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The Economic and Social Commission for Asia and the Pacific (ESCAP) serves as the United Nations’ regional hub promoting cooperation among countries to achieve inclusive and sustainable development. The largest regional intergovernmental platform with 53 Member States and 9 Associate Members, ESCAP has emerged as a strong regional think-tank offering countries sound analytical products that shed insight into the evolving economic, social and environmental dynamics of the region. The Commission’s strategic focus is to deliver on the 2030 Agenda for Sustainable Development, which it does by reinforcing and deepening regional cooperation and integration to advance connectivity, financial cooperation and market integration. ESCAP’s research and analysis coupled with its policy advisory services, capacity building and technical assistance to governments aims to support countries’ sustainable and inclusive development ambitions.

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Explanatory notes

References to dollars ($) are to United States dollars, unless otherwise stated. References to “tons” are to metric tons, unless otherwise specified.
A solidus (/) between dates (e.g. 1980/81) indicates a financial year, a crop year or an academic year.
Use of a hyphen between dates (e.g. 1980-1985) indicates the full period involved, including the beginning and end years.

The following symbols have been used in the tables throughout the journal:
Two dots (..) indicate that data are not available or are not separately reported.
An em-dash (—) indicates that the amount is nil or negligible.
A hyphen (-) indicates that the item is not applicable.
A point (.) is used to indicate decimals.
A space is used to distinguish thousands and millions.
Totals may not add precisely because of rounding.

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The objective of the present paper is to examine the extent to which economic growth and public social expenditure in Asia and the Pacific have translated into an increasing middle class. Using international poverty lines and an absolute definition of the middle class, it is estimated that between 1999 and 2015, 1.2 billion people moved into the Asia-Pacific middle class and that the share tripled, from 13 to 39 per cent of the total population. This expansion, however, did not translate into an income-secure middle class, as almost one billion people are vulnerable and at risk of falling back into poverty. Examination at the country-level reveals that large disparities persist in the region, as most countries need to sustain economic growth and at the same time guarantee that the gains are sufficiently distributed to increase the size of the middle class.

JEL classification: D31, I32, O15

Keywords: poverty, middle class, vulnerability, Asia and the Pacific
I. INTRODUCTION

In recent decades, development in Asia and the Pacific often has been viewed as a success story. Economic growth has generated new jobs, increased incomes, improved access to basic services and opportunities, and led to advances in poverty reduction (ESCAP, 2019). Between 1999 and 2015, moderate poverty in the region, defined as living below $3.20 per day, fell from 66 to 27 per cent, while gross domestic product (GDP) per capita more than doubled. This surge translated into an increasing proportion of the population moving to higher incomes within their country’s income distribution, thus forming an emerging middle class.

The middle class is often perceived as the engine of economic growth. Individuals in this stratum have consumption patterns above subsistence levels, allowing them to invest in productive activities and accumulate physical and human capital (Pezzini, 2012). Growing disposable incomes result in higher spending on leisure, entertainment and a range of basic services, such as health and education, and consumer goods, such as washing machines, telephones and computers (Kharas and Hamel, 2018a). As this group expands, so does its weight and voice in such matters as social protection and the public provision of services, which can shape institutions and promote good governance (Birdsall, 2015; Desai and Kharas, 2017).

The size of the middle class is not only instrumental in assessing the economic health of a country, but it also serves as a platform to estimate standards of living and the redistribution of economic growth. For this paper, international poverty lines and an absolute definition of the middle class are used to assess the size and growth of the Asia-Pacific middle class. The analysis sheds light on the extent to which economic growth and public social expenditure have translated into higher standards of living between 1999 and 2015. It also shows how distributional changes have come alongside growing income inequalities in selected countries.

This paper is structured as follows: in section II, an overview of the existing literature is given along with a definition of the concept of vulnerability and the middle class. Section III includes a description of the data used and provides the framework to assess middle-class changes over time. Section IV contains a discussion on regional trends, while focusing on the performance of the two most populous countries: China and India. In section V, the composition of the Asia-Pacific middle class is further explored by analysing the most and least successful countries in the region in terms of their income distribution. Section VI concludes with some remarks on the middle-class expansion.
II. POVERTY, VULNERABILITY AND THE MIDDLE CLASS

The concept of the middle class is often weighted with social, political and historical implications. However, much of the recent academic and political discourse concerns the income dimension, as it refers to a stratum of the income distribution rather than an analysis of class. Individuals belonging to the middle class are expected to have a reasonable amount of disposable income to cover subsistence expenditures and enable them to buy consumer durables, invest in productive activities and save for the future (Kharas and Hamel, 2018b).

In the context of the 2030 Agenda for Sustainable Development, this notion carries great weight, as the pledge of leaving no one behind is also a call to end extreme poverty, curb inequalities and raise the well-being of all. Middle-class expansion underlies the commitment to “by 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to regional definitions” (Sustainable Development Goal 1, target 1.2), “empower and promote the social, economic, and political inclusion of all irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status” (Sustainable Development Goal 10, target 10.2), and embodies other dimensions of sustainable development, such as equal access to services and opportunities.

A large amount of literature underscores the relationship between middle-class expansion, social gains and economic growth. Dabla-Norris and others (2015) find that after controlling for several covariates, a percentage point increase in the income share of the middle class is associated with a 0.38 percentage point rise in economic growth. Razafimandimby (2017) finds that a large and wealthy middle class positively affects growth and development, while Desai and Kharas (2017) show a negative and significant relationship between middle-class expansion and extreme poverty.1 Chun, Hasan and Ulubasoglu (2011) argue that the middle class affects economic growth through higher human capital investment, while Easterly (2001) and Loayza, Rigolini and Llorente (2012) underscore that countries where the middle class is a high proportion of the population have greater physical and human capital, less political instability and stronger institutions. Ravallion (2001) and Fosu (2017) argue that high inequality limits the effectiveness of growth in reducing poverty, thus curbing an expanding middle class, while Van de Walle (2011) shows a negative correlation between the size of the middle class and inequality.

However, Pezzini (2012), Birdsall, Lustig and Meyer (2014) and Kochhar (2015) emphasize that for the middle class to be the driver of this virtuous cycle, the risk

1 Desai and Kharas (2017) also find that this effect diminishes once the size of the middle class approaches 30 per cent of the population.
of falling back into poverty needs to be eliminated.\textsuperscript{2} Individuals with incomes just above the poverty level would not be able to have a reasonable amount of disposable income or be able to cope with idiosyncratic risks, such as unemployment or illness. In addition, their capacity to accumulate human capital would also be restricted, as insufficient income would not allow for investments in proper health care and quality education, or enable consumption smoothing through savings.

For the middle class to enjoy economic security and boost economic growth, drive investments, sustain consumption, and foster quality public services and social protection systems, it needs to attain a reasonable standard of living that is sufficiently above the poverty level.

III. DATA AND METHODOLOGY

To some extent, the definition of the middle class is rather arbitrary and depends on the purpose of the analysis at hand. Some authors, such as Milanovic and Yitzhaki (2002), have defined the world’s middle class as those countries with standards of living between the mean income level of Brazil and Italy. Kharas (2010) sets the global middle class as the households with per capita expenditure between $10.00 and $100.00 per day (2005 purchasing power parity (PPP)), while Kochhar (2015) adopts a threshold of between $10.00 and $50.00 per person per day (2011 PPP). Banerjee and Duflo (2008) define the middle class as households with daily per capita expenditure between $2.00 and $10.00 (2005 PPP), while Birdsall (2010) includes individuals with income levels at or above $10.00 per day, and at or below the 95th percentile of the income distribution in their own country. Furthermore, Razafimandimby (2017) distinguishes four subgroups of the middle class by daily household per capita income: a floating class ($2.00-$4.00), a lower-middle class ($4.00-$10.00), an upper-middle class ($10.00-$20.00), and a higher-middle class ($20.00-$100.00) (2011 PPP). In Asia and the Pacific, Chun (2010) uses $2.00 and $20.00 per person per day as the lower and upper bounds of the middle class (2005 PPP).

For this paper, an absolute middle-class approach from the standpoint of developing countries in Asia and the Pacific is used to estimate the size and share of the middle class when compared to the developed world.\textsuperscript{3} Two data sources are used to assess changes and develop inequality estimates between 1999 and 2015:

\textsuperscript{2} In addition, the extent to which the middle class becomes larger and wealthier also plays a role in forming expectations of further growth (Birdsall, 2015).

\textsuperscript{3} The middle-class absolute approach, which is closely related to the notion of PPP, entails using a single metric to depict the same standards of living in Asia and the Pacific.
population income distributions are obtained from the World Bank online poverty tool, PovcalNet, from which poverty measures are drawn from households’ income or consumption expenditure levels, and expressed in 2011 PPP. Data are drawn from the World Inequality Database to estimate income changes across population percentiles in selected countries. Out of the 53 member States of the Economic and Social Commission for Asia and the Pacific (ESCAP), data are shown for 37 countries (annex table A.1).

Following Ravallion (2010), the Asia-Pacific middle class is defined as the group of a population who are not poor by upper-middle income country standards ($5.50 per person per day), but still poor by high income country standards ($21.70 per person per day). The definition anchors the discussion of the Asia-Pacific middle class to the standards of living in the developing and developed world alike. Using international poverty lines, the region’s population is divided into four income groups to estimate the poverty headcount at different income levels: poor (< $3.20 per day); near poor ($3.20-$5.50 per day); middle class ($5.50-$21.70 per day); and “global middle class” (> $21.70 per day). Starting with the assumption that the middle class begins where poverty ends, the lower bound for defining the Asia-Pacific middle class is set at $5.50 per person per day. This value corresponds to the poverty line of upper-middle income countries. As an upper bound, the poverty line of high income countries of $21.70 per person per day is used (Jolliffe and Prydz, 2016). Households with per capita incomes beyond this threshold are not poor by any international standard; accordingly, they are considered to belong to the “global middle class”.

In this paper, the $5.50-$21.70 bracket constitutes the Asia-Pacific middle class. The wide range, however, fails to capture individuals that could be trapped in vulnerable situations moving in and out of poverty at $5.50 per day. On this basis, $10.00 per day is used to disaggregate the middle class. Based on evidence presented by Lopez-Calva and Ortiz-Juarez (2011), this threshold has gained acceptance among academics because households living with a per capita income above this this

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4 Purchasing power parity, which is exchange rates adjusted for differences in the prices of goods and services across countries, allows for regional aggregates, cross-country, and over time comparisons.

5 France, the Netherlands, the United Kingdom of Great Britain and Northern Ireland, and the United States of America are ESCAP member States, but are located outside of Asia and the Pacific. Moreover, Australia, Japan, and the Republic of Korea are excluded from the analysis because they are high-income countries with absolute poverty lines that exceed $21.70 per person per day.

6 At current 2019 dollar prices, the income levels correspond to the following: poor (< $3.64 per day), near poor ($3.64-$6.25 per day), middle class ($6.25-$24.67 per day), and “global middle class” (> $24.67 per day).
level have a low probability of falling back into poverty. The same, or virtually the same threshold has been used by Birdsall (2010); Kharas (2010); Birdsall, Lustig and Meyer (2014); Jolliffe and Lanjouw (2014); Kochhar (2015); and Desai and Kharas (2017) as the cut-off income level between those considered to be vulnerable and those considered to be income-secure. The Asia-Pacific middle class is, therefore, divided into the vulnerable cohort ($5.50-$10.00 per day), and the income-secure cohort ($10.00-$21.70 per day). Moreover, the poverty line of lower-middle income countries, defined as living below $3.20 per day, is used to distinguish between the poor and those living just below $5.50 per day with the potential to belong to the Asia-Pacific middle class (figure 1).

Figure 1. Disaggregation of the Asia-Pacific middle class

<table>
<thead>
<tr>
<th>Income line</th>
<th>Group classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-income countries</td>
<td>“Global middle class”: &gt; $21.70</td>
</tr>
<tr>
<td>$21.70</td>
<td></td>
</tr>
<tr>
<td>Vulnerability threshold</td>
<td>Income-secure middle class: $10.00-$21.70</td>
</tr>
<tr>
<td>$10.00</td>
<td></td>
</tr>
<tr>
<td>Upper-middle income countries</td>
<td>Vulnerable middle class: $5.50-$10.00</td>
</tr>
<tr>
<td>$5.50</td>
<td></td>
</tr>
<tr>
<td>$3.20</td>
<td>Poor: &lt; $3.20</td>
</tr>
</tbody>
</table>

Source: Author’s elaboration based on Lopez-Calva and Ortiz-Juarez (2011); and Jolliffe and Prydz (2016).

It is estimated that households in Chile, Mexico, and Peru have less than a 10 per cent probability of falling back into poverty if their income is at least $10.00 per person per day (2005 PPP) (Lopez-Calva and Ortiz-Juarez, 2011).

The vulnerability threshold of $10.00 per person per day is about three times the poverty line of lower-middle income countries ($3.20 per person per day) as used in this paper.
IV. THE GROWING MIDDLE CLASS IN CHINA AND INDIA

The Asia-Pacific middle class has experienced steep growth in terms of size and share of the total population. Almost 1.2 billion people moved to the middle class, which increased in absolute size from 500 million in 1999 to 1.7 billion in 2015, while the percentage share tripled from 13 to 39 per cent of the total population (annex table A.2).

Authors, such as Drysdale and Armstrong (2010) and Huang and Wang (2011), attribute this expansion to the region’s high annual GDP growth rate, which enabled many to escape poverty and improve their standards of living between 1999 and 2015. Alongside economic growth, many countries also made strides in alleviating poverty, thus allowing for an emerging middle class by fostering investments in human capital and creating the conditions for many to take advantage of growth-related opportunities. ESCAP (2018) argues that if countries in the region were to further increase the amount of public social expenditure in education, health care, and social protection to match global averages, 328 million people would be lifted out of moderate poverty and 52 million out of extreme poverty by 2030.

In analysing middle-class changes, estimates indicate that a dramatic shift occurred from 1999 to 2015. In 1999, two thirds of the population in Asia and the Pacific – 2.3 billion people – were poor, with an income of less than $3.20 per day while in 2015, the bulk of the population – 1.7 billion people – were considered middle class (figures 2 and 3). Yet, when disaggregating the Asia-Pacific middle class to consider the vulnerability threshold of $10.00 per day, estimates show that almost 1 billion live at risk of falling into poverty. These figures point to movements out of poverty to incomes levels just above poverty.

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9 China and India had an average annual GDP growth rate of 9.5 and 7.2 per cent, respectively (World Bank, 2019).
A closer look at trends reveals that the expansion of the middle class in the Asia-Pacific region can be attributed to poverty reduction in the most populous countries: China and India. These best performers added 900 million people to the middle class between 1999 and 2015, comprising 75 per cent of the total advancement in the region (figure 3).
In 1999, two thirds of the population of China – 859 million – lived below $3.20 per day; sixteen year later, in 2015, two thirds of the population – 880 million – belonged to the middle class. Of those classified as middle class, 457 million were considered vulnerable and 423 million people were seen as being income-secure. By comparison, estimates in India suggest that in 1999, 78 per cent of the population – 809 million – lived below $3.20 per day, and in 2015, half of the population – 659 million – were still living in poverty. Only 220 million people were considered middle class, with 79 per cent of this figure – 173 million – belonging to the vulnerable stratum. Notably, only 48 million people were considered income-secure.
Distinct middle-class trends between China and India raise questions about the impact of growth and the nature of public social expenditure in reducing poverty and raising standards of living. China was able to sustainably reduce poverty and increase the size of its middle class, while in India, the spells of development did not trickle down to those most in need. Although both countries attained high GDP growth rates, investment in human capital differed between 1999 and 2015. In China, the total public social expenditure as a percentage of GDP increased from 4.7 to 6.3 per cent, as compared to a range of 1.6 to 2.7 per cent in India. The proportion of the population covered by at least one social protection scheme (Sustainable Development Goal 1, target 1.3) was 63.0 per cent in China, compared to 19.0 per cent in India. Furthermore, 96.9 per cent of the population of China had legal health coverage in 2010, as compared to 12.5 per cent of the population of India (ILO, 2017). In figure 4, growth incidence curves are used to explore how economic growth and public social expenditure translated into annualized income growth rates for all percentiles of the populations of China and India between 1999 and the latest year available.

