

INVESTING IN FREE
UNIVERSAL CHILDCARE
IN THE REPUBLIC OF
NORTH MACEDONIA
Analysis of Costs, Short-Term
Employment Effects and
Fiscal Revenue



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January, 2019

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EXECUTIVE SUMMARY

This report examines the case for investing in free universal childcare services in order to: i) reduce gender inequality in employment, labour market activity and earnings; ii) to promote higher human capital through greater enrolment of children in early childhood learning and development; and iii) to ensure equal access to all children in formal childcare as to foster the life chances and well-being of young children. The study estimates the employment-generating and fiscal effects of investing in universal childcare in the Republic of North Macedonia. It calculates the total annual costs of investing in childcare services that would increase the enrolment (coverage) rate of the children in formal childcare services to different target levels. The Government has recently pledged to increase the enrolment rate of the children aged 3-6 from 40% to 50%. In addition, this study experiments with several options for the target enrolment rate, up to the full coverage, using parameters relevant to the Macedonian context.

Provision of childcare in North Macedonia is inadequate, relying mainly on mothers' informal care time and with unequal access to early childcare and education services despite relatively low prices. Quality of childcare services is also unequal. This impairs children's development as shown by numerous studies (Huston et al., 2015). Children from disadvantaged backgrounds tend to benefit most from high quality formal childcare, from an early age, but are least likely to attend such facilities. Therefore developing accessible, affordable childcare of high quality is essential to achieving multiple policy goals: it increases and equalises the life chances of all children and thus contributes to social mobility; it improves employment prospects of mothers by freeing their time and budget constraints for childcare responsibilities; it reduces poverty by enabling all families to acquire economic resources independently; it improves employment prospects in the economy overall by creating jobs directly and indirectly; it generates tax revenue in the long term for government to recoup the original investment and spend on other projects. As such it contributes to the Sustainable Development Goals (SDG) of gender equality, high quality education, well-being and health and reduced poverty.

Calculations entail different scenarios that vary by quality indicators and children's enrolment. As quality of childcare provision is paramount to offer the best chances for children, we prioritise the expansion based on a high quality scenario that is gradually extended to all children. Therefore three main scenarios are examined in more detail corresponding to plausible policy choices. The main report offers comparison with other scenarios of various combinations of childcare quality and coverage.

Scenario 'SDG current': increased enrolment to reach SDG potential target of 50% of children aged 6 months to 2 years and 100% of children aged 3-5 (following ILO, 2018) but based on current quality parameters (staff numbers, pay and qualification). This would only serve as a benchmark for the other two scenarios as quality levels would not be optimal and so should not be pursued.

Scenario 'SDG high': increased enrolment to SDG targets but with high quality parameters including: low child/staff ratios and group size, at levels of regulatory standards; salary of pedagogues at level of teaching professionals; greater proportion of pedagogues in the child/staff ratio, about 48% on average, and nursing staff qualified with 2 years of post-secondary training

Scenario 'Universal high': universal enrolment with the same high quality parameters as the previous scenario.

TABLE 1

Total gross annual investment in childcare services by scenario retained

Scenarios	SDG current	SDG high	Universal high
No. children 6m-2y covered	50%	50%	100%
No. children 3-5y covered	100%	100%	100%
Hours p.w. per child	50	50	50
Child/staff ratio	Current (12:1)	Statut. (4:1 for 0-2; 8:1 for 3-5)	Statut. (4:1 for 0-2; 8:1 for 3-5)
Pay level (MKD per month)	Current (pedagogues 31,284; nursing 23,581)	Teacher (pedagogues 36,531; nursing 30,619)	Teacher (pedagogues 36,531; nursing 30,619)
Qualification levels	Current (pedagogues tertiary; nursing secondary)	High (pedagogues tertiary; nursing 2y post- secondary)	High (pedagogues tertiary; nursing 2y post- secondary)
Total gross annual cost (MKD mil.)	8,101	14,139	19,579
(in % of GDP)	1.3%	2.3%	3.2%
Cost per child p.a. (MKD)	82,943	144,760	200,449
(% average earnings)	19.7%	34.4%	37.0%

Source: authors' calculations

In order to calculate the total annual gross investment of childcare provision in each scenario we assume the following constant parameters: centre-based childcare services only with 120 children per facility; children enrolled for free for a maximum of 50 hour per week, 48 weeks per annum; 40 working hours per week (52 weeks per year) paid for all staff in childcare centres (with provision for sickness and holiday replacement and based on 35 hours per week of contact with children per childcare staff member); a fixed number of support staff per facility (6 full-time equivalent posts across management, admin and cooking/cleaning/technical support functions); overhead costs fixed at current levels per facility (i.e. do not vary with number and staff pay levels).

Training costs are based on cost of four years tertiary education pro-rata and annualised over a thirty years depreciation period. Construction costs are fixed per facility and also annualised as part of the overhead annual costs equivalent to a mortgage repayment/rent bill of about 25% of the overhead costs, following the UK assumption (De Henau, 2017a).

Increasing the quality and the quantity of childcare provision requires a large upfront annual investment – up to 3.2% of GDP in the universal high-quality scenario (Table 1) – but it will also have large employment effects which in turn will reduce the net funding requirement that needs to be found. It can also be recouped over a few years from reducing the child-related employment penalty faced by mothers.

TABLE 2

Employment effects of childcare investment by scenario retained

Scenarios	SDG current	SDG high	Universal high
Employment creation (FTE)			
Nursing staff	7,783	16,600	26,456
Teaching staff	4,863	7,842	8,938
Other staff in childcare	4,884	4,884	6,294
Other sectors	6,509	11,398	15,795
Total	24,039	40,725	57,483
% pts change in employment rates			
All	1.7%	2.8%	4.0%
Women	2.6%	4.4%	6.2%
% pts change in gender employment gap	-1.9%	-3.1%	-4.4%

Source: authors' calculations

Employment rates can be significantly increased, especially for women, as a result of the combined direct, indirect and induced job creation: not only direct employment of childcare and support staff will be created, industries supplying the childcare industry will also recruit more staff to honour the increased demand of their products; and all these new jobs will mean higher earnings to households can spend in the economy, inducing further employment creation. Overall, our estimations place the total job creation at 24,000, 41,000 and 57,000 in each scenario respectively, three quarters of which would go to women assuming current gender industrial segregation (Table 2). This means the employment rate of women would increase by between 2.6 and 6.2 percentage points. In the high-quality universal scenario, the gender employment gap would be reduced by more than a fifth from 20.2% to 15.8% (among the 15-64y).

With increased employment and earnings come increased fiscal revenue from income tax, social security contributions and expenditure (consumption) taxes, which would almost halve the net annual funding requirement of the investment (Table 3). For example, in the most generous scenario of universal enrolment and high quality provision, the annual net funding requirement is 1.6% of GDP for a gross investment of 3.2% of GDP. Effects on aggregate demand (GDP) are also shown in Table 3 for illustration: the most generous scenario entails a GDP that is 5.8% higher than it would be had the investment in childcare not taken place, a multiplier of 1.81. This compares to an increase in GDP of 3.6% following an equivalent investment in construction (a multiplier of only 1.2).

Moreover results show that the investment in childcare can also be self-funded over the years. We calculate a theoretical fiscal break-even point, based on longitudinal labour supply effects of mothers closing their lifetime employment and earning gap following such generous childcare offer. In North Macedonia, the fiscal return on investment based on this measure is likely to overcome the total cost of childcare for a typical mother of two children on average earnings. A typical mother of two benefitting from 11 years of free childcare (5.5 years for each child) would 'repay' the original investment after between 7 and 14 years of full-time employment on average earnings depending on the scenario retained.

TABLE 3

Employment and fiscal effects of childcare investment by scenario retained

Scenarios	SDG current	SDG high	Universal high
(MKD mil. unless otherwise specified)			
Gross annual cost	8,101	14,139	19,579
(in % of GDP)	1.3%	2.3%	3.2%
Direct tax revenue	2,553	5,152	7,216
Indirect tax revenue	813	1,708	2,404
Net funding gap	4,735	7,280	9,960
(in % of GDP)	0.8%	1.2%	1.6%
% self-funding	42%	49%	49%
No. years to break even (2 children)	7.29	12.72	13.67
% increase in GDP	2.4%	4.2%	5.8%

Source: authors' calculations

These results show that public investment in free universal childcare provision of high quality is not only beneficial to children and their parents, and to society more generally, it is also self-funding without having to increase taxation. Improvement in children's social outcomes will also materialise in accrued fiscal benefits in the long-term. Therefore, because childcare provision is an investment in the social infrastructure of a country it should be seen as a macro-economic policy in its own right, which creates new and promising avenues to develop a sustainable industrial strategy fit for the challenges and opportunities of the 21st Century.

1. INTRODUCTION

This study presents the findings of an application of a method developed for the United Kingdom (UK) to the case of the North Macedonia, which estimates the annual fiscal cost of public investment in early childhood education and care (ECEC) services.¹ In particular, the study examines several important outcomes of investing in early childcare:

- direct and indirect employment creation;
- impact on gender employment gap;
- related increases in tax revenues.

Hence, the study makes the case for increasing the access and capacity of the public childcare services to contribute to building a care economy that will promote gender equality and high-quality employment.

