

FEATURE ARTICLE

**THE IMPACT OF WORKFARE INCOME SUPPLEMENT
ON SPOUSAL LABOUR MARKET OUTCOMES**

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EXECUTIVE SUMMARY

- Building on an earlier study which found that the Workfare Income Supplement (WIS) scheme had a positive impact on the employment rates of WIS-eligible individuals, this study examines how individuals responded to their spouses' eligibility for WIS. Our findings indicate that the labour market outcomes of less-educated Singaporeans were not adversely affected by their spouses' eligibility for WIS. In particular, there is no evidence to suggest that spousal eligibility for WIS reduced individuals' employment rates across all age groups. On the contrary, we find that less-educated Singaporeans who were already in employment tended to increase their work effort when their spouses became eligible for WIS.
- The results of this study differed from findings on workfare schemes in countries like the US and UK. As the eligibility criteria for the workfare schemes in the US and UK are based on household income, they tend to have the unintended effect of encouraging an individual to leave the workforce when his/her spouse works so that the household income can remain within the scheme's eligibility threshold. By contrast, our results suggest that WIS – which uses individual income rather than household income as part of its eligibility criteria – has not resulted in any adverse labour market responses at the spousal level.

The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the Ministry of Trade and Industry or the Government of Singapore.

INTRODUCTION

The Workfare Income Supplement (WIS) scheme has been a key feature of Singapore's social safety net since 2007. It encourages older low-wage workers to enter and remain in the workforce by supplementing their income and at the same time, boosting their retirement savings.

In an earlier study², we found WIS to be effective in incentivising less-educated Singaporeans, especially those who were older, to enter the workforce. While the eligibility criteria for WIS are at the individual rather than household level³, the scheme may have a spillover effect on an individual when his/her spouse becomes eligible for WIS. For example, when the income of an individual's spouse increases because of WIS, the individual may prefer to stay at home rather than work as the household income is now higher. However, it is also possible that the individual may decide to work rather than stay at home if his/her spouse is now spending more time at work because of WIS.

To the best of our knowledge, no prior study has been done to ascertain the net impact on the labour market outcomes of individuals when their spouses become eligible for WIS. This study thus aims to estimate the impact of spousal eligibility for WIS on the individual's (i) labour market entry decision (i.e., the extensive margin of employment), and (ii) work effort (i.e., the intensive margin of employment).

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² Refer to "The Impact of the Workfare Income Supplement Scheme on Individual's Labour Outcomes", Economic Survey of Singapore Second Quarter 2014.

³ Since 2013, a new eligibility criterion for married couples has been imposed. The criterion is that the spouse of a WIS recipient must not own two or more properties and his/her assessable income must also not exceed \$70,000 in the previous year. This change is beyond the scope of this study which uses data up to 2010 only.

The rest of the paper proceeds as follows. First, we present a brief literature review. Next, we describe our dataset which matches individuals to their spouses, as well as the methodology employed for the study. Finally, we discuss the findings before concluding.

LITERATURE REVIEW

A priori, theory is ambiguous about the impact on an individual as a result of his/her spouse's eligibility for WIS. On the one hand, if the individual values shared leisure time with his/her spouse, the individual may choose to work when his/her WIS-eligible spouse works (i.e., complementarity effect). On the other hand, when his/her WIS-eligible spouse works more, the individual may have to spend more time on 'home production' like childcare or household chores (i.e., substitution effect). Similarly, the increase in household income when a spouse is eligible for WIS may lead the individual to opt out of work (i.e., income effect).

Empirically, there is a growing body of research on the effect of government legislation on household labour market outcomes. For instance, Eissa and Hoyne (2004) and Brewer, Duncan, Shephard and Suarez (2006) evaluated the Earned Income Tax Credit (EITC) in the US and the Working Families' Tax Credit (WFTC) in the UK, respectively. They found that the EITC and WFTC reduced the employment rate of married women, which in turn implied that the substitution and income effects dominated the complementarity effect. Such a finding may have been due to the design of the workfare scheme in both countries. In both cases, as the eligibility criteria of the schemes include household income, women may have been incentivised to leave the workforce so that their households would continue to meet the income eligibility threshold for participation in the scheme.

By contrast, other researchers examining the reduction in the French workweek and Swedish tax reforms found that complementarity effects among married couples dominated. Specifically, Goux, Maurin and Petrongolo (2014) studied the legislated French workweek reduction in the late 1990s and found that when wives reduced their weekly labour supply by two hours, their husbands also worked around an hour less. Gelber (2014) analysed the reduction in Swedish tax rates in the early 1990s and found that spousal earnings rose in tandem with individuals' earnings, suggesting a joint increase in work effort (i.e., complementarity effect more than offset the income and substitution effects).

DATA

For this study, a dataset was constructed comprising longitudinal administrative data, including data on gross wages⁴, demographic characteristics, educational status, spouses and children, and housing type of married Singaporeans.