The growth incidence curve for China underscores that the annualized GDP growth rate of 9.5 per cent, coupled with slower population growth, major reforms to create job opportunities and improved access to social protection, led to income growth rates between 2.9 to 14.5 per cent for the whole population. After comparing over time distributional changes (figures 2 and 3) with percentile income growth rates (figure 4), the growth incidence curve suggests that most of those considered poor or near poor in 1999 were able to sustainably move into the Asia-Pacific middle class. The Chinese middle class, located between the 27 and the 91 percentile of the income distribution in 2015, had annualized income growth rates between 6.3 and 8.6 per cent, as seen on the red part of the curve.

The growth incidence curve also underlines growing income inequalities. A closer look at the income growth rate of the bottom 10 per cent when compared to the top 0.1 per cent shows that the standards of living of the poorest improved, but the gains of growth mostly benefited those that were already wealthy. Income growth was more rapid at the middle and higher segments of the income distribution when compared to the lower end. Xie and Zhou (2014); ILO (2017); and Jain-Chandra and others (2018) find that although for most of the population of China, incomes increased along with health and pension coverage through universal programmes, the urban-rural disparity also increased and gaps in access to tertiary education and financial services widened. In addition, Xie and Jin (2015) argue that inequality in China goes beyond the income sphere, as one third of the country’s wealth is owned by the top 1 per cent of households, in contrast to the bottom 25 per cent who owns 1 per cent.
The growth incidence curve in India is different. Although the country attained an average annual GDP growth rate of 7.2 per cent; rapid population growth, low public expenditure on social protection and lack of job opportunities translated into slow growth in incomes of 90 per cent of the population. Figures 3 and 4 show this mismatch. The middle-class expansion in the country was the result of movements of people living just below $5.50 per day into the vulnerable middle class. Only a few were able to attain high enough annualized income growth rates and move into the income-secure stratum. In addition, the middle class was squeezed between the 82 and the 99 percentile of the income distribution, suggesting that most of the population still lives on less than $5.50 per day.

The growth income curve also highlights that the middle class will expand slowly as the gains of economic growth are concentrated at the top end of the income distribution. Given the current trend of GDP growth, an Indian living in poverty below $3.20 per day in 2013 would move into the vulnerable middle class by at least 2041, in almost a 30-year span, and into the income-secure middle class by at least 2071.
Chaudhuri and Kotwal (2013) and ILO (2018) note that economic growth in India was driven by the formal and skill-intensive sector, which created few opportunities for the vast majority working in low-skilled and informal markets. This skilled-biased growth also translated into growing income inequality between the rich and the rest of the population. While the top 0.1 attained income growth rates of 9 per cent, those below the 90 percentile enjoyed increases of 2.1 per cent. Credit Suisse (2018) argues that income inequality came alongside high wealth inequality, as the country’s top 1 per cent held more than 50 per cent of the wealth in 2016.

V. A CLOSER LOOK AT THE MIDDLE CLASS: THE VULNERABLE AND INCOME-SECURE STRATUM

Between 1999 and 2015, China and India were leading middle-class expansion in Asia and the Pacific because of their size. In both countries, economic growth also came alongside growing income inequality. Other less populous countries had also made major strides in poverty reduction by fostering inclusive growth and investing in human capital. In this section, the composition of the Asia-Pacific middle class in the rest of countries for which data were available is reviewed.

Out of 37 countries considered, the size of their middle class increased between 1999 and 2015 in 34 countries (figure 5). Only the Federated States of Micronesia, Solomon Islands, and Vanuatu had a lower-middle-class share when compared to their 1999 value. Estimates also reveal that big disparities persisted in the region.

Mongolia and Viet Nam stand out in terms of middle-class expansion. Poverty fell from 86.0 to 19.8 per cent of the population in Mongolia, while the middle class expanded from 13.9 to 74.9 per cent. In Viet Nam, poverty fell from 86.8 to 30.9 per cent of the population while the middle class increased from 12.9 to 64.9 per cent. However, when disaggregating the middle class to consider the vulnerability threshold, estimates show the expansion was mainly because of movements out of poverty into the vulnerable middle class. This pattern is consistent throughout Asia and the Pacific. In only Azerbaijan, the Islamic Republic of Iran, Malaysia, the Russian Federation, Thailand and Turkey, the income-secure middle class comprised a greater share of the middle class in 2015.

Some countries, such as Bangladesh, India, the Lao People’s Democratic Republic, Pakistan, Papua New Guinea, Solomon Islands, Timor-Leste, and Uzbekistan, still face several challenges as most of the population lives under $5.50 per day. In addition, the share of the middle class is below 25 per cent of the population. These countries are in the most need to achieve sustained economic growth and receive assistance in developing policies to boost their middle class.
An emerging but vulnerable middle class: a description of trends in Asia and the Pacific

Figure 5. Share of the Asia-Pacific middle class, 1999–2015

<table>
<thead>
<tr>
<th>Country</th>
<th>1999</th>
<th>2015</th>
</tr>
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<tbody>
<tr>
<td>Kazakhstan</td>
<td>11%</td>
<td>26%</td>
</tr>
<tr>
<td>Thailand</td>
<td>18%</td>
<td>28%</td>
</tr>
<tr>
<td>Mongolia</td>
<td>12%</td>
<td>40%</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>14%</td>
<td>31%</td>
</tr>
<tr>
<td>Iran, Islamic Republic of</td>
<td>27%</td>
<td>30%</td>
</tr>
<tr>
<td>Turkey</td>
<td>39%</td>
<td>41%</td>
</tr>
<tr>
<td>Tonga</td>
<td>30%</td>
<td>32%</td>
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<tr>
<td>Viet Nam</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>China</td>
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<td>16%</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>25%</td>
<td>33%</td>
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<tr>
<td>Samoa</td>
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<td>27%</td>
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<td>Sri Lanka</td>
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<td>20%</td>
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<td>Tuvalu</td>
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<td>Maldives</td>
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<td>Fiji</td>
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<td>Turkmenistan</td>
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<tr>
<td>Georgia</td>
<td>16%</td>
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<td>Armenia</td>
<td>11%</td>
<td>39%</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>2%</td>
<td>12%</td>
</tr>
<tr>
<td>Philippines</td>
<td>9%</td>
<td>18%</td>
</tr>
<tr>
<td>Kiribati</td>
<td>7%</td>
<td>23%</td>
</tr>
<tr>
<td>Myanmar</td>
<td>1%</td>
<td>24%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>17%</td>
<td>22%</td>
</tr>
<tr>
<td>Micronesia</td>
<td>14%</td>
<td>26%</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
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<td>24%</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td>Nepal</td>
<td>4%</td>
<td>23%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>3%</td>
<td>17%</td>
</tr>
<tr>
<td>Lao People’s Democratic Republic</td>
<td>5%</td>
<td>15%</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>2%</td>
<td>15%</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>7%</td>
<td>15%</td>
</tr>
<tr>
<td>India</td>
<td>1%</td>
<td>13%</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>2%</td>
<td>13%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1%</td>
<td>13%</td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>1%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Source: Author’s elaboration based on PovcalNet, the online tool for poverty measurement developed by the Development Research Group of the World Bank.

Note: The numbers inside the bars represent the share of the population belonging to the vulnerable and income-secure middle class.

Legend:
- Poor < $3.20
- Near poor $3.20–$5.50
- Vulnerable middle class $5.50–$10.00
- Income-secure middle class $10.00–$21.70
- “Global middle class” > $21.70
VI. CONCLUDING REMARKS

The present paper entails a review of the extent to which economic growth and public social expenditure in Asia and the Pacific has translated into an increasing middle class. After dividing the region’s population into four income groups: poor (< $3.20 per day); near poor ($3.20-$5.50 per day); middle class ($5.50-$21.70 per day); and “global middle class” (> $21.70 per day), estimates reveal that 1.2 billion people had moved into the Asia-Pacific middle class, while the share of middle class tripled from 13 to 39 per cent of the total population.

Analysis at the country level indicates that large disparities persist in the region. China, Mongolia and Viet Nam have experienced the greatest middle-class expansion. On the contrary, Bangladesh, India, the Lao People’s Democratic Republic, Pakistan, Papua New Guinea, Solomon Islands, Timor-Leste, and Uzbekistan still face several challenges in boosting the size of their middle class. Results in China and India underscore that economic growth rose in tandem with income inequality, as the gains were concentrated among the top 0.1 per cent of the income distribution. Furthermore, only in Azerbaijan, the Islamic Republic of Iran, Malaysia, the Russian Federation, Thailand and Turkey, most individuals moved into the income-secure middle class.

Altogether, estimates suggest that success in alleviating poverty in Asia and the Pacific has resulted in an emerging but vulnerable middle class. Economic growth has translated into almost one billion people living just above $5.50 per day and at risk of falling back into poverty. Accordingly, whether middle-class expansion is a cause for optimism relies upon each country’s ability to sustain economic growth while guaranteeing that the gains are sufficiently shared. Political will, therefore, is paramount in creating the conditions for individuals to seize growth-related opportunities and guarantee that those in vulnerable situations are able to attain a higher standard of living.

The paper sets the stage for further policy discussions on the factors supporting middle-class expansion and the barriers curbing its growth. As large disparities persist in the region, emphasis should be directed towards the countries that are most in need of sustained economic growth and have greater potential to unlock the middle-class virtuous cycle. Only by removing persistent vulnerabilities can the middle class fulfil its role in driving investments, sustaining consumption, fostering quality public services and social protection systems, and boosting further economic growth.
Annex

Table A.1 Data availability for countries in Asia and the Pacific

<table>
<thead>
<tr>
<th>Subregion</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>East and North-East Asia (ENEA)</td>
<td>China, Mongolia</td>
</tr>
<tr>
<td>South-East Asia (SEA)</td>
<td>Indonesia, Lao People’s Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, Timor-Leste, Viet Nam</td>
</tr>
<tr>
<td>South and South-West Asia (SSWA)</td>
<td>Bangladesh, Bhutan, India, Iran, Islamic Republic of Maldives, Nepal, Pakistan, Sri Lanka, Turkey</td>
</tr>
<tr>
<td>North and Central Asia (NCA)</td>
<td>Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan</td>
</tr>
<tr>
<td>Pacific</td>
<td>Fiji, Kiribati, Micronesia, Federated States of Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu</td>
</tr>
</tbody>
</table>
Table A.2 Size and percentage share of the Asia-Pacific middle class, 1999–2015

<table>
<thead>
<tr>
<th>Subregion</th>
<th>People living between $5.50-$21.70 per day (millions)</th>
<th>Percentage share of population (%)</th>
<th>Absolute change in number of people</th>
<th>Percent-age point change</th>
</tr>
</thead>
<tbody>
<tr>
<td>East and North-East Asia (ENEA)</td>
<td>136,380</td>
<td>9.548</td>
<td>745,490</td>
<td>47.261</td>
</tr>
<tr>
<td>China</td>
<td>136,048</td>
<td>10.86</td>
<td>743,590</td>
<td>53.29</td>
</tr>
<tr>
<td>Mongolia</td>
<td>0.332</td>
<td>13.95</td>
<td>900</td>
<td>60.95</td>
</tr>
<tr>
<td>South-East Asia (SEA)</td>
<td>79,780</td>
<td>16.015</td>
<td>178,265</td>
<td>26.200</td>
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<tr>
<td>Indonesia</td>
<td>9,304</td>
<td>4.46</td>
<td>70,442</td>
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<tr>
<td>Lao People’s Democratic Republic</td>
<td>0.302</td>
<td>5.76</td>
<td>1,040</td>
<td>14.38</td>
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<tr>
<td>Malaysia</td>
<td>12,941</td>
<td>57.11</td>
<td>2,711</td>
<td>-6.16</td>
</tr>
<tr>
<td>Myanmar</td>
<td>0.337</td>
<td>0.74</td>
<td>16,028</td>
<td>30.49</td>
</tr>
<tr>
<td>Philippines</td>
<td>20,764</td>
<td>27.20</td>
<td>13,546</td>
<td>6.53</td>
</tr>
<tr>
<td>Thailand</td>
<td>28,538</td>
<td>45.80</td>
<td>23,053</td>
<td>29.34</td>
</tr>
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<td>Timor-Leste</td>
<td>0.071</td>
<td>1.42</td>
<td>-0.001</td>
<td>4.26</td>
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<tr>
<td>Viet Nam</td>
<td>7,522</td>
<td>9.82</td>
<td>51,447</td>
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<td>South and South-West Asia (SSWA)</td>
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<td>11.249</td>
<td>244,625</td>
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<td>7.50</td>
<td>14,132</td>
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<tr>
<td>Bhutan</td>
<td>0.096</td>
<td>17.16</td>
<td>0.319</td>
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<tr>
<td>India</td>
<td>59,796</td>
<td>5.78</td>
<td>161,695</td>
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<td>57.20</td>
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<td>Maldives</td>
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<td>Pakistan</td>
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<td>26,971</td>
<td>11.52</td>
</tr>
<tr>
<td>Sri Lanka</td>
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<td>28.70</td>
<td>6,234</td>
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<tr>
<td>Turkey</td>
<td>38,807</td>
<td>62.30</td>
<td>12,398</td>
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<tr>
<td>North and Central Asia (NCA)</td>
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<td>45.871</td>
<td>29,984</td>
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<td>Armenia</td>
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<td>0.944</td>
<td>33.25</td>
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<td>Azerbaijan</td>
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<td>42.40</td>
<td>3.197</td>
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<tr>
<td>Georgia</td>
<td>1.122</td>
<td>25.22</td>
<td>0.755</td>
<td>25.24</td>
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<tr>
<td>Kazakhstan</td>
<td>5.488</td>
<td>36.76</td>
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<tr>
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<td>0.870</td>
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<td>Russian Federation</td>
<td>85,809</td>
<td>58.29</td>
<td>4,095</td>
<td>4.10</td>
</tr>
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<td>Tajikistan</td>
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<td>Turkmenistan</td>
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<td>Uzbekistan</td>
<td>1.986</td>
<td>8.17</td>
<td>4.224</td>
<td>11.67</td>
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</table>
### Table A.2. (continued)

<table>
<thead>
<tr>
<th>Subregion</th>
<th>People living between $5.50-$21.70 per day (millions)</th>
<th>Percentage share of population (%)</th>
<th>Absolute change in number of people</th>
<th>Percent-age point change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific</td>
<td>1.220</td>
<td>2.437</td>
<td>4.654</td>
<td>7.17</td>
</tr>
<tr>
<td>Fiji</td>
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<td>0.466</td>
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<td>Kiribati</td>
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<td>0.030</td>
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<td>1.562</td>
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<td>Samoa</td>
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<td>0.107</td>
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<td>Solomon Island</td>
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<td>0.089</td>
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<td>Tuvalu</td>
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<td>0.005</td>
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<td>54.46</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>0.056</td>
<td>0.071</td>
<td>31.15</td>
<td>27.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>482.346</strong></td>
<td><strong>1 681.928</strong></td>
<td><strong>13.25</strong></td>
<td><strong>39.16</strong></td>
</tr>
</tbody>
</table>

**Source:** Author’s elaboration based on PovcalNet: the online tool for poverty measurement developed by the Development Research Group of the World Bank.
REFERENCES


Borrower overindebtedness is a serious issue faced by the microfinance industry globally. In that regard, the purpose of the present article is to identify the extent and determinants of borrower overindebtedness among microfinance borrowers.

For this study, the concept of overindebtedness is approached with the help of a scientifically estimated poverty line level of income by a government agency, and then the results are compared with the World Bank recommended poverty line of $1.90 per capita per day. A quantitative methodology is followed using a survey design covering 210 borrowing households in two districts from the state of Tamil Nadu in India.