2. MAKING THE CASE FOR INVESTING IN UNIVERSAL CHILDCARE

Universal provision of high-quality affordable childcare is paramount to achieving some of the Sustainable Development Goals (SDGs) set out in the United Nations 2030 Agenda, including gender equality, quality education, well-being and health and reduced poverty. High-quality childcare services benefit young children from birth onwards, with cumulatively positive economic, social and well-being outcomes over their life course (Garcia et al. 2017; Havnes and Mogstad 2011, 2014; Babchishin et al. 2013; Li et al. 2013; Karoly et al. 2005; Melhuus 2004). External provision also allows more mothers to stay in or take up employment and earn a decent living by relieving some of their childcare constraints, fostering more gender equality in lifetime earnings.² As a result, it offers a supply-side solution to demand-oriented stimulus policies in times of chronic underemployment or recessions: Not only would investment in care services, and childcare in particular, create many more jobs than equivalent investment in more male-dominated industries such as construction, it would also release some of the supply-side caring constraints in taking up those jobs, more so than construction investment (Ilkkaracan et al., 2015; De Henau et al., 2016, 2017).

These long-term and wider benefits of providing high-quality childcare services have led to calls for considering such spending as investment and such services as infrastructure—more precisely, social infrastructure (De Henau et al. 2016; Ilkkaracan, 2017). Social infrastructure includes those services such as health care, education, childcare and long-term care that create and maintain the social fabric of an economy, without which it cannot function, exactly as does the physical infrastructure of transport and communications equipment. However, despite evidence of long-term benefits, the care infrastructure has long

been neglected by policymakers when macroeconomic policies have been designed by governments and international institutions to prop up a country's economy. In the 2010s austerity era (and even before the 2008 financial crisis), public spending on care services continued to be considered as a cost for the state in many countries, a burden that needed to be reduced through savings and privatization. At the same time, it was a period in which there was a return to the Keynesian-type of stimuli packages mainly based on public infrastructure projects in construction.

¹ De Henau 2017a.

² See De Henau and Himmelweit (2016) and De Henau (2017b) for a discussion.

Because of this, the case for borrowing to invest public money in social infrastructure is not being heard and remains off the agenda of many countries' economic policy plans. This contrasts with borrowing to invest in physical infrastructure, which is gaining more traction despite both types of investment yielding long-term benefits with positive externalities. Nevertheless, a growing number of organizations and think tanks have become more vocal about reconsidering the rules for defining public investment versus public current expenditure. The public interest and debate around the care economy was also initiated by some recent studies and available evidence for the long-term positive effects of universal provision (or expansion) of formal childcare.³ Long-term economic benefits enable the collection of net fiscal revenue that largely repays the borrowing required owing to increased employment of mothers, better career prospects for children and reduced social spending on other areas such as crime, health and social security benefits (Garcia et al., 2017).

Even the case for largely tax-funded collective services that would preserve current budgetary discipline through higher taxes (rather than spending cuts) has proven unpopular in a context of widespread 'low-tax/low-spending' rhetoric (Streeck, 2017). Nevertheless, it is possible to assess the extent to which investing public money into increasing the access to high-quality childcare services that are free or subsidized by the state is 'affordable' in a short-term or steady state mode from the budget viewpoint. This entails calculating the amount of annual investment that can be recouped by increased tax revenue stemming from increased employment, earnings and consumption without changing the tax system. Bearing in mind that this would only be a fraction of the multiple funding avenues, such fiscal effects are quantified in this paper and are discussed with respect to a wider arsenal of fiscal and monetary considerations that can be deployed to fund adequate childcare provision in a sustainable way. This discussion also includes an indication of how much of employment and earning gains would be needed for mothers over their lifetime (relative to a steady, unaffected pattern for fathers) in order to yield sufficient tax revenue for the state that would finance (pay back) the childcare costs in full, based on typical examples.

This report starts by overviewing the main features of the current system of childcare in North Macedonia and its main challenges. It also provides arguments about the need for investing in early childhood care from two perspectives: i) gender gaps in labour market and ii) the need to improve the human capital and reduce the effects of disadvantaged social-economic backgrounds on the life chances and well-being of young children. It then explains the method used to calculate the costs and the specific assumptions. It goes on to summarize the derivation of employment effects and examine the ways in which fiscal revenue can be accounted for. The final sections present the main results and discusses them in comparison with the results for the comparator countries.

³ See recent study for UN Women by De Henau et al. (2018).

3. WHY NORTH MACEDONIA NEEDS TO FOCUS ON CARE?

There are two main arguments why North Macedonia should focus on childcare. The first one is related to the large gender gaps in labour market which are to some extent exacerbated by the lack of access to formal, public childcare, besides the other factors such as the culture, traditional division of labour within the household, etc. The second argument stems from the poor performance of children from North Macedonia on the international assessments of knowledge, as well as the large difference in the results of children based on their socio-economic background.

3.1.

Gender gaps in employment and earnings

While both genders experience a similar unemployment incidence, women in North Macedonia are much less likely than men to be employed and active in the labour market. In particular, the gender employment gap for the population 20-64 in 2017 was 21.9 p.p., almost double the EU-average gap.⁴ The gender employment gap is much wider at lower educational levels. At low education levels (primary education and less) the employment rate of men is 2.7 times as high as that of women (56.3% vs. 20.5%, respectively). The gap closes to 8.4 p.p. (78.3% vs. 69.9, respectively) at tertiary education levels (note that women are more likely to complete tertiary education). These gender gaps in employment are driven mainly by gaps in labour force participation and the very low labour force participation of women rather than differences in unemployment (Mojsoska-Blazevski, 2018). Mothers of young children are also much less likely to be employed than mothers of older children and childless women, a phenomenon that is present worldwide (Petreski and Mojsoska-Blazhevski, 2016; ILO, 2018).

The costs of low activity of the female working-age population are estimated to be high. For instance, a study by the World Bank found that total income could increase by 15% by closing the gender participation gap (Cuberes and Teignier, 2015).

A large share of inactive women reported that they do not seek employment due to family/caring responsibilities (53.6%), more than twice the share of women stating this reason in the EU-28 (25.1%). In addition, 45% of women in the country also reported “other family and personal responsibilities” as a reason (relative to 9.8% of the women in the EU). In particular, studies show that the traditional division of household labour in which the burden of care for the household and its dependents automatically falls on women constitutes an important impediment to women’s activity (Mojsoska-Blazevski, 2018). Indeed, the Time Use Survey 2014/2015, for instance, shows that women aged 25-64 spend 2.8 hours per day in paid employment (work), whereas men spend 4.3 hours (SSO, 2015). By contrast, women in this age group are engaged in domestic activities for about 4.9 hours per day, compared to 2.5 hours for men. Similar gender differences in paid and unpaid work are found across the world. ILO (2018) shows that in Europe and Central Asia women spend 272 minutes per day in unpaid care work, relative to 132 minutes that males spend; worldwide, women perform 76.2% of the total amount of unpaid care work, which is 3.2 times more than men. The same ILO study argues that, globally, the unpaid care work is a major factor influencing the decision of a woman to enter and stay in employment, as well as the quality of jobs that women can aspire to.

⁴ Data from the Labour Force Survey (<http://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/>)

Mojsoska-Blazevski et al. (2017) examined the main reasons behind the low female activity in North Macedonia. Besides the “standard” factors they also include the social norms, culture, stereotypes, and women’s own perceptions of their role in the family and society. The authors found that the main reasons for women’s inactivity are household duties and the stereotypes about gender roles in the family and society. Another important reason cited was the need to care for children and the elderly, followed by poor health and discouragement (the woman has either lost hope of finding a job or believes that she is not sufficiently qualified). The authors argue that all of these factors are inter-related and reinforcing each other, with a significant negative effect on labour market participation of women.

On the other hand, the country is doing comparatively well with respect to the gender pay gap. Based on Eurostat data, the gender pay gap in unadjusted form in 2014 (latest available data for the country) was 9.1%, which is much lower than the EU-28 average gap of 16.6% (same year). Contrary to the situation in the EU, the adjusted pay gap which takes into account the personal labour market characteristics in the North Macedonia is higher than the unadjusted gap. This is due to the better average educational attainment of employed women relative to employed men. This also means that women are paid (rewarded) comparatively less than their male counterparts of the same educational level. Available studies estimate the adjusted gender wage gap in the Republic of North Macedonia to be approximately 17–20% (Petreski et al., 2014; Petreski and Mojsoska-Blazevski, 2016). The study of Petreski and Mojsoska-Blazevski (2016) also found that mothers (defined as women aged 25-45, with a child aged up to 6 years) earned 7.8% less than fathers. These studies generally find that the gender wage gap in the North Macedonia can be attributed to: i) self-selection of females into inactivity; ii) discrimination (different returns for the same characteristics); and iii) the effects of men’s and women’s unobservable characteristics that are rewarded by employers (Mojsoska-Blazevski, 2018). On the other hand, worker and job characteristics do not play an important role in explaining the gender wage gap.

3.2.

