

# Investing in Free Universal Childcare in South Africa, Turkey and Uruguay: A comparative analysis of costs, short-term employment effects and fiscal revenue

Other

DISCUSSION PAPER

# INVESTING IN FREE UNIVERSAL CHILDCARE IN SOUTH AFRICA, TURKEY AND URUGUAY

## A COMPARATIVE ANALYSIS OF COSTS, SHORT-TERM EMPLOYMENT EFFECTS AND FISCAL REVENUE

No. 28, February 2019

**JEROME DE HENAU, WITH DEBBIE BUDLENDER, FERNANDO FILGUEIRA, IPEK ILKKARAÇAN, KIJONG KIM AND RAFAEL MANTERO**

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# SUMMARY

This discussion paper makes the case for investing in free universal childcare services of high quality in order to reduce gender inequality in earnings and employment. It estimates the employment-generating and fiscal effects of investing in free universal childcare in three middle income countries: South Africa, Uruguay and Turkey. It calculates the total annual costs of investing in high-quality childcare services that would cover the entire population of children below primary school age, using parameters relevant to each national context. Results show that employment rates can be significantly increased, especially for women, as a result of the combined direct, indirect and induced job creation. Although the total annual cost of such investment can go up to 3 to 4% of GDP, the net cost can be halved thanks to significant fiscal returns stemming from increased employment and earnings, without changing the tax structure itself (rates and bands). Results are compared with those obtained using a similar method for the UK and show that the reach of a country's tax system plays an important role in the funding process. The paper also estimates 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 all three countries and the UK, the fiscal return on investment based on this measure is likely to outstrip the total cost of childcare for a typical mother of two children on average earnings.

# 1. INTRODUCTION

This discussion paper describes the application to three middle-income countries of a method developed for the United Kingdom (UK) to estimate the annual fiscal cost of public investment in early childhood education and care (ECEC) services.[1] It estimates direct and indirect employment effects and related increased tax revenues. It makes the case for providing universal and free public childcare services to contribute to building a care economy that will promote gender equality and high-quality employment. The three countries studied are South Africa, Turkey[2] and Uruguay.

## 1.1 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.[3] 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 gender equality throughout their life.[4] 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.[5]

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.[6] 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. Yet it is not clear that privatization of collective care provision (either to the commercial sector or to families)

1 De Henau 2017a.
2 The results presented for Turkey derive from Ilkkaraçan, Kim and Kaya 2015 (hereafter IKK), which adopts a different but comparable methodology in costing childcare and estimating the employment impact. A background paper for Turkey was prepared by Ilkkaraçan and Kim 2018 for this study.
3 Garcia et al. 2017; Havnes and Mogstad 2011, 2014; Karoly et al. 2005; Babchishin et al. 2013; Li et al. 2013; Melhuisch 2004.
4 See De Henau and Himmelweit 2016 and De Henau 2017b for a discussion.
5 IKK 2015; De Henau et al. 2016, 2017.
6 De Henau et al. 2016; Ilkkaraçan 2017.

has been in any way effective in delivering high-quality and accessible care. In fact evidence points to the opposite, with unequal access and lower quality of care in countries relying more on private solutions.[7]

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, think tanks and campaigners alike have become more vocal about reconsidering the rules for defining public investment versus public current expenditure, as highlighted by the UK Women's Budget Group and others.[8] 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.[9]

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.[10] Nevertheless, it is possible to assess the extent to which investing public money into universal high-quality childcare services that are free at the point of use is 'affordable' in a short-term or steady state mode if the budget orthodoxy is maintained. 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 small 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 over the lifetime for mothers (relative to a steady, unaffected pattern for fathers) to claw back the childcare costs in full, based on typical examples.

The paper starts by overviewing the main features of the current systems of childcare in the three countries studied. It then explains the method used to calculate the costs and the specific assumptions for each country. 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 for the three countries studied and discuss them in comparison with the UK case.

7 Van Lancker 2013; Himmelweit 2013.
8 Elson 2017.
9 Garcia et al. 2017.
10 Streeck 2017.

2.

# OVERVIEW OF CHILDCARE SYSTEMS

As part of wide-ranging strategies to improve child development and women's employment, all three countries have designed national plans to expand coverage of early childhood education and care (ECEC) services, especially for children aged 3 and above and with priority given to children from disadvantaged backgrounds. Raising the quality of services was also highlighted as an important objective, including enforcing existing government norms and standards. Evidence from South Africa and Turkey showed some discrepancy between norms and existing practices, mostly in terms of qualification of staff and number of children per staff.

In Turkey, the policy focus has been more explicitly on promoting female employment by freeing up their childcare constraints. However, expansion plans have prioritized older preschool children, and current provision for children under the age of 3 remains dismal, as is typical of many other countries.[11] In South Africa, the Government approved a National Integrated Early Childhood Development Policy in December 2015, covering all children from their mother's pregnancy to when they enter primary school. The Policy's emphasis is on development of the children rather than on promoting female employment. Expansion of ECEC service provision through centres focuses on children for the two years before they enter Grade R, the reception year that precedes Grade 1 of primary school. For younger children, the policy envisages a range of alternative services such as bi-weekly playgroup sessions and parenting programmes. In Uruguay, the situation is quite different. Childcare expansion started in the 1990s and universal coverage was almost complete for 4- and 5-year-olds by 2015. Current policy explicitly aims to expand universal coverage to all 3-year-olds, extend opening hours for younger children and improve quality standards overall.

Primary education starts at about the age of 5.5 in Turkey, 6 in Uruguay and 6.5 in South Africa and is compulsory. In Uruguay, however, compulsory enrolment in education starts at 4 (pre-primary education). In South Africa, a pre-primary reception class (Grade R) covers virtually all 5.5–6.5-year-olds, at least on a part-time basis. Before compulsory enrolment starts, ECEC coverage differs greatly between the three countries, albeit increasing with age, a pattern common to most countries across the world. Table 1 shows that enrolment rates are highest in Uruguay and lowest in Turkey for both 0–2-year-olds and the older age group.

11 Ilkkaraçan and Kim 2018.

**TABLE 2-1**

## Overview of current ECEC service provision in South Africa, Turkey and Uruguay (circa 2015)

| | South Africa | | Turkey | | Uruguay | |
|---|---|---|---|---|---|---|
| | **0–2 years** | **3–5 years** | **0–2 years** | **3–5 years** | **0–2 years** | **3–5 years** |
| Enrolment rate | 19% | 64% | 0.2% | 36% | 39% | 92% |
| Hours per week | 35-50 | 35-50 | 35-45 | 35-45 (20 for nursery classes) | 20-30 | 40 |
| Child/staff ratios | 8 (0–17 months) 13 (18–35 months) | 16 | 7 (private) | 13 (private) 19 (public) | 8 (6–17 months) 14 (18–35 months) | 14 (36–47 months) |
| Qualification of childcare practitioner | Below upper secondary school | Below upper secondary school | Post-secondary | Post-secondary | Post-secondary | Post-secondary |
| Public spending (% GDP) | 0.09% (0.15% if including Grade R for 6-year-olds) | | 0.18% | | 0.22% (0–47 months) (+0.38% for 4–5-year-olds) | |

Source: Figures provided by national experts (see Appendix 1 for complete sources).