The findings of the study indicate that approximately 57 per cent of the sample respondents are overindebted. Results of the binomial logistic regression show that adverse economic shocks, low household income, number of credit arrangements contracted by the household and quantum of borrowing from informal sources increase the likelihood of a household being overindebted. Comparison with the World Bank recommended poverty line shows large similarities.

Accordingly, the study points to the need to prioritize income generation schemes rather than credit distribution schemes as an instrument of social policy.

**JEL classification**: C93, C51, D14, D92, I31

**Keywords**: microfinance, micro credit; overindebtedness, poverty line

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I. INTRODUCTION

The microfinance industry has expanded at a rapid pace globally since the turn of the century, aided by a favourable policy and institutional environment. Industry sources estimate that as at the end of 2013, approximately 3,000 microfinance institutions around the world had reached out to 211 million borrowers (Microcredit Summit Campaign, 2015). This impressive growth has not been achieved without its own trade-offs and risk factors (Reichert, 2018). Significant among them is the situation of overindebtedness faced by the borrowing households (Centre for the Study of Financial Innovation, 2012; Schicks and Rosenberg, 2011; Guérin, Morvant-Roux and Villarreal, 2013).

Rigorous and systematic studies of the situation of overindebtedness, which facilitate firm and effective policy intervention, have yet to emerge, barring a couple of exceptions (Schicks, 2013a; Ray, Mahapatra and Nath, 2019). Researchers encounter various constraints in designing and implementing scientifically sound studies, primarily because of the measurement issues associated with the concept of overindebtedness. The multifaceted nature of the concept inhibits use of simple and straightforward measures to represent it (Betti and others, 2007; European Commission, 2008).

For the present paper, this issue is addressed with a unique feature of the Indian microfinance market, namely the availability of a scientifically estimated poverty line primarily intended to facilitate policy implementation by the government. Poverty line represents the estimated minimum level of income needed to secure the necessities of life. For this paper, borrowing households whose disposable income after meeting the monthly debt repayment commitments falls below poverty line income are deemed to be overindebted. This is the first attempt to analyse overindebtedness using an objective and publicly available measure, such as the poverty line level of income.

Using a unique data set of 210 borrowing households spread across two districts in Tamil Nadu, a state in Southern India, it was found that approximately 57 per cent of the borrowing households were overindebted. Among the factors that caused a household to be overindebted, household income, adverse economic shocks, number of credit arrangements and borrowing from informal sources were found to be significant determinants. Borrowings from microfinance institutions and the fees and interest charged by them were not found to be significantly influencing overindebtedness.

The rest of the paper is divided as follows. The next section gives a brief review of the literature dealing with overindebtedness, providing a rationale for the choice of the measure of identification of overindebtedness. In the subsequent section, the hypotheses, the empirical model and the variable definitions are set out, followed
by a description of the sample and the data. A discussion of the results of empirical tests follows that section and the last section concludes with policy implications and limitations of the study.

II. LITERATURE REVIEW AND A CONCEPTUAL FRAMEWORK FOR OVERINDEBTEDNESS

Attempts to define overindebtedness have involved reviewing the concept from theoretical and empirical perspectives. From a theoretical perspective, theories explaining consumption behaviour do not allow any level of borrowing to be termed as overindebtedness (Betti and others, 2007). Later research on models, however, allowing for departure from rationality of agents and complete information, permits market outcomes, such as overindebtedness. Poverty impeding cognitive function (Mani and others, 2013), problems with self-control (Schelling, 1984), tunnel vision (Williams, 1985) and excessive present bias (Frederick, Loewenstein and O’Donoghue, 2002) are examples of models predicting deviations from complete rationality.

From the empirical perspective, the concept of overindebtedness has been investigated widely from the perspective of consumer finance markets of the United States of America and Europe (Rowlinson and Kempson, 1994; Kempson, 2002; Haas, 2006; Dickerson, 2008). One of the main challenges faced by these studies is to identify an appropriate measure to represent the concept. In studies involving consumer finance, borrower overindebtedness is normally represented by a set of borrowing-related measures, such as total borrowing, borrowing to income ratio, repayment to income ratio or debt to asset ratio (Betti and others, 2007; Disney, Bridges and Gathergood, 2010).

Early studies focusing on the overindebtedness of microfinance borrowers have tried to look at the concept from different viewpoints. For instance, for some of them, a household is considered to be overindebted if it cannot meet its payment obligations arising from all the debt contracts that the household has entered into (Pytkowska and Spannuth, 2011; 2012; Maurer and Pytkowska, 2011). Schicks (2013b) defines a borrower as being overindebted if the borrower has serious problems to repay loans. To study the overindebtedness problem of Bangladesh microfinance borrowers, Khandker, Faruqee and Samad (2013) use thresholds based on ratios of household finances of the borrowers to indicate the levels of indebtedness. Indebtedness beyond a threshold are considered to reflect the state of overindebtedness. All of the above-mentioned studies lack an objective benchmark for defining overindebtedness. Some studies use client default as an outcome variable representing overindebtedness (OXERA Consulting, 2004). This measure may not be very relevant in the case of microfinance borrowers, as there are very few default cases reported in the field, except in a crisis situation (Mader, 2013).
For this paper, measuring overindebtedness is predicated on whether the monthly repayment obligations of a borrowing household push the household below the poverty line level of consumption. To ensure the effectiveness of targeted subsidies for the poor, the Government of India tries to identify a certain level of monthly per capita consumption expenditure that can meet the expenses required for the absolute necessities of life and livelihood. Households earning an income below this monthly per capita consumption expenditure level are deemed to be living below the poverty line. The latest attempt in a series starting from 1979 has put this expenditure at 972 Indian rupee (Rs) ($12) in rural areas and Rs 1,407 in urban areas based on the 2011/12 financial year prices (India Planning Commission, 2014).

This poverty line threshold is used in this paper to identify whether a household is overindebted. The identification strategy is based on the condition that after deducting the loan repayments, does the monthly disposable income of the households fall below the income required to maintain the poverty line level of consumption, adjusted for inflation? If it falls below the level, the household is considered to be overindebted, otherwise not. This approach ensures objectivity of measurement of overindebtedness because it captures the negative consequences of having to live below the poverty line by virtue of having excessive debt. Other measures of overindebtedness use thresholds of ratios based on income or expenditure, but they may not capture this consequence, if the denominator is large. Subjective measures of overindebtedness based on experiences of sacrifices may be hampered by the weakness of differences in borrowers’ perceptions as to what constitutes a sacrifice and how acceptable those sacrifices are, based on local contexts and individual borrower characteristics. The identification strategy attempts to build on the above.

III. HYPOTHESIS, VARIABLES AND EMPIRICAL MODEL FOR ESTIMATION

Hypothesis

In a survey of evidence related to overindebtedness among microfinance borrowers in various rapidly growing markets of microfinance, Schicks and Rosenberg (2011) identify three broad categories of factors affecting borrower indebtedness, namely environmental factors, borrower-related factors and lender-related factors.

Among the environmental factors, adverse expenditure, and income shocks and uncertainty with respect to the income sources of the borrowers are expected to have a significant influence on levels of indebtedness. In studies of indebtedness using the British Household Panel Survey, Disney, Bridges and Gathergood (2008) allude to the role of adverse economic shocks in developing overindebtedness. Perhaps
the most direct influence of adverse shocks on indebtedness has been identified
by Khandker, Faruqee, and Samad (2013), in which the authors find a significant
marginal influence of adverse shocks (such as death of a family member, losses in
an income-generation activity, natural calamities and other types of financial losses)
on various levels of indebtedness of the borrower households. Hulme (2007) also
posits that because of circumstances beyond their control (such as sickness, flood,
drought and theft), lack of skills and knowledge or taking bad decisions, a proportion
of poor borrowers encounters great difficulties in repaying loans.

In the consumer finance literature, the strong relationship between the situational
aspects of the individual’s life and his or her risk for developing indebtedness has
been confirmed by Stone and Maury (2006). Khalily and Faridi (2011) supports this
argument by pointing out a high correlation between income shocks and multiple
borrowing among Bangladeshi borrowers. Evidences for uncertain incomes resulting
in higher levels of debt among microfinance borrowers are also given in Pytkowska
and Spannuth (2011; 2012), and Schicks (2013a).

Accordingly, hypotheses related to environmental factors can be the following:

**H1a: Occurrence of adverse economic shocks in the borrower households
during the previous 12 months will be positively and significantly associated
with overindebtedness.**

**H1b: Income uncertainty of the borrower households will be positively and
significantly associated with overindebtedness.**

Significant association has been found between low income and overindebtedness
in consumer finance and microfinance literature. Some of the examples are the
following: Bridges and Disney (2004); and Disney, Bridges and Gathergood (2008).
In the specific context of microfinance, a negative relationship between income and
repayment problems was observed by Al Mamun and others (2011) and Oke, Adeyemo
and Agbonlahor (2007). Similarly, evidence of the influence of household wealth in
indebtedness is given by Disney, Bridges and Gathergood (2010), Godquin (2004),
Sharma and Zeller (1997) and Schicks (2013a). A significant portion of household wealth
in the case of most microfinance borrowers constitutes a residential house property
in which the borrowing household resides. This property can serve as collateral for
informal borrowing, thereby increasing the borrowing capacity of the household. The
resulting increase in borrowing can, therefore, lead to overindebtedness.

A distinction needs to be made between adverse economic shocks and expected
large lump-sum shocks. The former is totally unplanned in nature whereas the latter
can be planned, but it is scarcely avoidable in a social context (Schicks, 2013a).
Large lump-sum shocks take the form of large expenses, such as marriage of a family
member or close relative, child birth, and family ceremonies such as ear piercing or a puberty (coming of age) ceremony. In a survey carried out among poor rural households in the southern Arcot region of the Indian state of Tamil Nadu, focusing on household socioeconomic characteristics and borrowing practices, ceremonies were found to be the most important cause associated with borrower overindebtedness, highlighting the influence of planned lump-sum non–discretionary expenditure of the household on indebtedness (Guérin and others, 2011; Guérin, Morvant-Roux and Villarreal, 2013).

Regarding household expenditures, the acceptable argument about a priory causality can be, as borrowing increases, expenses of the household also increase. The recent behavioural research among microcredit borrowers provides reason to suspect otherwise. Two behavioural biases, scarcity and present based preference, are found to greatly influence the borrower response towards microfinance and thus act as significant forces on the demand side (Mullainathan and Shafir, 2013). The task of making day-to-day spending decisions in the face of scarcity and volatility of income sources consumes a significant cognitive band width available to the poor people. This results in a tunnelled focus in managing their immediate scarcity, which, in turn, translates into a present preference for cash to meet the immediate and important needs. Accordingly, scarcity created by severe limitation in available resources and importance, and immediacy of household expenses can lead to increased borrowing. Though there are no studies examining the direct influence of household expenditure on borrowing outcomes, Schicks (2013a) has found a significant association between non-productive uses of a loan and overindebtedness.

Therefore, the hypotheses on borrower related factors can be the following:

**H2a:** Household income will be negatively and significantly associated with overindebtedness.

**H2b:** Value of household assets will be positively and significantly associated with overindebtedness.

**H2c:** Planned lump-sum non–discretionary expenditures shocks faced by the borrower households during the previous 12 months will be positively and significantly associated with overindebtedness.

**H2d:** Recurring and unavoidable household expenses of the borrower households will be positively and significantly associated with overindebtedness.

Studies examining the impact of microfinance participation have also noted the increase in the level of indebtedness resulting from programme participation (Banerjee and others, 2015; Pitt and Khandker, 1998). The analysis conducted by Khandker, Faruquee and Samad (2014) shows that various household-level programme participation variables of the borrower households are found to be unequivocally associated
with indebtedness outcomes of the households. Indirect evidence for size of the loans having a negative impact on borrowing outcomes is also indicated in Godquin (2004) and Sharma and Zeller (1997). Apart from programme participation, the role of multiple source loans in triggering a repayment crises has been widely observed in the context of microfinance (Krishnaswamy, 2007; Puliyakot and Pradhan, 2015).

One of the allegations against microfinance institutions leading up to a crisis in the state of Andhra Pradesh\(^1\) in India in 2006 is the charging of exorbitant rates of interest by the microfinance institutions operating in the state. Not only that they charge absolutely high interest rates (upwards of 20 per cent), but their practices, which included forced savings, applying a flat rate method and adding service and other charges, over and above the annual interest rate, further exacerbates the cost. This is leading to an overall high cost of borrowing for the poor, making microfinance institutions’ rates appear to be almost usurious (Shylendra, 2006). Using a sample of borrowers from Ghana, Mensah (2013) finds that there is a significant relationship between interest rates and borrower defaults. In addition, Abbink, Irlenbusch and Renner (2006) and Hulme (2007) confirm the negative relationship between high borrowing cost and adverse borrower outcomes in the context of microfinance.

Contrary to the assumptions in theoretical literature on microfinance, not all microfinance loans are used for productive purposes. Karlan and Zinman (2011) find no evidence of increasing business investments as a result of expansion of microcredit access to second generation borrowers (individual liability loans) in the outskirts of Manila. Instead, the authors observe a diffused effect, with substitution away from labour and into education and substitution away from insurance even as overall access to risk-sharing mechanisms increases. Such diffused effects are also observed by Banerjee and others (2015) in a similar study in the state of Andhra Pradesh in India. At least in the immediate future, such borrowings may put a strain on the finances of the borrowing households. This may be because the view in some studies, such as those conducted by Vogelgesang (2003) and Schicks (2013a), consider non-productive loans as a risk factor on the borrowing outcomes of the household.

Accordingly, the hypotheses on lender-related factors can be the following:

**H3a:** Total amount of loans contracted by the borrower from microfinance institutions will be positively and significantly associated with the borrower’s level of overindebtedness.

---

\(^{1}\) Pursuant to the allegations of unethical lending practices and coercive collection practices employed by many microfinance lenders, the state government of Andhra Pradesh enacted a law referred to as the Andhra Pradesh Microfinance Institutions (regulation of money lending) Act in October 2010. As a consequence, microfinance lenders faced severe deterioration in lending portfolios and substantial decrease in new lending. For more details, please see Ghate (2007).
H3b: Total amount of loans contracted from informal sources, such as money lenders, friends and relatives, will be positively and significantly associated with the borrower’s level of overindebtedness.

H3c: Multiple source loans (number of credit arrangements) contracted by the borrower will be positively and significantly associated with overindebtedness.

H3d: Rates of interests and other charges imposed by microfinance institutions will be positively and significantly associated with overindebtedness.

H3e: Amount of loans used for consumption purposes will be positively and significantly associated with overindebtedness.

Variable definitions

External factors: On the dependant variables side, adverse economic shocks and uncertainty of income faced by the borrowing households represent external factors.

Adverse economic shocks: Both income and expenditure shocks jointly constitute the variable adverse economic shocks. For the purpose of capturing the variable, respondents are asked to narrate any such incidence of a loss of income or unforeseen heavy expenditure faced by the household during the 12 months period prior to the survey. Presence or absence of shocks are captured dichotomously.

Income uncertainty: A household’s income is considered to be facing uncertainty if all the earning members in the household are casual labourers in urban areas, agricultural labourers in semi-urban areas or in a business or profession with a high seasonality element, such as making flower garlands. This variable is also captured as a dichotomous variable.

Borrower-related factors (demand side): Household annual income, annual expenses, household wealth in the form of asset holdings and planned lump-sum non-discretionary expenses constitute the variables studied under borrower related-factors.

Household income is the annual income of the household, earned by all the earning members of the household together. Annual household income has two components: monthly income; and lump-sum income earned annually, such as a bonus, scholarships or grants received from governments.

Annual household expenses include all the expenses incurred by the household during the past 12 months prior to the survey.

Planned lump-sum non–discretionary expenditures include expenses that are foreseeable in nature, such as college fees, daughter’s marriage, and house construction expenses.
Determinants of overindebtedness among microfinance borrowers

Value of assets includes the aggregate value of all items of assets owned by the household that can have a resale value. Consumer durables are not counted as part of assets. This is in line with the treatment accorded to consumer durables in the National Sample Survey of indebtedness in India (India, Ministry of Statistics and Programme Implementation, 2014).

