

# Funding Allocations

## Kwon builds economic model of family decision making

Ask any parent worldwide what the most important thing in life is, and the answer will likely be his or her children. Allocations of public funds for families with children vary wildly from country to country, and besides affecting a family's bottom line these programs could affect a child's development as well. Sungjoon Kwon, an advisee under David Blau in the economics department at The Ohio State University, is studying the effect of child care subsidies and income transfers on child cognitive and non-cognitive skill development, as well as implications for how public funds are allocated.

Kwon built an economic model of family decisions regarding employment, child care and the allocation of resources to children. Using high-speed data processing through the Ohio Supercomputer Center (OSC), he simulated the effects of child care subsidies versus the effects of income transfers. His model employed data gathered from the Longitudinal Study of Australian Children.

"This task requires strong computing power because the model solution is obtained after evaluating millions of data points for each set of candidate model parameters, and the model estimation requires obtaining solutions for hundreds of sets of candidate model parameters," Kwon said. "The use of OSC helped to save me a lot of time because multiple cores can be used to solve the model at multiple sets of model parameters at the same time."

Kwon's simulation results suggested the optimal public policy on aiding families with children allocates about seven percent of government spending to child care subsidies with the rest going to income transfers. The simulation showed that subsidies have a positive effect on cognitive skill development but a negative effect on non-cognitive skill development. Income transfers showed positive effects on both types of skill development.

"This is quite surprising because child care subsidies usually promote use of formal child care," Kwon said. "However, my results show that formal child care is less productive in producing non-cognitive skill compared to maternal child care at preschool ages, so substituting formal child care for maternal child care harms child non-cognitive skill development."

Kwon conceded that since the project used data from only Australia, the results are likely to be different for data from different countries. For example, he said, it is known that European countries have high-quality formal child care, so simulation results could show that it is optimal to allocate more to child care subsidies than income transfers. •

**PROJECT LEAD** // David Blau, Ph.D., The Ohio State University

**RESEARCH TITLE** // Parental choice of child care, child development and the effect of income transfers and child care subsidies

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**WEBSITE** // [economics.osu.edu/people/blau.12](http://economics.osu.edu/people/blau.12)

Benchmark	Difference/ Percentage Change from Benchmark	
	Child Care Subsidy	Income Transfer
(1)	(2)	(3)
Government Spending per Week	\$ 514,006	\$ 514,006
Child Care Subsidy Rate or Income Transfer Rate	100%	\$ 82
Cognitive Skill at Ages 10-11	0.0111	0.0032
Non-Cognitive Skill at Ages 10-11	-0.0113	0.0049

Note: Benchmark is a scenario without child care subsidy and income transfer. Child Care Subsidy and Income Transfer are scenarios with no maternal work requirement and income test. The subsidy rate is 100% in Child Care Subsidy scenario. The values in Column 1 are averages in Benchmark. Cognitive and Non-Cognitive skills are restandardized, using Benchmark's means and standard deviations. The symbol '\$' indicates the Australian dollar.

Table 4: Comparison between Child Care Subsidy and Income Transfer

	Child Care Subsidy	Income Transfer
Government Spending per Week	\$ 51,739	\$ 694,515
Rate	6.9%	93.1%
Maternal Work Requirement	No	Yes (more than 0 hour)
Income Cutoff	\$ 1,515	\$ 2,590

Note: Total government spending per week is 746,254 AUD. The symbol '\$' indicates the Australian dollar. The weight on cognitive skill ( $\omega$ ) is 0.57.

Table 5: Optimal Mix of Child Care Subsidy and Income Transfer