Coverage differences are reflected in the size of current public spending on ECEC services as a proportion of gross domestic product (GDP). Public spending in South Africa relative to enrolment is the lowest of the three countries, mainly because staff qualification and pay are much lower than in the other two (and actually lower in practice for the majority of practitioners than what is stipulated in the national norms and standards (N&S)). The other reason is that the government contribution is framed as a means-tested 'subsidy' to cater for children from low-income families rather than covering the full cost of service provision. Provision is mainly delivered through not-for-profit organizations and not all children enrolled in ECEC services receive the subsidy, which has not increased for several years even in nominal terms and is based on the expectation of parental co-payments.

In Turkey and Uruguay, ECEC service provision is for the most part publicly financed and delivered. In Turkey, provision for young children (0–2 years) is virtually non-existent and private for-profit institutions cover the few children who are enrolled. By contrast, for the 3-5 age group—where coverage is much better—85 per cent of children attending ECEC services do so in public institutions. Shorter hours are found for very young children in Uruguay, but plans to increase them have been developed. Interestingly, despite these differences, child/staff ratios and opening hours are broadly similar by age group in all three countries. The opening hours shown in Table 1 are averages of typical day-care services.

## 3.

# CHILDCARE COSTING METHOD

Using a bottom-up approach that focuses on the specificities of each country, this paper estimates the costs of providing free full-time universal childcare services for children under primary school age (or under the age of compulsory enrolment in the education system, as in the case of Uruguay). 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.

### 3.1

## Parameters retained

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. Children to staff ratios, which typically vary by child age
4. Working time of staff, taking account of non-contact time of childcare staff (time away from children's supervision for training and administration)
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 employers' social security contributions, sick pay and holiday pay)
6. Non-staff costs (overhead), including 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. In Uruguay, contact time is set at 40 hours per week for 52 weeks (20 hours for children aged 0–6 months). For South Africa, it is slightly higher at 45 hours per week in order to reflect more typical full-time working weeks and commuting time;[12] year-round coverage is assumed to be 49 weeks (typical three-week holiday period). In both countries, this would correspond to slightly longer opening hours than currently available and would cover the whole year, including during school holidays. In Turkey, the simulated expansion plan assumes current opening

12 Former Apartheid-era spatial planning is still responsible for longer commuting times as economic activity happens mainly in the former 'white' areas, while poor black people live far away on the periphery with inadequate public transport.

hours, which are around 35-45 hr a week for preschool kindergartens and day-care centres.[13] Also, all staff in childcare centres are assumed to work full time on a 40-hour-per-week basis.[14]

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 and estimated separately for each country. This assumes that raising the wages of childcare staff in different scenarios does not increase the cost of supplying materials. Typical overhead costs in existing facilities in South Africa are estimated at 50 per cent of total costs based on evidence from an audit of existing childcare centres.[15] In Turkey, overheads account for 65 per cent of total costs, based on a field survey of private settings.[16] By contrast, in Uruguay, the share of intermediate inputs required by a typical public ECEC centre is estimated at only 22 per cent of total costs, reflecting higher wages for childcare practitioners and other staff compared to the other two countries and economies of scale for administrative and building costs.[17] These proportions for South Africa and Turkey will be lower once higher wages are factored into our various scenarios (see section 6 below).

## 3.2
## Scenarios retained

Because we use a bottom-up approach that reflects country specificities and priorities, the scenarios retained are not exactly the same across countries but they share similar objectives of a less and a more generous option for each criterion:

- Medium enrolment rates (that is, higher than current figures shown in Table 1) versus full enrolment rate (universal)
- Current qualification and pay levels for different childcare workers versus improved qualification and pay (except for Turkey, for which only one scenario of higher pay is estimated)
- Current child/staff ratios versus statutory ratios or improved standards if no legal requirement (except for Turkey, with ratios based on standards only).

Given that the options can be chosen independently for each parameter, a total of eight scenarios can be estimated. However, we have only retained the most relevant combinations. Below is the detail of those calculations for each country.

13 Public nursery classes for 5-year-olds, which are located in primary schools, operate on a half-day schedule. Students are enrolled in either the morning or the afternoon segment and have only four hours of contact on a daily basis. Although our model assumes a publicly run system, we have taken the more generous full-time opening hours of private settings as the benchmark for public expansion, in line with the IKK model.

14 This in principle does not preclude part-time employment and job sharing as the number of jobs created is calculated in full-time equivalent. However, for the purpose of income tax and social security calculations, we have assumed full-time jobs. In progressive individual tax systems, two part-time jobs are not equivalent to one full-time job on a given hourly wage because the average income tax incidence is higher the higher the income.

15 EPRI 2014.

16 Carried out by IKK 2015.

17 Plan CAIF 2015.

## 3.3

# Specific costing parameters

## South Africa

The current system in South Africa is characterized by a low proportion of qualified staff at the level of norms and standards requested nationally (which is one year post-secondary school, to reach level 5 of the National Qualification Framework – NQF5). Only 5 per cent of childcare staff at best reached that level in 2014 while the remaining 95 per cent (whether main practitioners or assistants) have achieved secondary school level or below.[18] The higher-qualification scenario assumes a 50-50 split between staff at NQF5 level (for main practitioner) and staff at NQF4 level, which is equivalent to upper secondary school (for assistant).

Three pay level scenarios are used:[19]

- **Low:** with less-qualified staff on the minimum wage paid in the Expanded Public Works Programmes (EPWP) (equivalent to about 20 per cent of mean annual earnings)[20] and more qualified staff paid at NQF5 average level in education (about 100 per cent of mean earnings)
- **Medium:** with less-qualified staff paid at the new 2018 national minimum wage (double that of the EPWP) and more qualified staff on the same pay as the low-pay scenario (NQF5)
- **High:** with less-qualified staff on the same pay as the medium pay scenario and more qualified staff qualified and paid at NQF7, which corresponds to primary school teacher levels (about 300 per cent of mean earnings).

Child/staff ratios and enrolment rates are made to vary according to the age of the child (Table 2). Child/staff ratios depend on the age of the child, and current ratios are well above the government-stipulated norms and standards (N&S).[21]

Three scenarios for enrolment rates are considered for each age group. The medium scenario corresponds to the objective of enrolling two thirds of pre-Grade R children (which is roughly the proportion of children living in poverty),[22] scaled in such a way as to reflect greater coverage for older children than for younger children. The average size of a typical centre assumed for South Africa is 45 children.

18 EPRI 2014.

19 Estimates of qualified practitioners' pay provided by Martin Gustafsson (University of Stellenbosch) and adjusted by government salary adjustment rates for the relevant years to arrive at a 2017 salary. Minimum wages are as per planned national legislation: EPWP workers on ZAR 11 per hour and national minimum wage on ZAR 20 (Republic of South Africa 2017).

20 See Appendix 2 for details on how the mean earnings of employees are estimated.

21 EPRI 2014; 4Chakras Consulting 2010.

22 In 2015, 67 per cent of children under 18 were living in poverty according to Statistics South Africa 2017. This does not mean that the proportion is the same for pre-Grade R children, but it is the best recent official source of approximation available.