Children’s educational and social development

The second argument for investments in early childhood development is based on the low achievements of children from North Macedonia in comparative perspective, as well as the large difference in the results of children based on their socio-economic back-

ground. A young child in North Macedonia gains relatively low levels of human capital from an early age. This early impediment is compounded over the years. The gap in human capital (relative to countries at similar level of development) starts with the low enrolment in preschool formal settings. Very few children in North Macedonia attend early childhood education and care services. National data show that 11% of children aged 0-2 are enrolled in formal childcare (data published by the State Statistical Office-SSO)⁵. Based on Eurostat data, 9% of children aged less than 3 years in North Macedonia in 2016 were in formal childcare, much less than the EU-28 average of 33% (with more than half attending for at least 30h). Less than a third of the children aged 3-6 years were attending formal childcare. In addition, only 0.3% of the children from the poorest quintile of the population attends kindergartens (World Bank, 2018). But the enrolment is low even for the richest quintile, at 55% which is comparatively low (it is 80% in Serbia). There are also large rural-urban preschool enrolment gaps: the attendance in urban areas is 37.5%, and less than 6% in rural areas (UNICEF, 2011). The effect of such lower early accumulation of human capital is compounded in primary and secondary education, as evidenced by the low achievement of 15-years olds from North Macedonia in the international achievement tests. In particular, on the 2015 PISA (Programme for International Student Assessment), North Macedonia ranked among the bottom 5 countries, below its peer countries at similar level of development and from the nearby region. 70% of 15-year-old students did not attain even basic math and reading proficiency in the 2015 PISA. The achievement was even lower for pupils from rural areas and from ethnic Albanian origin. The achievements of pupils from North Macedonia are declining since 1999 and are well below the predicted level taking into account the country’s GDP per capita.

The PISA results show that 7% of variation in the performance is explained by socio-economic background, showing that pupils with disadvantaged background fare worse than their peers, everything else being equal. Still, this “penalty” of disadvantaged pupils of the North Macedonia is lower than the OECD average of 13%. However, data also show that the inclusiveness of the society and education is low, given that there are only 4% of resilient students (students who displayed high levels of academic achievement despite the fact that they came from disadvantaged backgrounds). Experiences around the world indeed show that preschool education has a large potential to reduce the effect of disadvantaged socio-economic background on achievements of disadvantaged children later in life.

⁵ The main report with detailed data on childcare provision is the annual report on Institutions for care and education of children: kindergartens and centers for early childhood development, of the State Statistical Office, available at: <http://www.stat.gov.mk/PrikaziPoslednaPublikacija.aspx?id=21>.

4. OVERVIEW OF THE CHILDCARE SYSTEM

As previously mentioned, the enrolment of young children in preschool in North Macedonia is low. North Macedonia does not provide a free and compulsory pre-primary education for the duration of at least one year.⁶

Low enrolment in kindergartens in North Macedonia is a combination of supply and demand factors. On the supply side, there is a limited availability of kindergartens (especially in rural areas) which leads to overcrowding, very high child-staff ratios and waiting lists (World Bank, 2015). The actual average child/staff ratio is 12 (calculated based on official data of the SSO (2018), whereas the legislation (i.e. the Rulebook of norms and standards) sets the child/staff ratio at 4 (for groups of children 0-2) and 8 (for children aged 3-6).⁷ Availability is much more limited for young children (those aged 0-2). The World Bank (2015) shows that the major challenge for the access to kindergartens is the limited capacity and provision (i.e. non-availability). Affordability (i.e. the price) is of lesser concern. Indeed public kindergartens, offering heavily subsidised places, constitute the vast majority of providers, with the private sector catering for only 3% of enrolled children (SSO, 2018).

Regulation for the maximum size of a group for children aged 0-2 is set to 10, and for the children 3-6, to 20 (Law on Child Protection). However, the actual average size of the groups based on the official data is 24, but with large variations among the centres. Data on projected and used capacity of the childcare facilities shows large discrepancies between the two, in both directions. For instance, in the municipality of Aerodrom, highly populated municipality in Skopje, the actual capacity is 73% higher than the projected one (1,236 children are enrolled relative to the projected capacity of 730). On the other hand, in some rural areas and towns, enrolment can run at as low as 5% of capacity, and in most cases well below 50%.⁸ There might be limited scope for better use of existing resources by re-organizing and optimizing the system of public kindergartens, including the staff working in the under-utilized facilities. However given that most of the population lives in urban areas with oversubscribed facilities, simply reallocating staff from rural to urban areas will not suffice in catering for all children. The overall capacity of the system is simply well below demand.

The regular user fee of a public childcare place is EUR 25 per month (which is about 6% of the average wage in the economy), whereas the average price of

a private place is about EUR 200. The Law on Child Protection (Official Gazette No. 23/2013)⁹ provides option for full or partial financing (co-payment) by the state for children from poor and vulnerable groups. The co-payment is set in a range of 30% to 100% of the total fee, depending on the total family income (the criteria being that the family income is lower than the national minimum wage, and/or that the child comes from a one-parent family). Overall, the vast majority of users (98.2%) pay the full fee. There are some discounts offered for multiple children from one family. Although the cost seems low, it may be a reason for non-enrolment or low demand for formal childcare for low-income families. Indeed, the employment structure of parents of enrolled children shows that 76% of children that attend kindergartens have both parents employed, in almost 20% only one parent works (of which in 7% that parent is the mother) and 3.4% of children in formal childcare have both non-working parents.¹⁰ There are no national, official calculations of the real cost of provision of childcare per child. Some approximations made a few years ago was in the range of MKD 6,000-8,000 per child per month whereas the cost of private kindergartens can be considered as the upper limit of the cost (EUR 200 or MKD 12,000 per month). The cost per child also varies by size of the facility and location (rural/urban).

⁶ ILO (2018) finds that only 38 out of 207 countries in the world provide a free and compulsory pre-primary education for the duration of at least a year.

⁷ This is calculated based on the staff requirements for the groups based on "Norms and standards for kindergartens, at: <http://www.mtsp.gov.mk/pravilnici.nsp>. The actual ratio is calculated based on data on kindergartens published by the SSO (2018).

⁸ For instance only 1 child attends the kindergarten in the village of Kravari (city of Bitola) and there are no children at all in few small facilities in Pehcevo.

⁹ The Law has been amended several times in the past years. Recent consolidated text of the Law is published on: <http://www.mtsp.gov.mk/content/pdf/zakoni/2018/198%202018%20ZAKON%20ZA%20ZASTITA%20NA%20DECATA%20%20KONSOЛИДИРАН%20ТЕКСТ-converted.pdf>.

¹⁰ Though, low enrollment of children from non-working parents may also be related to their culture, norms, education, perceptions about the usefulness of kindergartens, etc.

The majority of enrolled children attend kindergartens for between 9 and 11 hours per day. However the opening hours of kindergarten are not fully in line with the working pattern of parents. Kindergartens start early (around 6-7am) but also close relatively early (around 4-4.30pm). Their prescribed opening hours are longer (up to 18 hours per day) but there is not much staff after 4.30pm and, in many cases, all children are brought into one single room without any planned activities and no additional food. The Government has recently introduced a possibility for work in shifts (eg mornings and afternoons) but this is implemented only in a few kindergartens. It is actually very costly, as the facilities have to ensure not just additional nursing and teaching staff but also food (lunch and dinner), and all additional services. Very few kindergartens, around 7 (which is about 7% of all kindergartens) are opened during weekends (probably only on Saturday). This is more a legacy issue, from old time, when kindergartens close to some large companies (production ones, manufacturing) were offering weekend services for the nearby workers/companies.

Apart from the administrative and support staff in the kindergartens, there are two types of staff working with the children: teachers (or pedagogues) and nursing staff. While the former hold tertiary education, the latter have completed secondary education. There is also a process of licencing of both teachers and nurses. Children aged 0-2 are cared for mostly by nurses (nursing staff or nannies), whereas the care for older children is provided more evenly by both nurses and teachers (pedagogues). Weekly working hours of the childcare staff are 40, of which 35 hours are prescribed for direct, contact hours with children. The share of administrative and support staff in overall staff employed in kindergartens is relatively high, at 35%, in comparative terms to other countries, owing mostly to the high actual child/staff ratios.

Recently, much attention has been given to the qualifications and training of the teachers (pre-service and in-service). The government is currently revising the study programs in kindergartens, the qualifications that teachers must hold (in terms of prior formal education), with the aim of improving training for teachers (in cooperation with UNICEF and the World Bank). The World Bank (2015) also proposed the creation of education and accreditation programs to prepare caregivers, but also care-entrepreneurs.

As explained earlier, demand for kindergartens is affected by the options for families for informal childcare (by family members, relatives), influencing intra-household decisions regarding division of paid and unpaid work (World Bank, 2015). Demand for childcare is also affected by the parents' perception of the quality of provision and this may or may not reflect actual quality standards.

Regarding the quality of the public pre-school education, a comparative World Bank study shows that the quality of public childcare facilities in the North Macedonia is relatively high compared to its neighbour, despite high child/staff ratios (World Bank, 2015). The WB created a score or index which includes i) quality of basic care services including infrastructure (eating, cleaning, sleeping, children's health, safety and security); ii) quality of ECD activities (content and variety of activities that benefit children's social, behavioural and cognitive development, such as drawing, playing, etc.); and iii) quality of caregiving staff. The World Bank concluded that the main area for improvement is the human resources although even on this indicator the country is best-ranked in the Western Balkan region.

However, findings from focus groups show that perception of quality by parents is far from being adequate and reflects the sub-optimal practice in place in most facilities, in part influenced by lack of sufficient qualified staff. Among the issues raised are:

- Overcrowding and very high child-staff ratios;
- Low quality of basic services, such as low hygiene standards in the facilities and/or insufficient attention of teachers/staff to children's basic care needs, such as hygiene or feeding;
- Healthcare risks including frequent epidemics, and especially flu, seem to be a general problem for public childcare centres;
- Insufficient teacher' attention to the safety of children;
- Unsatisfactory qualifications of teachers/staff, which may lead to maltreatment of children, for instance, yelling, physical harm, etc.