Lender-related factors (supply side): Total number of loans availed by the household from various credit sources, the respective sources of credit, microfinance institution fees and interest, and lending for consumption form part of lender-related factors.

Borrowings from microfinance institutions are represented by the aggregate amount borrowed by the respondent household from various microfinance institutions and continues to repay as on the date of the survey.

Loans from money lenders, friends and relatives: This variable includes loans from all informal sources, except gold loans from informal sources. As gold loans are fully collateralized, it does not obligate the borrower to make contractual periodical payments to the lender. Because of the accumulation of interest if the loan outstanding equates with the market value of gold, the lender enforces collateral. As there are no cash outflows on account of the loan, it does not affect the dependant variable either. Accordingly, the exclusion forms the variable.

Number of credit arrangements represents the number of loans availed by the household from various sources. It serves as a direct measure of multiple loans.

Microfinance institutions fees and interest is the weighted average fees and interest that the household has to pay in the current loan cycle to different microfinance institutions from whom it has borrowed. Most households have borrowed from more than one microfinance institution with different annual percentage rates. Effective annual percentage rates, including different fees and other incidental charges charged by different microfinance institutions are reported by MF Transparency (www.mftransparency.org) and are available in the public domain.

Lending for consumption. End-use purposes of the loans are captured by asking how the loan proceeds are actually spent by the households, irrespective of the stated purpose to the lending agency. Loans not used for either income generation purposes or asset creation purposes, such as buying gold or real estate, are considered as consumption loans. Consumption loans are considered under the lender-related category because the regulations and theory supporting microfinance lending do not condone lending by microfinance institutions for consumption purposes. Despite this, microfinance institutions' acquiescence to the widespread usage of loans for consumption purposes can only be attributed to the growth imperatives of the lenders, making it a supply-driven factor. This has contributed to a large divergence between the stated purpose and actual utilization of the loan at the borrower level (Karlan and Zinman, 2011).
Demographic factors: Demographic factors included in the study are size of the household, age and education of the household head, occupational profile of the household head and dependants' ratio of the household. Size of the household is measured by number of people who permanently stay in a homestead. Education of the household head is measured as a three-level ordinal variable consisting of primary school and below, up to completion of secondary school and above secondary school. Occupational profile has three nominal categories, consisting of business or self-employed households, regular wage or salaried households and casual labourers. Categorization of the household is carried out on the basis of the occupational profile of the chief earner of the family.

Empirical model for estimation

As the empirical analysis is performed by classifying borrowers into two categories, overindebted and not overindebted borrowers, the dependant variable assumes a categorical nature. Accordingly, logit models of regression are used, as they are a more appropriate specification than ordinary least squares when the dependant variable involved is categorical and the assumption of normality is violated. For a linear combination of explanatory variables, logit models ascertain the probability of an outcome variable of interest. In the present study, the specific problem requires ascertaining the probability (odds) that a household will fall in a certain category of indebtedness, given a linear combination of explanatory variables.

For a binary outcome variable, a binary logistic regression model is fitted in which a set of regression coefficients are estimated that explains the probability of a binary outcome of interest, which is in the form:

\[ Y = \ln \left( \frac{\text{Prob(Event)}}{1-\text{Prob(Event)}} \right) = \alpha + \beta_1 x + \beta_2 m + \beta_3 n + \beta_4 p + \varepsilon \]  

(1)

Where:

- \( Y \) = log odds of a household being overindebted;
- \( x \) = a vector of external factors;
- \( m \) = a vector of borrower-related factors;
- \( n \) = a vector of lender-related factors; and
- \( p \) = demographic factors;

as defined in the previous section.
IV. SAMPLE, DATA AND FINDINGS

The methodology used to address the main research questions is a primary sample survey among microfinance borrowers conducted between June 2015 and December 2015. The respondent set constitutes borrowers from microfinance institutions, who have been borrowing from such institutions for at least the past three years. The sampling technique is a simple random sampling from two districts in the state of Tamil Nadu in southern India. South India is the most rapidly growing microfinance market in the Indian subcontinent (Sa-Dhan, 2015). Within South India, Tamil Nadu is one of the largest and most rapidly growing microfinance markets in India. Within the state of Tamil Nadu, two districts are selected for the specific characteristics of the districts and their relevance for the microfinance industry. The choice of urban and semi-urban borrowers of microfinance is made in line with the shifting focus of Indian microfinance from predominantly rural-focused lending to more rapid coverage of the urban areas in the recent past, as reported by Sa-Dhan, an association of development finance institutions in India.

Table 1. Sample statistics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overindebtedness</td>
<td>1 = overindebted</td>
<td>0.57</td>
<td>0.496</td>
</tr>
<tr>
<td></td>
<td>0 = not overindebted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total value borrowed</td>
<td>Total value of loans borrowed from all sources</td>
<td>105 993.57</td>
<td>109 003.86</td>
</tr>
<tr>
<td>Adverse economic shocks</td>
<td>Yes = 1, No = 0</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Income uncertainty</td>
<td>Yes = 1, No = 0</td>
<td>0.59</td>
<td>0.49</td>
</tr>
<tr>
<td>Annual income</td>
<td>In Indian rupees</td>
<td>169 653.39</td>
<td>95 284.45</td>
</tr>
<tr>
<td>Asset holding</td>
<td>In Indian rupees</td>
<td>254 540.95</td>
<td>29 914.68</td>
</tr>
<tr>
<td>Planned lump-sum non-discretionary expenditures</td>
<td>In Indian rupees</td>
<td>40 213.10</td>
<td>68 635.65</td>
</tr>
<tr>
<td>Annual household expenses</td>
<td>In Indian rupees</td>
<td>163 723.64</td>
<td>102 692.74</td>
</tr>
<tr>
<td>Total microfinance institutions borrowing</td>
<td>In Indian rupees</td>
<td>42 922.62</td>
<td>25 928.37</td>
</tr>
<tr>
<td>Loans from money lenders, friends and relatives</td>
<td>In Indian rupees</td>
<td>27 570.00</td>
<td>72 692.00</td>
</tr>
<tr>
<td>Total number of loans per household</td>
<td>Absolute number</td>
<td>3.09</td>
<td>1.35</td>
</tr>
<tr>
<td>Microfinance fees and interest</td>
<td>In Indian rupees</td>
<td>11 200.48</td>
<td>5 115.46</td>
</tr>
<tr>
<td>Lending for consumption</td>
<td>In Indian rupees</td>
<td>70 303.10</td>
<td>70 246.37</td>
</tr>
</tbody>
</table>
Table 1. (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household size</td>
<td>Number of members</td>
<td>3.79</td>
<td>1.20</td>
</tr>
<tr>
<td>Dependant ratio</td>
<td>No. of non-working members ÷ No. of working members</td>
<td>1.44</td>
<td>1.32</td>
</tr>
<tr>
<td>Household head age</td>
<td>Age in years</td>
<td>43.47</td>
<td>10.79</td>
</tr>
<tr>
<td>Household head education</td>
<td>Up to 5 years = 1, 5 to 10 years = 2, above 10 years = 3</td>
<td>1.79</td>
<td>0.62</td>
</tr>
<tr>
<td>Occupation: business/ self-employed</td>
<td>Yes = 1, No = 0</td>
<td>0.14</td>
<td>0.35</td>
</tr>
<tr>
<td>Occupation: regular wage/ salaried employee</td>
<td>Yes = 1, No = 0</td>
<td>0.27</td>
<td>0.44</td>
</tr>
<tr>
<td>Occupation: casual labourer</td>
<td>Yes = 1, No = 0</td>
<td>0.59</td>
<td>0.49</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>210</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows the sample statistics of the variables mentioned above. Fifty-seven per cent of borrowers were living below the poverty line level of income after meeting the loan repayment commitments. The national average of people living below the poverty line during the year 2011/12 was 21.9 per cent (India, 2018). In the table, the measure of total borrowing is the aggregate value at disbursal of all the outstanding loans at the date of survey.

Fifty per cent of the respondent households reported to have faced some form of income or expenditure shocks during a period of one year prior to the survey. This observation is more or less corroborated by the incidence of income uncertainty, which was also high, at the level of 59 per cent. Seen in the context of occupational profile, in which 59 per cent of the respondents fell in the category of casual labourers, the high incidence of income uncertainty appeared to be supported by other sample characteristics.

A lion’s share of annual income for the sample respondents in the present study is derived from the monthly incomes only. The observed figure of approximately Rs 170,000 per annum works out approximately to Rs 15,000 per month, or an average of Rs 500 per day per household. This is well above the average wage levels observed for urban workers in the latest National Sample Survey of Households, and hence will not affect the conclusions of the study even if there are measurement errors. Value of asset holding exhibit high levels of volatility. Planned lump-sum non–discretionary expenditures of approximately Rs 40,000 is consistent with the annual income and shows the conservative nature of the households. Annual household expenses of
approximately Rs 163,000 is below the annual income of Rs 170,000, but it shows the meagre surplus available with the borrowing households after meeting the necessary household commitments. This is strongly supportive of the arguments put forward by Guérin, Roesch and Kumar (2011) and Mullainathan and Shafir (2013) that scarcity can be a powerful force pushing people towards excess borrowing.

Among the lender-related factors, average microfinance institution borrowing of approximately Rs 42,000 is well within the regulatory limits of Rs 50,000, which was prevalent at the time of the survey. One hundred and eleven households in the sample have reported to have borrowings from more than one microfinance institution, out of which 88 have only two loans outstanding. The number of loans for the remaining 23 households range from three to five. This shows that violation of regulatory norm, though not completely absent, does not also occur in a large scale. The exceptions are mainly because of multiple borrowers in the same households, simultaneous memberships of self-help groups and joint liability microfinance institutions groups, and the existence of both internal and bank-linked loans in the case of a handful of self-help group clients.

The average value of consumption loans is much greater than that for microfinance institution loans, implying that a good share of credit from sources other than from microfinance institutions are directed towards consumption purposes. This is consistent with the narrow difference observed between household income and household expenses, as households facing a shortage of income will be forced to avail credit to bridge the gap. The average number of loans, at 3.09, indicates that apart from microfinance institution loans, most borrowers have accessed at least one more source of loan, point to the presence of multiple borrowing. Average microfinance institution fees and interest of approximately Rs 11,200 is consistent with the average borrowing size of Rs 42,000, implying an annual percentage rate of approximately 26.67 per cent.

Demographic features of the sample show that a representative borrower profile has an average age of below 45, with average education levels between the primary and secondary levels and the average occupational profile tending towards casual labourers. Average educational attainment of 1.79 shows that most of the sample respondent household heads have not completed secondary school education, and have dropped out of schools between the primary and secondary levels. This goes well with another sample feature of the employment profile of the respondent households. The chances of a household head of the borrower household being a regular wage or salaried employee is only 29 per cent, whereas the chances for being a casual labourer is 59 per cent.
V. RESULTS AND DISCUSSION

Based on the above sample features, below is the result and a discussion of the logistic regression analysis of the binary dependant variable, overindebtedness.

Table 2. Result of binary logistic regression on overindebtedness

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Coefficient</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse economic shocks</td>
<td>1.709***</td>
<td>5.523</td>
</tr>
<tr>
<td></td>
<td>(0.601)</td>
<td></td>
</tr>
<tr>
<td>Income uncertainty</td>
<td>-0.298</td>
<td>0.742</td>
</tr>
<tr>
<td></td>
<td>(0.614)</td>
<td></td>
</tr>
<tr>
<td>Annual household income</td>
<td>-6.665***</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(1.197)</td>
<td></td>
</tr>
<tr>
<td>Household asset holding</td>
<td>0.082</td>
<td>1.085</td>
</tr>
<tr>
<td></td>
<td>(0.096)</td>
<td></td>
</tr>
<tr>
<td>Panned lump-sum non-discretionary expenses</td>
<td>-0.002</td>
<td>0.998</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td></td>
</tr>
<tr>
<td>Annual household recurring expenses</td>
<td>-0.669</td>
<td>0.512</td>
</tr>
<tr>
<td></td>
<td>(0.913)</td>
<td></td>
</tr>
<tr>
<td>Total microfinance borrowing</td>
<td>-0.132</td>
<td>0.876</td>
</tr>
<tr>
<td></td>
<td>(0.104)</td>
<td></td>
</tr>
<tr>
<td>Total borrowings from money lenders, friends and relatives</td>
<td>0.412***</td>
<td>1.510</td>
</tr>
<tr>
<td></td>
<td>(0.117)</td>
<td></td>
</tr>
<tr>
<td>Total number of loans per household</td>
<td>1.397***</td>
<td>4.043</td>
</tr>
<tr>
<td></td>
<td>(0.306)</td>
<td></td>
</tr>
<tr>
<td>Microfinance institution fees and interest</td>
<td>-0.702</td>
<td>0.496</td>
</tr>
<tr>
<td></td>
<td>(0.651)</td>
<td></td>
</tr>
<tr>
<td>Total value of consumption loans</td>
<td>0.046</td>
<td>1.047</td>
</tr>
<tr>
<td></td>
<td>(0.063)</td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td>1.900***</td>
<td>6.686</td>
</tr>
<tr>
<td></td>
<td>(0.446)</td>
<td></td>
</tr>
<tr>
<td>Dependant ratio</td>
<td>0.630**</td>
<td>1.878</td>
</tr>
<tr>
<td></td>
<td>(0.317)</td>
<td></td>
</tr>
<tr>
<td>Household head age</td>
<td>0.060**</td>
<td>1.062</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td></td>
</tr>
<tr>
<td>Household head education</td>
<td>1.248**</td>
<td>3.483</td>
</tr>
<tr>
<td></td>
<td>(0.486)</td>
<td></td>
</tr>
</tbody>
</table>
Determinants of overindebtedness among microfinance borrowers

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Coefficient</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation: business/self-employed</td>
<td>0.856</td>
<td>2.354</td>
</tr>
<tr>
<td></td>
<td>(0.930)</td>
<td></td>
</tr>
<tr>
<td>Occupation: casual labourer</td>
<td>0.543</td>
<td>1.721</td>
</tr>
<tr>
<td></td>
<td>(0.660)</td>
<td></td>
</tr>
<tr>
<td>Cox and Snell R square</td>
<td>0.581</td>
<td></td>
</tr>
<tr>
<td>Negelkerke R square</td>
<td>0.781</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>210</td>
<td></td>
</tr>
</tbody>
</table>

Note: Standard errors in parenthesis. *, **, *** denote significance at 10 per cent, 5 per cent and 1 per cent, respectively.

Chi-square test of the model and Hosmer and Lemeshow test indicate good model fit with P values of .00 and .969, respectively. In approximately 88.6 per cent of the cases, the model’s predictions are consistent with the data set. Variables entered into the model with significance include variables from all three factors, namely external, borrower and lender-related factors. Among the demographic control factors, household size, dependant ratio, age and education of the household head are significant.

Under environmental factors, adverse economic shocks are statistically significant at the 1 per cent level. Income uncertainty is not found to be significant. The coefficient of adverse economic shocks suggests that a household that had faced an economic shock during the immediately preceding twelve months is more than 5.5 times as likely to be overindebted than a household not subjected to such misfortunes.

On the borrower-related factors, annual income is statistically significant under the 1 per cent level. It has to be noted that the other variables, such as value of assets and planned lump-sum non–discretionary expenditures, do not exert any influence over pushing a household to overindebtedness, suggesting that the outcome may not be the result of conscious actions by the households. Instead, in the course of managing day-to-day finances, a poor household may be forced to borrow to meet liquidity requirements, which over a period of time may push the household to a state of overindebtedness.

The supply side factors that are found to influence overindebtedness significantly are the total number of credit arrangements the household has contracted and the total amount of borrowings from informal sources, which include money lenders, friends and relatives. The odds ratio for the total number of credit arrangements suggests that, within the sample, one more loan taken by the household from any sources will increase the likelihood of the household being overindebted by about
four times. Many crises involving the microfinance industry in recent years in many of its growing markets is attributed to the practice of multiple lenders targeting the same borrowers. This finding further supports the suspected link between multiple borrowings and later repayment crises through the channel of overindebtedness.