**TABLE 3-1**

**Scenarios of child/staff ratios and enrolment rates, South Africa**

| Child age | Child/staff ratios | | Enrolment rates | | |
|---|---|---|---|---|---|
| | Current | N&S | Current | Medium | Universal |
| 0–17 months | 8 | 3 | 10% | 33% | 100% |
| 18–35 months | 13 | 6 | 30% | 60% | 100% |
| 36–65 months | 16 | 10 | 60% | 90% | 100% |

Source: see Appendix 1 for details.

## Uruguay

Comparable scenarios have been selected for Uruguay, although a slightly different method has been used in order to retain some of the specificities of an already well-developed public system of provision. The cost calculations reflect three main types of settings: large centres (hosting 144 children) account for 75 per cent of children enrolled; medium settings (hosting 72 children) for about 20 per cent; and small settings (hosting 36 children) for 5 per cent.[23]

Current childcare staff pay levels are such that assistant childcare staff are paid on average 90 per cent of national mean earnings and main practitioners 170 per cent.[24] A higher-pay scenario applies the pay level used in pre-primary education ('educación inicial') of university-level qualified staff ('docentes') to childcare main practitioners and less qualified level ('no docentes') to assistant practitioners.[25] In such a scenario, assistants would be paid 100 per cent of average earnings and main practitioners twice as much. There is therefore a much lower difference between the 'low' and 'high' pay scenarios than in the case of South Africa.

The parameters that provide the bulk of the variation in results in the Uruguayan case are the child/staff ratios and the enrolment rates (Table 3). Varying the proportion of main practitioners in each age group also affects the outcome. Main practitioners are assumed to account for 50 per cent of childcare workers for children aged 18 months and above and for 33 per cent of staff for younger children, except in the scenarios retaining 'ideal' child/staff ratios, for which 50 per cent main practitioners is assumed in all age groups.

Children aged 0–5 months are assumed to enrol on a part-time basis. The take-up is expected to be low anyway at that age, given maternity leave provision of about 14 weeks.[26] Older children are offered a place for 40 hours a week. Scenarios for enrolment rates vary between current coverage[27] and universal coverage. An intermediate scenario is suggested with 33 per cent for 0–5-month-olds, 66 per cent for the rest of under 3s and 100 per cent for 3 years and above.

23 Plan CAIF 2015.
24 Plan CAIF 2016. See Table A.4 in Appendix I.
25 ANEP 2017.

26 Batthyány and Perrotta 2015. This means that our estimates could be seen as 100 per cent of half the children aged 0–6 months covered in full-time places or all children taking half-time places. Either way these provide upper bounds of take-up, which is the aim of the simulations (we estimate potential rather than actual enrolment). Note that paid maternity leave also exists in the other two countries: Turkey (8–13 weeks post birth at 67 per cent) and South Africa (3–4 months post birth at 38-60 per cent with a cap). As these are slightly less generous, we have calculated full-time childcare provision since birth in these two countries.
27 This is already above the OECD average and the European Union targets of 33 per cent for 0–2-year-olds and 90 per cent for 3–5-year-olds

TABLE 3-2

## Scenarios for child/staff ratios and enrolment rates, Uruguay

| | Child/staff ratios | | | Enrolment rates | | |
|---|---|---|---|---|---|---|
| | **Basic** | **Improved** | **Ideal** | **Current** | **Medium** | **Universal** |
| 0-5 months | 4 | 3 | 3 | 11% | 33% | 100% |
| 6-17 months | 8 | 6 | 3 | 30% | 66% | 100% |
| 18-35 months | 12 | 8 | 4 | 55% | 66% | 100% |
| 36-47 months | 14 | 12 | 8 | 77% | 100% | 100% |

Source: see Appendix 1 for details.

## Turkey

The Turkish case[28] assumes a typical centre hosting 100 children. Child/staff ratios retained are based on legal requirement of five children aged 0–2 and 10 aged 3–5 per practitioner (one main practitioner and one assistant for 10 children 0–2 and for 20 children 3–5). A minimum of five non-childcare staff per day-care centre is also assumed. Qualification levels are roughly as current, with main practitioners qualified at university degree level and assistant practitioners at secondary school level. Enrolment rates in the medium scenario assume OECD averages for each age group (in 2014).

TABLE 3-3

## Scenarios for child/staff ratios and enrolment rates, Turkey

| | Child/staff ratios | Enrolment rates | |
|---|---|---|---|
| | N&S | OECD | Universal |
| 0–2-year-olds | 5 | 33% | 100% |
| 3–5-year-olds | 10 | 83% | 100% |

Source: see Appendix 1 for details.

28 See IKK 2015 for details of the original method and Ilkkaraçan and Kim 2018 for the background paper to these revised costings.

Although heavily based on the costings provided by IKK (2015), the adapted model here diverges from IKK in the following ways:

- Costings are estimated for the entire provision of ECEC on the relevant population. This means the model assumes an overhaul of current provision, for which improved N&S are imposed on pay and child/staff ratios. This is in line with the costing method used for South Africa and Uruguay. Costing calculations in IKK (2015) and Ilkkaraçan and Kim (2018) only included the expansion plan.
- We follow Ilkkaraçan and Kim (2018) by using higher wages compared to IKK (2015). The higher wages correspond to median full-time earnings in early education services (main practitioners paid about 2.5 times more than median earnings in the whole economy and assistants paid just above average earnings).[29]
- All ECEC workers are assumed to be registered for social security and thus the wage costs include employer social security contributions for all jobs in the new ECEC system.
- Despite higher wages, the amount of overhead costs (non-staff) per centre is kept at the level estimated in IKK (2015). This means that wage costs in the scenarios of this paper are a greater proportion of the total costs of a centre compared to IKK (2015). As a result, overheads fall to 40 per cent of total costs, compared to 65 per cent in IKK.

29 With less qualified staff paid at lower level than degree qualified staff, the ratio of which maps that found in IKK 2015.

## 4.

# 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.

Even as an employment-generating policy, childcare provision has traditionally been seen only 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.[30] 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.[31] 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.

Considering investment in childcare as an employment policy as much as a child development policy is particularly relevant to countries such as South Africa and Turkey in which the female employment rate is much lower than in other middle- and high-income countries, respectively at 37 per cent and 31 per cent, compared to 60 per cent for OECD average and 69 per cent in the United Kingdom.[32] As noted in the IKK study, the drive behind the childcare expansion plan in Turkey was explicitly about increasing female labour force participation. The female employment rate in Uruguay stood at about 63 per cent in 2016 and was 73 per cent for women aged 25 to 60.[33]

Investing in social infrastructure rather than physical infrastructure is also likely to reduce the gender employment gap by raising women's employment rates more than men's. This is due to persistent gender segregation observed in all countries between those two sectors, with more women than men expected to take up jobs in childcare services.[34] The gender employment gap—measured here as the difference between the employment rates of women and men of working age—stood at about 38 points in Turkey in 2016, compared to 14 in Uruguay, 12 in South Africa and 9 in the United Kingdom.[35]

The employment effects of direct public investment in ECEC services are threefold:

- direct creation of jobs in the childcare sector
- indirect creation of jobs in industries supplying the childcare sector

30 Thévenon 2013.
31 Antonopoulos et al. 2011; IKK 2015; De Henau et al. 2016.
32 OECD 2017a.
33 INE 2018a. This is an estimate for the population aged 14–64 as the official employment rate published by the Uruguayan statistical office only reports employment rates for those aged 14 and above (which was 50 per cent for women and 68 per cent for men).
34 De Henau et al. 2016.
35 OECD 2017a; INE 2018a.