The World Bank (2015) also concluded that the parents' perceptions about the quality of the childcare is usually based on their perception about the quality of the teachers/nurses. Parents would consider that a childcare centre is of high quality when they say that teachers "treat children like their own", or that they are "fed well" and happy, or saying that "teachers/nannies are very professional", etc. The above raises the importance of (perception about) the quality of the teachers/nurses and as an important factor for the demand for childcare. Hence, the authorities may consider improving the qualifications and pre- and in-service training of the teachers/nurses. Numerous studies carried out in other countries about the relationship between staff qualification and attention to children showed the importance for positive social and cognitive outcomes of low child/staff ratios and high qualification of staff with specific training in child development and pedagogy (see Huston et al., 2015 for a comprehensive review).

There have been no large investments in kindergartens in North Macedonia for a long time. In 2000 the country established 350 Early Childhood Development (ECD) Centres in disadvantaged areas with financial assistance from the World Bank and support from UNICEF. Unfortunately, many closed down as a result of the conflict of 2001 and for lack of structural funding. An evaluation of 17 ECD Centres (enrolling about 800 children) showed that they had a strong potential to enhance child development and to support parents (van Ravens, 2010). The ECD centres offered half-day programs and were sometimes organized as organizational units within the kindergartens or as separate facilities. The importance and size of the ECD centres further decreased since. According to the report on childcare provision by SSO (2018), in 2017 there were 2 public and 5 private ECD centres left (as separate legal units), involving 175 children (0.5% of total enrolled children in kindergartens).

Faced with the challenges posed by the current situation and issues in the childcare sector as well as by the labour market and recognizing the long-term benefits of early childhood development, the government has planned an increase in the number of public kindergartens. The major source of funding for the expansion of provision will be provided through a World Bank loan for the so-called “Macedonia Social Services Improvement Project”. The total amount of the loan is about EUR 30 million (USD 33.4 million), of which EUR 16 million will be used for expanding the access to and improving the quality of preschool services. The expansion will be done through building new facilities, but also through an adaptation of some existing public buildings and facilities. This component of the Project will focus on improving access to quality early childhood services, in particular for children from socially disadvantaged backgrounds (that is, poor children, children with disabilities, and Roma children). The planned activities for children aged 3-6 years will focus on increasing access to quality preschools and supporting their transition to primary education. For

children aged 0-2 the focus will be on empowering parents to support children’s holistic development through increased knowledge about the importance of the early years and about the availability of services in the local community. The government has announced that with the World Bank loan, the capacity of pre-school system will be increased by 7,500 places for children aged 3-6, reaching 50% enrolment rate for that age group. Still, it will be municipalities that will apply for the loan based on their demand and need of opening childcare centres. It is not clear however how funding will be earmarked to run the facilities year on year as the bulk of the World Bank loan seems to gear towards construction and refurbishment costs.

In the past year, the authorities have started a large reform of the social protection system in general, including child protection. Hence, a draft Law on Child Protection has been prepared and is open for public debate. In addition, the draft Budget proposal for 2019 incorporated a 5% increase of the wages of teachers and nurses in kindergartens as of September 2019 (the wages of teachers and nurses are lower than the average wages in the economy for the respective levels of education).

Table 4 summarises some of the indicators of the current system of childcare in North Macedonia and compares it with the other four countries analysed. While North Macedonia has low enrolment (as does Turkey), it has good qualification of the main teaching staff, in line with Turkey and Uruguay and much higher proportions of qualified teaching staff (at least for older children) compared to South Africa and the UK. Child/staff ratios are an issue in most countries except the UK. Table 4 shows that improvements can be made both on quality parameters (staff ratios and proportion of qualified staff for younger children) and on enrolment. Note that public spending appears quite high in North Macedonia. This may be due to a wider reach of public facilities than say, the UK.¹¹

¹¹ Although no official public spending estimates exist at the country level, this figure is derived from the average cost per child in public facilities (minus the fee) and aggregated over the number of children catered for in public facilities in 2017.

TABLE 4

Overview of current ECEC service provision in North Macedonia and comparison countries

	North Macedonia	South Africa	Turkey	Uruguay	UK
Enrolment rate	2017	2017	2015	2017	2016
0–2 years	13%	19%	0.20%	39%	29%
3–5 years	40%	64%	36%	92%	74%
Contact hours per week	50	35-50	35-45	40	15 -20
Actual child/staff ratios					
0–2 years	12	8 - 13	7	8 - 14	3
3–5 years	12	16	13 - 19	14	6
Qualification of main teaching / supervisory staff	Tertiary	1y post-secondary	Tertiary	Tertiary	Tertiary
% of teaching staff in group					
0–2 years	10%	5%	50%	33%	14%
3–5 years	50%	5%	50%	50%	14%
Public spending (% GDP)	0.43%	0.09%	0.18%	0.60%	0.27%

Source: Data for North Macedonia are based on the SSO (2018), and Law on Child Protection.

Data for other countries are from De Henau (2018) and De Henau (2017a)

5. CHILDCARE COSTING METHOD

This paper estimates the costs of providing free full-time universal childcare services for children under primary school age. The model is described in detail in De Henau (2017a) and assumes centre-based day-care provision that reflects a typical modality of service in each country. We estimate different scenarios combining different coverage rates for children of different ages, different levels of qualification and pay for childcare workers and different child/staff ratios for each age group of children. The model also includes additional costs for non-contact time and for support staff (cooking, cleaning) and overhead costs as well as provision for additional training and building costs where relevant.

5.1.

Parameters of childcare costings

The cost of provision in a typical ECEC centre depends on six main elements:

1. Number of children to be offered a place
2. Opening hours per week (and per year)
3. Number of children per staff of different qualifications (child/staff ratios), which typically vary by child age
4. Working time of staff, taking account of non-contact time (time away from children's supervision for training and administration) and provision for sickness and holiday replacements
5. Level of remuneration and qualification of staff (including auxiliary staff such as cooks, cleaners and admin), as well as cost of initial training for qualified childcare staff and other wage costs such as sick pay and holiday pay)
6. Non-staff costs (overhead), including physical infrastructure costs (construction, rent and maintenance).

The main parameters that are set to vary in the different scenarios are the enrolment rates for different age groups, the level of qualification and pay of the staff and the child/staff ratios. In order to avoid too many scenarios, we have retained only one (maximum) set of opening hours. The contact time is set at 50 hours per week for 48 weeks. Also, all staff in childcare centres are assumed to work full time on a 40-hour-per-week basis as is currently the case.

Overhead costs are taken as the value of inputs that are not wage costs of directly employed staff. They are fixed at the current level of a typical centre. This implies that raising the wages of childcare staff in different scenarios does not increase the cost of supplying materials. Typical overhead non-staff costs in existing facilities is estimated at 50% of wage costs (i.e. 33% of total costs). This is equivalent to the ratio between intermediate inputs and wage costs (compensation of employees) of both the education and the social work industries, as provided by the input-output table of North Macedonia for 2010.

TABLE 5

Overview of current and improved/ statutory parameters of childcare provision

	Current		Improved or statutory	
	0–2 years	3–5 years	0–2 years	3–5 years
Enrolment rate	13%	40%	varies	varies
Hours per week	50	50	50	50
Child/staff ratios	12	12	4	8
% of teaching staff	10%	50%	10%	50%
Qualification of teacher staff	Tertiary	Tertiary	Tertiary	Tertiary
Qualification of nursing staff	Secondary	Secondary	2 years post-secondary	2 years post-secondary
Monthly pay of teacher staff	MKD 31,284		MKD 36,531	
Monthly pay of nursing staff	MKD 23,531		MKD 24,708 (same qual.) MKD 30,619 (higher qual.)	

Source: Data are based on the SSO (2018), ESES (2014), and Law on Child Protection.

5.2.

Enrolment and quality scenarios

A range of scenarios are estimated for a combination of the following criteria (Table 6):

- Medium enrolment rates as per the broadened SDG targets of 50% of 0-2 and 100% of 3-5 year olds in line with ILO (2018) versus full enrolment rate (universal for both age groups);
- Current qualification and pay levels for different childcare workers versus improved qualification and pay;
- Current child/staff ratios versus statutory ratios.

Given the large number of potential combinations of these three criteria, we limit our results to an illustrative total of seven scenarios, progressing from a baseline replication of the current situation to the most generous combination of a universal system of high quality. The main focus of these scenarios is the increase of the enrolment of children in ECEC, from a target based on SDG of half of infant children covered, to universal coverage for all ages. Child/staff ratios and enrolment rates are made to vary according to the age of the child, as there are different statutory requirements for the child/staff ratio, and different plans of the government for increasing the coverage. Actually, the government has only set targets for the 3-5 (or 3-6) year-olds leaving out any plan of increasing enrolment of children aged 0-2. Scenarios also involve change of the child/staff ratio, from the

current one to the statutory prescribed ratio. Given the low teachers' pay relative to the economy-wide payment for those qualifications/education levels, we also propose scenarios which include increase of the teachers' and nursing staff pay (scenarios 5, 6 and 7). In these scenarios, nursing staff pay is increased to the average wage of personal care workers adjusted to match the 5% increase planned by the government from September 2019. For teacher staff, the increase is more substantial (17% above current pay levels), in order to reach the average salary of teaching professionals (of all levels), which is just above the average national salary.¹² As the qualifications of teachers in North Macedonia are comparatively good, we estimate only one scenario in which there is an increase in qualifications for the nursing staff (from secondary to 2 years post-secondary specialised education, with provision for initial training cost). However, this does not have to be related to increase in the requirements of formal education, but to the pre-service and in-service training of teachers.