Similar to our earlier study on the impact of WIS on individuals' labour market outcomes, only Singapore Citizens who were employees over the period of 2004 to 2010 were included in our dataset.⁵ The sample was also restricted to married couples with secondary and below education to proxy for low-income households.⁶

METHODOLOGY

We used a difference-in-differences (DID) strategy to estimate the changes in an individual's labour market outcomes in response to his/her spouse's eligibility for WIS.⁷ Specifically, by exploiting the WIS

⁴ Gross wages include employee CPF contributions but exclude employer CPF contributions and WIS payouts.

⁵ We excluded data from 2006 as the introduction of the Workfare Bonus Scheme that year might bias our regression results.

⁶ We restricted our sample by educational qualifications to create a comparable control group for WIS recipients. For instance, as degree holders tend not to receive WIS, they are likely to be an unsuitable control group for WIS recipients.

age eligibility criterion, we compared changes in the labour market outcomes of individuals whose spouses were exposed to WIS (i.e., the treatment group) with the outcomes of individuals whose spouses were not exposed to WIS (i.e., the control group), even while controlling for the characteristics (e.g., age and race) of the individuals themselves.⁸ For example, the labour market outcomes of wives whose husbands were just shy of 35 years old – and hence not eligible for WIS – were compared with that of wives whose husbands were aged 35 years old and above and hence eligible for WIS.

In order to account for the more generous WIS payouts for the older age groups, we constructed four treatment groups corresponding to the different age bands for WIS payouts.⁹ An individual would be assigned to one of the treatment groups based on the age of his/her spouse. We also controlled for the individual's own eligibility for WIS to ensure that the estimated impact came solely from the spousal channel.

We implemented the DID as pooled regressions with the following specification:

$$y_{i,t} = \beta_0 + \beta_1 D_t + \sum_{\sigma} \beta_{k,\sigma} T_{\sigma,i,t} + \sum_{\sigma} \beta_{l,\sigma} D_t \times T_{\sigma,i,t} + \sum_{\sigma} \beta_{m,\sigma} T_{\sigma,i,t}^S + \sum_{\sigma} \beta_{n,\sigma} D_t \times T_{\sigma,i,t}^S + \beta_c \text{controls}_{i,t} + \varepsilon_{i,t} \quad (1)$$

where,

$y_{i,t}$ is one of two labour market outcomes for individual i in year t : (i) whether he worked in any one month of the year (the *extensive margin*); or (ii) the number of months worked (the *intensive margin*);

D_t is a time dummy variable taking a value of 1 in the years after WIS came into effect (i.e., 2007 and after);

$T_{\sigma,i,t}$ is a series of dummy variables taking a value of 1 if individual i was in age band σ (35-44, 45-54, 55-59, or 60-70) in year t ;

$T_{\sigma,i,t}^S$ is a series of dummy variables taking a value of 1 if the spouse of individual i was in age band σ (35-44, 45-54, 55-59, or 60-70) in year t ;

$\text{controls}_{i,t}$ is a vector of demographic and employment-related controls (e.g. a functional form on age, annual value of housing, number of children, housing type, and race) for individual i in year t ; and

$\varepsilon_{i,t}$ is a random shock to the labour market outcome of individual i in year t .

The coefficient of interest is $\beta_{n,\sigma}$, which can be interpreted as the change in an individual's labour market outcome as a result of his/her spouse qualifying for WIS. It would reflect the net impact of the complementarity, substitution and income effects.

We ran the above regression for males and females separately as the impact on individuals may differ, depending on whether they are the husband or the wife.

⁷ A key advantage of the DID methodology is that it strips away the effect of macroeconomic factors on individuals' labour market outcomes, thereby allowing us to isolate the impact of WIS. For instance, an improvement in economic conditions may lead to an individual's labour market outcomes improving over time, regardless of WIS. The DID methodology allows us to strip away the effect of factors that affected both the treatment and control groups.

⁸ In constructing the treatment and control groups, we did not use any of the other eligibility criteria for WIS (i.e., income, annual valuation of housing, and number of months worked) to define the groups. This is because individuals and their spouses could potentially make adjustments to their income, housing, etc. in order to qualify for WIS, which would in turn bias our estimates.

⁹ The four age bands for WIS payouts are 35-44, 45-54, 55-59 and 60 and above.

RESULTS AND DISCUSSION

A. Effect on Extensive Margins

Effect of husbands' WIS eligibility on wives' labour market entry decisions

In terms of the decision on whether to enter the labour market, we found no statistically significant evidence to indicate that the employment rates of wives were affected by their husbands' eligibility for WIS ([Exhibit 1](#)). This result suggests that on average, the complementarity effect (i.e., the propensity to work when the husband worked because of WIS) was broadly offset by the income and substitution effects. There are two takeaways from this finding. First, the complementarity effect could have been affected by social and cultural norms in Singapore. Specifically, as wives are more likely to spend time on 'household production', it may not be easy for them to join the workforce if babysitting or childcare services need to be arranged, even if they would like to. Second, unlike in the case of the workfare schemes in the US and UK, the negative income and substitution effects did not dominate and lead to a significant fall in the employment rate of wives.