Also noteworthy is the finding that an increase in borrowings from informal sources by Rs 10,000 raises the likelihood of a household being overindebted by 1.5 times is not applicable for borrowing from microfinance institutions. Recent regulatory interventions in the industry in response to crises experienced in certain states of India, especially in the form of regulating the maximum number of loans and the amounts of credit that can flow to each borrower, and the active role played by credit information bureaus could have contributed to this finding in no small measures. This, however, has to be seen in the context of the significance of other informal sources of borrowing in influencing overindebtedness. Despite the rapid growth of microfinance over the past decade, the marginalization of informal sources of credit, which often come with punitive terms, appears to be limited. These findings with respect to the environmental, lender-related and borrower-related factors influencing overindebtedness are broadly in line with the extant literature on the subject (Schicks, 2013a; Guérin, Morvant-Roux and Villarreal, 2013; Khandker, Faruqee and Samad, 2014).

Because the estimates of the poverty line level of expenditure continue to be highly debatable, the results are tested with a different poverty line estimated by the World Bank for the purposes of international comparison. Using purchasing power parity-based exchange rates, the World Bank has estimated the international poverty line at $1.90 per day based on 2011 prices (World Bank, 2014). The Indian rupee equivalent of this is Rs 27.87, using a purchasing power parity-based exchange rate of Rs 14.67 per dollar. Adjusted for inflation between 2011 and 2015, which is the survey date, this translates into Rs 38.46 per capita per day. Results of the regression using this poverty threshold are given in table 3. As per this measure, approximately 31 per cent of the microfinance borrowers are overindebted. While the Chi-square test for the model shows a p-value of .000, the Hosmer and Lemeshow test shows a p-value of .001, giving conflicting results on model fit. As seen from the table, however, the results converge on many parameters, including, for example, household income, number of credit arrangements and loans from money lenders, friends and relatives.

One key difference in this regression is the negative influence of annual household living expenses on the odds of household being overindebted. With every Rs 100,000 increase in the annual living expenses, the odds ratio for being overindebted falls by approximately 92 per cent. Contrary to the hypothesis, this result may be suggestive of households cutting down on living expenses as a result of increasing overindebtedness and may point to the material sacrifices the overindebted families may go through.
This has been considered as one of the material sacrifices overindebted families undergo, in studies of overindebtedness measured on the basis of sacrifices (Schicks, 2013a; Ray, Mahapatra and Nath, 2019).

### Table 3. Results of binary logistic regression on overindebtedness, using World Bank estimates of poverty line

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Coefficient</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse economic shocks</td>
<td>1.070**</td>
<td>2.915</td>
</tr>
<tr>
<td></td>
<td>(0.511)</td>
<td></td>
</tr>
<tr>
<td>Income uncertainty</td>
<td>0.335</td>
<td>1.398</td>
</tr>
<tr>
<td></td>
<td>(0.580)</td>
<td></td>
</tr>
<tr>
<td>Annual household income</td>
<td>-4.573***</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.967)</td>
<td></td>
</tr>
<tr>
<td>Household asset holding</td>
<td>0.114</td>
<td>1.121</td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td></td>
</tr>
<tr>
<td>Panned lump-sum non-discretionary expenses</td>
<td>0.043</td>
<td>1.044</td>
</tr>
<tr>
<td></td>
<td>(0.0544)</td>
<td></td>
</tr>
<tr>
<td>Annual household recurring expenses</td>
<td>-1.711**</td>
<td>0.181</td>
</tr>
<tr>
<td></td>
<td>(0.863)</td>
<td></td>
</tr>
<tr>
<td>Total microfinance institutions borrowing</td>
<td>-0.014</td>
<td>0.986</td>
</tr>
<tr>
<td></td>
<td>(0.170)</td>
<td></td>
</tr>
<tr>
<td>Total borrowings from money lenders, friends and relatives</td>
<td>0.080*</td>
<td>1.083</td>
</tr>
<tr>
<td></td>
<td>(0.042)</td>
<td></td>
</tr>
<tr>
<td>Total number of loans per household</td>
<td>1.642***</td>
<td>5.165</td>
</tr>
<tr>
<td></td>
<td>(0.340)</td>
<td></td>
</tr>
<tr>
<td>Microfinance institutions fees and interest</td>
<td>-1.166</td>
<td>0.311</td>
</tr>
<tr>
<td></td>
<td>(0.779)</td>
<td></td>
</tr>
<tr>
<td>Total value of consumption loans</td>
<td>0.136***</td>
<td>1.146</td>
</tr>
<tr>
<td></td>
<td>(0.052)</td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td>0.993***</td>
<td>2.699</td>
</tr>
<tr>
<td></td>
<td>(0.294)</td>
<td></td>
</tr>
<tr>
<td>Dependant ratio</td>
<td>0.322</td>
<td>1.380</td>
</tr>
<tr>
<td></td>
<td>(0.265)</td>
<td></td>
</tr>
<tr>
<td>Household head age</td>
<td>0.080***</td>
<td>1.083</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td></td>
</tr>
<tr>
<td>Household head education</td>
<td>1.809***</td>
<td>2.971</td>
</tr>
<tr>
<td></td>
<td>(0.492)</td>
<td></td>
</tr>
</tbody>
</table>
Table 3. (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Coefficient</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation: business/self-employed</td>
<td>0.610</td>
<td>1.840</td>
</tr>
<tr>
<td></td>
<td>(0.863)</td>
<td></td>
</tr>
<tr>
<td>Occupation: casual labourer</td>
<td>-0.546</td>
<td>0.579</td>
</tr>
<tr>
<td></td>
<td>(0.624)</td>
<td></td>
</tr>
<tr>
<td>Cox and Snell R square</td>
<td>0.581</td>
<td></td>
</tr>
<tr>
<td>Negelkerke R square</td>
<td>0.781</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>210</td>
<td></td>
</tr>
</tbody>
</table>

Note: Standard errors in parenthesis. *, **, *** denote significance at 10 per cent, 5 per cent and 1 per cent, respectively.

VI. CONCLUSIONS AND POLICY IMPLICATIONS AND LIMITATIONS

In the present study, the concept of overindebtedness among microfinance borrowers is analysed using a unique measure of overindebtedness, hitherto unused in the literature. The main findings of the study point to the possibility that households with low incomes, when hit by economic shocks, become highly vulnerable to the situation of overindebtedness. Easy availability of credit from many informal sources act as supply side forces aiding the outcome. This strongly suggests the need to prioritize policy intervention in favour of providing income-generating activities, rather than ensuring availability of credit to the targeted group. Size and cost of microfinance loans not being significant factors affecting the state of overindebtedness may be suggestive of the sufficiency of access regulations implemented in the wake of the past crises in India. Given the negative relationship observed in the regression using the World Bank poverty line between household expenses and overindebtedness, the material sacrifices undertaken by overindebted households can be an area of future research.

This study is conducted in a limited geographic area with limited participants because of time and resource constraints. In addition, poverty line level of income which is used for identification of dependant variable has certain weaknesses, such as likely measurement errors present in the expenditure data used and disproportionately large representation of affluent households in the sample size (Raveendran, 2016). Though the problem of overindebtedness is studied here in the specific context of microfinance, borrowers who are not beneficiaries of microfinance can also be affected by issues related to excessive debt burden. Further studies in overindebtedness may address these limitations.
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Determinants of overindebtedness among microfinance borrowers


FOSTERING PEACEFUL SUSTAINABLE DEVELOPMENT IN THE PACIFIC UNDER THE 2030 AGENDA

Anna Naupa and Derek Brien

The Pacific is often characterized as a subregion of relative peace because the absence of inter-State conflicts, but episodes of violence, political unrest and instability have hampered development in these island States; a “business as usual” approach to development does not guarantee that the Pacific will remain peaceful in the future. The link between peace and development is a central tenet of the 2030 Agenda for Sustainable Development, presenting an opportunity to expand on traditional concepts of development and security.

In the context of Sustainable Development Goal 16 and safeguarding development gains in the Pacific, to foster peaceful sustainable development in the subregion, development approaches need to be revisited, in particular cases in which pervasive exclusion and inequality are linked to potential drivers of conflict. In the present paper, four areas are highlighted: resource scarcity; migration and displacement; urbanization; and exclusion and inequality. Climate change is a threat multiplier that is exacerbating these development challenges. In this paper, it is proposed that for Pacific island countries, policy emphasis on strengthening institutions – both formal and informal – combined with conflict-sensitive programming will go a long way towards mitigating drivers of the factors pushing conflict and realizing the intent of Sustainable Development Goal 16 as “the peace goal”. Acknowledging the limited reach of Pacific island State institutions, many such solutions need to be implemented through informal structures. At a subregional level, revisiting the Pacific Human Security Framework 2012-2015 in the context of the 2030 Agenda and Sustainable Development Goal 16 may also offer new ways to guide and monitor peaceful development.

JEL classification: D74, E02, Q01, Q54

Keywords: sustainable development, conflict prevention, peace, institutional policy, effective institutions, governance, climate change, Pacific small island developing States

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I. INTRODUCTION

In 2015, in the Report of the High Level Independent Panel on United Nations Peace Operations, it was acknowledged that the United Nations needed to do more to address the root causes of conflict, in partnership with others, through inclusive and equitable development (High-Level Independent Panel on Peace Operations, 2015). In so doing, there was recognition that better appreciation of political economy dynamics, together with social and institutional arrangements, is critical for building bridges between development and peace. The inextricable link between peace and development is central to the 2030 Agenda for Sustainable Development and the Sustainable Development Goals. Sustainable Development Goal 16 specifically seeks to “promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels” (A/RES/70/1). Its existence highlights the importance of including peace in any measure of sustainable development. Importantly, the focus of the 2030 Agenda on sustainable development and conflict prevention extends beyond the absence of conflict or violence, taking instead a holistic consideration of the social, economic, and environmental factors that underpin peaceful and prosperous societies and the governance that either paves the way for peace and development or triggers conflict. This creates a policy window for fostering what has been termed “positive peace” (Institute for Economics and Peace, 2016).

Peace is essential for fostering and safeguarding sustainable development. The cost of pervasive conflict – violent or otherwise – is detrimental to achieving sustainable development. Similarly, development can at times promote conflict. The foundations for sustaining peace — institutions and social cohesion – are fundamental to countries’ resilience to conflict and development “shocks”. Socioeconomic inequality and exclusion dilute social cohesion and create further vulnerabilities in cases in which governance institutions are weak. Conflict-sensitive development approaches are essential for countries to realize the ambitions of all the Sustainable Development Goals, not just Goal 16, and “leave no-one behind”. These approaches must be context-driven, inclusive and holistic in pursuing socioeconomic development and environmental sustainability.

1 The preamble to the 2030 Agenda includes the determination “to foster peaceful, just and inclusive societies which are free from fear and violence”, noting that “there can be no sustainable development without peace and no peace without sustainable development” (A/Res/ 70/1).
Although the Pacific is characterized as a subregion of relative peace, its hard-won development gains remain vulnerable to the “slow violence” associated with exclusion and inequality – which may be gradual, often invisible, yet pervasive – from which societal tension and conflict can grow. There is no guarantee that the Pacific will remain peaceful under “business as usual” approach to development policy and practice. The present paper presents the case as to why policy developers, planners, and development partners focusing on the Pacific subregion must embed conflict analysis in development planning and expand the direction of policy to the structural issues of inequality and exclusion, which underlie sustained and peaceful development.

For this paper, more than 100 academic and policy papers, reports, and media articles were reviewed to assess common themes centred around peace and development in the contemporary Pacific. It provides an overview of the multiple dimensions of peace in the Pacific, and four areas requiring policy attention are highlighted: resource governance; migration and displacement; urbanization; and exclusion and inequality. The paper follows with sections on the role of climate change in exacerbating these development challenges, and the urgency for policy emphasis on strengthening Pacific institutions – both formal and informal – to realize the intention of Sustainable Development Goal 16 as “the peace goal”. It concludes with policy recommendations for Pacific island countries.

II. THE MULTIDIMENSIONAL NATURE OF PEACE IN DEVELOPMENT IN THE PACIFIC

Peace is multidimensional. In a subregion as diverse as the Pacific, comprising 19 developing island countries and territories, these dimensions are periodically captured by global indices, such as the Fragile States Index, the World Bank Worldwide Governance Indicators (specifically the political stability and absence of

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2 The concept of “slow violence” is often used to describe environmental threats that take place gradually, and often invisibly, and which challenge development gains, for example climate change. It can also be applied to political and structural contexts where masculinized politics and gender inequalities can compound insecurity.

3 The Pacific region includes the 12 Pacific island countries with a presence in the United Nations that are full members of the Economic and Social Commission for Asia and the Pacific (ESCAP): Fiji; Kiribati; Marshall Islands; Micronesia (Federated States of); Nauru; Palau; Papua New Guinea; Samoa; Solomon Islands; Tonga; Tuvalu; and Vanuatu; and the following countries and territories that are associate members of ESCAP: American Samoa; Cook Islands; French Polynesia; Guam; New Caledonia; Niue; and the Northern Mariana Islands.
violence indicator) and the Global Peace Index\(^4\) (table 1). The human development index perhaps provides the most comprehensive data set for the Pacific subregion, inclusive of human rights considerations. Even though it does not capture the broader structural and institutional policy environment relating to inequalities and exclusion, it is a useful proxy that highlights areas needing attention. In 2016, for example, the index ranked Palau 60th, while Papua New Guinea and Solomon Islands ranked 154th and 156th out of 188 countries, respectively, because of poor scores for human security and inequality.

Table 1. Multiple measures of peace but inconsistent Pacific coverage

<table>
<thead>
<tr>
<th>Global indices</th>
<th>Pacific coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corruption Perceptions Index</td>
<td>Papua New Guinea, Solomon Islands and Vanuatu</td>
</tr>
<tr>
<td>Fragile States Index</td>
<td>Fiji, Marshall Islands, Papua New Guinea, Samoa and</td>
</tr>
<tr>
<td></td>
<td>Solomon Islands</td>
</tr>
<tr>
<td>Global Peace Index</td>
<td>Papua New Guinea</td>
</tr>
<tr>
<td>World Bank Governance Indicators</td>
<td>All</td>
</tr>
<tr>
<td>Human Development Index</td>
<td>All (excluding Cook Islands, Marshall Islands, Nauru,</td>
</tr>
<tr>
<td></td>
<td>Niue and Tuvalu)</td>
</tr>
<tr>
<td>Women, Peace and Security Index</td>
<td>Fiji, Papua New Guinea and Solomon Islands</td>
</tr>
</tbody>
</table>

Note: The Institute for Economics and Peace is developing a Pacific Peace Index.

The Inter-Agency Standing Committee Task Team on Preparedness and Resilience has developed the Index for Risk Management (INFORM) as a predictive measure for peace and conflict from a humanitarian perspective, focusing on exposure, vulnerability and capacity to address conflict.\(^5\) Within this index, notwithstanding the challenge in attaining data on the Pacific subregion, Papua New Guinea ranks as a high-risk country for conflict, and for the other countries in the Pacific, there is an even mix in the medium-to-low risk categories (figure 1).

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\(^4\) Pacific island States are only occasionally included in global indices often because of a lack of a full set of data required for the construction of the index. The Fragile States Index focuses on state governance and vulnerability to collapse or conflict. The Global Peace Index focuses on societal safety and security, ongoing domestic and international conflict, and militarization.

\(^5\) See [www.inform-index.org](http://www.inform-index.org).
The measure of coping capacity of the Index for Risk Management is most relevant to the structural aspects of peace and conflict; it assesses governance and institutional capacity. The index’s weakness, however, is the assessment of human and natural hazards for Pacific small island developing States. While the Pacific scores highly for natural hazards, the Index does not consider climate change risks or related uncertainties, such as coastal erosion. The absence of violent conflict (a measure of human hazards) pulls down the overall ranking of the Pacific. This indicates that the subregion is, in general, less vulnerable even though the constant barrage of natural hazards and disasters that occur in the Pacific are threat multipliers for inequality and exclusion, which also present challenges to governance systems and often erode development gains. A very resilient country is able to withstand and respond to an external shock, such as natural hazards, whereas the same shock can be a precursor for conflict for less resilient countries.
Similarly, Sustainable Development Goal 16 refocuses attention on the broader dimensions of peace and conflict in development through strengthening national institutions, but this still needs to be contextualized for the Pacific (as do the other Sustainable Development Goals). Ackman, van Es and Hyslop (2018) have highlighted the difficulties in measuring Goal 16 in the Pacific. Nevertheless, the Goal offers a policy opportunity for governments to focus on peace, justice and strong institutions in ways that resonate with their national contexts.

