Labor Market Insights in the Wake of the COVID-19 Pandemic and School Closures

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Presentation 1:
# Where have the workers gone since the COVID-19 pandemic?

Introduction

- The COVID-19 pandemic severely affected labor markets globally, leading to the unprecedented decline in employment and hours of work.
- The magnitude of the adverse effects, as well as the speed of recovery later into the pandemic, varied across sectors and occupations.
- At the onset of the pandemic, the loss in hours of work occurred largely at the extensive margin in many countries; the Philippines at the intensive margin. There was also some evidence of reallocation of jobs in other countries.
- Studies that analyzed hours of work later into the pandemic saw that it changed mostly at the intensive margin.

The Philippine labor market experience

At the onset of the pandemic, there were huge decline in labor force participation rate, steep increase in unemployment and underemployment rates...

… and reduced aggregate and average hours of work. Improvements in aggregate indicators gradually occurred, but mean hours of work remained low.
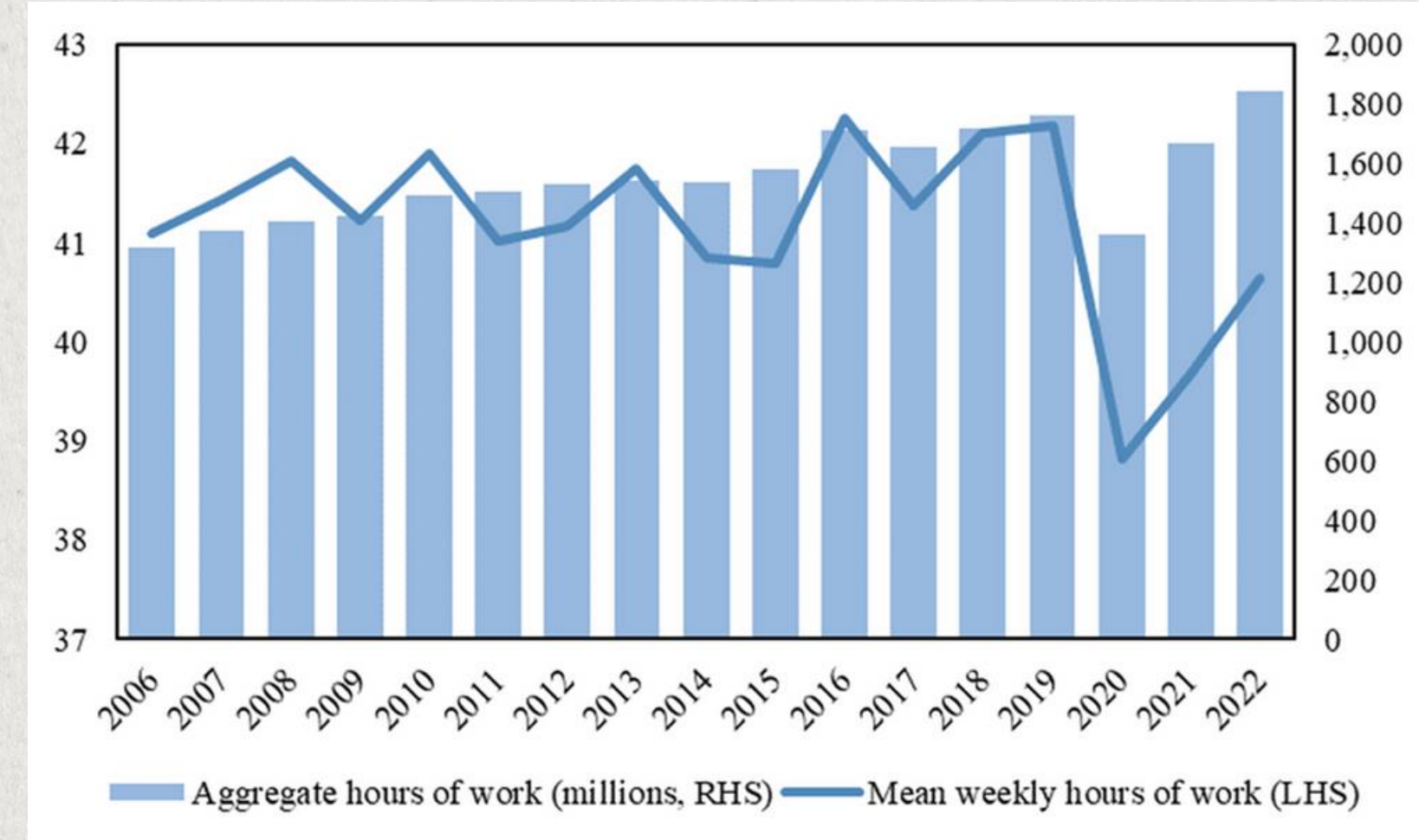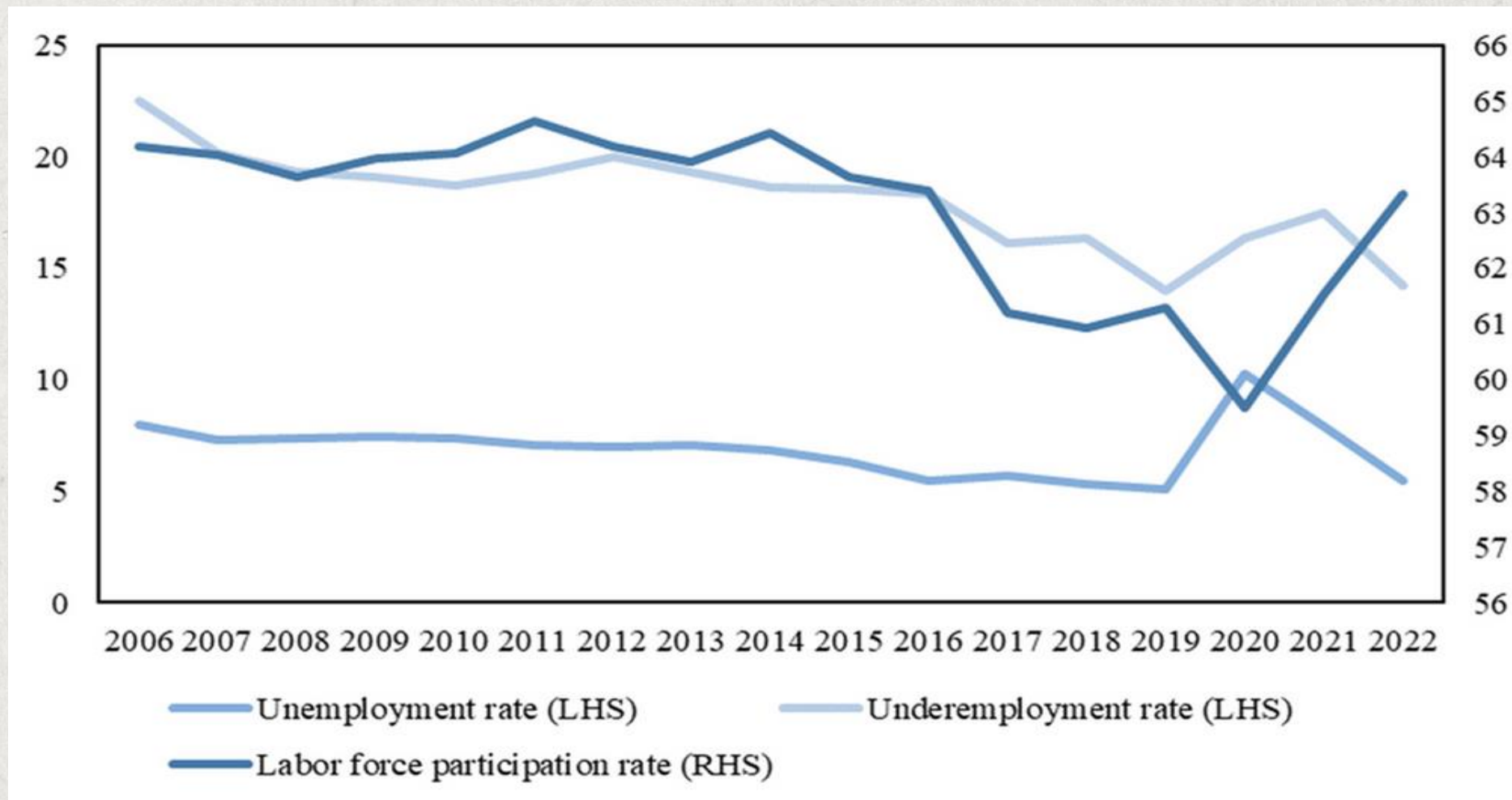
Source: Philippine Statistics Authority.

Research Questions

1. To what extent did the extensive margin and intensive margin contribute to the change in aggregate hours of work before and during the pandemic?

2. Was there reallocation of workers at the aggregate level across sectors, occupations, and classes and nature of work during the pandemic, and which of these were driving the change?

3. How do the employment dynamics of men and women differ?

Data and Methodology

Data and coverage: Quarterly rounds of the Labor Force Survey from January 2012 to April 2022; Working-age population (15+ years old)

Decomposition method for change in average hours of work per person: Blundell et al. (2011)

Average hours of work per person per year: $H_t = \sum_{j=1}^{J} q_{jt} H_{jt} = \sum_{j=1}^{J} q_{jt}(h_{jt}p_{jt})$

where: q_{jt} is the population share of group j in year t. H_{jt} represents the average hours per person for each group, which is the product of hours per worker for group j in year t as denoted by h_{jt} and the employment rate of group j in year t as denoted by p_{jt}.

Intensive vs. Extensive Margin: $\Delta_{jt} = q_{jt-1}\left\{\underbrace{p_{j,t-1}(h_{jt} - h_{j,t-1})}_{intensive} + \underbrace{h_{jt}(p_{jt} - p_{j,t-1})}_{extensive}\right\}$

Calculating the annual employment rate: $p_{jt} = \frac{1}{4}\sum_{k=1}^{4}\frac{W_{jkt}}{N_{jkt}}$

where: W_{jtk} is the number of employed persons for group j in quarter k in year t, and N_{jtk} is the number of working-age persons for group j in quarter k in year t.

Calculating the average hours per work: $h_{jt} = \frac{1}{W^A}\sum_{k=1}^{4}\sum_{i=1}^{W}(h_{ikt}^a * 13)$

where: h_{itk}^a refers to the total number of hours worked for all jobs for worker i during the reference week in quarter k in year t. W^A denotes the average number of employed across quarters.

