of each independent variable is same for all individuals, which assumes β_1 , β_2 , β_3 , and β_4 are the same for every individual in the sample.

This assumption is very questionable. We use a mixed effects model where the coefficients consist of two parts:

$$\begin{aligned} HoursWork_{it} = & (\beta_1 + \beta_{1i})Members_{it} + (\beta_2 + \beta_{2i})YoungAdults_{it} + (\beta_3 + \beta_{3i})\Delta YoungAdults_{it} + \\ & (\beta_4 + \beta_{4i})YoungAdults_{it} \times \Delta YoungAdults_{it} + \alpha_i + \gamma_t + \epsilon_{it} \quad (2) \end{aligned}$$

Where β estimates the population level effect, and β_i accounts for individual differences.

3.2.1 Mixed Effects Model: Result

Running the mixed effects model on the sample data from 2020 SIPP, we find the following result shown in table 3. The regression method finds only one of the four independent variables have a coefficient that is statistically significant at 5% or 10% level—the coefficient for *YoungAdults* is 0.627, and is statistically significant at 5% level. The mixed effects model finds that one additional young adults in the household is associated with another 0.627 hour of weekly working time for individual women in the household.

Table 3: Mixed Effects Regression Result	
	<i>HoursWork</i>
<i>Members</i>	0.0534 (0.108)
<i>YoungAdults</i>	0.627** (0.260)
$\Delta YoungAdults$	0.730 (0.584)
Interaction	-0.0709 (0.462)
Individual Fixed Effect	Yes
Individual Random Effect	Yes
Month Fixed Effect	Yes
*** p<0.01, ** p<0.05, * p<0.1	

3.3 Conclusion of Regression Results

In conclusion, considering that both two models we propose in this paper show statistically insignificant coefficients for the change in the number of young adults, we cannot find enough statistical evidence to prove that the return of young adults impact female household members' labor force attachment.

We do find there is a positive correlation between the number of young adults and female household members' employment. However, due to concerns of endogeneity that the number of young adults is closely associated with the number of children female household members have in total which is further correlated with fertility which is extensively studied to have a strong correlation with labor supply decisions (Felmlee, 1993), we cannot conclude that the increase in the number of young adults in the household *causes* the number of working hours to increase.

4 Racial Difference in the Impact

Literature finds the impact of household composition on women's labor force attachment particularly significant in racial and religious communities with a strong presence of patriarchal norms (Spierings, 2014). We run the regression on subsets from different racial groups to examine the different impact for individuals of different ethnics. The SIPP data encodes race with the ERACE variable. ERACE is an individual-level variable with four possible values: 1 stands for White, 2 stands for Black, 3 stands for Asian, and all other races are encoded with 4. We filtered the sample data set with ERACE and created four subset with different races. We then run then mixed effects regression model proposed earlier on each of the racial subsets of the sample data. The regression result is shown in table 4.

The mixed model finds none of the dependent variable has a statistically significant impact on the employment of individual women of White and Asian race. The number of young adults is found to be positively correlated with the employment of individual women

Table 4: Mixed Effects Regression Result

	Race = White (A)	Race = Black (B)	Race = Asian (C)	Race = Other (D)
<i>Members</i>	0.0769 (0.122)	0.515 (0.330)	-0.329 (0.240)	-1.051* (0.609)
<i>YoungAdults</i>	0.388 (0.284)	1.953** (0.872)	-1.113 (0.730)	3.064** (1.396)
$\Delta YoungAdults$	0.789 (0.621)	1.153 (2.256)	0.823 (1.261)	-0.986 (2.510)
Interaction	-0.265 (0.515)	0.822 (2.100)	0.204 (0.933)	-0.277 (1.886)
Observations	8,412	1,365	672	360

*** p<0.01, ** p<0.05, * p<0.1

of Black and Other race. Another young adult child is associated with an additional 1.953 hours of weekly working time for women of Black race, and for women of Other race, another young adult child is associated with an additional 3.064 hours of weekly working time. The coefficient for the number of young adults is statistically significant at 5% level for the aforementioned two races. Individual women of Other race are found to have the largest positive relationship between the number of young adult children and employment, which is more than 50% larger than individual women of Black race and significantly larger than individual women of White and Asian race. This result might suggest that individual women of Other race share more financial burden of child breeding than women of other races.

Due to the aforementioned concerns of endogeneity that the number of young adults is closely associated with the number of children female household members have in total which is further correlated with fertility which is extensively studied to have a strong correlation with labor supply decisions (Felmlee, 1993), we cannot conclude that the increase in the number of young adults in the household *causes* Black and Other women's number of working hours to increase.

The regression result also finds none of the races have statistically significant coefficient for $\Delta YoungAdults_{it}$, suggesting that there is no statistically significant impact of the migration of young adults on the labor force attachment of individual women of any race. This finding

is consistent with the regression result of the mixed effects model on the full sample data set.

