

Review of the Productivity Commission childcare model

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Introduction

The Productivity Commission (PC) – as part of its inquiry into Early Childhood Education and Care (ECEC) – has undertaken (jointly with the Department of Employment and Workplace Relations, DEWR) a substantial modeling task to quantify the impacts of potential policy changes to Australian childcare subsidy arrangements. This document describes and assesses their methodology and resultant model, and includes suggestions to extract more value from the work.

In summary

- The methodology adopted is fit for the purpose of assessing the policies in question
- There are no major omissions from the methodology or model, but additional results could be provided and more exposition included to provide the reader with deeper insights into the rich model created
- The clarity of expression is good, though some parts could use more explanation.

An important high-level point is that all of the policies the PC examines represent large changes from the status quo. Models are always imperfect abstractions of reality, and large changes are always the most difficult (and the most uncertain) to model. However, it is still very valuable to model those changes, to provide an illustration of the order of magnitude of the impacts, as well as the relativities implied by the changes. In this I see a lot of value in the PC's work, with the additional caveat that the PC's estimates are likely uncertain and optimistic.

The remainder of this report is divided into five sections. The first discusses the considerations needed for modeling the Australian tax and transfer system as well as childcare demand responses in Australia; the second provides an overview of the Commission's and DEWR's approach; the third provides a commentary and assessment of the model and results presentation; the fourth provides a brief commentary on the written expression; and the final section notes additional considerations not mentioned elsewhere.

1. Taxes, Transfers and ECEC choices

The Commission is examining changes to childcare subsidy arrangements (and related tests) in Australia, and considering the impacts of those changes on families' childcare demand and labor supply, as well as the costs of the changes to the Australian government.

As is no doubt discussed in the Commission's broader report, there are a number of reasons families demand ECEC services, as well as potentially broader public benefits. Families see direct benefits of ECEC to their children in the form of education and socialization; and direct benefits to parents in the form of more time and flexibility to do things they enjoy or undertake tasks like selfcare, cleaning, volunteering etc. (which could in turn make them better parents). ECEC can also provide indirect benefits to families by allowing one or more of the care-giving parents to provide additional labor supply and potentially increasing earnings and labor market attachment (though this need not only be provided by formal ECEC, but could also be provided by the other parent in couple households, or through informal care networks like grandparents, neighbors and friends). There could also be broader public benefits from improved educational outcomes for children and society more broadly, as well as improved labor market access and attachment for disadvantaged parents (especially considering the gender angle, with a majority of primary-carer parents being women). Many of these factors drive family decision making for ECEC demands and labor supply, and ideally a model looking at the sector will reflect them.

Reducing the cost of formal ECEC (by increasing subsidies or reducing barriers to access to subsidies) will firstly increase demands for those direct benefits, and secondarily for indirect benefits. Governments are concerned also with the market failures associated with the public good aspect of those broader benefits.

ECEC subsidy arrangements also have an interaction with the tax and transfer system, which is highly complex, non-linear and discontinuous. Any analysis considering the impact of changes to ECEC subsidies on childcare demand and labor supply needs to reflect the nuances of those interactions to ensure the modeled decisions accurately consider the true out-of-pocket costs of childcare, as well as the impact on disposable income when families choose to increase their labor supply.

2. Overview of the modeling approach

The PC describes its approach as an enhancement of a pre-existing behavioral microsimulation model. This is the best type of tool for the task of assessing the impact of changes like those the PC is considering.

Microsimulation models are the correct tool for assessing the complex interactions between detailed tax and transfer policies and changes in ECEC subsidy arrangements. Static microsimulation models describe the ‘morning after’ impact on people if the policy changes occurred and families did not change their behavior. The PC has appropriately adopted a behavioral microsimulation model for this inquiry, as a central focus of the inquiry is looking at the behavioral impacts the policy changes could have on households’ demands for formal ECEC and supply of labor (specifically, universal access as mentioned in the Terms of Reference). A static model can only show impacts on fiscal outlays (and not changes in ECEC demand or labor supply), and even fiscal impacts would not reflect the additional marginal impacts of the policy change as people demanded more ECEC and worked more (paying more tax, and receiving less transfers). Behavioral microsimulation reflects both.