Data and Methodology

Reallocation index: Forsythe et al. (2022)

Measures the minimum fraction of employment needed to move across groups to maintain the same distribution as three years prior
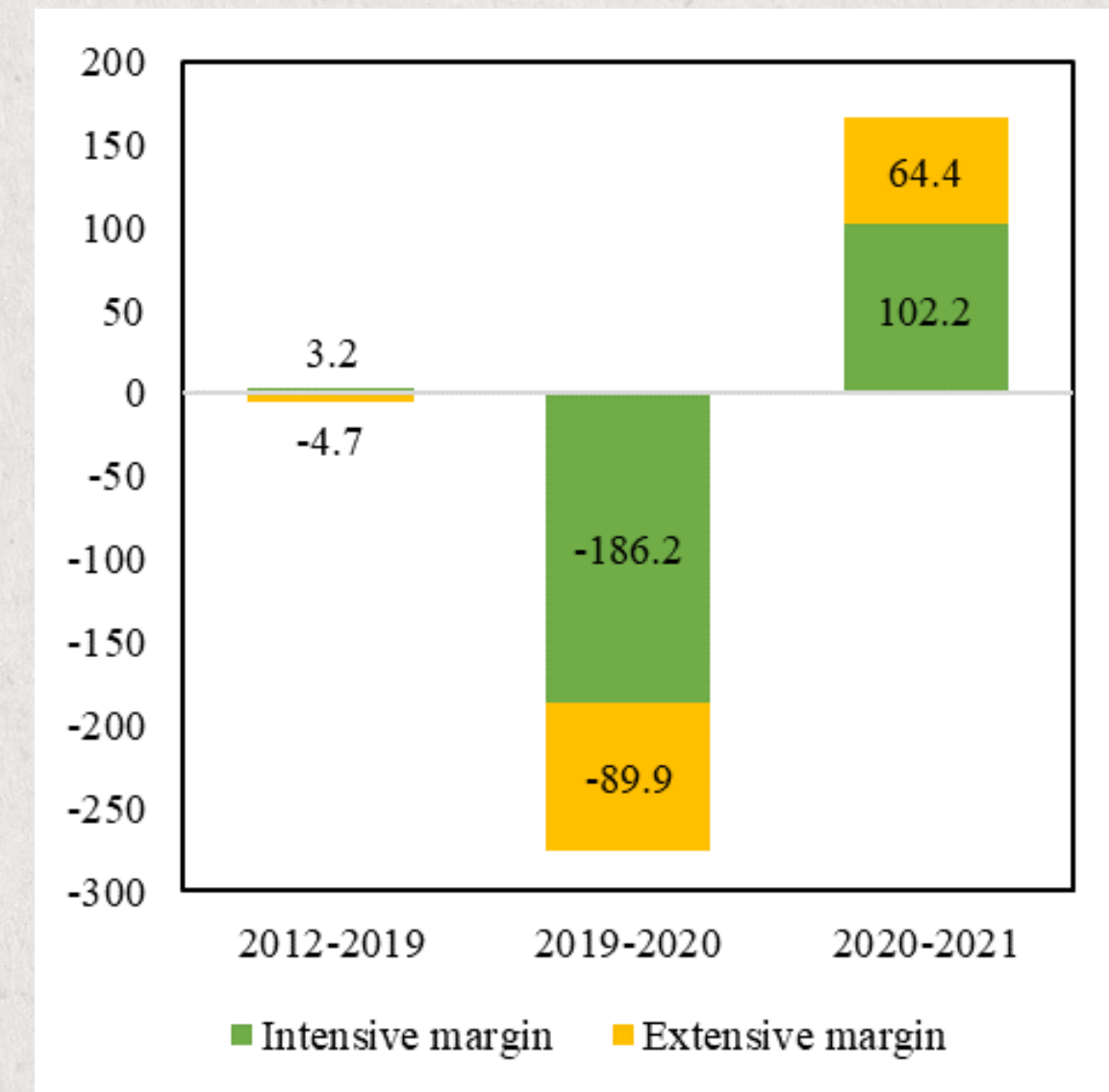
$$R_t = \frac{1}{2} \sum_{g \in G} \left| \frac{Emp_{g,t}}{\sum_{g \in G} Emp_{g,t}} - \frac{Emp_{g,t-3}}{\sum_{g \in G} Emp_{g,t-3}} \right|$$

which is the sum of absolute deviations from the employment share of G labor markets three years prior divided by two.

Larger losses in hours of work for men and change mostly occurring at the intensive margin
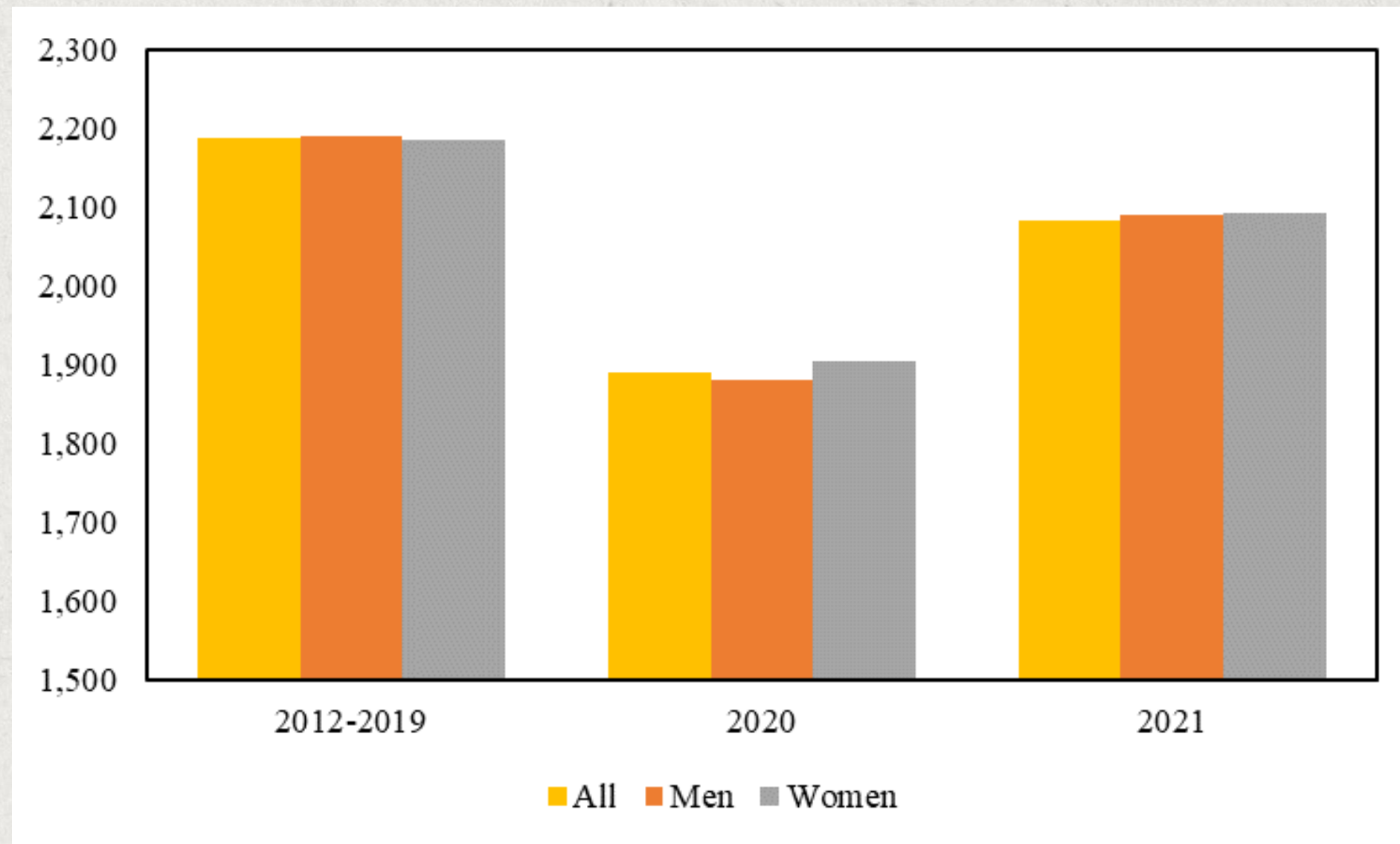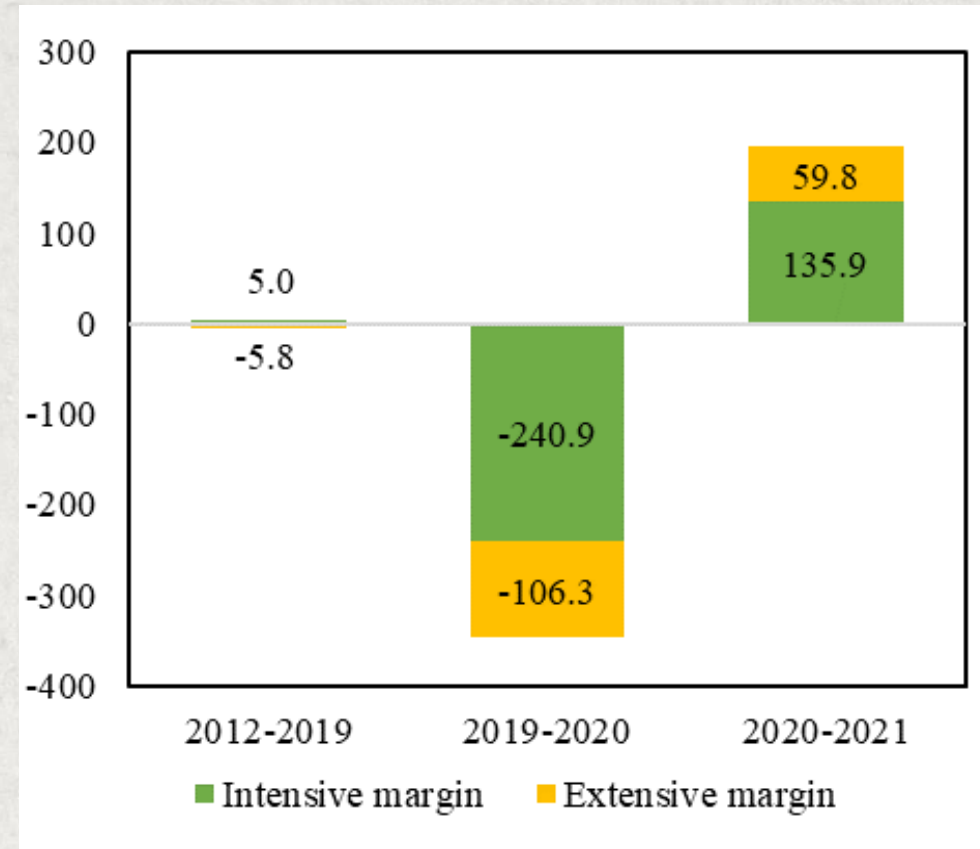

Average annual hours of work per person

Decomposition of change in average hours of work per person

Source: Authors' estimates using several rounds of the Labor Force Survey.