¹² Data for salary levels for teaching professionals and personal care workers are taken from the European Structure of Earnings Survey (ESES) for 2014, by occupation (average across men and women) updated by the average wage inflation between 2014 and 2017, provided by MakStat (<http://www.stat.gov.mk>).

TABLE 6

Main enrolment and quality features of the scenarios

Scenarios	0	1	2	3	4	5	6	7
Type	Base	Govern	SDG curr	Uni curr	Uni stat	Uni teach	Uni high	SDG high
No. chi 6m-2y covered	13%	13%	50%	100%	100%	100%	100%	50%
No. chi 3-5y covered	40%	50%	100%	100%	100%	100%	100%	100%
Hours p.w. per child	50	50	50	50	50	50	50	50
Child/staff ratios	current	current	current	current	statut	statut	statut	statut
Pay levels	current	current	current	current	current	teacher	teacher	teacher
Qualification levels	current	current	current	current	current	current	high	high

Note: 'Uni' is abbreviation for universal; 'statut' is statutory; 'Govern' is government plan; 'teach' is teachers' pay rates

6. CALCULATION OF EMPLOYMENT EFFECTS

The primary objective of investing in free universal ECEC services is to provide accessible and quality education and care services to foster the life chances and well-being of young children. Employment creation is a secondary objective that could be considered, fostering the synergies between ECEC and employment generation. In practice, though, it is often the primary objective of policymakers, subordinated to available fiscal space. The potential employment effects of investments in the care sector in general (including childcare services) are large. ILO (2018) for instance estimates that in case of a “high road” scenario based on the targets set by the Sustainable Development Goals (SDGs), increasing investment in the care economy will result in a total of 475 million jobs by 2030, from 206 million jobs in this sector in 2015. This means 269 million new jobs compared with the number of jobs in the care industry in 2015, and 117 million additional new jobs over and above the status quo scenario for the care sector (no changes in the policy, preserving current coverage rates).¹³

However, until relatively recently, childcare provision has traditionally been seen mostly from a labour supply perspective in many countries, as activation policy, with provision of affordable and accessible childcare deemed to reduce the caring constraints of mothers—especially lone mothers—and thus foster their attachment to the labour market (Thévenon, 2013). More recently, some economists have revived and tweaked a classic Keynesian macroeconomic argument, whereby public expansion of ECEC services also addresses an issue of labour demand by creating employment directly and indirectly, in the same way that investing in physical infrastructure is seen as employment stimulus policy (Antonopoulos et al., 2011; Ilkkaraçan et al., 2015; De Henau et al., 2016). These studies have shown that the employment creation effects in different countries of investing a fraction of GDP in social infrastructure such as care services were larger than those stemming from an equivalent investment in physical infrastructure, owing to the higher labour intensity of the former.

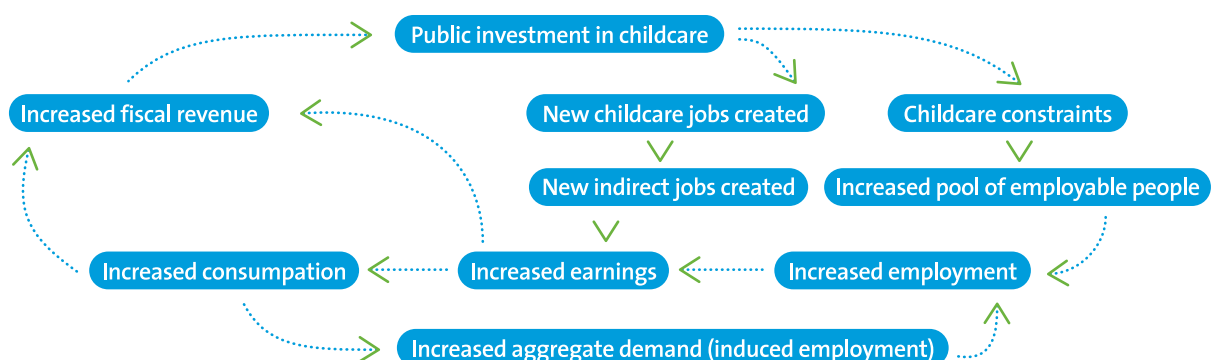
The employment effects of direct public investment in ECEC services are threefold (see Figure 3):

- direct creation of jobs in the childcare sector
- indirect creation of jobs in industries supplying the childcare sector
- induced job creation stemming from increased consumption out of the earnings of the newly employed ECEC staff and indirect jobs.

Figure 1 illustrates the conceptual model of employment and fiscal effects: investing in childcare creates labour demand (in childcare and in the supplying industries) at the same time as it reduces labour supply constraints (childcare budget constraint) for mothers. As a result increased employment is generated, which bring higher earnings to many households. As households spend part of these earnings, demand for goods and services increases, boosting employment further. Tax revenue from earnings and consumption allows to reduce the net funding requirement of the annual childcare investment.

FIGURE 1

Employment and fiscal effects of increased public investments in childcare



Source: Authors' conceptual model

¹³ Calculations are made for a sample of 45 countries, which represents 85% of global GDP and close to 60% of the global population and workforce.

The method used in this paper is based on an input-output analysis to derive indirect and induced employment multipliers (which is the number of jobs created indirectly for every job created directly).¹⁴ These effects can be simulated and will typically depend on the parameters of the scenario.

Roughly speaking:

- The larger the increase in enrolment rates and the lower the child/staff ratios, the higher the direct employment creation (since more childcare staff are needed for each group of children).
- The higher the overhead costs as a proportion of staff costs, the larger the indirect job creation (note, however, that these have been fixed for each country across the various scenarios so that indirect job creation will not vary with changes in wages, only with the number of centres needed, and thus the enrolment rates).
- The larger the increase in the wages of childcare workers, the larger the induced employment multiplier (increased earnings for increased consumption).

We have estimated both indirect and induced employment effects (see appendix for details on data and assumptions). It is important to note that such effects capture labour demand aspects. The model does not estimate whether these jobs would be taken up and by whom, except that we assume the same gendered composition of each industry. A labour demand approach implicitly assumes that all jobs can be and will be taken up by women and men who are underemployed (unemployed or doing unpaid care work). For indirect and induced jobs, we allocate earnings to newly employed people (technically job vacancies by gender) on the basis of the average earnings in the economy as a whole. For direct jobs in childcare, the respective level of pay per qualification in each scenario is applied. With high levels of unemployment and of economic inactivity for mothers constrained by childcare duties, it is reasonable to assume that all job vacancies can be filled. This is even more the case given that provision has been earmarked for training teaching staff to the level required and therefore avoid qualification mismatch.

Although impact analysis using input-output tables relies on strong assumptions about a stable industrial structure (in prices and production technology), which some argue are too restrictive and implausible, the case for investing in the childcare industry in particular alleviates some of these issues for three main reasons.

First, it offers a solution to the assumption of no supply constraints, given that the main labour supply constraint of caregivers—chiefly affordable and accessible childcare—would be somewhat relaxed. Supply constraints in the economy as a whole are also less problematic in this country given relatively high levels of unemployment by European standards. And potential qualification mismatch is addressed to some extent as the programme makes provision for training teaching staff to the required university level.

Second, given that childcare is essentially a final product, hardly feeding into other industries, we do not expect much change in production technology and thus relative prices of inputs in the economy. Therefore, even at high unit costs of production (in the higher-quality scenarios), we do not expect this to affect the structure of the supply chain significantly.

Third, induced employment effects derived from average households' consumption patterns are often argued to be overestimated because the propensity of consumption of households whose members would see an increase in earnings is not the same as the country average. Indeed the issue is that the propensity to consume of the newly employed people is arguably lower than that of the overall population because most jobs would go to higher-income households, due to the qualification level of the childcare jobs and the fact that most direct beneficiaries are potentially women as second earners (Ilkkaraçan et al., 2015). It is difficult to evaluate the degree of overestimation and, given the scale of the employment creation, it is possible that households across a wide range of incomes benefit from increased earnings and so their propensity to consume and pattern of spending may not be far off the average.¹⁵ It is the intention of the programme to favour take-up by low-income parents first and foremost, and these households have a comparatively higher propensity to consume than the average.

¹⁴ Full details of how this is done can be found in De Henau et al. (2016)

¹⁵ See De Henau and Himmelweit 2016 for a more detailed discussion.

7. ESTIMATION OF FISCAL EFFECTS

Funding public childcare provision requires tax revenue. While it may be possible to mobilize a number of sources for immediate funding, including international aid and financial markets, public spending on childcare will ultimately have to be funded by tax. It can either be current, by raising the tax intake necessary to fund the annual cost of running the system contemporaneously (the usual ‘current expenditure’ way), or it can be borrowed against future net fiscal revenue (the ‘investment’ way). Either way, it is often considered or portrayed as though funding requires raising tax rates (or cutting spending elsewhere), either now or in the future, and as such may prove politically sensitive. However, the case made here is that the benefits of such provision are large enough to claw back the original (and annual) investment, when considering both short-term and long-term effects, without modification of the fiscal structure (De Henau, 2017a)

Short-term, cross-sectional fiscal effects are to do with the immediate employment creation and boost to aggregate demand on a year-by-year basis, which yields increased tax revenue (and reduced social security spending on out-of-work benefits if any). Long-term, longitudinal effects stem from improved lifetime earnings of those children and their parents (mainly mothers)—and thus tax intake—as well as reduced social spending on physical and social protection owing to better health, safety and social security outcomes. In the case of North Macedonia, the government will fund the expansion of childcare by a loan from World Bank. At the same time, the authorities are planning some tax increases starting from 2019.¹⁶ Moreover, the scenarios presented in the study are based on a free public provision of childcare, although we also calculate short-term fiscal effects when accounting for a similar scheme of low user fees as in the current system (in which a user fee of EUR 25 is charged per child per month for most parents).