For the Pacific, a multidimensional approach to peace and conflict within development has in the past been facilitated through The Human Security Framework for the Pacific (2012–2015), which was developed by the Pacific Islands Forum secretariat. It provides five principles for addressing causes of conflict monitoring conflict escalation and strengthening conflict resolution mechanisms, suggesting that interventions need to be preventive, localized, collaborative, people-centred and inclusive (figure 2). Also stressed in the Framework is interconnectivity of the five elements of human security (political, economic, environmental, community/family/personal and social) and the necessity of an integrated approach to development. This is to ensure that inhabitants of the Pacific subregion are secure and safe from threats to their well-being, and can enjoy political stability, sustainable economic development and social fulfillment. The Framework was reviewed in 2015 and abandoned because of its generalist approach and lack of monitoring. Despite this, the principles of the Framework resonate with the approach taken under the 2030 Agenda and the revival of a more targeted framework may serve the subregion well in the Sustainable Development Goals era. The commitment of Pacific Island Forum Leaders to develop a comprehensive regional security architecture highlights the importance of an expanded concept of security inclusive of human security, humanitarian assistance, environmental security and climate change.
III. A “MOSTLY PEACEFUL” PACIFIC

With the notable exceptions of the prolonged independence struggle in New Caledonia (1980s), the Papua New Guinea-Bougainville Civil War (1989–1997), the “tensions” in Solomon Islands (1998–2003), and repeated coups in Fiji (1987, 2000 and 2006), episodes of national conflict, unrest and political turmoil in the Pacific have generally been short-lived, and in many cases, peacefully resolved, including through ongoing peacebuilding efforts, such as in Solomon Islands. Underpinning its standing as a “pacific” subregion is a long history of traditional conflict resolution mechanisms, high levels of social resilience (Brown, 2006) and the limited availability of arms, in addition to widespread respect for the rule of law. Regional security cooperation has also played a role in this: in 2000, Pacific Islands Forum member States adopted the Biketawa Declaration as a regional security cooperation mechanism in the wake of the Fiji coup and ethnic tensions in Solomon Islands. The declaration facilitated the Regional Assistance Mission to the Solomon Islands from 2003 to 2017.
Despite episodic violent conflict, the Pacific is not, however, exempt from persistent violence. Rates of violence against women are among the highest in the world. Neither is the Pacific immune to the causes of conflict. These include rising economic and social inequalities, land tenure and management issues, strained governance and institutional capacity, high youth unemployment and alienation, and poorly managed urbanization (Pacific Islands Forum Secretariat, 2014). Furthermore, the Pacific is as vulnerable as is every subregion to the risk that a conflict will recur.

These issues are compounded by emerging global challenges that transcend national boundaries, including, among others, climate change, religious extremism, political populism, rising rates of migration, transnational crime and an intensified competition for resources, including fisheries. Moreover, it should also be noted that the subregion is close to global security pressure points, such as the Korean Peninsula and the South China Sea.

As the world undergoes a period of significant change to the status quo, guaranteeing peace and development is not a given. According to the 2017 Global Peace Index, there has been a decline in peacefulness across the world over the past decade (Institute for Economics and Peace, 2017). Considered holistic strategies are required at national, regional and global levels. If countries are to address the root causes of conflict and protect any development gains, policy must not only keep pace with shifting trends, it must also take into account the links between development and security. This will ensure stronger, more resilient societies where people and their governments are better equipped to withstand internal and external shocks.

Future development shocks in the Pacific are likely to be centred around the subregion’s particular vulnerability to climate change and extreme weather events, economic constraints to improving levels of development and risks associated with the “youth bulge” and rapidly changing populations. Together these factors have the potential to overwhelm small government administrations and, consequently, further erode the traditional economic and social protection systems, and to increase levels of poverty, hardship, vulnerability and exclusion (UNDP, 2014). The sources of these challenges are multi-dimensional and increasingly complex, and pose serious risks of reversing hard-earned development gains, and of triggering sociopolitical upheaval.

Within this setting, the Pacific subregion is contextualizing the new global development agenda and rethinking its security cooperation arrangements under the Biketawa Declaration. The intent here is to formulate a new regional security policy which would set “the foundation for strategic future regional responses recognizing the importance of an expanded concept of security inclusive of human security, humanitarian assistance, prioritising environmental security, and regional cooperation in building resilience to disasters and climate change” (Pacific Island
Fostering peaceful sustainable development in the Pacific under the 2030 Agenda

Forum Secretariat, 2017). This coincides with the rapid changes occurring in global power dynamics and the repositioning of the United Nations system to implement the 2030 Agenda. The Pacific Roadmap for Sustainable Development, developed in 2017, guides the subregion’s responses for the achievement of the 2030 Agenda and the Sustainable Development Goal from the perspective of national plans, the United Nations global small island developing States framework – the SAMOA Pathway – and the Framework for Pacific Regionalism, which was endorsed by the Pacific Island Forum leaders in 2014, to deliver “a region of peace, harmony, security, social inclusion, and prosperity”.

IV. ACHIEVING PEACEFUL SUSTAINABLE DEVELOPMENT – WHERE ARE THE PRESSURE POINTS/CONFLICT RISKS?

Key questions related to the 2030 Agenda and the Sustainable Development Goals is the following: how can the Pacific, which reported limited progress under the Millennium Development Goals, achieve sustainable development in the context of economic constraints, climate change, natural disasters, and changing populations? and what are the Pacific subregion’s pressure points for the attainment of peaceful sustainable development?

In a review of more than 100 academic and policy papers, reports, and media articles, the following emerging common themes around peace and development in the contemporary Pacific were assessed: resource governance; migration and displacement; urbanization; and exclusion and inequality.

Resource governance

Pacific island economies have limited options for growth and are reliant on their natural resources. As terrestrial and maritime resource-rich States, the productive sectors – agriculture, forestry, fisheries and mining – have been a fulcrum for development in Pacific island countries. Despite these natural endowments and high levels of aid, economic and social development has lagged, a situation that was described as the “Pacific Paradox” (Toatu, 2001). While resource development has contributed to economic growth, the combination of resource depletion and weak governance creates conflict risk. For example, in Papua New Guinea, the weak governance of resource-based rents has been identified as the single factor most likely to undermine prospects for sustainable growth (Avalos and others, 2013). Similarly, in Kiribati, problems with water and sanitation infrastructure persist despite high fisheries revenue and a growing sovereign wealth fund (Beitau, 2014). Uneven development and exclusion stemming from the problematic distribution of benefits, combined with rent-seeking behaviour, corruption, poor governance and
underdeveloped human capital, has resulted in numerous, often violent, localized conflicts.

Land disputes are among the leading causes of tension and conflict in the subregion, when resource development often competes with widespread subsistence activities for food security (Weir and Virani, 2011). In Vanuatu, Solomon Islands and Papua New Guinea, in the 1990s and early 2000s, real estate, logging and mining sector activities were the cause of numerous instances of intertribal conflict and violent disputes between companies and tribes. In cases in which State institutions fail to ensure good governance in relation to natural resource industries, local tensions are often exacerbated. The weak governance of resource-based revenue, in terms of accountability, transparency and government capability in the delivery of services has a particularly corrosive impact on equitable and peaceful development. The adequacy and enforcement of environmental protection legislation that protects the sustainability of countries’ productive sectors is an ongoing concern.

Coastal fisheries are emerging as sites of potential resource tension. Offshore foreign-based fishing accounts for approximately 50 per cent of the value of the subregion’s fisheries. Coastal fisheries (whether commercial or subsistence) constitute 12 per cent of the total economic value of the subregion’s fisheries resource (Gillett and Cartwright, 2012). For many islands, particularly the low-lying atolls, coastal fisheries are major sources of food and livelihood, but overfishing of tuna stocks and illegal inshore commercial fishing has increased recently. Additionally, coastal fisheries are expected to become less productive because of the degradation of coral reefs by climate change-induced bleaching events and increased cyclone intensity, as well as domestic environmental pollution and degradation.

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6 Solomon Islands: logging and fishing account for 30 to 40 per cent of GDP for the past two decades, with numerous reports of corruption in the Asian-dominated logging industry. For more details, see Blondel (2012) and John (2017). Bougainville: One of the world’s largest copper mines, the Panguna Mine in the Autonomous Region of Bougainville was shut in 1989 in response to violent clashes between local communities and the mine companies. For more details see Phillips (2015).

7 From 2016 to 2017, there have been one to two media reports per month in the Pacific of arrests of Vietnamese “blue boats” for illegal fishing, particularly close to shore. As an example, see RNZ (2017). In May 2017, a Pacific workshop was held to strengthen regional cooperation in monitoring, control and surveillance regarding these “blue boats” (World Wide Fund for Nature, 2017).
The triple burden\(^8\) on Pacific islanders — reduced economic potential, depleted environmental reserves and greater food insecurity — underscores the need for policy attention on conflict prevention and human security in development.

**Box 1. Conflict-sensitive resource management**

Recognizing the need for forward-thinking policy relating to food security and environmental protection, a number of Pacific island countries have already put in place coastal fisheries management plans, and are collaborating in the monitoring, control and surveillance of illegal fishing. In addition, the Government of the Cook Islands has created the world’s largest marine protected area to ensure sustainable management of the country’s marine resources, working closely with traditional communities.

Many Pacific island Governments are taking innovative measures in resources-based development, drawing on the strength of cultural institutions to foster peaceful development. For example, in Vanuatu, land reforms that embrace customary land governance and safeguard community resource rights have institutionalized conflict-sensitive land development.

These initiatives underscore the inclusive, multi-stakeholder approach that engages with multiple governance systems (both State and non-State based) to pursue resource-related development in a conflict-sensitive manner.

**Migration and displacement**

In the 2030 Agenda, “the positive contribution of migrants for inclusive growth and sustainable development” is recognized\(^9\) along with the need for human rights-based migration, which applies to both sending and receiving communities, and to local domestic mobility hubs. Expanding migration opportunities have the potential to transform sustainable development and regional integration (Berkelmens and Pryke, 2016) and to provide adaptive solutions for resource-constrained countries. Nevertheless, the processes of migration and displacement may cause grievances if not addressed in a conflict-sensitive manner. This section deals with internal and external/international migration, distinct from urbanization, which is discussed in the following section.

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\(^8\) The issues of reduced economic benefit and environmental depletion have been previously described as a “double burden” on Pacific island countries’ fisheries, however, the authors suggest that there is also a third burden of growing food insecurity, in particular, for low-lying atoll countries that rely significantly on coastal fisheries for their subsistence. For more details see UNDP (2014).

\(^9\) A/RES/70/1.
Migration is occurring across the subregion as a “release valve” that provides decent work opportunities for resource-constrained countries in the areas of Micronesia and Polynesia. Migration, in response to climate change-related hazards, is also occurring (Oakes, Milan and Campbell, 2016). Migrant-sending countries often enjoy relatively easy access to larger labour markets, and tend to have lower rates of population growth, easing pressure on gross domestic product (GDP) growth, which, in turn, helps to boost living standards. Remittances also benefit their national GDPs significantly (Stahl and Appleyard, 2007). Recently, migrant and refugee receiving Pacific island countries have also benefitted from economic inflows, although this has been contentious. One example of this is the Government of Australia-run detention centres on Manus Island, Nauru, and Papua New Guinea.

In contrast to the preferential immigration access granted to citizens of some Pacific island countries through post-colonial arrangements with metropolitan powers, citizens of Kiribati, Papua New Guinea, Nauru, Solomon Islands, Tuvalu and Vanuatu have, to date, had few opportunities to move abroad. These six countries, which are among the most vulnerable to equitable economic growth, natural disasters, conflict and exclusions in the subregion, had difficulties meeting the Millennium Development Goals, and, in the case of the Melanesian countries, have the highest rates of population growth (Opeskin and MacDermott, 2009; Pacific Island Forum Secretariat, 2015). Governments in the region are increasingly considering labour mobility as an adaptive measure, focusing on protecting migrant workers and securing decent work opportunities.11

Migration policies result in a range of development implications that may lead to potential conflict. Increased pressures on already stressed social and physical infrastructure (Milan, Oakes and Campbell, 2016) from rural-urban mobility, concerns over prolonged depopulation in migrant-sending centres (Pacific Institute of Public

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10 The citizens of the Micronesian states in Compacts of Free Association with the United States of America (Palau, Federated States of Micronesia and of the Marshall Islands) have right of access to the United States of America and territories in exchange for reciprocal military access and foreign policy influence. New Zealand extends citizenship to residents of its former territories (Cook Islands, Niue and Tokelau), and also provides preferential visa access to citizens of other Polynesian countries, notably Samoa and Tonga, which also enjoy relative ease of access to Australia and the United States.

11 See for example, Voigt-Graf (2016).
Policy, 2010)\textsuperscript{12}, “brain drain” and the social costs of temporary and seasonal labour migrants resulting family separation (Voigt-Graf, 2017), are some potential problems. Furthermore, global remittance flows are in decline, in part, because of the breakdown of traditional social support mechanisms (World Bank, 2017; UNFPA, 2014).

The promotion of external migration stemming from climate change, while improving adaptive capacity of households, has in some cases — as, for example, the 2014 purchase by the Government of Kiribati of 5,500 acres of land in Fiji — sparked concerns over integration, and competition for land and resources (Ellsmoor and Rosen, 2016). Similarly, displacement (whether temporary or long-term, voluntary or forced) caused by disasters and climate change impacts can lead to upheaval among individuals and within communities, and can inflame tensions as competition for resources increases. Policies that tap into traditional resilience and response mechanisms that provide for relocation, exchange and sharing of resources in times of crisis extend conflict sensitivity to migration processes (Kiddle and others, 2017).

In considering circular mobility, some countries are facing difficulties regarding the reintegration of citizens who have been forcefully repatriated for criminal offences abroad (Pereira, 2014). In 2016, Pacific Islands Forum leaders highlighted the growing number of criminal deportees from metropolitan countries as a regional security risk. Pereira (2011) found that in the Pacific, the average length of time people who had been deported had spent outside of their birth country exceeded 20 years. In addition to social stigma and discrimination, which often prevents employment or access to services, some returnees have poor language skills and lack cultural connectedness. Migration policy responses need to offer ways to further draw on the subregion’s culture of strong family and kinship ties, and deepen these among the diasporic communities.

Migration in the Pacific, which may once have been considered simply in terms of gaining access to opportunity overseas, is now an increasingly complex interaction of social, political and economic factors. This transformation demands better balancing of the interrelationships between competing domestic and international positions. The range of issues affecting peace and development include, for example, the balance of inward and outward migration flows, returning migrants, depopulation, migration impacts on social structures (Lim and Brown, 2017), the processing of refugees, and the subregion’s role in emerging global compact on safe and orderly migration.

\textsuperscript{12} A far greater proportion of the populations of Cook Islands, Niue and Tokelau all have far greater proportions of their population living in New Zealand than at home, and the Micronesian states are amongst the highest per capita net emigration rates in the world. See Pacific Institute of Public Policy, Micronesian exodus (Pacific Institute of Public Policy, 2010).
Box 2. Labour-based migration

Temporary labour migration has been a widely used and relatively successful development strategy in Pacific island countries over the past couple of decades. It serves the dual purpose of addressing domestic unemployment and alleviating pressures on basic services. The Kiribati seafarers scheme has endured for two decades, and remains popular among the male population. Many Pacific island countries have actively participated in the Recognised Seasonal Employment scheme in New Zealand, which together with the Seasonal Worker Programme in Australia, has given more than 12,000 Pacific islanders work opportunities during 2015–2016, and generated approximately $60 million in remittances per year for the countries of the subregion. The focus of the Pacific island countries has been on securing ongoing access to these programmes. The programmes also present the opportunity to build on this success by aligning education and skills training for the subregion’s young people with the need created by the ageing workforces in Australia and New Zealand. The Australia-Pacific Technical College, launched in 2007 to boost hospitality skills and promote labour mobility, was intended as a first step in this direction. However, a recent assessment notes that despite gains in skills development, graduates had an emigration rate of only 1.5 per cent because of barriers that limit migration opportunities for Pacific islands graduates.