All male

Young male
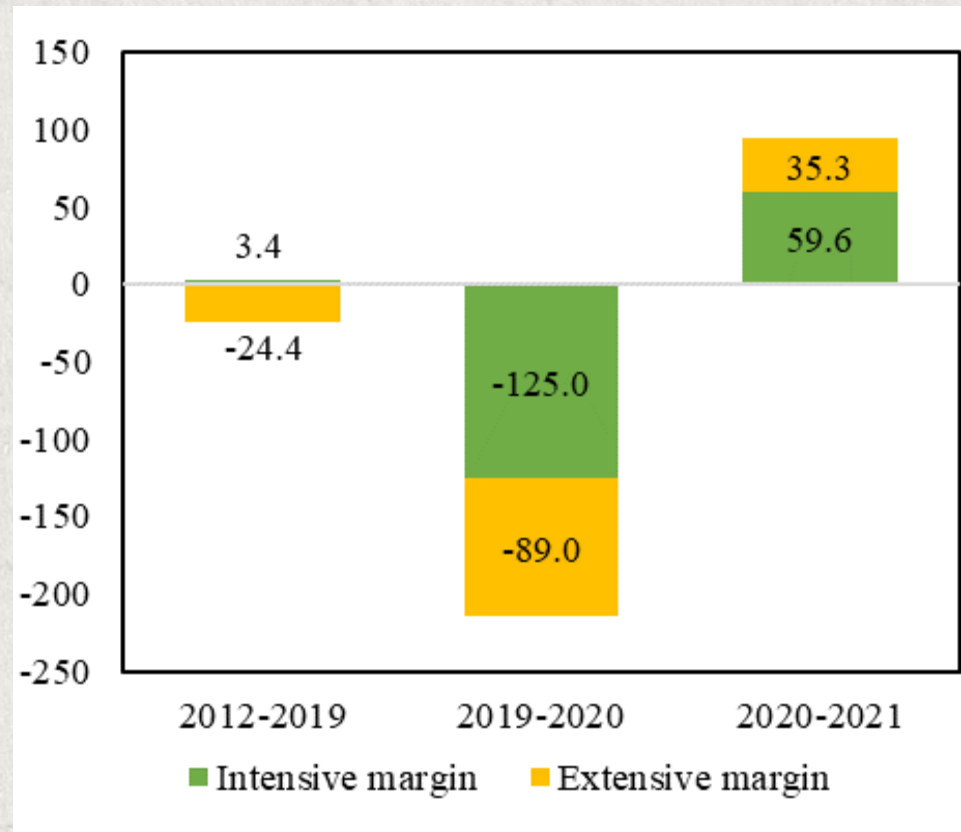
Prime-aged male
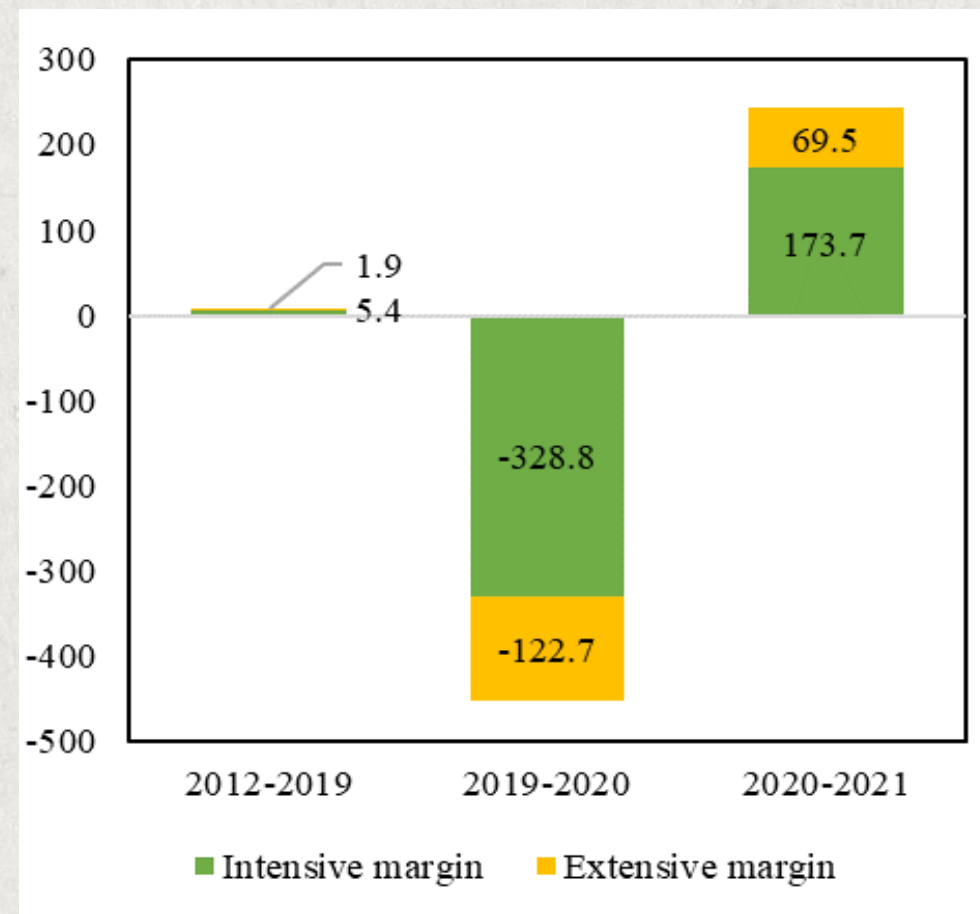
Old male
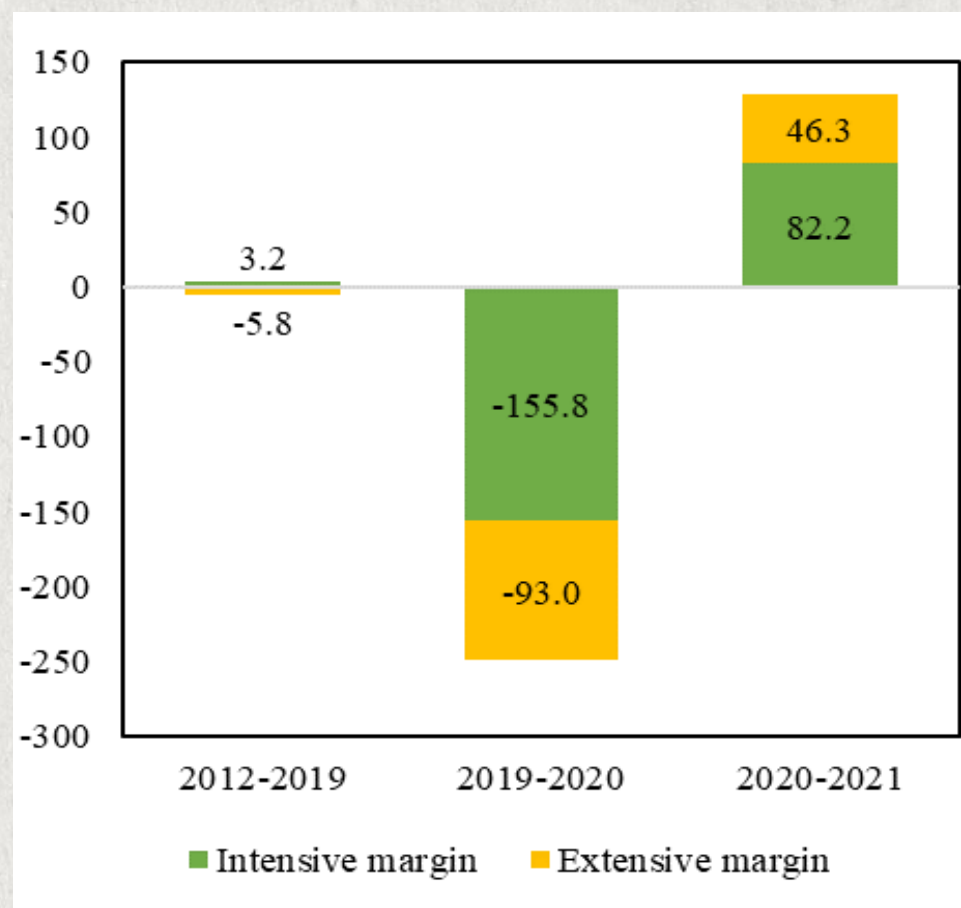
Decomposition of average hours of work (Male)

- <u>Before the pandemic</u>: Extensive margins, small decline mostly from the young (and old to some degree)

- <u>During the pandemic</u>: Intensive margins, recovery also mostly at the intensive margin, mainly driven by the prime-aged

Source: Authors' estimates using several rounds of the Labor Force Survey.