To ensure the model is up-to-date and is as current as possible, they start from the foundation of the CAPITA-B model. This model includes a detailed representation of the tax and transfer policies existing in Australia, freeing the PC/DEWR staff to focus on the key policy questions at hand – understanding, implementing, appropriately modeling and explaining changes to ECEC arrangements. They describe using the latest Survey of Income and Housing (and mention bringing those data forward to 2023-24). The only other alternatives would be HILDA and PLIDA. In the document, it is implied at times that the PC also uses aspects of PLIDA data. SIH and PLIDA are appropriate datasets for this exercise.

The PC also describes sensible labor supply and ECEC demand discretization in their model, and a sensible approach of utility maximization with household-level decision making, processes of cleaning and refining the underlying data (removing unreliable observations, imputing missing wages), and detailed model benchmarking and calibration. All of these contribute to a robust and reliable model.

3. Commentary on the model, modeling and results

All of the policies modeled represent large changes from current arrangements, but there is still value in modeling them. The move to universal 90 per cent subsidies represents a big change in the out-of-pocket cost of childcare for many families (especially high-income families), and removal of activity tests could induce inframarginal shifts in households who currently do not pass it, as well as potentially materially impacting the behavior of families who comply with existing activity tests in order to access reduced-price childcare. Modeling large changes

accurately depends on an accurate definition and estimation of the functional form of households' utility and is more likely to violate assumptions that would be safe for smaller changes (for example, the assumption that the primary earner will not change their labor supply, or that informal care will be used in similar ways to the initial data). That said, uncertainty is not a case to avoid modeling; rather it is a case to note the caveats, and emphasize magnitudes, signs, and relativities of results rather than exact numbers. The value is in the insights and mechanisms.

The modeling framework adopted models changes in ECEC demand and labor supply keeping the respective childcare prices and wages fixed (and arguably implying an optimistic full availability of demanded ECEC places and hours of work, depending on how a reader interprets or uses results). It would be informative to see how results are impacted by simple parameterizations relaxing assumptions: for example, if the labor market demand (or childcare supply) elasticity were 0.1 or 0.5, how might wages (ECEC prices) change and how might that impact households' choices and net fiscal impacts. This could also be used in a more targeted way to explore commonly discussed challenges such as lack of regional availability of childcare places, employment opportunities for disadvantaged populations, or the exercise of pricing power by childcare centers in more affluent suburbs.

There could be more useful results exposition and reporting than is included in the document at the moment. This appears in several areas:

1. Results reporting for each policy option is primarily a description of the numbers in the tables. Readers and decision makers could benefit from a more detailed exposition and explanation of the mechanisms at play for the scenarios in question, potentially drawing on more targeted model results to highlight the behavior simulated in the model. This is most starkly apparent for option 3 (removing the activity test), where ECEC demand increases and labor supply decreases across the board. This scenario represents a good opportunity to highlight that some policies are 'sticks' (somewhat punitive) while others are 'carrots' (incentivizing behavior): the activity test acts as a hurdle which causes some people to work more to unlock subsidized childcare, and causes others to avoid ECEC altogether. When the activity test is removed, households could always choose to do exactly what they did before (in terms of labor supply and ECEC demand) but they do not. In aggregate, the results show that removing that hurdle reduces some peoples' labor supply while they continue to use ECEC, and unlocks ECEC for others who might still choose not to supply labor. This interaction could then be further explored in the scenarios where the subsidy rate is also adjusted (as is the case with options 4 and 5).
2. Behavioral microsimulation models include a rich and detailed set of representative behaviors that could be used for greater expository effect (supporting the broader report). Changes in subsidy and access arrangements have an impact on both the internal and external margin. In plain English, when you increase subsidies some people just get

transferred an extra quantum of money each year for what they would have done anyway (internal margin), others respond to the subsidy by changing their behavior (external margin), and still others have a bit of both (get a transfer from the activity they would have done anyway, and are induced to act a little differently than they did before).