- induced job creation stemming from increased consumption out of the earnings of the newly employed ECEC staff and indirect jobs.

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).[36]

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 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 effects for all three countries, albeit with specific assumptions depending on data availability in each country (see appendices for details). 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 for reflecting existing gender segregation in different industries. It effectively assumes that all jobs can be and will be taken up by women and men who are underemployed (unemployed or inactive but constrained by caring duties). IKK (2015) carried out a more refined analysis for Turkey with individual job-matching and earning estimations to capture the heterogeneity of potential new workers (limited to direct and indirect effects in their 2015 study). In this paper, on the other hand, we have allocated earnings to newly employed people (technically job vacancies by gender) on the basis of the average earnings in each sector wherever possible (or for the economy as a whole) and, for direct jobs in childcare, the respective level of pay per qualification in each scenario.

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. Second, we do not expect much change in production technology and thus relative prices of inputs in the economy given that childcare is essentially a final product, hardly feeding into other industries. 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. It is, however, 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.[37]

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

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

5.

# 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 respectively, 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.[38] 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.

## 5.1

## 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 economic growth 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[38] (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 team[39] 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

38 De Henau 2017a

39 See Garcia et al. 2017 for most recent findings.

cumulative earning penalties over their life course, unlike those in the control group

- reduced spending on various services that would otherwise be spent to tackle cumulative disadvantages (justice system, mental and physical health care, welfare payments).

Assessing such long-term benefits empirically for our three countries is well beyond the scope of this paper. Methodological issues, pertaining to the universal scope of the programme, would also need to be addressed. Indeed the magnitude of benefits for children would be reduced as universal coverage includes those children not from disadvantaged background whose parents could be in full-time employment anyway (substituting private or informal childcare for public childcare), and who would be less exposed to social and health risks. However, it would still be possible to evaluate the existence of net positive benefits for disadvantaged children, calibrated on Heckman's method, and to add to them the cost of provision for the other children.

Even if some children would not see additional benefits compared to what they would otherwise get, perhaps the more widespread effects of free universal childcare are 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 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.[40]

Data limitations (chiefly, longitudinal employment and earning surveys) 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 a minimum increase in fiscal revenue (direct and indirect tax) that would claw-back the total cost of childcare, compared to the current gender employment penalty that is observed in each country. We provide estimates based on the following conservative assumptions:

- The total cost of childcare per child is calculated in various costing scenarios over the full period of potential enrolment. A typical example of two children in childcare is used.
- 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 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, $10,000 per year per child in real terms, the total childcare cost for two children would be $80,000 (in today's prices). Let's say average male earnings are $25,000 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 todays' prices). The average total tax on this would be, say $12,500 per year (indirect and direct taxes). However the actual current annual income of all women who have had a child is, say $5,000, in today's prices (averaging across employed and non-employed women). The average total tax on this would be just say $1000 (low tax rate because low income, likely to be below direct tax thresholds, so mainly consumption tax). 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 80,000 / (12,500 – 1000) = 7 years.

40 Costa Dias et al. 2016; Kleven et al. 2018; Boll et al. 2017.

## 5.2
# 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. 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)[41]
- 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 for each country so we have not considered this effect for the three countries studied. We did, however, consider it for our comparator country, the United Kingdom, as shown in the discussion at the end.

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. In doing so, both employment and fiscal effects are calculated net of existing provision. This means that although the annual gross investment is for a system built from scratch (the actual amount that would have to be paid each year), the figure for the employment effects are net of the existing jobs in childcare. The same holds for fiscal effects: We only consider the additional tax revenue from additional earnings and expenditure. We also deduct current public spending on existing childcare services for the age group covered since these will be replaced by the new, more generous, system.

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

41 This gain is from the increased consumption of the newly employed people. Another consumption gain not modelled here is that mothers using universal free childcare would no longer spend on childcare services, thereby shifting spending away from childcare payments that are often zero-rated for VAT or attract tax relief and towards other goods and services that attract VAT, with potentially additional positive net effects on tax revenue.

improved.[42] 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.[43]

Given the specificities of the country parameters, results are presented separately for each country. A discussion follows that compares some of these results with those of the UK calculations.

42 This is in practice what policymakers may want to do, but it is good to have a final, steady-state figure for planning purposes. For example, the Women's Equality Party in the United Kingdom, a fringe feminist political party that presented a programme at the general elections in 2017 that adopted our suggested universal childcare scenario, took the view of a gradual implementation of the system, starting with a lower pay that was increased after a few years to reach the higher quality system (Women's Equality Party 2017).

43 See De Henau 2017a for more details.

6.

# RESULTS

## 6.1
## South Africa

Table 5 shows that the variation in gross annual investment is significant between the scenarios and depends mainly on the level of pay since the high-pay scenario assumes that the more qualified staff earn three times as much as in the medium pay scenario. Scenario 1 serves as a benchmark for the other scenarios, with an expansion of current provision to all children but with low-quality parameters reflecting current practices. The most achievable scenarios are the two scenarios using medium pay levels (scenarios 2 and 3), and we have costed them using the 50-50 split of qualified practitioners/assistants and abiding by the norms and standards with regard to child/staff ratios, given the objective of improving service quality. Medium enrolment rates (scenario 2) would entail gross annual investment worth 1.8 per cent of GDP, while universal coverage (scenario 3) would increase the annual spending to 3.2 per cent of GDP.

Note that the high-pay universal scenario (scenario 4) would entail public spending on childcare going up to 7.3 per cent of GDP. Although unrealistic, it would create 3 million full-time jobs—half of which would be in sectors other than childcare—and boost the female employment rate by 12 percentage points, thereby reducing the 11 percentage-point gender employment gap to just 4 points. However, the medium pay level universal scenario (scenario 3) offers similarly attractive employment results with a 10 percentage-point increase in the female employment rate and the gender employment gap reduced to 4 percentage points as well. Given that female employment rates were at a low 38 per cent in early 2017 (49 per cent for men), these increases would be no small achievement.

Short-term fiscal effects are sensitive to the level of pay of childcare staff. The strongly skewed earning distribution in South Africa and the structure of its progressive income tax schedule—with the vast majority of earnings found below the first income tax threshold—is reflected in the low income tax intake, which is, in the first three scenarios, lower than the indirect tax revenue. The more expensive higher-pay scenario 4 offers a better fiscal return as the many direct jobs of qualified practitioners attract significantly more tax revenue owing to wages that are three times as high as in the case of the otherwise equivalent medium pay scenario 3.