All female
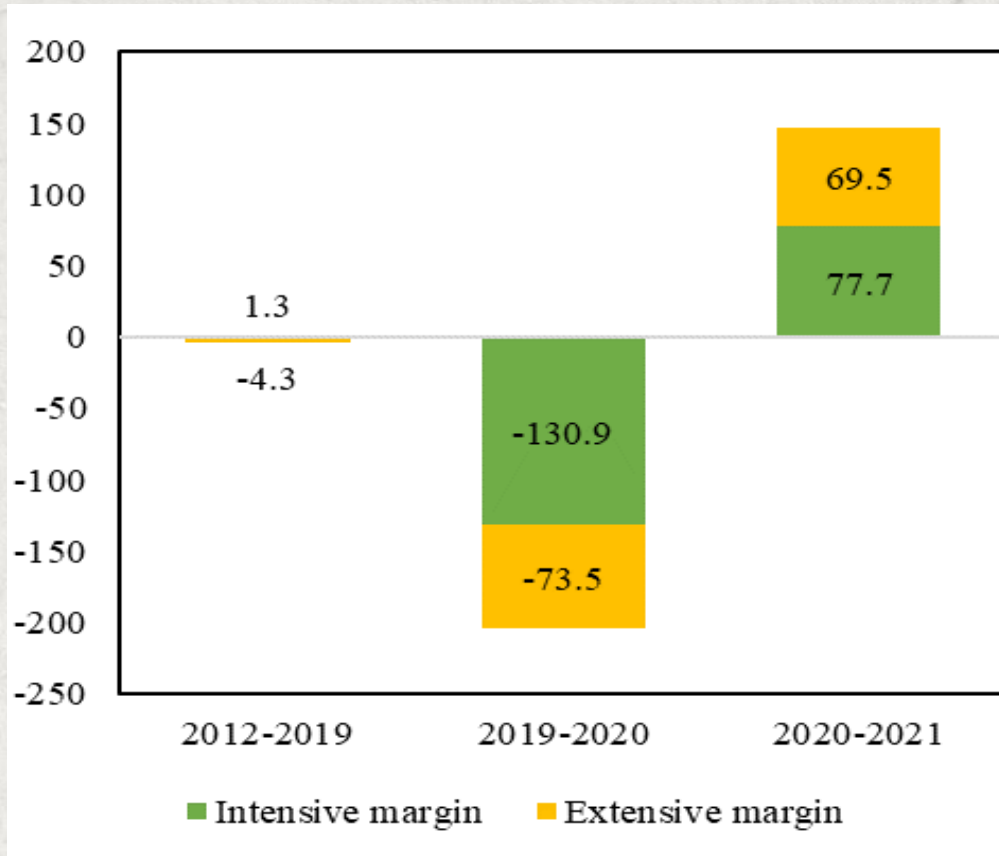
Young female
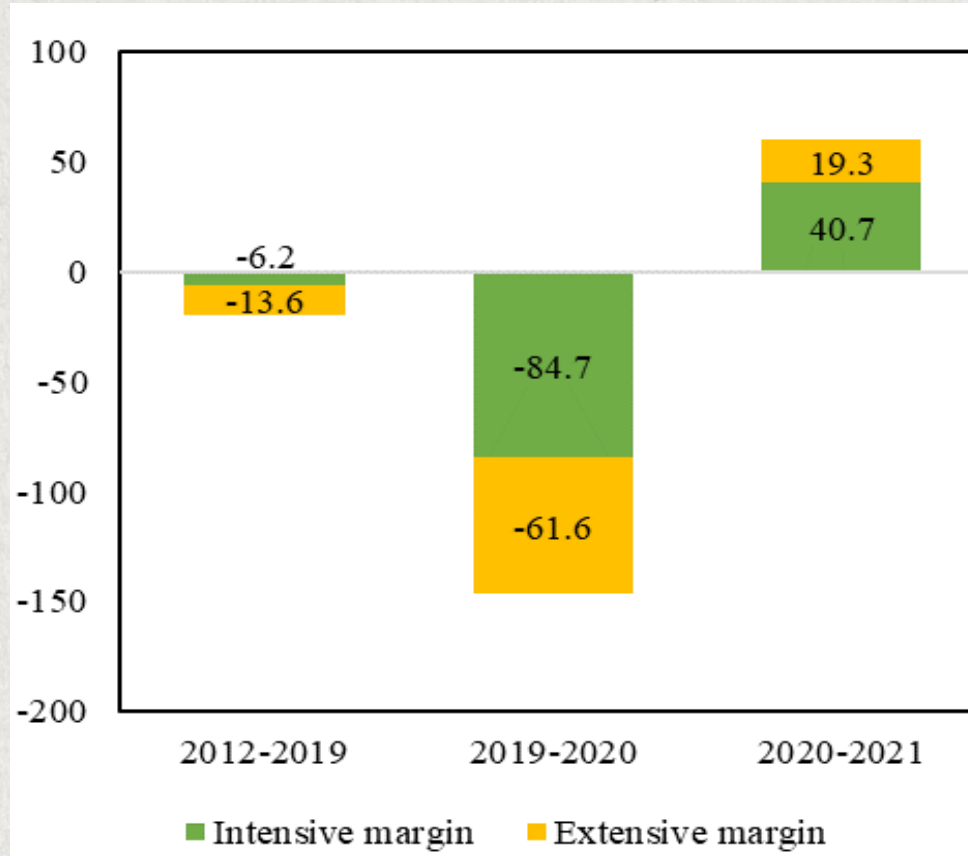
Prime-aged female
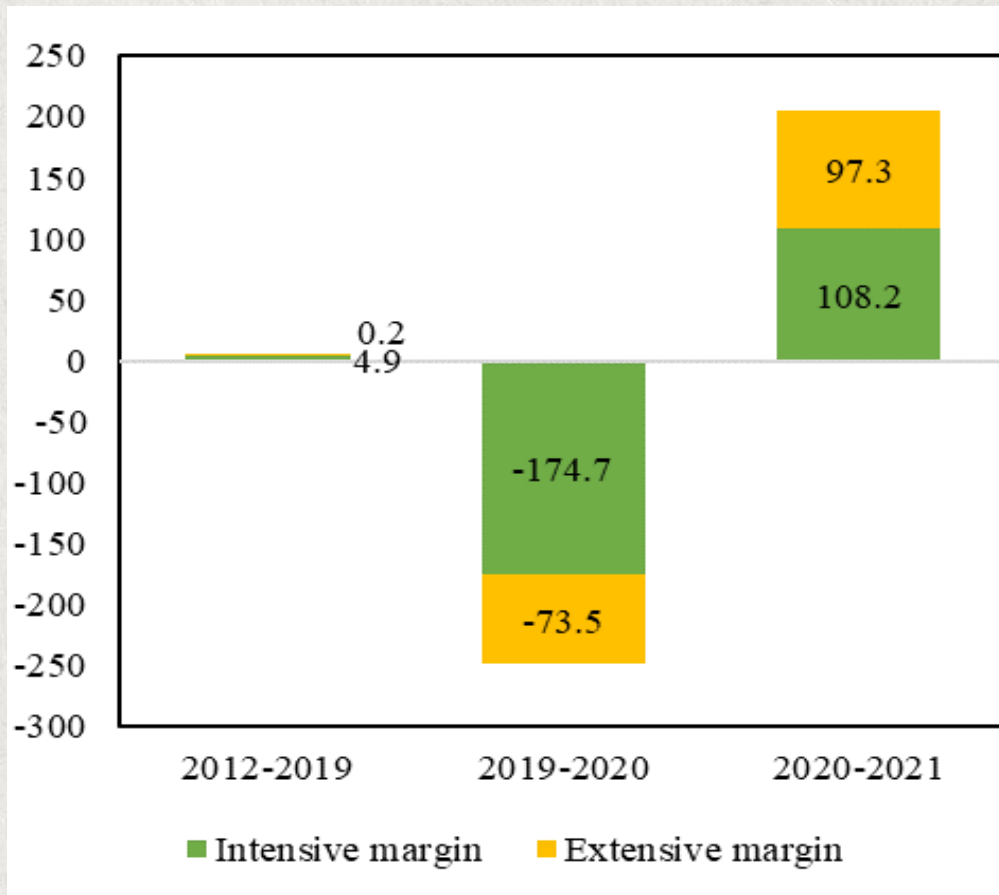
Old female
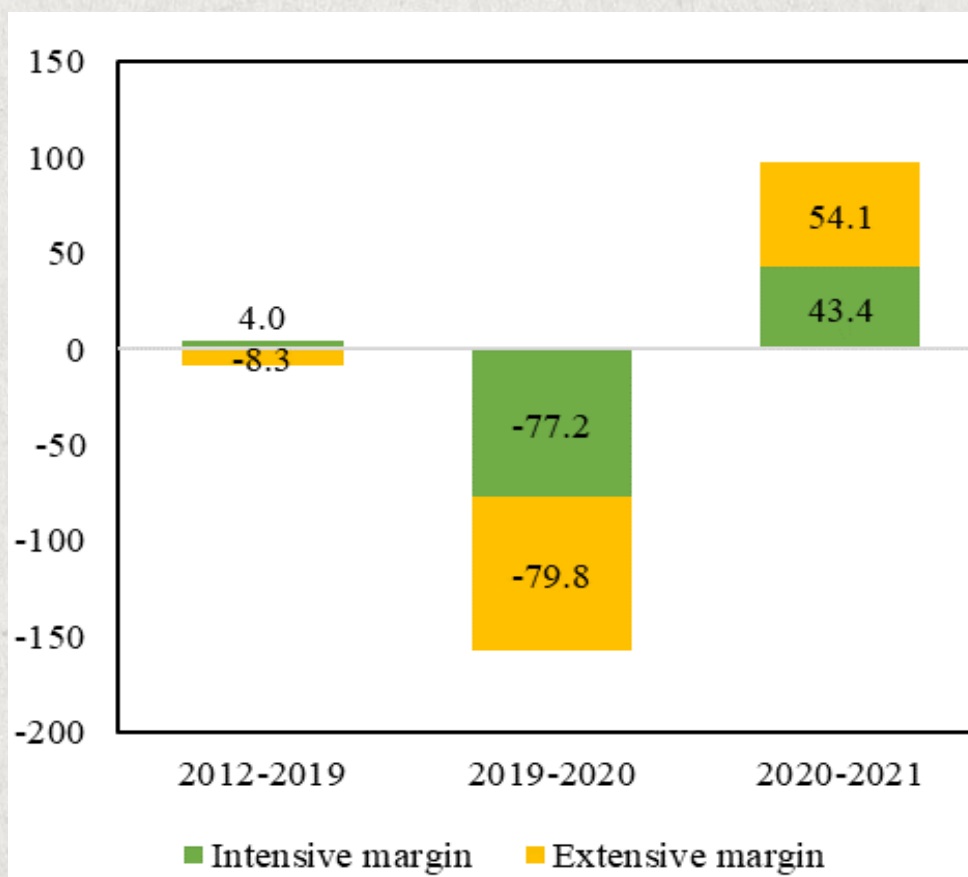
Decomposition of average hours of work (Female)

- <u>Before the pandemic</u>: Larger decline than the males, extensive margins, due to the young and old

- <u>During the pandemic</u>: Smaller decline than the males, intensive margins (except old), mostly from prime-aged

Source: Authors' estimates using several rounds of the Labor Force Survey.

Lower occupational and sectoral reallocation at the onset of the pandemic with observed gender differentials