Exhibit 1: Effect of Husbands' Eligibility for WIS on Wives' Employment Rates

Husbands' Age Band	Estimate (Percentage-points)			
	35-44	45-54	55-59	60-70
Impact of husbands' WIS eligibility on their wives' extensive margin	0.51	-1.09	-1.64	-1.38

Note: All parallel trends tests¹⁰ were cleared at the 1 per cent level.

* p<0.05, ** p<0.01, *** p<0.001

Effect of wives' WIS eligibility on husbands' labour market entry decisions

Similarly, wives' eligibility for WIS did not affect the employment rates of their husbands. The exception was for wives aged 55 and above, where a significant impact on their husbands' employment rates was found ([Exhibit 2](#)). Specifically, husbands married to wives aged 55 and above experienced a 1.8 to 2.0 percentage-points increase in their employment rate. This result implies that on average, the positive complementarity effect dominated the negative substitution and income effects for this group of husbands. Possible reasons for this finding include social norms in Singapore, where husbands are expected to be the breadwinners of the family; or the possibility that husbands value spending time with their wives and hence prefer to go out to work, rather than stay at home, when their wives worked.

Exhibit 2: Effect of Wives' Eligibility for WIS on Husbands' Employment Rates

Wives' Age Band	Estimate (Percentage-points)			
	35-44	45-54	55-59	60-70
Impact of wives' WIS eligibility on their husbands' extensive margin	0.30	0.44	1.82***	2.00***

Note: All parallel trends tests were cleared at the 1 per cent level.

* p<0.05, ** p<0.01, *** p<0.001

B. Effect on Intensive Margins

Effect of husbands' WIS eligibility on wives' intensity of work

Our regression results indicate that wives who were already in the workforce increased their work effort, as measured by the number of months worked, when their husbands became eligible for WIS ([Exhibit](#)

¹⁰ These are tests conducted to ensure that the trends for the treatment and control groups are similar in the years prior to the treatment, i.e., the parallel trends assumption holds.

3).¹¹ Specifically, wives married to husbands eligible for WIS increased the number of months worked by approximately 0.18 to 0.27 months per annum (or around 4 to 6 working days).

Exhibit 3: Effect of Husbands' Eligibility for WIS on Wives' Intensive Margins

Husband's Age Band	Estimate (Percentage-points)			
	35-44	45-54	55-59	60-70
Impact of husbands' WIS eligibility on their wives' intensive margin	0.24**	0.26**	0.18*	0.27**

Note: All parallel trends tests were cleared at the 1 per cent level.

* p<0.05, ** p<0.01, *** p<0.001

The increased work effort among wives implies that the complementarity effect was strong enough to more than offset the income and substitution effects. This differed from the findings for the extensive margin, suggesting that wives who were already in the workforce could have more flexibility to increase their work effort compared to their counterparts who were not working. For instance, they could have already put in place childcare arrangements that allowed them to go out to work in the first place, thus making it easier for them to scale up the number of months worked when necessary. There could also have been a 'learning effect', as wives who were themselves eligible for WIS could have gained information about WIS from their husbands when the latter became eligible for the scheme, and thereby be incentivised to work more months to benefit from WIS.

Effect of wives' WIS eligibility on husbands' intensity of work

Likewise, husbands who were already working increased their work effort when their wives became eligible for WIS, albeit to a lesser extent ([Exhibit 4](#)). For example, husbands aged below 60 increased the number of months worked by 0.07 to 0.09 months per annum (or around 2 working days). The smaller increase in work effort may be because the husbands were already working almost every month of the year, and as such, had limited scope to further increase the number of months worked.¹²

Exhibit 4: Effect of Wives' Eligibility for WIS on Husbands' Intensive Margins

Wives' Age Band	Estimate (Percentage-points)			
	35-44	45-54	55-59	60-70
Impact of wives' WIS eligibility on their husbands' intensive margin	0.08**	0.09**	0.07*	0.06

Note: All parallel trends tests were cleared at the 1 per cent level.

* p<0.05, ** p<0.01, *** p<0.001

CONCLUSION

A key finding of this study is that WIS did not appear to have any adverse impact on the labour market outcomes of individuals whose spouses were eligible for WIS. In fact, there were positive effects on spousal labour market outcomes for some age groups. Specifically, husbands whose wives were aged above 55 were incentivised to enter the labour force due to the WIS eligibility of their wives. In addition, individuals who were already working were incentivised to increase their work effort when their spouses became eligible for WIS.

These findings are in contrast to that found for workfare schemes in other countries where the primary eligibility criteria are based on household income rather than individual income, such as the US' EITC and the UK's WFTC. Specifically, the EITC and WFTC have been found to have the unintended effect of reducing spousal employment rates. For example, if the husband is already working, the wife may be

¹¹ This study is only able to measure the intensive margin by the number of months worked, as data on hours worked is not available.

¹² For a more detailed analysis, it would be necessary to have a more granular measure of intensive margin, such as the hours worked by individuals. However, such data is not available from administrative sources.

incentivised to leave the workforce to ensure that the household income continues to fall below the income threshold for the EITC or the WFTC.

Overall, this study provides some evidence that WIS – with its current design – has avoided some of the unintended consequences on spousal labour market participation found in workfare programmes in other countries.

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