TABLE 6-1

## Gross and net investment in childcare provision, South Africa (2017)

| | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 |
|---|---|---|---|---|
| Enrolment rates | Universal | Medium | Universal | Universal |
| Child/staff ratio | Current | N&S | N&S | N&S |
| Pay level | Low | Medium | Medium | High |
| % qualified staff | 5% | 50% | 50% | 50% |
| Gross annual investment | 2,647 | 6,314 | 11,347 | 25,740 |
| % GDP | 0.8% | 1.8% | 3.2% | 7.3% |
| Direct tax revenue | 222 | 750 | 1,376 | 5,824 |
| Indirect tax revenue | 460 | 1,315 | 2,428 | 5,014 |
| Current ECEC funding | 201 | 201 | 201 | 201 |
| Net funding gap | 1,765 | 4,048 | 7,343 | 14,702 |
| % GDP | 0.5% | 1.2% | 2.1% | 4.2% |
| % self-funding | 33% | 36% | 35% | 43% |
| No. new full-time jobs | 871,347 | 1,230,781 | 2,329,087 | 3,077,490 |
| ECEC | 670,175 | 807,937 | 1,558,574 | 1,558,574 |
| Other sectors | 201,172 | 422,844 | 770,514 | 1,518,917 |
| % pts empl. rate change | 2.4% | 3.3% | 6.3% | 8.4% |
| % pts empl. rate change women | 4.0% | 5.3% | 10.1% | 12.0% |

Notes: (1) N&S stands for norms and standards requirements; (2) employment rates change is for the population aged 15-64; (3) monetary amounts are in US$ millions (2017).

## 6.2

# Uruguay

Given the lower degree of variation in pay levels compared to South Africa, the main factor that differentiates the overall cost of each scenario is the child/staff ratio (Table 6). Scenario 1 represents an expansion of provision to all children but keeping the parameters of staffing and pay as per the existing system. Scenario 4 represents the ideal scenario of universal high-quality coverage for all children under the age of 4. This would entail an annual investment of 2.8 per cent of GDP.

It is worth recalling that the calculations for Uruguay only cover the 0–3-year-old population, compared to 0–5 for South Africa and Turkey. This is because all 4-year-olds and above are already enrolled in pre-primary compulsory education (and so 4–5-year-olds are excluded from this assessment). Public spending on this older age group is 0.4 per cent of GDP. Therefore total annual spending on 0–5 years in the ideal universal scenario 4 would be 3.2 per cent of GDP, very similar to the mid-pay universal scenario of South Africa.

TABLE 6-2

## Gross and net investment in childcare provision, Uruguay (2017)

| | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 |
|---|---|---|---|---|
| Enrolment | Universal | Universal | Medium | Universal |
| Child/staff ratio | Basic | Improved | Ideal | Ideal |
| Pay level | Low | High | High | High |
| Gross annual investment | 623 | 887 | 1,149 | 1,464 |
| % GDP | 1.2% | 1.7% | 2.2% | 2.8% |
| Direct tax revenue | 141 | 248 | 361 | 473 |
| Indirect tax revenue | 54 | 88 | 126 | 165 |
| Current ECEC funding | 113 | 113 | 113 | 113 |
| Net funding gap | 315 | 438 | 550 | 713 |
| % GDP | 0.6% | 0.8% | 1.0% | 1.4% |
| % self-funding | 49% | 51% | 52% | 51% |
| No. new full-time jobs | 30,052 | 43,803 | 60,896 | 80,369 |
| ECEC | 19,971 | 27,859 | 38,294 | 50,674 |
| Other sectors | 10,082 | 15,944 | 22,601 | 29,695 |
| % pts rise empl. rate | 1.1% | 1.5% | 2.1% | 2.8% |
| % pts rise female empl. rate | 1.6% | 2.3% | 3.2% | 4.2% |
| % pts 14–64 empl. rate | 1.3% | 1.9% | 2.6% | 3.5% |
| % pts 14–64 female empl. rate | 2.0% | 2.9% | 4.0% | 5.3% |

Note: Percentage point rises in employment rates are given for both 14–64 and 14+ populations as the employment rate based on the latter is the official rate used in government statistics. Monetary amounts are in US$ millions (2017).

The magnitude of the employment effects is lower than for South Africa. This is expected given that the system is already well developed. However, fiscal effects are relatively better than for South Africa because of a wider reach of the tax system at such levels of earnings: About half of the gross investment could be recouped through direct and indirect tax revenue from increased employment and consumption. As expected, employment rates are increased most in the ideal child/staff ratios of scenarios 3 and 4. In the ideal universal scenario 4, female employment rates (14–64 years) would increase by 5.3 percentage points (4.2 points for 14+ rates).

## 6.3
# Turkey

For Turkey, only two scenarios are considered with a simple adaptation of the IKK study. The first is an expansion of services in order to achieve at least the average coverage rates of other OECD countries.[44] To that we add a second scenario that consists of extrapolating the expansion to reach all children under primary-school age. We do not look at current child/staff ratios or current pay levels and estimate the two coverage scenarios directly with improved child/staff ratios set by the norms and standards[45] and with higher pay[46].

Expanding coverage to OECD average levels for children aged 0–5 would entail a gross annual investment of 2.0 per cent of GDP (Table 7). Such expansion would generate close to 660,000 new jobs in the childcare industry[47] (three quarters as childcare practitioners and assistants and the rest in admin and support) and more than 350,000 indirect jobs in other sectors.[48] A universal coverage scenario would require an annual investment of 3.7 per cent of GDP and would generate 2.1 million new permanent full-time jobs, raising female employment rates by almost 6 percentage points. Given existing gender segregation in employment, we estimate that 91 per cent of direct jobs and 29 per cent of indirect and induced jobs would go to women, representing the existing proportions of women in childcare and non-childcare industries respectively.[49] This means that 7 out of 10 jobs would go to women overall as a result of such expansion in either scenario. This compares to 80 per cent in Uruguay and 75-80 per cent in South Africa. The difference could be explained by the much lower proportion of women in the employed population in Turkey (30 per cent) compared to that in the other two countries (both at 45 per cent).

Fiscal effects from increased direct and indirect tax revenue would result in a self-funding rate of about 47 per cent in both scenarios, reducing the net funding needs to 1.1 and 2.0 per cent of GDP, respectively. The ECEC wage costings and estimations of fiscal effects assume that 85 per cent of non-direct jobs and 100 per cent of ECEC jobs are registered for social security. This differs slightly from IKK (2015), which found through their job-matching estimations that about 85 per cent of all new jobs would be registered for social security (and that 85 per cent of all jobs were direct jobs, albeit they only estimated indirect effects in that study). For comparison, if we assume a scenario in which 85 per cent of all jobs are registered (which implies reducing the gross annual investment by the amount of employer social security contributions no longer applicable to 15 per cent of ECEC jobs but also reducing tax revenue for more jobs), the fiscal recoup (self-funding) rate would be very similar at 48 per cent while reducing the gross investment in the universal scenario by $500 million. If, by contrast, all jobs created were assumed to be registered for social security, the gross investment would be unchanged but the fiscal recoup would be higher, given that all the non-direct jobs would become liable to income tax and social security contributions and not just 85 per cent of them. The difference is not huge but not negligible either, with a fiscal recoup rate rising to 50 per cent in the universal scenario thanks to an additional $900 million tax revenue (0.1 per cent of GDP).

44 As discussed in IKK 2015.
45 As per ibid.
46 As per Ilkkaraçan and Kim 2018.
47 These new jobs in ECEC services include 611,386 jobs as a result of the childcare coverage expansion (same estimates as in IKK 2015) and 46,459 additional childcare practitioners and assistants in existing facilities owing to improved child/staff ratios across the board.
48 107,000 indirect jobs (as in IKK 2015) and 245,000 induced jobs, including 14,000 jobs induced by the increased consumption of the additional staff in existing facilities. Estimation of induced jobs has been carried out by Ilkkaraçan and Kim 2018.
49 Eurostat 2018.