Reallocation index: Occupation
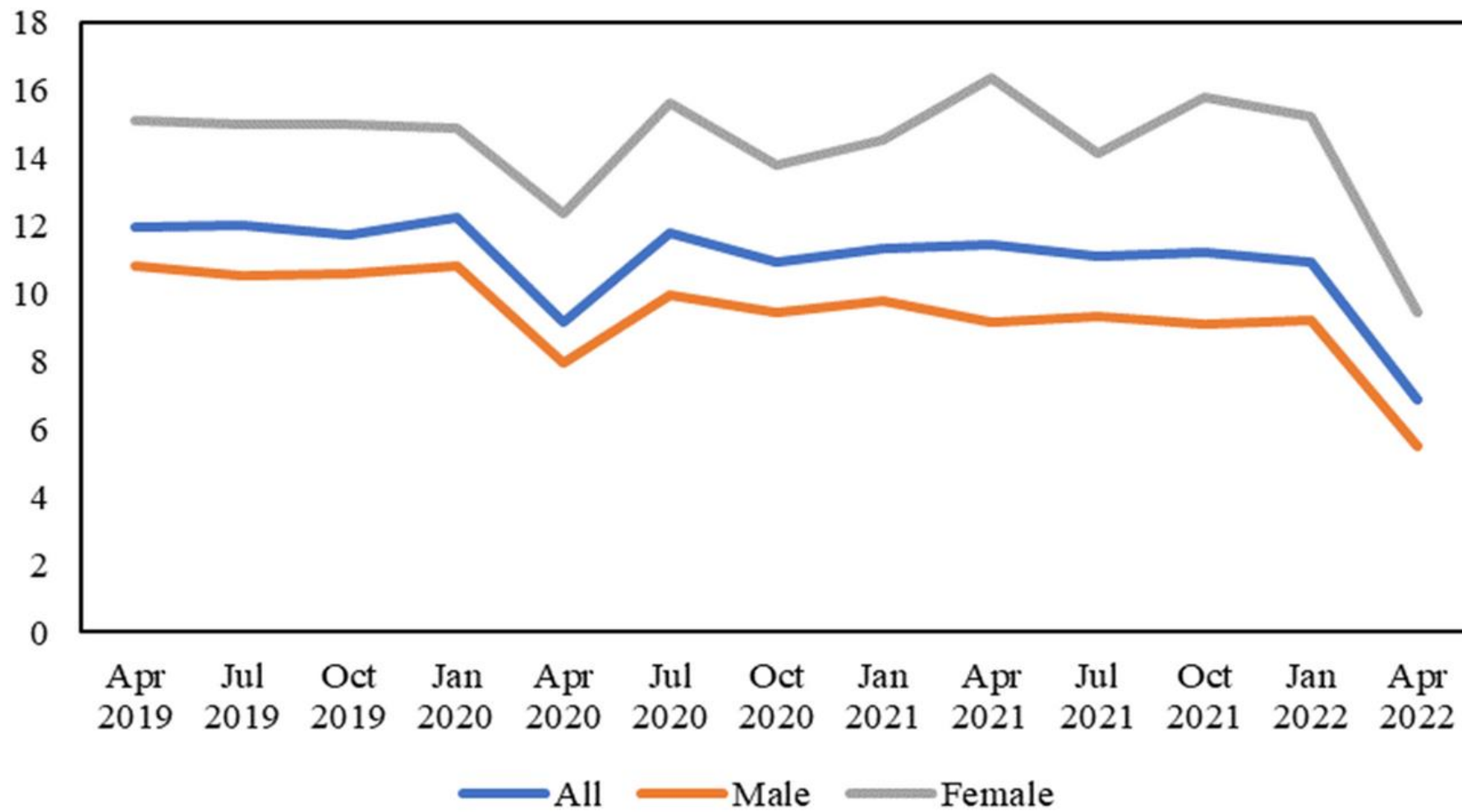
Reallocation index: Sector
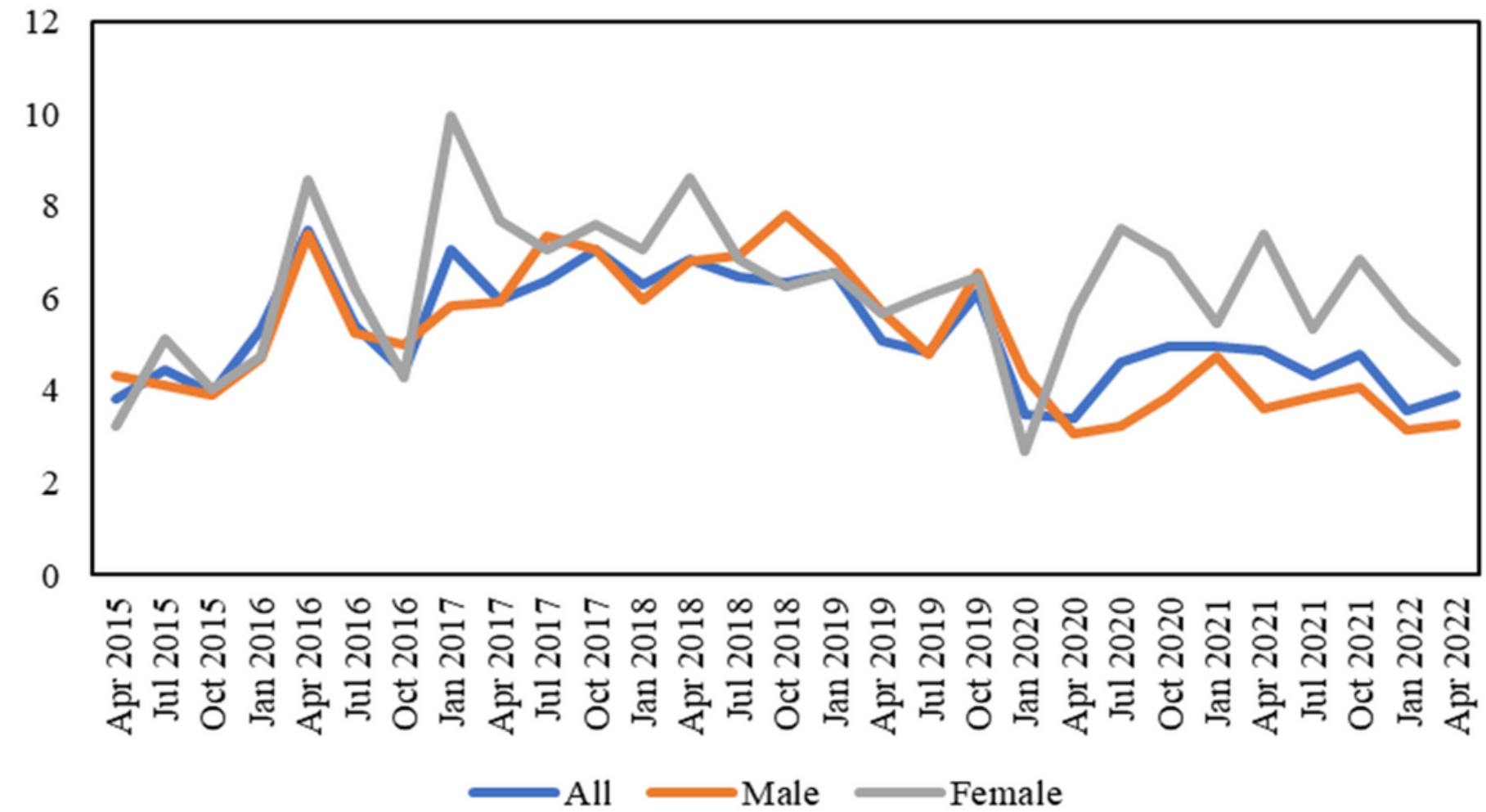
Higher degree of reallocation of female employment which was due to uptick in paid and unpaid family work

Reallocation index: Class of work
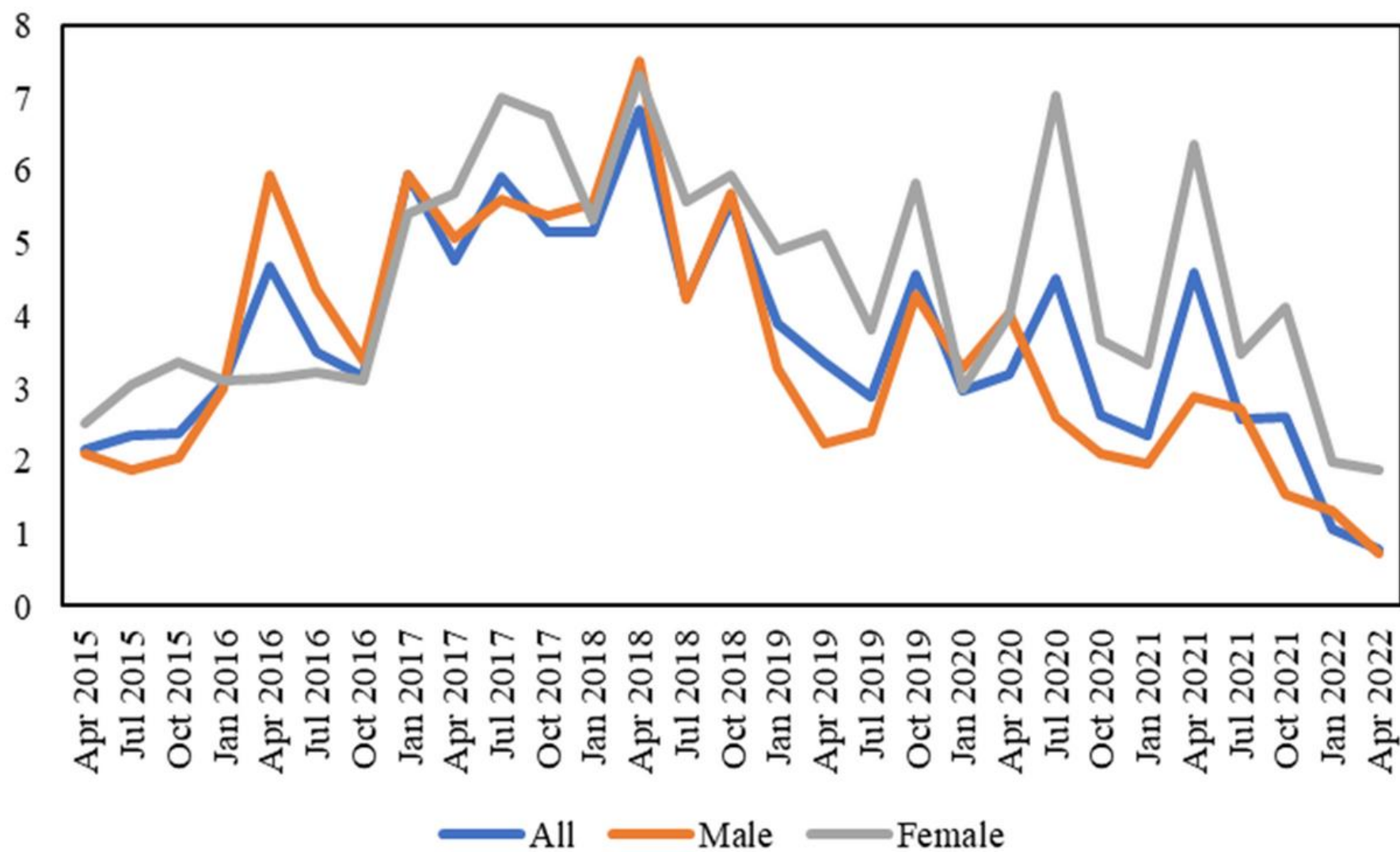
Deviation of female employment shares from pre-pandemic levels
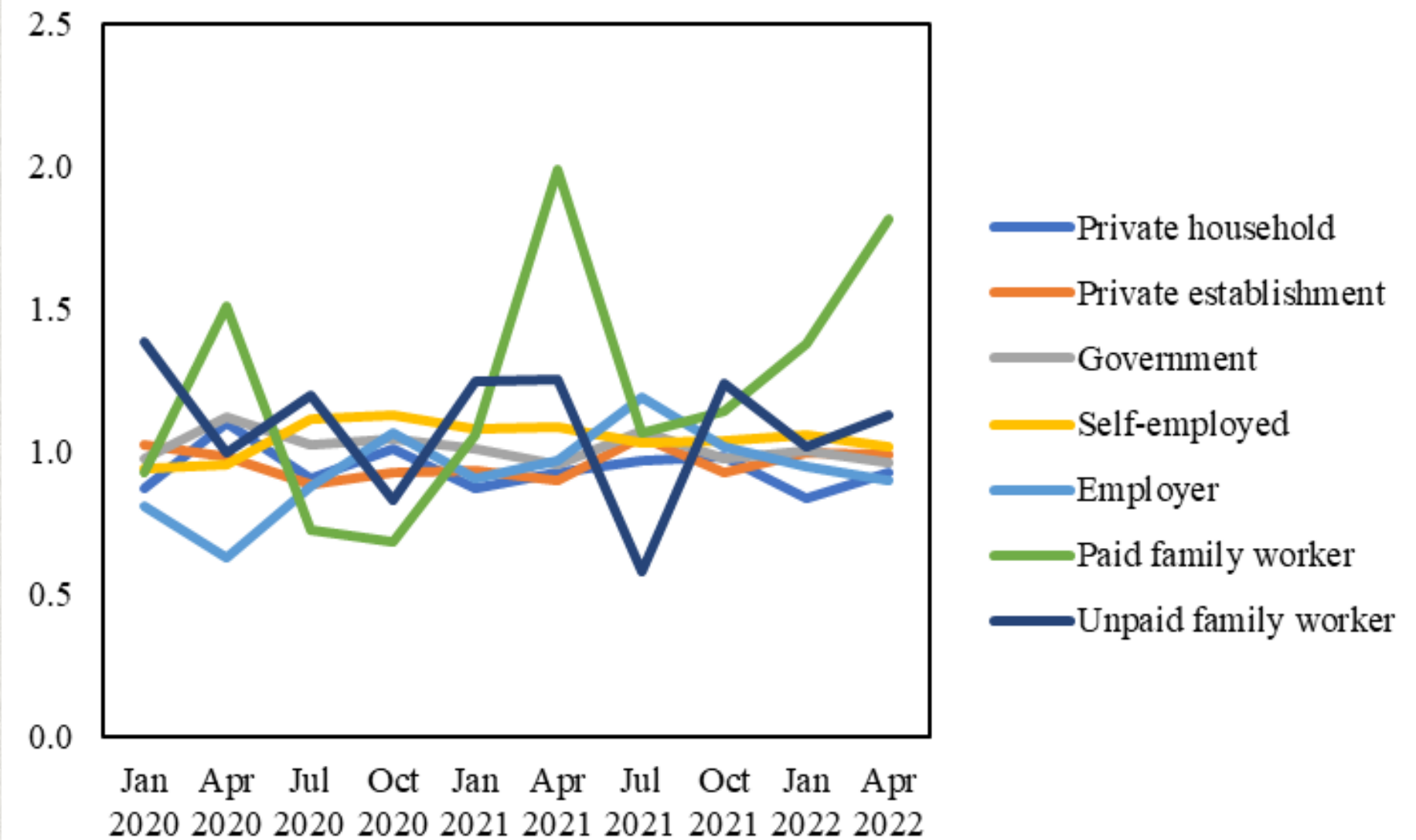
Mostly higher reallocation in nature of work because of increasing short-term employment