Urbanization

Internal migration within Pacific island countries in the form of urbanization remains an underrecognized area of policy attention, even though towns and cities across the subregion have become “hubs” for socioeconomic exclusion and inequality. While the subregion has in place the New Pacific Urban Agenda, the subnational focus has been unable to sustain high-level political attention, despite the prevalence and growth of informal urban settlements throughout the subregion. Generations of urban dwelling underscore that the urban issues in the Pacific are more than temporary.

Limited infrastructure, overcrowding, few employment prospects, patchy urban services, financial insecurity and land tenure insecurity, in particular in the burgeoning informal settlements, are chief among the litany of Pacific urbanization challenges. Static economic growth, weak urban governance and management, land disputes and the permanency of urban populations compound urban social issues (Connell, 2017). As hubs for economic activity and service delivery, the urban centres of the Pacific are under pressure to provide services equitably in the face of high urban population growth rates. Up to 50 per cent of Melanesian urban populations live in
informal settlements where poverty and hardship rates are high (ADB, 2010). Urban settlements are frequently on marginal land and are vulnerable to environmental degradation and climate change impacts; in the case of the low-lying and atoll countries, such as Kiribati and the Marshall Islands, coastal erosion is shrinking urban areas (Connell, 2017).

People who live on “the fringe” face widespread inequalities that are potentially destabilizing: urban-based social safety nets cannot keep pace with the costs of urban living, and cash incomes are inadequate replacements for traditional resources that provide livelihood security. Mushrooming informal settlements, in particular, those in the larger Melanesian countries, are often sites of crime and violence (Dinnen, 2017).

**Figure 3. Proportion of Pacific populations living in urban areas (percentage of total population)**

To date, Pacific Government responses to the “urban challenge” have focused primarily on infrastructure projects. Community governance and social issues have received varying levels of attention, although this is beginning to change in some countries, such as Fiji, Papua New Guinea and Solomon Islands. The concept of “urban resilience”, traditionally considered in terms of disaster risk reduction and infrastructure, is a new policy frontier for Pacific Governments that have committed to addressing socioeconomic and environmental dimensions of urban resilience in the Framework for Resilient Development in the Pacific, which was endorsed by Pacific leaders in 2016. The Framework, under which attention is refocused on climate resilience, enables reinvigorated attention on urban affairs, and is a welcome policy opportunity to achieve the ambition of the Pacific Urban Agenda. Policies that go beyond “infrastructure and services” to also address the inequalities that feed underlying social tensions are particularly needed.

**Box 3. Conflict-sensitive urban initiatives**

**Solomon Islands**

Solomon Islands has a high concentration of urban youth, so countering high unemployment, boredom, substance abuse and violence is a peace-building policy priority for the Government. To manage potential conflict, the Government of Solomon Islands has developed skills training initiatives, and entrepreneurship fostering programmes. The “soft skills” (non-technical skills pertaining to, for example, social interaction, character and work ethic) imparted during the course of these initiatives have helped to deter crime and contributed to social stability, in addition to providing economic opportunities for urban youth. Additionally, with United Nations peacebuilding support, efforts are under way to engage young people in the peace process with society and leadership through dialogue and reconciliation, and implementation of the peace policy.

**Fiji**

The urban development challenges in Pacific island countries and their associated demographic challenges—such as the “youth bulge”—have elicited a range of strategies to deal with the potential factors behind conflict. Fiji, with more than 50 per cent of its population living in cities, and 70 to 80 per cent of the urban dwellers living below the poverty line, has begun to recognize the rights of informal settlers and extend services to them, building tangible ties between the informal and formal sectors.
Exclusion and vulnerabilities – inequalities in terms of access, opportunity and participation

As a subregion, the Pacific reported in 2016 the greatest difficulty in achieving poverty reduction under the Millennium Development Goals. Despite efforts by governments, income and food poverty, and unequal access to basic services persist. The Pacific is far from achieving full equality for all its citizens, particularly with regard to income (figure 4).

The urbanization of poverty, gender inequalities and social exclusion are some of the persistent factors behind the vulnerability and insecurity in the subregion. The exclusion of marginalized groups – young people, women and the elderly – from political life and full economic participation coupled with imbalances in access to resources are indicators of the “slow violence” compounding human insecurity in the Pacific (George, 2014).

Figure 4. Inequality in the Pacific
(Gini co-efficient where 0 = full equality)

Gender inequality

In the mid-2000s, the Pacific reported some of the highest rates of gender-based violence in the world: Tonga (79 per cent), Samoa (76 per cent), Kiribati (73 per cent), Fiji (72 per cent), Vanuatu (72 per cent) and Solomon Islands (64 per cent) (ADB, 2016a). Intra-household inequality, along with women’s limited access to justice in traditional and formal systems, has significant socioeconomic development implications. This type of violence generates economic costs, such as lost work days and cost to health systems, and societal costs, such as reduced access to education that constrains future participation in the formal sector. The Pacific island countries, except Tonga, have ratified the United Nations Convention on the Elimination of Discrimination Against Women and accompanying legal frameworks criminalizing gender violence are in place or in the process of being developed.

Policies aimed at comprehensively addressing gender disparities in political, economic and social affairs and in access to environmental resources are a practical means for attaining better development outcomes and maintaining peaceful and prosperous societies.

The Pacific Leaders Gender Equality Declaration, adopted in Rarontonga, Cook Islands, on 30 August 2012, committed countries to greater action. Achieving the ambition of the 2030 Agenda requires enhanced efforts to combat gender violence and the gender disparities that breed violence, in particular through exploring policy bridges between traditional and formal access to justice and support for peaceful communities. There have been several progressive initiatives in this regard. For example, in Bougainville in Papua New Guinea, where women have played a critical role in brokering peace in the post-conflict context, and in Vanuatu, which has connected its dual governance systems (traditional and State-based) to foster social stability.

The youth challenge

While young populations present a challenge shared across all Pacific island countries, projections for 2030 suggest this will be a continuing challenge for Melanesian countries in particular (figure 5). The concentration of the “youth bulge” in the urban centres of the Pacific calls for greater focus on youth development policies and youth participation, especially when the links between disenfranchised and undereducated young people and youth-driven violence are well-established (Evans, 2017).

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13 See http://pacificwomen.org/our-work/focus-areas/ending-violence-against-women/.
Policy approaches among Pacific island countries to date include vocational skills training, employment programmes, entrepreneurship schemes and sports development. In cases in which island States have brokered arrangements with neighbouring countries with relatively large metropolitan areas, such as Australia and New Zealand, Government policies encourage out-migration of young people from urban and rural areas to join temporary work schemes. The impact of such schemes on inclusion and youth empowerment are mixed, however. As Solomon Islands has experienced, continued investments in youth empowerment are fundamental to mitigating youth-driven crime and violence, and ensuring that young people are not “left behind” in sustainable development (see also box 2).

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14 See previous discussion under the migration section.
Exclusion in development

Optimism about the subregion’s generally positive economic outlook (especially the increasing investments in information and communications technology and labour mobility), however, must be tempered against the vulnerability of Pacific island countries and their limited ability to meet the increasing demand for public services, which is significantly being compromised by rising levels of sovereign debt (Pacific Institute of Public Policy, 2013). This poses the risk that Governments may have insufficient resources or policy space to meet the needs of their peoples. Conflict and instability can flourish in such circumstances, especially when high levels of youth unemployment, substandard service delivery, and inequality in resource sharing (including food and water) are already extant.

While development is an essential mean for avoiding conflict, it can also be a trigger if it results in marginalization, perceived or actual. Even a cursory reflection on the subregion’s recent history suggests that the potential of domestic and external shocks warrants ongoing vigilance to protect development gains, and to prevent outbreaks of conflict.

V. CLIMATE CHANGE AS A THREAT MULTIPLIER AGAINST PEACEFUL DEVELOPMENT

Climate change exacerbates development conflict pressure points. Accordingly, it can be considered a threat multiplier in countries experiencing conflict or vulnerabilities and inequalities. Mazo (2010) has argued that while climate change is unlikely to be the sole factor in conflict, as it becomes increasingly pronounced, climate change plays a larger role in terms of vulnerability, instability and exclusion.

Pacific island countries are among the highest at risk of being hit by natural disasters,\textsuperscript{15} with the average annual cost of direct losses estimated at $284 million (World Bank, 2012). For some of the smaller economies, this means the cost of a single event could exceed annual GDP. The category 5 Tropical Cyclones Pam and Winston, which struck the subregion in 2015 and 2016 were estimated to have cost 61 per cent of the Vanuatu GDP\textsuperscript{16} and 31 per cent of the Fiji GDP (ADB, 2016b), respectively.

\textsuperscript{15} Including tropical cyclones, floods, storm surges, droughts, earthquakes, volcanic eruptions, and tsunamis.

\textsuperscript{16} Based on Government estimates of cost and ESCAP statistical data on GDP.
Between November 2013 and June 2015, nine extreme weather-related events occurred in the Pacific; five of them had significant humanitarian consequences (OCHA, 2015), which affected 25 per cent of the total population of the eight affected countries (figure 6). The subregion is now bracing for the prospect of higher intensity, more frequent extreme weather events, including unprecedented out-of-season cyclones (Noonan, 2015). Additionally, climate change will bring more saltwater intrusion, prolonged heavy rainfall and flooding, higher temperatures, droughts and more violent tropical cyclones.

The impacts of climate change are directly linked to the adequate provision of the basic determinants of health and well-being, food, water, and shelter (WHO, 2018). The potential for direct disruptions to agriculture (from flooding, drought, and saltwater inundation) and fisheries (rising sea temperatures, coral bleaching, coastal erosion) have been well established, as has the likelihood of increased water stress and damage to property. Often overshadowed by damage to life and livelihoods, however, are the health implications, including the toll that disaster trauma (dealing with loss of family members, housing, livelihoods, crops and livestock) imposes on mental health. Positive mental health is fundamental for coping and when compromised can elevate stress and vulnerability. The overwhelming majority of people with mental health issues are living in poverty, suffer from poor physical health, and are subject to human rights violations (WHO, 2010a).

17 While there has been an increased number of studies of the economic impact of mental health issues on the economies of high-income countries, for example depression was estimated to cost at least $800 billion in 2010 in lost economic output – a sum expected to more than double by 2030. Less clear is the understanding of the impacts on development gains in low and middle-income countries (see for example, Marquez and Hewlett, 2018).
Figure 6. People affected by extreme weather-related events in Pacific island countries, 2013–2017 (percentage of population, per year)


The impacts of climate change also fuel infectious illnesses, such as typhoid, malaria, dengue, cholera and diarrheal disease, further burdening the region’s fragile health systems. Shifting temperatures and wet/dry seasons create changed conditions conducive to increased bacterial, viral and microbial development, which, in turn, fuel increased human exposure to disease. Changing lifestyles and diets, in particular among growing urban populations, have spurred a shift from traditional staples to imported, nutritionally poor foods (Bell and others, 2016). For example, reduced subsistence cropping because of changing climate or reduced agricultural areas as a result of coastal erosion and saltwater intrusion in low-lying areas are directly affecting food supplies. In addition to driving the region’s non-communicable diseases crisis (WHO, 2010b), this shift is contributing to a decline in agricultural production, and a corresponding increase in susceptibility to global supply and price shocks in foodstuffs.

Natural disasters have similar threat multiplier implications to development. As the subregion is highly vulnerable to natural disasters (Vanuatu and Tonga were ranked the first and second most vulnerable countries out of 171 in the 2016 *World Risk Report*), safeguarding development gains from natural disaster is an ongoing challenge. Regular livelihood shocks and major disruptions to economic and social systems can potentially overwhelm formal and informal governance systems — the very structures that underpin peace and facilitate development — unless policy attention is given to these systems as a central component of national disaster preparedness.

National and regional integration of climate change and disaster risk reduction is advancing and is often coupled with community adaptation outreach. For example, in response to the subregional non-communicable diseases crisis, efforts are being made to promote a return to “island diets” in concert with climate change adaptation initiatives to build the resilience of food production systems, addressing the risks from changing rainfall patterns and saltwater intrusion to staple food crops, such as taro and cassava (UNDP, 2015).

Kinship obligations to provide food and shelter in times of disaster can supplement limited State disaster aid, but they also increase financial and social strains on families, in particular those in urban areas without access to subsistence crops. Reliance on relief aid can sometimes diminish traditional mechanisms. Acts, or perceptions, of political favouritism, can fuel tensions over the distribution of relief efforts. In 2018, the temporary mass relocation of the entire population of Ambae island in Vanuatu provided an example of a disaster response managed in tandem using traditional coping systems and a State-run humanitarian disaster response; it highlighted the need for multi-stakeholder engagement to ensure peaceful outcomes.

Globally, climate finance flows have increased significantly. Across the subregion, 59 per cent of climate finance is directed to adaptation activities. The largest single share of it supports “enabling environments”, which includes activities to mainstream climate change into sector policies, planning and management, —mainly in the energy, forestry and water sectors (Atteridge and Canales, 2017). Pacific Governments must take advantage of the option to use climate finance flows to help to tackle persistent inequalities and support conflict-sensitive approaches.

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20 The Framework for Resilient Development in the Pacific, An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) 2017–2030 provides high-level strategic guidance to different stakeholder groups on how to enhance resilience to climate change and disasters, in ways that promote the active engagement of diverse groups, both individually and in partnership.
Over the past decade, there has been considerable debate over the role the Security Council should play in the consideration of climate change. While political divisions persist, the discussion has furthered a broader discussion of climate change within the context of peace and sustainable development. The security–climate change nexus traverses social security (health and well-being); resource security (food, water, land, energy); national security (sovereignty, especially for the low-lying atoll States facing an existential threat); and international security (global peace and stability). Ensuring strong and resilient institutions to traverse these issues in times of multiple disasters is also a key element. Arguably, the peace-development nexus in the Pacific is necessarily a climate-peace-development nexus.

The urgent need to deal with in the subregion underscores why the Pacific must focus on its governance systems and conflict-sensitive development under the 2030 Agenda.

VI. THE COMMON THREAT: STRENGTHENING EFFECTIVE INSTITUTIONS IN THE PACIFIC

The ability of political and social institutions to cope with shocks to stability, such as conflict, is key to sustaining peace in development. Peaceful and inclusive societies depend on effective and accountable institutions at all levels, both formal and informal and where there is space for participation and dialogue. Attention to informal institutions, however, has been makeshift in Pacific policymaking, tending to focus on the rule of law, as in the examples of the land courts of Samoa and Vanuatu.

As previous discussions in this paper have highlighted, the persistent development challenges in the Pacific are amplified in the context of increasing resource scarcity, imbalances in migration policies and deepening urban inequalities. Combined with the threat multiplier of climate change, policymakers in the Pacific subregion must urgently steer development efforts to deal with these conflict pressure points in a manner that facilitates balanced and inclusive development by engaging with the full range of national institutions.

21 The Pacific, through its grouping in the United Nations (the Pacific small island developing States), has long lobbied for climate change to be considered an issue of global peace and security and that it should be on the agenda of the Security Council. The following article provides an overview of the engagement of the Security Council on climate change. See www.securitycouncilreport.org/monthly-forecast/2017-08/the_securityCouncil_and_climate_change_an_ambivalent_relationship.php.