TABLE 6-3

## Gross and net investment in childcare provision, Turkey (2014)

| | Scenario 1 | Scenario 2 |
|---|---|---|
| Enrolment | OECD | Universal |
| Staff ratio | N&S | N&S |
| Pay/qualifications | Higher | Higher |
| Total gross investment | 18,738 | 34,607 |
| % GDP | 2.0% | 3.7% |
| Current ECEC spend | 1,435 | 1,435 |
| Direct tax revenue | 5,973 | 12,069 |
| Indirect tax revenue | 1,429 | 2,881 |
| Net funding gap | 9,901 | 18,223 |
| % GDP | 1.1% | 2.0% |
| % self-funding | 47.2% | 47.3% |
| New jobs ECEC | 657,844 | 1,381,635 |
| New jobs other | 352,172 | 751,491 |
| New total jobs | 1,010,017 | 2,133,127 |
| % women | 69% | 69% |
| % point rise employment rate all | 1.9% | 4.1% |
| % point rise employment rate women | 2.7% | 5.7% |

Source: adapted from IKK 2015 and Ilkkaraçan and Kim 2018.
Notes: Monetary amounts in US$ millions (2014). N&S stands for norms and standards.

## 7.

# DISCUSSION

Table 8 shows a comparison of the countries studied according to a universal scenario with the most generous but plausible parameters (on pay, child/staff ratios and qualifications). The range of annual investment needed as a percentage of GDP would be between 2.8 per cent in Uruguay and 3.7 per cent in Turkey, with 3.2 per cent in South Africa. In Uruguay, however, as noted above, comparable amounts for the same population of children (all 0–5-year-olds) would actually be around 3.2 per cent of GDP as well (0.4 per cent spent on 4–5-year-olds). Table 8 also shows comparable results from the UK simulation, with the level of gross investment to provide universal pre-school childcare services corresponding to 3.1 per cent of GDP.[50]

Despite having the least generous child/staff ratios of the four countries—a significant factor in the total cost of provision—Turkey's relatively higher cost (as a percentage of GDP) may be due to the markedly higher overhead (non-staff) costs of childcare centres compared to the other countries (40 per cent vs about 10 per cent). Wages paid to childcare workers in Turkey are also slightly higher than in the other countries, with main practitioners paid 2.5 times more than average earnings compared to twice in Uruguay and 1.7 times more in the United Kingdom (and in South Africa, just under the level of mean earnings of employees).

Cross-country differences in the fiscal effects and the percentage of the investment that is 'self-funding' in the short term are mainly due to differences in pay and the reach of the fiscal system. In the United Kingdom, the tax take is much larger than in the other countries, with 64 per cent of the gross investment being recouped in direct and indirect tax revenue. The UK self-funding rate is even higher (88 per cent) when social security spending is taken into account. Reduced spending on its complex scheme of out-of-work and in-work means-tested benefits is significant. It was calculated by a tax-benefit model based on calibrated estimates of increased employment and working hours by economically inactive or underemployed mothers of pre-school children as well as unemployed people.[51]

This pattern of tax revenue differences is not surprising as lower-income countries have less capacity to generate tax revenue from employment or consumption. Other forms of funding could be mobilized through borrowing and aid, along with new taxes.[52] As explained earlier, the case for borrowing to fund social infrastructure is strong given the large returns expected over the life course of children who benefit from better childcare, although some of these effects (on their parental employment and earnings) is likely to be partly reflected already in the short-term fiscal effects estimated here (those new jobs that are taken up by mothers).

50 De Henau 2017a.

51 De Henau 2017a.

52 As described in Ortiz et al. 2017.

TABLE 7-1

## Comparative results of universal provision of high quality in four countries

| | South Africa | Turkey | Uruguay | United Kingdom (2014) | |
|---|---|---|---|---|---|
| | 2017 | 2014 | 2017 | w/ social sec. | w/o social sec. |
| Enrolment | Universal | Universal | Universal | Universal | |
| No. children 0–2 years per staff | 4.5 | 5 | 3.5 | 2.8 | |
| Pay/qualifications | Medium / high | High / high | High / high | High / high | |
| Total gross investment | 11,347 | 34,607 | 1,464 | 94,149 | |
| % GDP | 3.2% | 3.7% | 2.8% | 3.1% | |
| % staff costs in total | 90% | 60% | 92% | 88% | |
| Current ECEC spend | 201 | 1,435 | 113 | 8,264 | |
| Direct tax revenue | 1,376 | 12,069 | 473 | 34,779 | |
| Indirect tax revenue | 2,428 | 2,881 | 165 | 17,410 | |
| Soc. security spend | - | - | - | 22,296 | - |
| Net funding gap | 7,343 | 18,223 | 713 | 11,400 | 33,696 |
| % GDP | 2.1% | 2.0% | 1.4% | 0.4% | 1.1% |
| % self-funding | 35% | 47% | 51% | 88% | 64% |
| New jobs ECEC | 1,558,574 | 1,381,635 | 50,674 | 1,087,820 | |
| New jobs other | 770,514 | 751,491 | 29,695 | 782,490 | |
| New total jobs | 2,329,087 | 2,133,127 | 80,369 | 1,870,310 | |
| % women | 81% | 69% | 78% | 75% | |
| % pt rise employment rate all | 6.3% | 4.1% | 3.5% | 4.6% | |
| % pt rise employment rate women | 10.1% | 5.7% | 5.3% | 6.8% | |

Notes: The UK scenario with social security spending ('w/ social sec.' in table) adds to the fiscal effects an estimation of the reduced social security spending on out-of-work and in-work means-tested benefits (Universal Credit) as a result of taking up the jobs (see De Henau 2017a for details on the estimation method). Child/staff ratios for children under 3 are reported as average across different age groups and all correspond to the most generous option of each country's scenarios. Amounts are in nominal US$ millions at current exchange rates (2014 for Turkey and the United Kingdom and 2017 for South Africa and Uruguay). Employment rates are measured on the working-age population.

An indication of the minimum number of years to be maintained at earning potential is given in Table 9, for a mother who uses childcare for two children. Table 9 also shows the average gender earning gap observed in each country to illustrate the magnitude of the child-related penalty that could be overturned. The gender earning gap (for a given age group) is measured as the relative difference between the average annual gross earnings of male employees of that age group and the average earnings of all women of the same age group, based on earnings of female employees that are averaged across the whole female population, employed and not employed (see Appendix III for details).. Such gap approximates the penalty that women face relative to men owing to the cumulative impact of lower employment rates, lower working hours and lower wage rates. Note that both Turkey and Uruguay have a gender earning gap almost entirely due to differences in employment rates and hours worked rather than hourly wages. In South Africa and the United Kingdom, the earning gap is influenced by differences in employment rates and working hours as well as in hourly wages.

**TABLE 7-2**

## Gender earning gaps,cost of childcare and years to break even fiscally

| | South Africa | Turkey | Uruguay | United Kingdom |
|---|---|---|---|---|
| Annual childcare cost per child (% average earnings) | 20% | 32% | 59% | 63% |
| Gap to earning potential | 66% | 71% | 51% | 54% |
| No. years to break even | 14.6 | 11.0 | 11.7 | 7.5 |

Source: own calculations using data on employment, wages and tax schedule of each country (see Appendix III for details).