5 Change in the Impact Over Time

The first score of the twenty first century witnessed substantial progress in gender equality, especially in terms of home production and employment (e.g. Cotter et al., 2007). Despite at an increasingly slowing pace (Seguino, 2016; England et al., 2020), the progress towards gender equality suggests that the impact might face a decreasing trend. In order to examine the change in the impact of the migration of young adults over time, we run the mixed effects model proposed in the previous section on data sets from 2014, 2017, 2018, and 2019 SIPP data. The 2014 SIPP data consists of four waves— each wave is a series of surveys covering one individual year. The 2014 SIPP wave one took place in 2013, gathering survey data from January to December 2013. The second, third, and fourth wave took place in 2014, 2015, and 2016 respectively. “Beginning with 2018 SIPP, data are collected as yearly overlapping panels, with new panels beginning each year.”(Bureau, 2021) The 2018 SIPP data covers year 2017, and the 2019 SIPP data covers year 2018. We filter each year’s data and construct sample data sets using the conditions proposed in previous sections, and run the mixed effects model on each year’s sample data set respectively. Table 5 shows the regression results for each year from 2013 to 2017.

The regression results find none of the years have statistically significant coefficient for $\Delta YoungAdults_{it}$ ², suggesting no statistically significant impact of the migration of young adults on the labor force attachment of women in any year. This finding is consistent with the regression result from previous sections. 2019, 2018, 2014 wave 3, and 2014 wave 1 have a coefficient for the number of young adults that is statistically significant at 5% level. However, we cannot prove causality due to the aforementioned concerns on endogeneity.

²For SIPP wave 3, although the coefficient for $\Delta YoungAdults$ has a p-value that is smaller than 0.1, its confidence interval includes 0.

Table 5: Mixed Effects Regression Result

	2019 SIPP (A)	2018 SIPP (B)	2014 SIPP Wave 4 (C)	2014 SIPP Wave 3 (D)	2014 SIPP Wave 2 (E)	2014 SIPP Wave 1 (F)
<i>Members</i>	-0.0816 (0.118)	-0.0739 (0.107)	0.183 (0.112)	0.0690 (0.102)	-0.0402 (0.0925)	-0.250** (0.104)
<i>YoungAdults</i>	0.947*** (0.287)	0.893*** (0.278)	0.352 (0.251)	0.960*** (0.221)	0.180 (0.219)	0.692** (0.271)
Δ <i>YoungAdults</i>	-0.301 (0.297)	- (-)	0.159 (0.256)	-0.509* (0.274)	0.200 (0.308)	- (-)
Interaction	0.210 (0.277)	- (-)	-0.420 (0.271)	-0.0635 (0.161)	0.336 (0.355)	- (-)
Individual Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Individual Random Effect	Yes	Yes	Yes	Yes	Yes	Yes
Month Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,340	13,240	8,522	9,697	11,736	15,182

Note: Δ *YoungAdults* and the interaction are omitted because of collinearity for 2018 SIPP and 2014 SIPP Wave 1.

*** p<0.01, ** p<0.05, * p<0.1

6 Robustness

6.1 Reversal Causation

This paper’s model is based on the assumption of exogeneity, that the moving of young adults is not correlated with the employment of their parents. However, little literature has identified factors young adults take into consideration other than employment and financial condition of the young adults themselves. One might argue that young adults make their moving decisions partially based on the financial capability of their parents, which is closely correlated with their employment. On the other hand, parents have the right to decide whether to agree their adult children to move back (Clemens and Axelson, 1985), and it is plausible to suggest that their decisions are partially based on their ability to maintain their living standard with the additional expense brought by the returning children. Therefore, parents will only allow their children to move back if the parents have stable employment. Had the aforementioned correlations in place, there would be a positive causality relationship between the employment of women household members and the returning of young adults. The model this paper proposed would suffer from simultaneity. With the sheer literature available, it is difficult to either prove or challenge this paper’s assumption of exogeneity, leaving gaps for further analysis in future studies.

6.2 Exogeneity

The variable of interest, $\Delta YoungAdults$ — the monthly change in the number of young adults since the last three month, is weakly correlated with the total number of children. Had the migration of young adults exogenous, as the number of children increases, the chance that at least one young adults moves back to the household and the expected number of young adults move back would both increase accordingly. The total number of children of an individual women is strongly correlated with individual’s fertility, which— as we have mentioned extensively in previous sections— has been studied to be correlated with labor

supply decisions (Felmlee, 1993). However, given the absence of related data and literature, as the time of writing, we are not able to examine the magnitude of the correlation, leaving gaps for further analysis in future studies.

7 Conclusion

In conclusion, considering models we propose in this paper show statistically insignificant coefficients for the change in the number of young adults, we cannot find enough statistical evidence to prove that the return of young adults impact female household members' labor force attachment. Should the aforementioned simultaneity not exist, we can conclude that the moving back of adults do not impact their female household members' labor force attachment.

The finding provides implications for policy makers and reflections on gender equality:

1. It might not be very effective to adopt options that help females with changing household composition or with a large number of young adult children.
2. Our hypothesis believes that the returning of young adults impacts women's labor force attachment based on the gender convention that women tend to take more responsibility in home production. The insignificant result suggests that at least in terms of this particular setting, the situation is not as bad as our estimation.

Future versions of this paper will use the 2021 SIPP data which will undoubtedly include significantly more incidences of migration of young adults. Furthermore, researches need to be done to address the concerns on exogeneity and reversal causation. Finally, it might be helpful to modify the regression model, including more controls and using lagged variables to account for the delayed while lasting shock of the return of the children.

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