Reallocation index: Nature of work
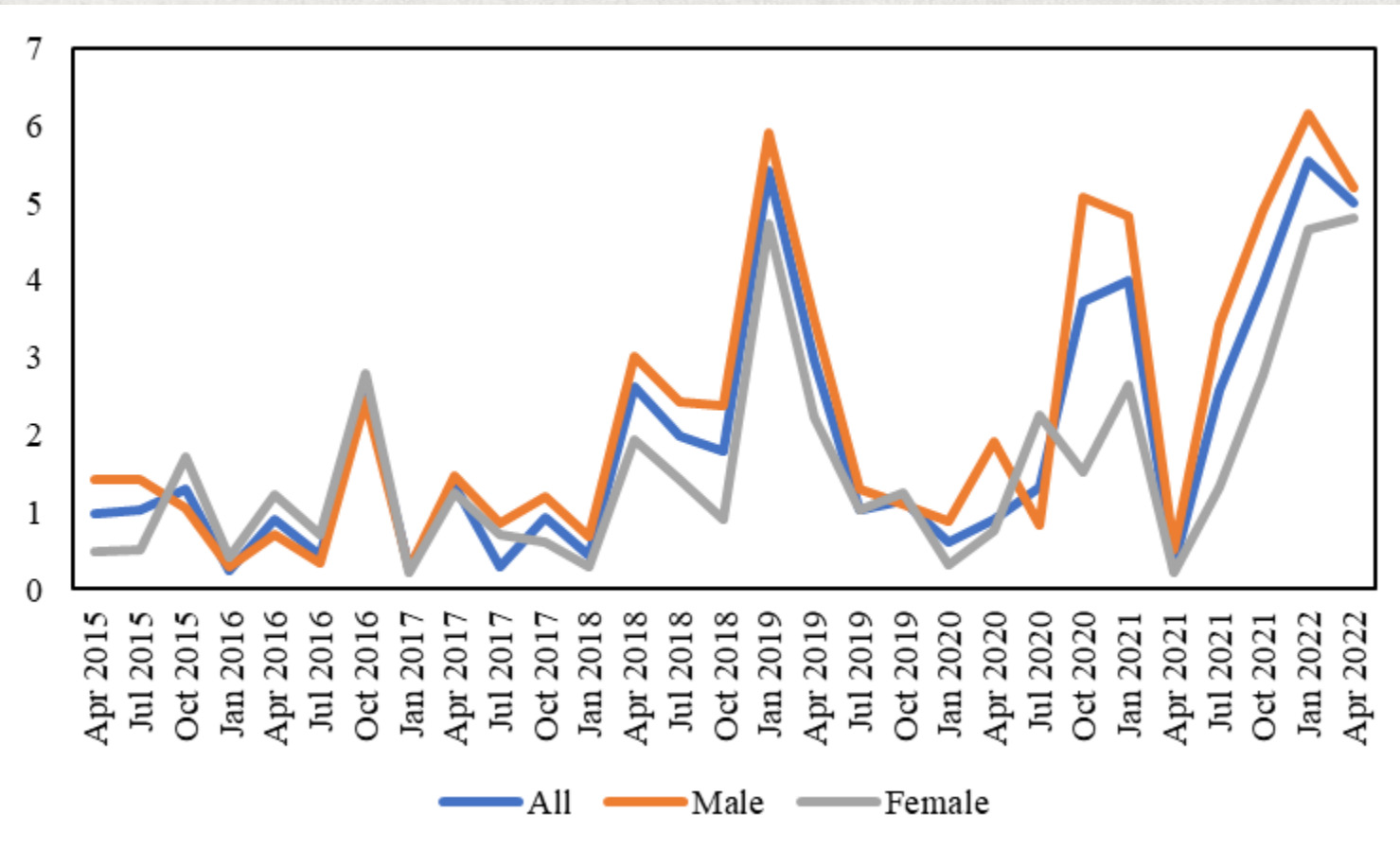
Deviation of employment shares from pre-pandemic levels:
Male vs. Female
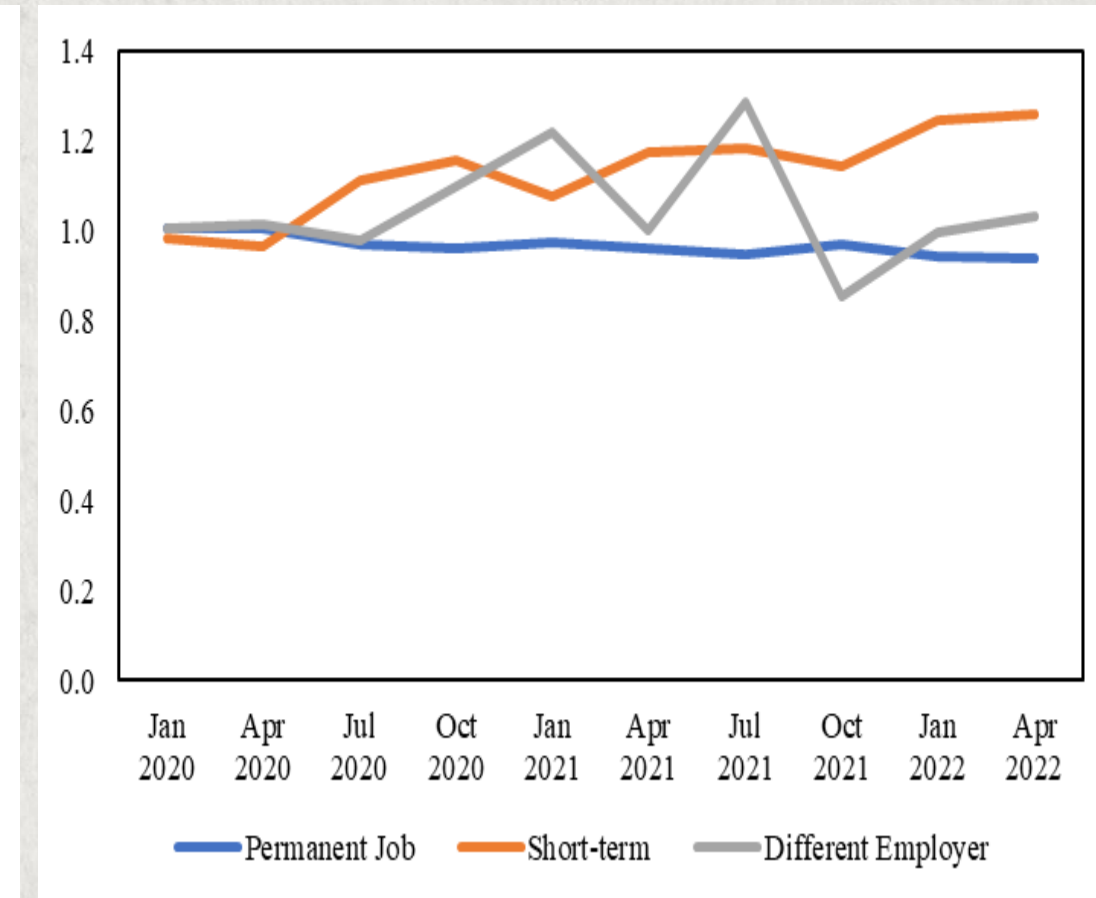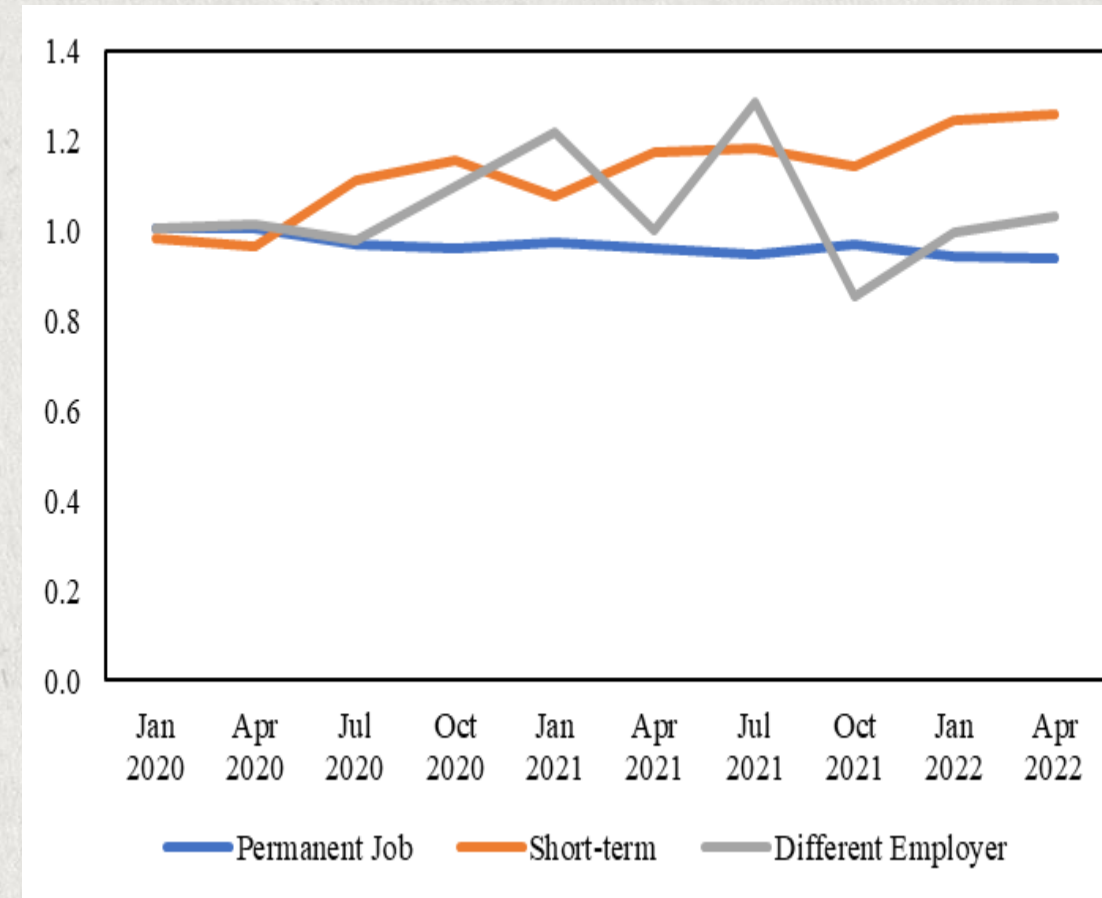
Conclusion and Policy Implications