As Table 9 shows, the minimum number of years to be maintained at average earning potential is well below a typical mother's working life. This supports the claim that investing in high-quality childcare is fiscally affordable, and can even lead to fiscal surplus over the lifetime of the beneficiaries. The fiscal claw-back will be shortest in the UK and longest in South Africa. Despite a relatively large earning gap that can be closed, the tax reach remains low in South Africa compared to the other three countries, making it longer to break even. By contrast, although annual childcare costs in the simulated system are relatively high in the UK (63% of average earnings) compared to the other three countries, the fiscal recoup is the shortest because of a much greater tax differential.

## 8.

# CONCLUSION

Providing universal childcare services of high quality may be a significant investment, but it is a necessary one to foster better gender economic equality and to achieve several of the SDGs set out in Agenda 2030. It also generates more jobs than equivalent investment in less labour-intensive industries such as construction, while sharing with it similar infrastructure properties in terms of delivering essential public goods, in this case in the form of a well looked-after population. With this in mind, this paper has shown how a method for costing and evaluating different scenarios of childcare provision can be replicated for different countries while arguing for considering wider effects on employment and short-term tax revenue.

The design of a country's tax system as well as its labour market conditions play a significant role in determining the net investment required for developing high-quality services accessible to all children and their caregivers. Further research is needed to refine the crude results obtained here, using microeconometric models to estimate the take-up by parents of both the new childcare places and the new jobs. Replication of this study to other countries, provided data are available, can be done as well, and we expect similar results in countries with similar demographic structures and average wages relative to the income tax bands, given the labour-intensive nature of the programme.

But whatever the fiscal and employment effects that might be found, such outcomes should not be the only indicators of feasibility or attractiveness of a policy of universal childcare. Providing the care that people need—and thus opportunities for children to fulfil their best potential in life—should remain the main objective in its own right and deserves proper funding on a sustainable basis. The rewards of such investment reach far beyond economic benefits.

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# APPENDICES

## APPENDIX I

## Sources and data

### TABLE A.1

Sources of Table 1: Enrolment, staff ratios, qualifications, public spending

| | South Africa | Turkey | Uruguay |
|---|---|---|---|
| Enrolment rates | General Household Survey 2016 | IKK 2015 | Registro Nacional de Centros de Educación Infantil Privados; SIPI de INAU |
| Opening hours | EPRI 2014 – average hours of audited centres | IKK 2015 | Plan CAIF 2015 |
| Child/staff ratios | EPRI 2014 | IKK 2015 | Plan CAIF 2015 |
| Practitioners' qualifications | EPRI 2014 | IKK 2015 | Plan CAIF 2015 |
| Public spending | National Treasury 2017 | IKK 2015 | Ministerio de Economía y Finanzas 2014 |

### TABLE A.2

### Population of children by age group

| | South Africa (2017) | Turkey (2014) | Uruguay (2017) |
|---|---|---|---|
| 0–17 months | 1,710,560 | 3,717,426 | 68,431 |
| 18–35 months | 1,764,964 | -- | 68,681 |
| 36–65 months | 2,986,003 | 3,779,761 | 45,972 |

Sources: Statistics South Africa 2017; IKK 2015; INE 2017. Population of 36–65-month-olds in Uruguay is actually limited to 36–47 months (target population of ECEC expansion).

### TABLE A.3

### Hourly wage rate per ECEC staff qualification and pay level scenario, South Africa (ZAR)

| | High (NQF 7) | Medium (NQF 5) | Low (NQF 5) |
|---|---|---|---|
| Lower qualification (NQF4) | 20.19 | 20.19 | 10.61 |
| Higher qualification (NQF7 or NQF 5) | 170.37 | 59.09 | 59.09 |

Sources in main report.

TABLE A.4

## Monthly wage per ECEC staff type and pay level scenario, Uruguay (Uruguayan pesos)

| | Low pay | Medium pay | High pay |
|---|---|---|---|
| **Childcare staff:** | | | |
| Teacher/practitioner (40 hr) | 47,295 | 52,243 | 57,191 |
| Educator/assistant (40 hr) | 24,774 | 27,366 | 29,958 |
| **Other staff:** | | | |
| Psychologist/social worker (20 hr) | 27,610 | 27,610 | 27,610 |
| Psychometrician (32 hr) | 44,176 | 44,176 | 44,176 |
| Cooking and cleaning (40 hr) | 20,045 | 20,045 | 20,045 |
| Assistant administrator (30 hr) | 16,700 | 16,700 | 16,700 |

Source: ANEP 2017.

TABLE A.5

## Annual earnings of staff in ECEC centre, Turkey (Turkish lira)

| | Gross |
|---|---|
| Teacher/practitioner | 39,166 |
| Educator/assistant | 17,911 |
| Other staff in centre | 17,911 |

Source: Own estimations based on Ilkkaraçan and Kim 2018 and distributed around mean of 25,980 Turkish lira (median full-time earnings of childcare staff) for staff in centre. The ratio of teacher pay to assistant/other pay is that of university qualified to high school qualified staff of 2.19 found in IKK 2015 (Table 13).

APPENDIX II

# Explanatory note of employment and fiscal effects for each country

Following De Henau et al. (2016) and IKK (2015), the estimation of employment effects uses input-output tables (I-O) available in each country to derive the indirect and induced effects of the childcare investment policy. Specific estimations were carried out in each country to account for the differences in available data and structure of the I-O tables.

## South Africa

The South African I-O tables do not distinguish the education sector or the care sector from other activities carried out by the Government. All public sector activities are recorded under the 'public administration' industry category so that the 'education' industry and the 'health and social care' industry include only private sector activities. Because the vast majority of education services and a large proportion of healthcare services are public, it is impossible to use either industry's input structure to derive the input structure that a public childcare sector system would entail.

Instead, we have calculated the indirect effects by looking at the industrial structure of inputs to existing childcare centres based on the early childhood development (ECD) audit, such as rent, food and material.[53] We have mapped these onto the relevant sectors available in the I-O tables (energy, retail, etc.). The indirect effect is calculated based on the proportion of each input as a direct cash injection into their respective sector for a given amount of childcare investment. So, for example, if food is 20 per cent of the input into a childcare centre, then for each billion invested in childcare, 200 million will be injected directly in the food-related industries (which we have assumed as the wholesale and retail industry in the I-O table). Then we can calculate the indirect effects of that cash injection in wholesale/retail. We repeat the process for each category of input and add all the indirect effects and their own direct effects to obtain the indirect effect of investing in childcare.

For the induced effects, we have used the same method as that explained in De Henau et al. (2016) to derive induced employment multipliers, but instead of injecting cash into a particular industry that we could not identify (i.e., education), we have estimated the rise in household disposable income from the new jobs and calculated the employment effects by treating the household income rise as a direct cash injection into the household sector.

The fiscal effects are based on the 2017/2018 tax system using gross wages of (full-time) childcare staff corresponding to each pay level scenario (see Table A.3). For the jobs created in the rest of the economy, we have estimated the tax due on average for three types of jobs: those not assessed and not paying taxes; those not assessed but potentially paying taxes (and assuming that they did); and those assessed and paying taxes. The size of each group determines the weights in the tax calculations. The weighted average salary and income tax due is obtained as per Table A.6. Each group is assumed to pay the unemployment insurance contribution rates (1 per cent employer and 1 per cent employee).