7.1.

Longitudinal effects

Assessment of fiscal feasibility of public investment programmes often takes the view, to justify borrowing, that wider long-term benefits will accrue in the form of growing economic activity and greater social well-being and thus higher tax revenue and reduced public spending. In the same way, private investors calculate the difference between the present value

of future benefits (net of any interest repayments) and the cost of the project to determine whether it is worth investing or not. In the case of public finance, a programme of public childcare investment could be evaluated by looking at a series of future benefits that will materialize in the form of increased tax revenue and reduced public spending in other domains. For example, James Heckman and his team¹⁷ have argued, and demonstrated with longitudinal experiments, that the long-term benefits of high-quality childcare programmes targeted at disadvantaged children in the United States include:

- higher human capital and thus earnings for the children who benefited from the programme (compared to a control group that did not benefit from it but otherwise equivalent), over their life course;
- accrued earnings of caregivers (mothers) of the beneficiaries who could remain attached to the labour market and thus who did not suffer cumulative earning penalties over their life course, unlike those in the control group;
- reduced spending on various services that would otherwise be deployed to tackle cumulative disadvantages (justice system, mental and physical health care, welfare payments).

Assessing the whole range of long-term benefits empirically for North Macedonia is beyond the scope of this study. We can however estimate a narrower range of fiscal benefits, stemming from the parental gains in employment, in the form of lifetime earnings. High-quality free childcare provision is likely to be taken up by many mothers, enabling them to

¹⁶ Changing the current personal income tax system which is flat (at 10% rate) to a progressive, with additional tax rate of 18% for income above approximately EUR 1,500 in net terms.

¹⁷ See Garcia et al. (2017) for most recent findings.

increase or retain more of their previous earnings, thereby reducing the child-related earnings penalty that currently applies to most mothers, even those who are highly educated and well-paid (Costa Dias et al., 2016; Kleven et al., 2018; Boll et al., 2017).

Data limitations – chiefly, employment and earning surveys that are longitudinal – prevent us from estimating such gains accurately here. So instead we estimate a theoretical break-even point for typical mothers. That is we estimate the minimum number of years a mother would need to stay in full-time employment after the birth of her child to provide the necessary fiscal revenue (direct and indirect tax) that would claw-back the total cost of the childcare of her children, relatively to the current situation of reduced working hours or inactivity and thus lower tax liability. We provide estimates based on the following conservative assumptions:

- The total cumulative cost of childcare per child is calculated over the full period of potential enrolment: a typical example of two siblings attending full-time childcare from the age of 6 months till their entry in primary school is used (i.e. 5.5 years for each child).
- The average earning potential is set at average males earnings (used as a proxy for the benchmark earning from which a mother departs at her first child's birth, which is the basis of the gap to be closed).

The minimum number of years of full-time earnings regained required to break even fiscally is the ratio of the total cost of childcare and the difference between the total tax due on the annual earnings potential and that on the current average annual earnings of all women. The tax revenue accounted for includes direct personal income taxes (as well as social security contributions) and indirect expenditure taxes.

So, for example, if five years of state-funded universal childcare are provided until primary school, costing the state, say, EUR 2000 per year per child in real terms, the childcare cost of 5.5 years for each of the two children would add up to EUR 22,000 (in today's prices). Let's say average male earnings are EUR 7300 a year. This is taken as the level of real-term earning potential a woman without child-related earning penalty could command over her career (in today's prices). The average total tax on this would be about EUR 3400 per year (indirect and direct taxes). However the actual current annual income of all women who have had a child is, say EUR 3200, in today's prices (averaging across employed and non-employed women). The average total tax on this would be about EUR 1400. Therefore the minimum number of years a woman with two children in childcare would need to remain at her earnings potential in order for the policy to break even fiscally is $22,000 / (3400 - 1400) = 11$ years.

Note that taking average earnings of (male) employees as the benchmark implicitly assumes that all mothers who use the childcare services will somehow achieve a full-time employment career, which is unlikely. Some mothers will stay out of the labour force even if their child attends childcare services (for example at a later age to prepare for primary school) in the same way as some mothers of school-attending children are not employed. Therefore in the example above, the aggregate cost will take longer to recoup than the 11 years estimated. If only 75% of mothers whose children are in childcare resume employment, their average 'male' earnings (measured over both employed and non-employed) would be 75% of EUR 7300 and thus a lower tax intake on average (about EUR 2500). This yields a minimum number of years to recoup of around 20 in our example.

7.2. Cross-sectional effects

It is important to note that these longitudinal fiscal considerations come from a labour-supply perspective: The focus is on how much a mother would change her employment pattern and thus potentially achieve higher earning over the lifetime if her child could benefit from universal high-quality childcare. This requires that there are enough jobs to be created or returned to (quite aside from the question raised about the number of mothers who would want them or could take them up). As discussed above, we also adopt a labour-demand perspective by looking at the number of jobs created. Therefore it is also possible to calculate the fiscal effects of such employment expansion and compare them to the total cost on a year-by-year basis.

These short-term, contemporaneous fiscal effects include:

- increased income tax revenue from additional earnings (including increased social security contributions of both employees and employers)
- increased indirect tax revenue from consumption (value added tax – VAT, excise duties and other expenditure taxes for households)
- reduced spending on social security benefits for those previously unemployed or on low income who have taken up the new jobs.

The latter effect would require some estimation of labour supply reactions to determine how many of those not currently in employment would benefit from the investment, taking into account the tax incentive structure of any social security benefits they receive (that is, their effective participation tax rates). Tax-benefit simulation tools could help with such

estimations but are costly to build so we have not considered this effect. Moreover, we can expect that the reduction in social expenditures will be very small given that: (i) the educational structure of the recipients of the social assistance in North Macedonia is dominated by primary educated individuals (whereas staff in childcare is mainly with secondary education), and (ii) the amount is immediately and entirely withdrawn if a person starts working which discourages take up of jobs by the recipients of the benefit.

The model here concentrates on estimating the fiscal effects from income tax, social security contributions and consumption taxes based on estimated earnings (and propensity to consume) of the newly employed people.

It is important to note that these short-term employment and fiscal effects are by no means short lived. They are called short-term in the sense that they are cross-sectional. This means that for every year of spending, the tax revenue occurs contemporaneously on a sustained basis, in contrast to the long-term effects that take account of the cumulative returns over the life cycle. This steady-state calculation does not preclude the possibility for gradual implementation in practice. Universal coverage at higher levels of pay can be rolled out in phases, starting by covering a fraction of the child population and paying staff at current rates, with gradual above-inflation pay rises as the system develops and qualifications are improved. The same goes for upfront costs of building such a system: initial training costs and building costs are included in the calculations of total costs and annualized in the form of debt repayments, in order for the outlay to happen at the start.¹⁸

¹⁸ See De Henau 2017a for more details.

8. RESULTS

8.1.

Childcare costings

Table 7 shows that the variation in gross annual investment is significant between the scenarios and depends mainly on the coverage rate given the current low enrolment in childcare (base). Scenario 1 serves as a benchmark for the other scenarios, with an expansion of current provision to the government target of 50% for the children aged 3-5, but with low-quality parameters reflecting current practices.

The cost per child is nearly doubled when moving from current quality parameters to the more generous scenario involving higher pay, statutory child/staff ratios and higher qualification (and related pay) for nursing staff (including the cost of training them). At 3.2% of GDP, the gross annual cost of investing in high quality childcare services (Scenario 6) is very close to the costings estimated for the UK in a similarly generous scenario (teacher pay, high qualification and adequate child/staff ratios), at 3.1% of GDP.

TABLE 7

Total annual cost of childcare by scenario

Scenarios	0	1	2	3	4	5	6	7
	Base	Govern	SDG curr	Uni curr	Uni stat	Uni teach	Uni high	SDG high
No. chi 6m-2y covered	13%	13%	50%	100%	100%	100%	100%	50%
No. chi 3-5y covered	40%	50%	100%	100%	100%	100%	100%	100%
Hours p.w. per child	50	50	50	50	50	50	50	50
Child/staff ratios	current	current	current	current	statut	statut	statut	statut
Pay levels	current	current	current	current	current	teacher	teacher	teacher
Qualification levels	current	current	current	current	current	current	high	high
Total gross annual cost (MKD mil.)	2,950	3,528	8,101	10,337	16,100	17,612	19,579	14,139
(in % of GDP)	0.5%	0.6%	1.3%	1.7%	2.6%	2.8%	3.2%	2.3%
Cost per child (MKD)	30,207	36,120	82,943	105,826	164,827	180,311	200,449	144,760
(% average earnings)	19.9%	19.9%	19.7%	19.5%	30.4%	33.3%	37.0%	34.4%

Source: authors' calculations

8.2.