01. The steep decline in hours of work at the onset of the pandemic mostly occurred at the intensive margin (except old women); men more so. The increase in hours of work later into the pandemic was still largely due to the intensive margin. Existing literature attributes this to the lack of well-developed unemployment insurance system.

02. In contrast to developed countries, reallocations across sectors and occupations were relatively lower in the Philippines during the pandemic, suggesting less dynamic labor markets. However, there was higher reallocation across class and nature of work, which was attributed to increased low-quality employment.

03. With limited social safety nets that protect worker income amid economic shocks, there appears little leeway for workers to adjust in the labor market. Thus, sufficient and timely support for workers should be delivered when faced with negative economic shocks.

Presentation 2: School closures and parental labor supply

Introduction

- The Philippines recorded the longest closure to in-person learning during the COVID-19 pandemic.
- In developed countries, school closures had a larger negative impact on hours of work for women with school-age children. Those who do not have college degrees and those who cannot telework experienced larger adverse impacts on employment.
- In the Philippines, employment losses during lockdowns were larger for women with minor children. In the absence of well-established childcare systems, schools could also be considered a substitute for childcare facilities.
- In other developing countries, there was no observed impact on hours of work due to school closures.

The Philippine context:
Differential labor market outcomes

Gender gap in employment ratios appears
to have narrowed during the pandemic.

However, women with school-age children worked less.
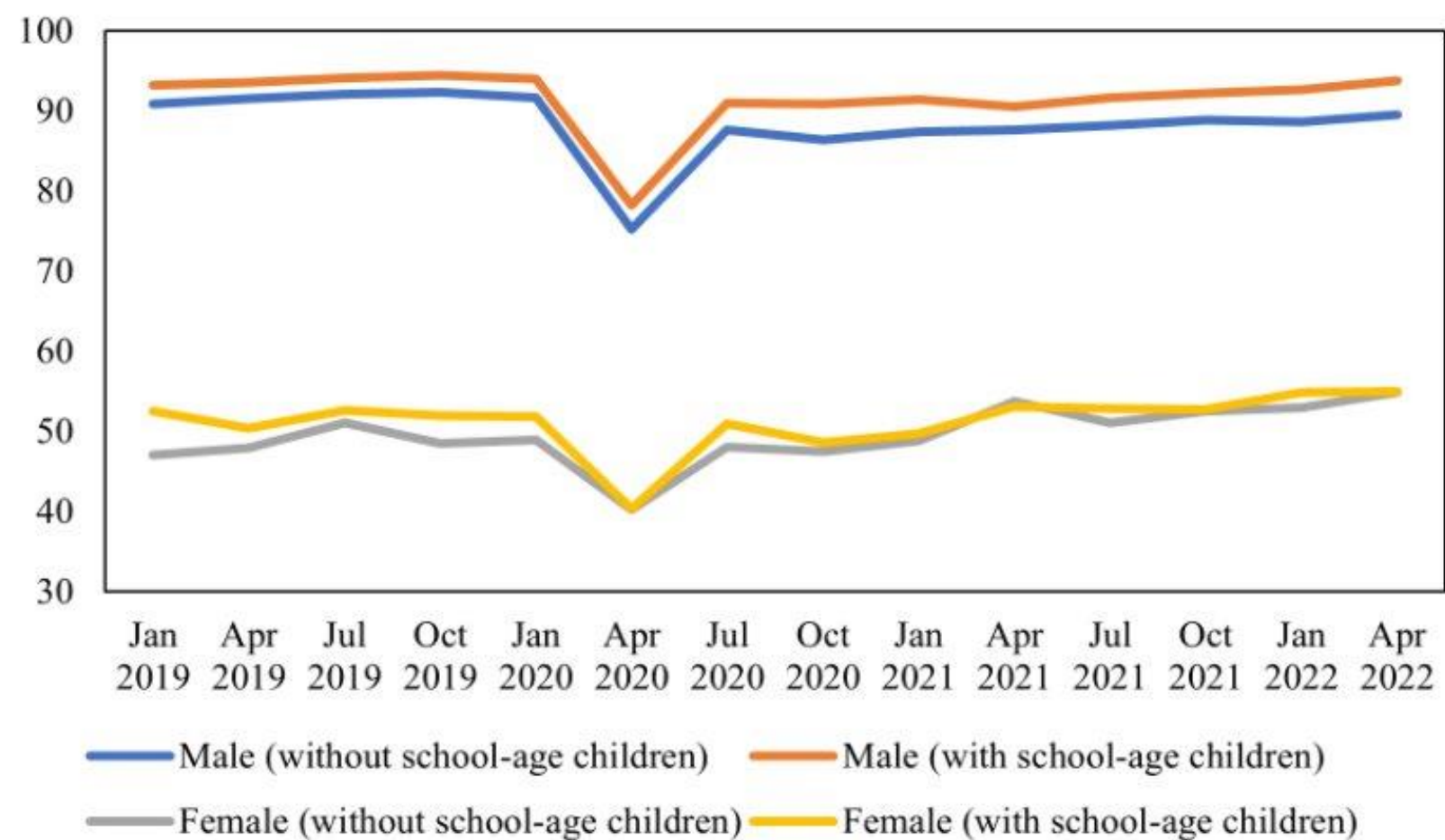
Paid employment-to-population ratio
by gender and presence of school-age children
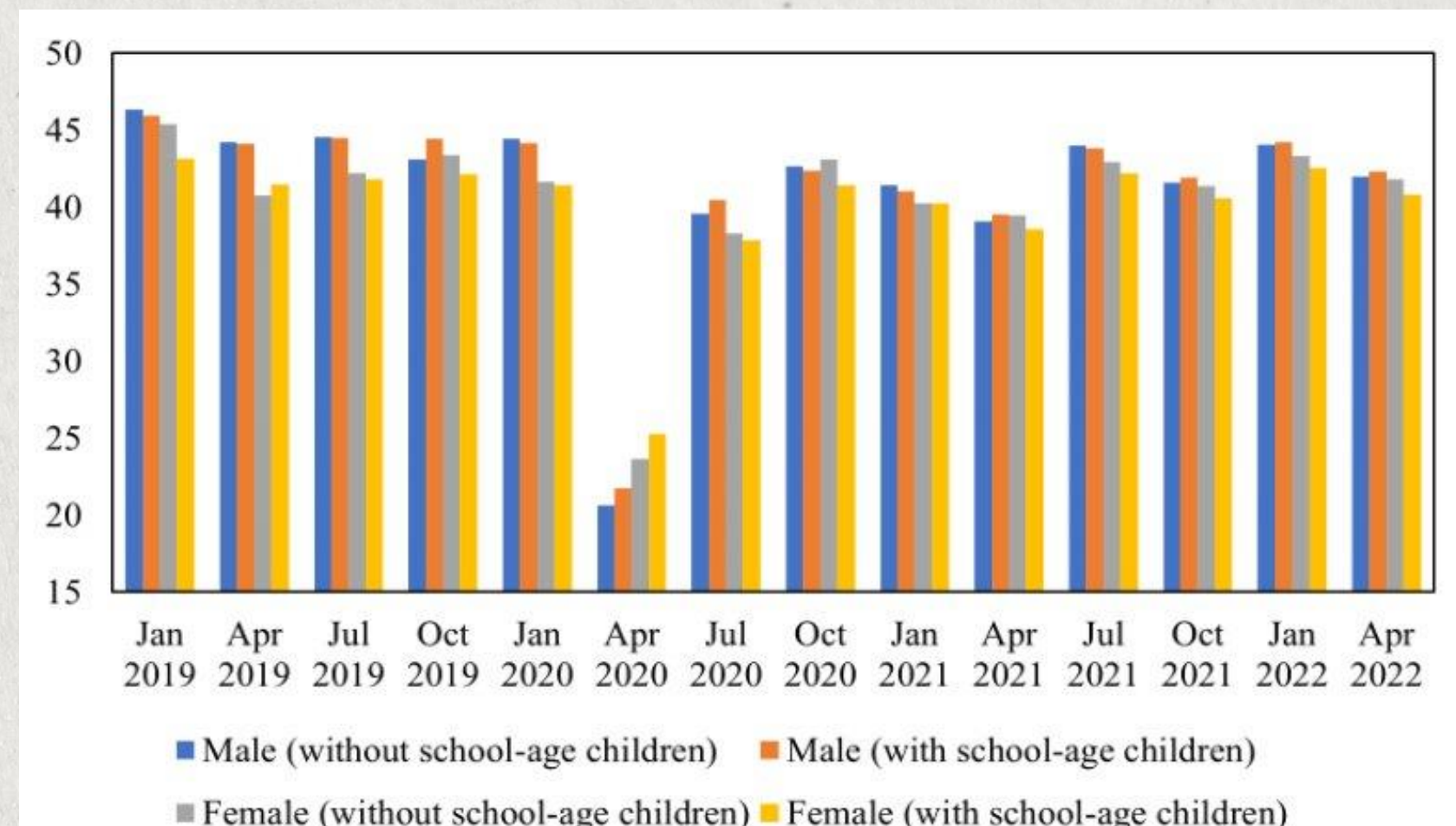
Average weekly hours of work conditional on employment
by gender and presence of children