53 EPRI 2014.

**TABLE A.6**

## Mean earnings and income tax due by type of employment registration (2017)

| | No. employees | Average salary (ZAR) | Average tax due (ZAR) |
|---|---|---|---|
| No-tax employees | 6,962,187 | 37,876 | 0 |
| Taxed but unassessed | 1,866,540 | 132,816 | 10,272 |
| Assessed and taxed | 4,775,950 | 222,683 | 29,072 |
| Total/average | 13,604,677 | 115,778 | 11,615 |

Source: National Treasury and SARS 2016, adjusted for 2017 prices.

Indirect (consumption) taxes are calculated by applying the average indirect tax incidence on disposable income, which is estimated at 16 per cent on average for middle deciles.[54] This includes VAT, excise duties and fuel levy.

### Uruguay

For Uruguay, the method is the same as that of De Henau et al. (2016) and De Henau (2017a), with the education sector used as the industry in which the investment in childcare takes place, given the similar qualification of childcare staff and the aim to develop an education-based system of childcare with costs inputs resembling the school system. The most recent available input-output table dates from 2005.

Salaries are calculated with a typical 25 per cent extra in added benefits (akin to 13th month and holiday pay), and tax and social security contributions are calculated on that augmented basis, applying the 2017 schedule.

Indirect tax incidence (VAT + excise duties) is estimated at 16.7 per cent on average of the total household private consumption expenditure. Propensity to consume is estimated at 83 per cent of average disposable income, so the indirect tax incidence on disposable income is 13.8 per cent and is applied to all incomes levels of the new jobs as per the other countries. Calculations are made using data from the National Accounts provided by the Banco Central de Uruguay and the Dirección General Impositiva for the year 2015.[55]

### Turkey

The calculations of the employment effects for Turkey follow the model developed by IKK (2015) using the input structure of the typical childcare centre they have estimated based on the field survey of existing provision. As noted earlier, the amount of overhead per centre has been kept constant at the level of IKK (2015) despite the higher wages assumed in this paper.[56] This means that the indirect employment effect is the same as that of IKK (2015) for the OECD scenario and proportional to it for the universal scenario. The Type I employment multiplier derived from IKK (2015) and used to extrapolate indirect employment creation in the universal scenario is 1.18. Induced effects have been estimated by Ilkkaraçan and Kim (2018) using a similar approach to that used in the other countries.[57] We have adapted their results to also account for the employment effect induced by increased consumption of the additional childcare staff in existing facilities (through improved child/staff ratios).

Income tax and social security contributions (SSC) are calculated on gross income assuming all jobs created in ECEC services are registered for social security and are permanent, thereby liable to SSC. We have assumed that only 85 per cent of non-ECEC jobs are

54 Inchauste et al. 2015.

55 Available on the website of the Instituto Nacional de Estadistica: http://www.ine.gub.uy/cuentas-nacionales.

56 And in Ilkkaraçan and Kim 2018.

57 Based on De Henau et al. 2016.

registered.[58] All non-direct jobs are assumed to be paid at the average level of earnings of 2,642 Turkish lira per month.[59]

Calculations for direct tax revenue require knowing the family type and employment situation of any partner in order to determine a minimum living allowance used as an income tax rebate. The lowest amount is given to single childless people (about 80 Turkish lira a month in 2014) and it increases if the person has a non-employed partner and with the number of children. However, deductions for children only apply to one partner so if the newly employed person lives with a partner who is already employed and already claims the discount for their children, that newly employed person would receive the same discount as a single person. Given that most jobs are likely to be taken up by women, who are most likely to be either single or married with an employed spouse, we have assumed that all new jobs would attract the single-rate discount. Ilkkaraçan and Kim (2018) calculated discounts based on a share of 65 per cent of married people taking up the jobs as per the current proportion in the population (and assumed these would all be with a non-employed partner and with two children). If this was applied here, the difference in impact on the fiscal recoup would be small with only about $260 million less in income tax, pushing down the self-funding rate from 47.3 per cent to 46.6 per cent in the universal scenario.[60]

Indirect tax incidence (from both general and specific consumption taxes) is estimated at 14.8 per cent of disposable income. It is calculated on the basis of the total revenue from VAT and specific consumption taxes (such as excise duties) found in Table 4.65 of the OECD revenue statistics.[61] Such revenue is then divided by the household final consumption expenditure.[62] Then we use the household gross savings ratio of 13.6 per cent in 2014[63] to determine average disposable income and thus the tax incidence.

58 Following the suggestion in Ilkkaraçan and Kim 2018, based on IKK 2015.

59 As explained in Ilkkaraçan and Kim 2018.

60 See details of how the discount is calculated (with figures for 2015) at https://turkishlaborlaw.com/faq/332-how-to-calculate-minimum-living-allowance-2.

61 OECD 2017b.

62 TurkStat 2016a.

63 TurkStat 2016b.

APPENDIX III

# Calculations of the gender earning gap

For South Africa and the United Kingdom, the calculations of the total earning gap between women and men of the same age are done using data on annual earnings of male employees and compared to annual earnings of female employees averaged over the total population of employed, unemployed and economically inactive women.

Data for South Africa are taken from the Labour Dynamics in South Africa (2016) interactive data available online.[64]

Data for the United Kingdom are from the Annual Survey of Hours and Earnings (2014 – revised), Table 6 (age groups) and from the Labour Force Survey quarterly data (file A05 – labour force status by age group).[65]

For Turkey, we used the national time-use survey of 2014, reporting average time in employment per day for different age groups. Data on hourly wages are available from the European Structure of Earnings Survey (ESES) (2014).[66] Because time in employment is measured across the whole age group (including those not in employment), the total earnings averaged over the group is simply the product of the hourly wage of employees by the average number of hours in employment per day (multiplied by 7 and 52 to get annual earnings). Hourly gender wage gaps in Turkey for those aged 25–54 are negative (-15 per cent), meaning salaried women earn on average 15 per cent more than salaried men. But the gap in employment is huge in favour of men, which more than compensates for the reversed hourly gap.

For Uruguay we used the same method as for Turkey, although we were unable to find time-use data by age. INE (2014) provides data on total unpaid and paid work carried out by women and men aged 14+ (Sistema de Información de Género, Inmujeres-MIDES, en base a Módulo EUT 2013, INE), available at http://www.ine.gub.uy/web/guest/encuesta-de-uso-del-tiempo-eut-.

For hourly wages, the Encuesta Continua de los Hogares, December 2017, provides estimates of hourly wages of employees by sex, averaged over quarters of 2017 (in 2017 prices): UYU 177.3 for women (+15% of taxable benefits) and UYU 185.04 for men (+15% of taxable benefits). This yields a gender hourly wage gap of 4.2 per cent.[67]

We use data on the share of paid work in total work for women provided by the time-use report and the hourly wage to derive their total average earnings of all women (in 2017 prices), to be compared with average earnings of male employees.

64 http://interactive.statssa.gov.za:8282/webview/.
65 Both available online at www.ons.gov.uk .
66 Both data sets are available from the Turkish Statistical Institute TurkStat at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1009 (statistics by theme).
67 INE 2018b.

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