Employment effects

Table 8 summarises the main employment effects, overall and for women, including the percentage point reduction in the gender employment gap. It shows that women stand to gain much more than men, especially from jobs in the childcare centres, as they account for 92% of the sector, while their share of non-direct jobs is lower at 37%. Increase in employment is a function of the number of childcare places created but

especially of the improvement in child/staff ratios. The non-direct effects (jobs in sectors other than childcare) are influenced by the level of pay (comparing scenarios 4, 5 and 6). Women's employment rate can potentially rise by more than 6 percentage points in the three most generous scenarios and overall employment rate by up to 4 points. The gender employment gap can be significantly reduced by such investment.

TABLE 8

Employment effects by scenario

	0	1	2	3	4	5	6	7
	Base	Govern	SDG curr	Uni curr	Uni stat	Uni teach	Uni high	SDG high
New jobs								
Nursing staff	2,676	3,118	6,223	11,068	26,456	26,456	26,456	12,590
Teaching staff	1,907	2,350	4,294	5,229	8,938	8,938	8,938	6,803
Other staff in childcare	1,770	2,112	4,062	6,294	6,294	6,294	6,294	4,062
Other sectors	2,370	2,834	5,433	8,309	13,015	14,256	15,795	9,214
Total	8,723	10,414	20,012	30,900	54,703	55,944	57,483	32,670
% pts change in employment rates								
All	0.6%	0.7%	1.4%	2.1%	3.8%	3.9%	4.0%	2.3%
Women	0.9%	1.1%	2.2%	3.3%	6.1%	6.1%	6.2%	3.5%
% pts change in gender employment gap	-0.7%	-0.8%	-1.5%	-2.4%	-4.5%	-4.4%	-4.4%	-2.5%

Source: authors' calculations

Note that the baseline scenario, although expected to reflect the current situation, provides a slightly higher number of childcare jobs than official statistics (4583 versus 3066) because of the standardisation of the parameters in the model (size of facilities, staff working hours, contact hours, coverage for holiday etc.).¹⁹

Results also show that just above a quarter of the jobs created are in other sectors. In scenarios with current child/staff ratios, around 47% of all the jobs would be in occupations other than childcare workers (i.e. including the admin and support staff of the centres). This proportion goes down to about 35-37% in the more generous scenarios with statutory child/staff ratios. This variety in the types of job being created (skills and pay) is important because many mothers (and other women and men looking for jobs more generally) may not have the qualifications for the childcare jobs or might not want to take them up.

The employment generation of a generous and high-quality childcare system is also much larger than that stemming from equivalent investment in the construction sector. Using the same input-output analytical method, we have calculated that investing 3.2% of GDP (as per scenario 6) in the construction

industry would yield only 20,376 jobs in total (direct, indirect and induced) compared to 57,483 if the investment was in high-quality childcare.

8.3.

Fiscal effects

Table 9 reports the tax revenue generated by the new employment for the existing tax system (in 2017). Once tax revenue (from direct and indirect taxes) is taken into account, the net annual funding requirement is reduced by between 41 and 49%. The most generous scenarios are the most expensive but yield the most 'efficient' outcomes (in terms of the ratio net-to-gross cost), owing to larger induced employment effects (out of higher earnings). If the model could effectively account for potential activation of those receiving out of work social benefits, this would reduce the net funding requirement further.

Note that so far the fiscal effects are measured for a free-at-the-point-of-use scheme, entirely paid for by the state. If a modest fee was kept, such as the EUR 25 per month currently applied in public kindergartens, and if only the richer half of users would have to pay for it, the net cost for the state would be reduced further, yielding a higher self-funding rate by between 6 and 12 percentage points: the cheaper the scenario (as unit cost per child) the higher the yield produced by applying a fixed fee.

¹⁹ The interpretation of the 'new jobs' in this baseline scenario is of course compared to no childcare centres at all in the country. Therefore the employment creation of the other scenarios should be considered net of that baseline. However we have left them in as they would also benefit from improved working conditions in the more generous scenarios.

TABLE 9

Cross-sectional and longitudinal fiscal effects

Scenarios	0	1	2	3	4	5	6	7
(MKDm)	Base	Govern	SDG curr	Uni curr	Uni stat	Uni teach	Uni high	SDG high
Gross annual cost	2,950	3,528	8,101	10,337	16,100	17,612	19,579	14,139
(in % of GDP)	0.5%	0.6%	1.3%	1.7%	2.6%	2.8%	3.2%	2.3%
Direct tax revenue	931	1,115	2,553	3,247	5,678	6,364	7,216	5,152
Indirect tax revenue	297	355	813	1,033	1,895	2,122	2,404	1,708
Net funding gap	1,722	2,058	4,735	6,057	8,527	9,126	9,960	7,280
(in % of GDP)	0.3%	0.3%	0.8%	1.0%	1.4%	1.5%	1.6%	1.2%
% self-funding	42%	42%	42%	41%	47%	48%	49%	49%
% self-funding w/ fee	53%	53%	53%	53%	54%	55%	55%	55%
Years to break even (2c)								
only w/ working mother	7.35	7.36	7.29	7.22	11.24	12.30	13.67	12.72
any child	12.61	12.62	12.51	12.39	19.29	21.10	23.46	21.83
% increase in GDP	0.9%	1.0%	2.4%	3.1%	4.8%	5.2%	5.8%	4.2%

Source: authors' calculations

Although the remaining funding requirement is about half the annual cost, it is not necessarily the case that parents should chip in for the remainders. If the policy is to be effective in attracting children in high-quality services and so motivate parents to take-up the places, it needs to remain affordable and targeted at those on lower incomes. Therefore general taxation is more adequate to fund the scheme than user fees, even if means-tested. The argument behind investing in universal childcare is not just one of efficiency and incentive it is also because benefits accrue to the wider population, including those who will never have children, and so justifies recourse to general taxation funding models.

However, as discussed above, this does not mean increases in tax rates to fund the shortfall. Another way of looking at the additional tax revenue generated is through the improved lifetime employment prospects of mothers who, through childcare provision, can remain in employment when their children are small. If the child-related employment penalty that mothers face over their working life can be avoided through the provision of high-quality childcare, then the tax revenue accumulated from the 'regained' (i.e. not lost) earnings should be set against the costs to the state of that childcare. Publicly provided childcare is 'fiscally affordable' in the narrow sense of the term (i.e. breaking even) once a mother has worked a sufficient number of years that the tax revenue from her 'regained' earnings has paid for the childcare for her children.

Table 9 produces two sets of estimates to reflect the different degree in which mothers would take-up the scheme. Not all mothers might take up jobs (or cannot) even if their child attends pre-school facilities so that the revenue raised from higher earnings of those mothers who do stay in employment will have to stretch further in order to fund those childcare places of children with non-working mothers. The second set of figures ('any child') shows this longer period of repayment needed, and assumes that only 75% of the mothers using the childcare scheme for their child will be in employment (this mirrors men's employment rate). Childcare investment in scenario 6 for example would be recouped after 24 years if not all mothers take up the job but their children attended full-time childcare, compared to 14 years if only working mothers put their child in full-time childcare (or if all mothers with children in childcare took up paid employment). Regardless, even the longest period required to break even (in scenario 6) remains well within the usual working lifespan of most mothers.

Moreover these are conservative estimates that ignore additional fiscal revenue stemming from improved employment prospects of the children themselves when they grow up, along with potentially reduced spending on services dealing with social inequalities (social work, healthcare, justice, etc.). Such longer-term effects have been estimated for more targeted experiments, for example in the US, with significant positive economic returns in the long-term (see Garcia et al, 2017).

Finally and purely for information purposes as difficult to interpret, the last row of Table 6 gives an estimate of the one-off permanent increase in GDP (relative to a situation without the childcare investment and assuming everything else in the economy remains the same as discussed earlier), through the direct injection of government spending in the economy (and corresponding rounds of aggregate demand multipliers). Not surprisingly the more generous the

scenario the higher the increase in GDP (in line with larger employment and thus income effects), ranging from 0.1 percentage points above the 0.9% baseline in scenario 0 to as much as 4.9 percentage points in scenario 6 (over and above the baseline). This means that GDP will be up to 4.9% higher, permanently, than it would otherwise have been had the extra investment not taken place, all else being equal, assuming universal take-up of the scheme.

9. CONCLUSION

This study has shown how investing in free universal childcare of high-quality in North Macedonia would achieve an ambitious plan for nurturing child development and early education that fosters their life chances. In the process it has the potential to yield large employment creation effects likely to significantly improve women's employment prospects and thus their lifetime earnings. The different scenarios involve large sums of public money to invest but in net terms the annual spending is reduced by almost half when taking into account fiscal revenue from increased earnings and consumption. Looking at affordability over the lifespan across which benefits can be reaped, in a narrow measure of mother's employment gains, the reform would achieve break-even fiscal returns well within the working life of typical mothers, whether or not they all choose and manage to take up jobs while their child attends childcare services. And this is only showing a fraction of the benefits of such policy. The main benefits are to do with children's well-being and life chances, which economic value is more difficult to measure but which would add up to the fiscal benefits of their mother's employment gains. This means that in all configurations the policy is self-funding in the long run without having to raise tax rates in the population. Therefore the most generous scenario of low child/staff ratios, high qualification and higher pay for the staff should be considered as the best way to achieve a step change in children's cognitive and social developments and significantly reduce social and gender inequalities at the same time as being fiscally affordable.