Research Questions

During school closures:

1. Were parents with school-age children less likely to be on paid employment?

2. Did parents with school-age children work fewer hours?

3. Are there differences in the labor market outcomes for fathers and mothers ?

Data and Methodology

Data and coverage: Quarterly rounds of the Labor Force Survey from January 2019 to April 2022; Individuals aged 25-55 years old

Method: Probit (probability of paid employment) and Heckman model (log weekly hours of work conditional on employment)

$$y_{it} = \alpha + \gamma_t Status_t + \delta_{it} Child_{it} + \omega_{it}(Status_t * Child_{it}) + \beta_{it} X_{it} + \rho_t + \varepsilon_{it}$$

y_{it} represents the two labor supply indicators: paid employment and log of hours of work conditional on employment

$Status_t$ school status at time t

$Child_{it}$ dummy variable which indicates whether individual i has a school-age child (aged 5-17) at time t

$Status_t * Child_{it}$ interaction term (variable of interest)

X_{it} vector of control variables

ρ_t quarterly fixed effects

ε_{it} error term

School status categories: completely open to in-person learning, on academic break, full remote learning, and partial remote and in-person learning

Results: Paid employment by gender

Independent variable	(1)	(2) All	(3) Male	(4) Female
School status (base: F2F learning)				
Academic break		-0.095***	-0.224***	-0.053***
		(0.013)	(0.023)	(0.016)
Remote learning		0.077***	0.070**	0.074***
		(0.016)	(0.028)	(0.020)
Partial remote learning/partial F2F		0.122***	0.100***	0.131***
		(0.018)	(0.033)	(0.023)
Presence of school-age children		0.090***	0.104***	0.130***
		(0.009)	(0.017)	(0.011)
Interaction terms				
Academic break * with school-age children		-0.018	-0.018	-0.023*
		(0.011)	(0.020)	(0.014)
Remote learning * with school-age children		-0.029**	-0.016	-0.041***
		(0.013)	(0.023)	(0.015)
Partial remote learning/partial F2F * with school-age children		-0.014	0.011	-0.033**
		(0.012)	(0.022)	(0.015)
Presence of young children		-0.112***	0.004	-0.164***
		(0.004)	(0.006)	(0.004)
Presence of other adult relatives in the household		-0.323***	-0.055***	-0.450***
		(0.007)	(0.010)	(0.009)
Age		0.102***	0.073***	0.091***
		(0.002)	(0.004)	(0.002)
Age squared		-0.001***	-0.001***	-0.001***
		(0.00002)	(0.00004)	(0.00003)
Marital status (base: single)				
Currently married		-0.166***	0.280***	-0.668***
		(0.011)	(0.014)	(0.016)
Previously married		0.191***	0.135***	-0.199***
		(0.013)	(0.019)	(0.017)

*** means significant at 1 percent level, **5 percent, and *10 percent (probit coefficients). Standard errors are in parentheses.

- Paid employment of fathers with school-age children were unaffected by school closures.
- Women with school-age children were less likely to be on paid employment during school closures.
- School closures aside, ever-married women and women with young children were less likely to be employed.

Source: Authors' estimates using several rounds of the Labor Force Survey.

(1) Independent variable	(2) All	(3) Male	(4) Female
Highest educational attainment (base: did not complete grade school)			
Completed grade school	-0.014***	-0.088***	0.066***
	(0.005)	(0.009)	(0.007)
Completed high school	0.011**	-0.218***	0.167***
	(0.005)	(0.009)	(0.007)
Completed post-secondary	0.089***	-0.328***	0.329***
	(0.009)	(0.015)	(0.011)
Completed college and above	0.440***	-0.295***	0.769***
	(0.006)	(0.011)	(0.008)
Regional community quarantine index (base: 0 - no community quarantine)			
1 (least stringent)	-0.069***	-0.153***	-0.026**
	(0.010)	(0.018)	(0.013)
2	-0.041***	-0.118***	0.004
	(0.015)	(0.027)	(0.018)
3	-0.060***	-0.168***	-0.007
	(0.014)	(0.025)	(0.018)
4	-0.061***	-0.177***	0.006
	(0.021)	(0.036)	(0.026)
5 (most stringent)	-0.267***	-0.445***	-0.124***
	(0.010)	(0.016)	(0.013)
Region	Yes	Yes	Yes
Quarter	Yes	Yes	Yes
Gender	Yes	No	No
No. of observations	924,253	449,287	474,966

*** means significant at 1 percent level, **5 percent, and *10 percent (probit coefficients). Standard errors are in parentheses.

Results: Paid employment by gender (cont.)

- There was lower probability of paid employment amid community quarantine measures.
- Findings suggest the prevalence of traditional gender roles.

Results: Paid employment by gender and education

Independent variable	(1) Male	(2)	(3) Female	(4)
	With college degree	Without college degree	With college degree	Without college degree
Interaction terms				
Academic break * with school-age children	0.010	-0.021	-0.051	-0.018
	(0.056)	(0.022)	(0.034)	(0.015)
Remote learning * with school-age children	-0.071	-0.007	-0.076**	-0.035**
	(0.062)	(0.025)	(0.038)	(0.017)
Partial remote learning/partial F2F * with school-age children	-0.029	0.021	-0.050	-0.030*
	(0.059)	(0.024)	(0.036)	(0.016)
Region	Yes	Yes	Yes	Yes
Quarter	Yes	Yes	Yes	Yes
No. of observations	52,018	397,269	77,790	397,176

*** means significant at 1 percent level, **5 percent, and *10 percent (probit coefficients). Standard errors are in parentheses.

- Regardless of educational attainment, there was no significant impact of school closures on the paid employment of men with school-age children.
- Women with school-age children were less likely to be on paid employment amid full (and partial for those without college degree) remote learning.

Independent variable	(1)	(2) All	(3) Male	(4) Female
School status (base: F2F learning)				
Academic break		0.047***	0.042***	0.006
		(0.007)	(0.007)	(0.011)
Remote learning		-0.030***	-0.004	0.002
		(0.008)	(0.009)	(0.014)
Partial remote learning/partial F2F		0.021**	0.055***	0.069***
		(0.009)	(0.010)	(0.016)
Presence of school-age children (base: without school-age children)		-0.039***	-0.005	-0.033***
		(0.005)	(0.005)	(0.008)
Interaction terms				
Academic break * with school-age children		0.002	-0.008	0.012
		(0.006)	(0.006)	(0.010)
Remote learning * with school-age children		0.004	-0.003	0.005
		(0.006)	(0.007)	(0.011)
Partial remote learning/partial F2F * with school-age children		0.003	-0.004	0.005
		(0.006)	(0.006)	(0.010)
Presence of young children		0.032***	0.003*	-0.020***
		(0.002)	(0.002)	(0.003)
Presence of other adult relatives in the household		0.063***	0.015***	-0.034***
		(0.003)	(0.003)	(0.005)
Age		-0.019***	-0.004***	0.015***
		(0.001)	(0.001)	(0.002)
Age squared		0.0002***	0.00003**	-0.0002***
		(0.00001)	(0.00001)	(0.00002)
Marital status (base: single)				
Currently married		0.035***	-0.005	-0.087***
		(0.005)	(0.004)	(0.009)
Previously married		-0.021***	0.005	-0.046***
		(0.006)	(0.006)	(0.009)

*** means significant at 1 percent level, **5 percent, and *10 percent. Standard errors are in parentheses.

Source: Authors' estimates using several rounds of the Labor Force Survey.

Results: Log weekly hours of work by gender

- For both men and women with school-age children, school closures did not have significant impact on hours of work.
- School closures aside, ever-married women and women with young children tended to work fewer hours.

(1) Independent variable	(2) All	(3) Male	(4) Female
Highest educational attainment (base: did not complete grade school)			
Completed grade school	0.062***	0.039***	0.088***
	(0.003)	(0.002)	(0.005)
Completed high school	0.132***	0.101***	0.215***
	(0.002)	(0.002)	(0.005)
Completed post-secondary	0.123***	0.107***	0.267***
	(0.004)	(0.005)	(0.008)
Completed college and above	0.050***	0.117***	0.308***
	(0.003)	(0.003)	(0.006)
Regional community quarantine index (base: 0 - no community quarantine)			
1 (least stringent)	-0.030***	-0.054***	-0.043***
	(0.005)	(0.005)	(0.009)
2	-0.039***	-0.058***	-0.054***
	(0.008)	(0.008)	(0.013)
3	-0.034***	-0.055***	-0.041***
	(0.007)	(0.007)	(0.012)
4	-0.013	-0.031***	-0.025
	(0.011)	(0.011)	(0.018)
5 (most stringent)	0.022***	-0.035***	-0.129***
	(0.006)	(0.007)	(0.011)
Region	Yes	Yes	Yes
Quarter	Yes	Yes	Yes
Gender	Yes	No	No
No. of observations	910,621	440,725	469,896
Selected	670,523	404,283	266,240
Non-selected	240,098	36,442	203,656

*** means significant at 1 percent level, **5 percent, and *10 percent. Standard errors are in parentheses.

Results: Log weekly hours of work by gender (cont.)

- Both men and women worked fewer hours amid community quarantine measures.

Independent variable	(1)	(2) Male	(3) Male	(4) Female	(5) Female
		With college degree	Without college degree	With college degree	Without college degree
Interaction terms					
Academic break * with school-age children		0.005	-0.010	0.033**	0.008
		(0.016)	(0.006)	(0.015)	(0.011)
Remote learning * with school-age children		0.043**	-0.009	0.051***	-0.005
		(0.018)	(0.007)	(0.017)	(0.013)
Partial remote learning/partial F2F * with school-age children		0.020	-0.008	0.055***	-0.007
		(0.017)	(0.007)	(0.016)	(0.012)
Region		Yes	Yes	Yes	Yes
Quarter		Yes	Yes	Yes	Yes
No. of observations		51,074	389,651	76,461	393,435
Selected		45,648	358,635	57,358	208,882
Non-selected		5,426	31,016	19,103	184,553

*** means significant at 1 percent level, **5 percent, and *10 percent. Standard errors are in parentheses.

Source: Authors' estimates using several rounds of the Labor Force Survey.

Results: Log weekly hours of work by gender and education

- Highly educated men with school-age children worked longer hours when full remote learning was in place.
- Highly educated women with school-age children worked more amid school closures (in any form).

Conclusion and Policy Implications

01. School closures had a negative effect on the probability of paid employment of women with school-age children, unlike men. The lower probability of paid employment for women with school-age children can be observed regardless of educational attainment.

02. Once employed, school closures did not have a significant impact on hours of work for both men and women with school-age children. Disaggregating the results further, it is found that highly educated women (and highly educated men to some degree) with school-age children tended to work longer hours amid school closures.

03. School closures, including regular academic breaks, seem to lead to reduced labor supply of women with school-age children at the extensive margin. Thus, policies aimed at preserving employment, especially for women, such as childcare support and active labor market policies can help mitigate the costs of school closures to households.

Thank you very much!