3. More statistics could be extracted to illustrate other important fiscal and distributional aspects of the policies.
 - a. CAPITA-B includes many tax and transfer policies, but it looks like the tables only show changes in Child Care Subsidy (CCS) expenditure (which is described as ‘cost to government’ in the text, potentially implying it is broader). I think it’s much more useful for policy makers and observers to show the net fiscal impact in aggregate, including increases (or decreases) in income tax collections and decreases (or increases) in transfer payments, especially for different demographic groups.
 - b. Households adjust their labor supply (and indirectly their ECEC demand) to increase their disposable income, and this is a calculation already in CAPITA and CAPITA-B. Household disposable income net of taxes and transfers (and arguably net of out-of-pocket child care expenses, if we assume ECEC is purchased ONLY to support work and not for use benefits) would be informative and could guide the broader childcare policy discourse. Further, calculations of effective marginal tax rates (for a range of margins, 1 hour, 1 shift, 1 day etc.) would be useful.
 - c. Summary statistics contextualizing the relative magnitudes and sign of results would be informative. As stated, because the simulations represent large changes from the status quo (and current observed behavior), the most informative results are magnitudes, relativities, and signs (rather than exact numbers). In this context, relative results and ratios – like CCS cost to government per FTE ECEC place or CCS cost to government per FTE labor supply, or FTE ECEC places per FTE worker — are more useful and reliable. Ideally, tying in with (a) above, reporting focused on net fiscal impacts rather than CCS cost would be preferable. The tables included in the report now imply large CCS costs per FTE of care (\$100k-\$150k), large public costs per FTE (\$300k-\$1m), and large ratios of increases in childcare to labor (3x-9x).

4. Commentary on the document write-up

Overall, the paper clearly describes what was done, how the model was developed, what it includes, what the policies are and what the model forecasts their impact to me (Ceteris paribus, subject to all the caveats appropriately outlined in the paper, most notably fixed childcare prices and wages). Overall, results are intuitive with expected magnitudes and relativities (especially

changes in childcare demand relative to change in labor supply, as well as the relative changes in various income cohorts given the likely beneficiaries of more targeted policy changes).

In several places, the write-up would be better supported by a little more exposition of the rationale for decisions (comments are included on the provided draft indicating where this is the case). In general, this relates to assumptions: for example, saying that a choice was made because it was simpler (given the model is already quite complicated) would be more persuasive with detailed reasoning; and assertions that choices were made because they aligned with the data would be stronger if supported by summary statistics from the data. The exclusion of approximately one quarter the data due to the sample-period overlapping the direct impact of COVID-19 could be spelled out more clearly and explained.

The interpretation of results is greatly enhanced by the elasticity section, which is clear and well explained. However, the alternative utility specifications tested do not add to the understanding of the model or support the interpretation of the model results, so might best be moved to an addendum or removed.

It is a bit jarring seeing households on \$80k and \$140k referred to as “low-income families”. If this is an accepted definition in the area, then it makes sense. But a benchmark to other aspects of the transfer system (such as family tax benefit A, healthcare card access, or low-income tax offset rules) might be more sensible and would give a cutoff of around \$65k or less.

5. Other considerations

There are two other issues that could be acknowledged and qualitatively discussed in the document (the second of which is probably addressed elsewhere in the PC report, but has bearing on the interpretation of model results):

1. Pre-school is not included in the model, but OSHC is. This is a material judgment and should be at least discussed and rationalized as a choice (especially given geographic variations, state-based policy changes, pre-existing high take-up rates, and the fact that many formal ECEC centers provide certified pre-school services). There are several reasons why this judgment could be made, and it’s good to say why they were made. This is most relevant where it interacts with the subsidy a parent receives, and where the responses are large (for example, high-income families that have big responses to the universal subsidy arrangements). If the PC/DEWR team has made the judgment that it is immaterial, that’s fine, but it is important to provide the reader with the rationale, ideally with supporting data-informed arguments (especially since the model does include some aspects of OSHC)
2. A post-COVID world might include material changes in preferences for, and the private value of, ECEC (especially with changing rates of WFH). It is sensible to adjust the data to

exclude people from the COVID-19 period. But the added changes in workplace demands and preferences will likely have flow-on effects for aspects of ECEC. This need not be included in the model, but is important to acknowledge given the data is based on a pre-COVID SIH (barring aspects of PLIDA data which might have been drawn upon). Such trends are unlikely to increase the value households privately attach to ECEC services, and thus their demand for it.