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APPENDICES

Appendix I Sources and data for costings of childcare provision

TABLE A.1

Child population by age as of 31/12/2017

6m-2y	56,371
3-5y	69,490
Total	125,861

Source: Makstat database
(<http://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/>)

TABLE A.2

Working-age population as of 31/12/2017

	All	Men	Women
Total 15-64y	1,449,869	736,469	713,400
Active 15-64y	946,764	577,392	368,828
Employed 15-64y	734,091	445,922	287,991
Employment rate 15-64y	50.6%	60.5%	40.4%

Source: Makstat database

TABLE A.3

Characteristics of the simulated facility

Open days per week	5
Number of children	120
Open weeks per year	48
Staff paid hours per week	40
Staff paid weeks per year	52
Non-contact hours (% of contact hours)	14%
Sickness / holiday cover (% of contact hours)	10%
Training cost (4y tertiary) per year	MKD 6,822
Overhead cost per year	MKD 3,342,363

Notes: The number of children in facility is based on current average facility size. The average size is 126. Rounding numbers to 120 children per facility also allows different child/staff ratios and group size to accommodate different age group. Other parameters are based on the UK estimations (see De Henau, 2017a). Training costs per year are calculated as follows: 4-year university degree average expenditure (Annual government expenditure on tertiary education divided by number of enrolled students, multiplied by 4 and then divided by 30 to reflect a thirty-year career spread, equivalent to a zero % interest rate mortgage over thirty years in real terms). Overhead costs are calculated as 50% of staff costs in the current coverage scenario (13% of 0-2y and 40% of 3-5y and with current quality parameters of staff ratios, pay and qualification levels). This is based on the input-output table for both the education and the care sector where input costs represent 50% of staff costs..

TABLE A.4

Gross wages of employees in childcare facilities and in the economy (MKD per month)

	Current pay	Higher pay	Corresponding occupational rate (ESES) for higher pay scenario
Nursing staff	23,531	24,708	Personal care workers
Pedagogue staff	31,284	36,531	Teaching professionals
Manager	40,000	67,585	Admin and commercial managers
Admin staff / clerks	23,000	30,221	General and keyboard clerks
Technical / clean / cook staff	18,000	20,741	Elementary occupations
Average wages all industries	35,017	35,017	

Note: average monthly pay of non-childcare staff in the current pay scenario are educated guests to reflect lower pay in childcare sector for corresponding occupation

Source: for occupations, European Structure of Earnings Survey 2014 (Makstat database), updated to 2017 levels using average wage inflation in the economy. For average wages, all employees in 2017 provided by Makstat database.

APPENDIX II

Explanatory note of employment and fiscal effects

Following De Henau et al. (2016) and Ilkkaraçan et al. (2015), the estimation of employment effects uses input-output tables (I-O) made available by the State Statistical Office with data for 2010.

Indirect employment effects

Calculating indirect employment effects is straightforward. It requires matching each industry's output with employment data from labour force surveys of the same year (available in the Makstat database). This links the amount of output demanded of a given industry to the corresponding employment required to produce one unit of that output. Since an industry's final output can be used as input in other industries' value production and for final consumption by resident households, the national government or the rest of the world (exports), the input-output matrix allows to calculate the indirect employment creation that results from an increase in final demand of an industry (direct investment in that industry).

In the case of childcare services, we use a proxy for the childcare industry which is not isolated in the available data as childcare services are split between the education industry and the residential care and social work industry. We use the education industry as the closest proxy to the childcare sector's input structure given the aim of the investment to provide high quality education-based childcare provision (and given that childcare for the youngest children, which would usually pertain to the social work industry rather than the pre-primary education industry is quasi non-existent in North Macedonia). Given that the share of intermediary inputs in the total output value is the same for both the education and the social work industries (about a third) it is reasonable to assume a similar ratio for the childcare industry.

All our values are in real terms with 2010 figures uprated to 2017 using cumulative inflation data (both CPI and average wages have experienced the same 11% increase between December 2010 and December 2017). This assumes that the relative structure of the industries doesn't change between 2010 and 2017 (that the relative shares of input of each industry into any other industry or as final demand by households and governments have not changed). Since we are more interested in the total indirect employment created, it is not so important to pin down exactly which type of jobs are created (i.e. in which industry). It is also the only data available.

Induced employment effects

For induced effects, the calculations involve consumption expenditure by households resulting from an increase in the total earnings of those newly employed people as a result of the direct and indirect employment creation. Broadly speaking, part of the earnings (compensation of employees) will be spent in the domestic economy and this can be traced using the input-output matrix again by analysing the share of output of each industry consumed by the household sector. For a more complete explanation of the method, see the excellent note by the Scottish Government (2015). In a nutshell the household sector is added as an extra column to the input-output symmetric matrix of industries as if it was another industry and the corresponding row is that of the compensation of employees. As households do not 'produce' anything for other industries to use²⁰, the total 'output' needed to calculate the share of input of the industries they spend on out of their resources available is proxied by the 'total primary and secondary resources' they can mobilise, available in the National Accounts (total primary resources and total secondary resources to the household sector). This broadly corresponds to the sum of households' expenditure, savings and taxes paid (on income and wealth). We use data on expenditure, savings and taxes paid as proxy for these total resources.

Because using the education sector as proxy for the childcare industry underestimates the direct employment creation in childcare (but not so much the indirect effect), we use a slightly different method to capture more fully the employment creation as a result of induced demand. Instead of using the education sector as the reference industry to calculate the Type II multiplier effects (the induced and indirect effects), we calculate the total compensation of employees of all the direct and indirect jobs created and inject it in the household sector directly. This means we can better account for the larger direct employment effect owing to the smaller child/staff ratios (in the better quality scenarios) compared the rest of the education sector. Using the education industry as the proxy industry for childcare in the induced effect calculations would have underestimated the induced employment effect by 7% in the high quality scenarios.

²⁰ (they may produce something but it will be used by other households and so remain within the household sector in accounting terms)

Fiscal effects

The calculation of direct and indirect taxes arising from the increased earnings and consumption is fairly straightforward given the fiscal system in North Macedonia.

We calculate the income tax and social security contributions due on the average earnings of each of the occupations created, as well as for the average wage in the rest of the economy (see Table A.4 above).

For indirect taxes, we estimate an average tax rate applicable to gross earnings by calculating the ratio of average indirect tax revenue collected in 2017 and the gross disposable assets (net assets plus direct tax revenue). Data of aggregate tax revenue are from the Public Revenue Office (<http://www.ujp.gov.mk/mk/naplata/category/1549>). Data for the disposable assets are taken from the Household Budget Survey 2017 (average assets multiplied by number of households).

APPENDIX III

Calculations of the longitudinal fiscal recoup

The longitudinal effects are calculated using a typical example of a mother of two pre-school-aged children in need of childcare. We compare two situations for this woman. The baseline situation reflects the current system in which she would command an average income calculated across all mothers whether in employment or not. This is proxied by the employment and earnings situation of all women aged 25-64, owing to a lack of employment and earnings data for mothers only. The average of that age group is deemed to capture the lifetime earning situation of a woman faced with a

child-related employment penalty compared to an unaffected pattern for men. Average earnings of employed women in that age group are averaged across both employed and non-employed women to calculate the average 'private' individual income of all women aged 25-64. This is done by multiplying the average hours paid per day for these women (measured in the Time Use Survey) by the average hourly wage rate of women of the same age (taken from ESES 2014, uprated for 2017). Table A.5 shows the figures for the earnings and related tax liability of women in that age group.

TABLE A.5
Gender earning gap and fiscal recoup calculations

	Men	Women	Gap	gap %
Population 25-64y	600,811	585,786	15,025	2.5%
Hours paid per day	4.36	2.84	1.52	34.8%
Average hourly wage	219	192	27	12.3%
Benchmark 1: male employees				
Av. earnings per year	455,138	199,150	255,987	56.2%
Direct tax	147,075	59,271	87,804	59.7%
Indirect tax	66,432	29,068	37,364	56.2%
Total tax	213,507	88,340	125,168	58.6%
Benchmark 2: all men				
Av. earnings per year	348,322	199,150	149,171	42.8%
Direct tax	110,437	59,271	51,166	46.3%
Indirect tax	50,841	29,068	21,773	42.8%
Total tax	161,279	88,340	72,939	45.2%

Sources: Time Use Survey 2014 and European Structure of Earnings Survey 2014 (Makstat database)

The second situation is the benchmark (potential) earnings this woman could command if childcare responsibilities no longer caused such an employment penalty (in our case, owing to universal free high-quality provision of childcare services). Two benchmark earnings are calculated. The first applies only to working mothers, proxied by the average earnings of male employees (benchmark 1 in Table A.5). This is the benchmark that should be used when offsetting the cost of childcare assuming that only mothers in employment would take up the free childcare provision while the other would stay at home looking after their child. The second benchmark is used to capture the idea that not all mothers who use the new childcare system would be employed. Some would look for jobs, some would be unable to work, and some would choose to stay at home but would be happy to put their children in childcare and early education, very much in the same way that some

stay-at-home mothers have their children in school. Therefore in order to capture both groups of those working mothers unimpeded by childcare constraints and those mothers who would still choose to stay at home (or who could not work for other reasons), we use a proxy in the form of the actual employment situation of men, that is the average earnings of male employees averaged across the whole age group of men (and so including non-employed men). This is not a perfect comparator because men and women have different constraints and interests (other than childcare responsibilities), however it is the best available benchmark. Childless women of the same age group could be another candidate but it is difficult to find detailed earnings and employment data for this group (and women who never had children may have quite different characteristics to other women, even when stripping out the effect of childcare, so it would not be a perfect comparison group either).

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