The simmering insecurities diminish the subregion’s progress towards achieving sustainable development, and suggest that traditional aid-dependent development approaches are insufficient for facilitating transformational development (Pacific Islands Forum Secretariat, 2017b). As the Pacific draws strength from its rich and diverse traditional heritage that has long provided sustenance, social stability and resilience (Pacific Island Forum Secretariat, 2014), truly transformational and peaceful development must be supported by policies that bridge “customary and formal systems”.

The Pacific subregion’s rich heritage of informal and traditional social protection “buffers”, based on elaborate kinship-based social structures linked to resource rights, are under increasing pressure from monetization in the transition from subsistence- to cash-based market economies (UNDP, 2014).

Institutions—formal and informal, State-centric and community-centric—are the common thread in the facilitation of sustainable development that is peaceful, inclusive, and equitable. Culture, however, has been described as a “barrier” to the development approaches taken by Pacific Governments in the effort to reach Sustainable Development Goal 16, many potential opportunities are presented to move ahead on persistent development issues, to think beyond the existing development paradigm and to embrace the opportunities that Pacific cultures and local governance systems offer for achieving peaceful development, while maintaining a human rights-based approach.

A shift in mindset is required to consider the role of social and customary institutions in conflict-sensitive development. For example, the social problems associated with high numbers of unemployed young people in urban centres are not simply a demographic problem, but they are also a consequence of a much more complex set of factors. Similarly, the challenges posed by migration have significant implications on social institutions at both the sending and receiving locations, which warrant attention. Such a mindset dictates an evolution from the traditional security lens — in the example of young people, to reinforce community policing with urban planning (for example, the creation of safe spaces for young people), economic management (notably, creating jobs), and social planning (for example, providing activities for people to engage in, as well as ensuring health care, education and training).
VII. POLICY RECOMMENDATIONS

Sustainable Development Goal 16 presents a valuable policy opportunity for Pacific island countries to advance their sustainable development through mobilizing attention to conflict-sensitive development. This highlights the importance of fostering peace in any sustainable development effort.

Balancing the traditional development focus on health, education and poverty with inclusive governance/institutions and conflict prevention must become a larger focus in policymaking in the Pacific. Development processes are inherently sites for potential conflict, in particular with regard to issues of resource scarcity, exclusion and inequality. Effective and resilient social institutions are essential buffers against conflict. Fundamentally, the threats to peace based on exclusion, vulnerability and resource scarcity can be avoided through the implementation of well thought out policy and programming that extends beyond a “business as usual” approach. Accordingly, in fostering peaceful development under the 2030 Agenda, the following two policy recommendations serve to advance efforts to encourage peaceful sustainable development approaches in the Pacific, drawing from existing good practices across the subregion.

Reinvigorated attention to the Human Security Framework for the Pacific is essential to support Pacific-style peaceful development in a holistic manner and advance efforts to achieve Sustainable Development Goal 16 in the subregion;

- Drawing on lessons from the 2015 review of the Human Security Framework for the Pacific, renewed attention within the context of a Biketawa Plus concept needs to include specific target areas for policy attention. The following four issues should be included: resource governance; migration and displacement; urbanization; and exclusion and inequality. The Pacific Islands Forum could commission a rapid review of the Human Security Framework for the Pacific, taking into account the 2030 Agenda and more specifically Sustainable Development Goal 16 and Biketawa Plus as a way forward.

- Many aspects of human security are already being addressed by governments in a range of ways. Enhanced awareness of the customary governance principles of the Human Security Framework for the Pacific would encourage policymakers to turn their attention to challenges that have not previously been visible to them. Leadership on these aspects of the Framework should come from within governments.
• There is a need to develop new ways of monitoring human security in the Pacific. One option is for Pacific island Governments to work closely with regional agencies, such as the Pacific Islands Forum Secretariat, to enhance policy focus in this area.

*Fostering peaceful development under the 2030 Agenda requires a rethinking of development approaches in the Pacific such that they would embrace working with State and non-State governance systems to increase the likelihood of peaceful development and stem “slow violence” in the subregion.* The focus of attempts to localize efforts to achieve Sustainable Development Goal 16 must extend beyond the global focus on weapons, violence and trafficking, to a more Pacific-relevant emphasis on more effective institutions in support of peace, sustainable development and conflict prevention;

• One area of focus of the 2019 High-Level Political Forum was on Sustainable Development Goal 16. This presented the opportunity to report through voluntary national reviews and also through regional sustainable development reporting mechanisms to demonstrate how this particular Goal relates to the Pacific subregion. The Human Security Framework for the Pacific reporting mechanism for progress in achieving the Sustainable Development Goals should be leveraged by Pacific participation to enhance global learning about contextualization of Goal 16.

• Consistent with existing efforts to localize efforts to achieve the Sustainable Development Goals, Governments could contextualize Goal 16 into national planning and operations, tailoring it to focus on domestic drivers of conflict based on pressures points centred on exclusion, vulnerability and competition for resources.

This may require Governments – supported by partners in the subregion – to do the following;

• Provide policy and programming opportunities to incorporate conflict and context analysis into development planning, including domestic governance arrangements (both State and non-State), which, in turn, would lead to better programming that, at a minimum, does not exacerbate existing exclusions and inequalities, and ideally facilitates greater inclusion and equality.

• Invest in developing holistic strategies that would work with, not against, cultural and social institutions at local and regional levels. Hybrid conflict prevention mechanisms that work with both State and non-State/informal governance systems could be explored, for example, creating platforms for dialogue and participation at all levels.
- Leverage the Biketawa Plus and Pacific 2050 strategy processes to convene development and security/conflict prevention/peacebuilding practitioners to ensure a coherent approach to peaceful development. Leadership of the Pacific Islands Forum and its member States is essential.

VIII. CONCLUSION

In the present paper, policy opportunities presented by Sustainable Development Goal 16, the “peace goal”, to safeguard development gains in the Pacific are highlighted. Fostering peaceful sustainable development in the Pacific requires the formulation of the development approaches taken, increased emphasis on strengthening institutions – both formal and informal – and conflict-sensitive policy and programmes to mitigate the factors driving conflict, exclusion and inequality. Acknowledging limitations in the reach of and access to Pacific island State institutions, many such solutions will need to be through informal structures. The potential for regional-level initiatives, such as revisiting of the Pacific Human Security Framework 2012–2015, to complement national initiatives and provide a platform for regional innovation and knowledge exchange could be a viable way forward. Further policy research and innovation in bridging formal and informal institutions to support peaceful development would also add value, and further identify additional risks and challenges that Pacific island countries may need to address through policy and practice.
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Fostering peaceful sustainable development in the Pacific under the 2030 Agenda


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The dissolution of the Soviet Union, and the emergence of new States in Central Asia and Southern Caucasus has created new political and security dynamics in these regions. The latter was affected by the Nagorno-Karabakh conflict and the former is confronted by the threat of conflict over shared water resources. More than twenty years later, the protracted conflict in Southern Caucasus over Nagorno-Karabakh remains unresolved and overshadows water-related problems; despite this, the dispute over water is a very important factor in the conflict, and key to overcoming it. In Central Asia, although the threat of conflict over water resources did not materialize, the region remains under the spotlight of water-conflict literature. In the present paper, the complex nature of water security is reviewed through an in-depth analysis of security and development-related factors in their connection to water and vice versa, which leads to the conclusion that policy interventions should be based on a more holistic approach that includes a wider set of issues.

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I. INTRODUCTION

Water has always been central in human history: it was integral to many cultures and religions, and key to the advancement of many civilizations. Despite this, water has been underappreciated until recently.

Environmental degradation, overexploitation, the looming climate crisis and the consequent deterioration of water resources had prompted the rethinking of water’s role in the global political agenda. For example, the United States Intelligence Community conducted an assessment on global water security in 2012. Based on the assessment, it warned that by 2040, global demand for water will outstrip supply by 40 per cent and that the supply problem combined with poverty, environmental degradation and weak political institutions, will result in State failure and increased tensions over water resources. In the report, it was stated that “as water shortages become more acute beyond the next 10 years, water in shared basins will increasingly be used as leverage; the use of water as a weapon or to further terrorist objectives also will become more likely beyond 10 years” (Intelligence Community Assessment, 2012, p. iii). Accordingly, the concept of “water security” has emerged as an attractive paradigm to deal with the role that water may play in the wider political and development agenda.

To date, many watercourses are shared among two or more countries, which elevates the importance of transboundary water cooperation to ensure water security in its wider definition and achieve sustainable development. Many scholars have elaborated methodological frameworks to understand water cooperation dynamics or the lack thereof in shared basins (Zeitoun and Mirumachi, 2008; Zeitoun, Mirumachi, and Warner, 2011; Mirumachi, 2010; Warner and Zawahri, 2012; Delli Priscolli and Wolf, 2009; Allouche, 2005). This literature aids efforts aimed at understanding the water-security nexus, with development as an intervening factor and the water-development nexus with security as an intervening factor. Respectively, water is seen as central to socioeconomic development of States and achieving sustainable development. But, the link between water and conflict is not straightforward: “it is impossible to develop a catalogue of all factors potentially intervening along the causal chain between water and conflict” (Schmeier and others, 2018, p. 3). Recently, much effort has focused on developing the tools that make it possible to identify water conflicts before their onset, which are often linked to developmental objectives.

The contribution of the present paper is that it digs into the complex causal nature of regional water security or security in general in two regions – Central Asia and Southern Caucasus. By doing so, it can be ascertained that security in these two regions is intrinsically linked to water, but there needs to be much more comprehensive analysis of causal factors, not just “snapshot” views, to see the big picture. The first
part of this paper includes a discussion on how water security is defined and its link with development literature, then an in-depth analysis of two cases and a discussion is provided, followed by a conclusion and policy recommendations.

II. WATER IN SECURITY AND DEVELOPMENT LITERATURE

In 1983, Richard Ullman, in his work on redefining security, argued that “defining national security merely (or even primarily) in military terms conveys a profoundly false image of reality,” and suggested that security should be defined as “an action or sequence of events that… threatens drastically and over a relatively brief span of time to degrade the quality of life for the inhabitants of a state…” (Ullman, 1983, pp.129, 133). In 1987, the Brundtland Commission report entitled “Our common future: report of the World Commission on Environment and Development” stressed the need to expand the traditional notion of security to include “growing impacts of environmental stress – locally, nationally, regionally, and globally” (Bruntland Commission, 1987, p. 24).

The expansion of the security definition to include the environmental vulnerabilities and factors has led to increased attention to water security as a concept to explain various aspects of water-related issues. It should be noted, however, that although the use of the term has increased and is being used in a wide range of disciplines, the approaches and scales have varied greatly. As such, in the 1990s, water security was mainly used with regard to water wars (Wolf, 1997) and water terrorism (Gleick, 2006). Later, the definition was expanded to include the access to and affordability of water resources and its human security dimension (Cook and Bakker, 2012).

UN-Water (2013, p. vi) defines water security as “the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability”. Wegerich and others (2015, p. 4659), however, emphasize that although this definition focuses on the demand side of water security, it “critically lacks reference to the supply-side”.

On the other hand, water security in most literature is considered through the environmental security lens and linked to food or human security. Libiszewski (1992), however, argues that environmental conflicts are not necessarily the struggle for scarce natural resources, but they can be manifested as conflicts induced by degradation of natural resources. In this respect, there is need to distinguish between environmental and geopolitical scarcity in which the former is directly linked to scarcity as a result of environmental degradation and the latter stems from uneven distribution of
natural resources. Accordingly, distinguishing between the two is important to better understand the conflict dynamics over natural resources.

With the growing salience of the development paradigm, there is also need to effectively draw linkages between development and water security concepts. Development, by definition, is generally about change, “not just any change, but a definitive improvement” (Slim, 1995, p. 143). In this respect, water security in a wider definition should embed the considerations of both the demand and supply-sides of water, as well as its human security aspect and be linked to the overall betterment in society and countries of concern.

Such betterment requires effective cooperation in the transboundary context in which shared watercourses are central for socioeconomic development and the environmental sustainability of adjacent territories. As such, shifts in political divisions associated with the integration or disintegration of political units that result in changes in riparian relations may be an indicator of potential water conflict in the transboundary basins (O’Hara, 2000) because of changing historical patterns of appropriation and utilization of water resources caused by new political borders (Weinthal, 2002). The alteration of interests of new nation-States and the asymmetries in relative capabilities are viewed as common causes of water conflicts.

Accordingly, the politico-military dimension of water security should be based on establishing cooperative arrangements that facilitate dealing effectively with arising challenges. Given that “the mere existence of cooperative arrangements is often celebrated as a sign of progress, with little or no interrogation of their influence over the intended goals of the cooperation” (Kistin and Phillips, 2008), it is imperative that water security at the transboundary level takes into account cooperation that is equal in terms and acceptable by all participating countries.

### III. WATER SECURITY IN CENTRAL ASIA

The water resources of Central Asia are comprised of two major endorheic rivers, the Syr Darya and the Amu Darya, which originate from the snowy peaks of the Tian Shan and Pamir mountains, flow crossing the borders of seven countries (Afghanistan, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), and terminate in the Aral Sea. The Amu Darya river’s flow is formed mainly in Tajikistan (about 80 per cent), Afghanistan (12 per cent), Uzbekistan (6 per cent), and Turkmenistan (3.5 per cent). In the Syr Darya river basin, Kyrgyzstan contributes about 74.2 per cent of the river flow, followed by Kazakhstan, 12.1 per cent, Uzbekistan, 11.1 per cent, and Tajikistan, 1.1 per cent (Ibatullin, 2013). Melting glaciers of snow peaked mountains are a major source of nourishment.
The arid climate of the region with low and irregular rainfalls had necessitated the development of irrigated agriculture from old times. Agricultural development was also strongly linked to historical processes that took place in the region. The expansion of the Russian Empire to Central Asia was not initially driven by the need for large-scale cotton production (Obertreis, 2017); it became a priority after growth in demand for cotton from domestic textile producers following the 1861 Emancipation Reform and an increase in world prices resulting from the decline in cotton from the United States of America as the result of the American Civil War. During the Soviet period (1918–1991), the policy of economic orientation transformed Central Asia into the cotton basket of the Soviet Union, with Uzbekistan becoming one of the world’s leading cotton producers.

Figure 1. Water Resources in Central Asia

During the Soviet period, water was managed based on water-energy swap logic in which upstream States run their hydropower facilities in irrigation mode, prioritizing the water release during the vegetation season for the needs of downstream irrigated...
agriculture. Energy shortages during the winter in those countries were compensated by fossil fuel deliveries from downstream countries and the Unified Energy System of Central Asia, a power grip system set up in the 1980s.

After independence, countries initially agreed to continue with the established water management scheme. An agreement signed in February 1992 by Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, referred to as the Almaty Agreement, provided that the Parties shall have equal rights to water use and responsibility to ensure rational use and protection of water. Countries reconfirmed the previous arrangements based on water quotas and a water-energy barter mechanism.

The Almaty Agreement and the following legal acts were referred to regulating cooperation on environmental issues and to establishing a joint institutional framework, which, however, failed to prevent the rise of grievances among countries over the shared water resources. In August 1993, the Interstate Commission for Water Coordination, an institutional framework established to regulate regional cooperation efforts, blamed Kyrgyzstan of “unilateral change of regime of the Syr Darya rivers... in the interests of its energy sector...” (Central Asian Research Institute for Irrigation, 1993, p. 14). This rather stemmed from the problems that remained unaddressed by new agreements hastily made in the early 1990s.

These developments led to speculation that “nowhere in the world is the potential for conflict over the use of natural resources as strong as in Central Asia” (Smith, 1995, p. 351). The Pacific Institute, based on its water conflict database, also indicated that in the period 1990–2014, at least 13 conflicts over water resources in Central Asia were recorded, including development disputes, water used as either a political or military tool or target, or in an attempt of a terrorist act. Four of them were classified as violent, while the rest were considered to be non-violent (Gleick and Heberger, 2014). The Water Cooperation Quotient of the Strategic Foresight Group, on the other hand, has put four out of five Central Asian States under the risk of war over water resources (Philip and others, 2015).

This leads to question why there reportedly has been conflict potential in the region even though water cooperation agreements were signed, and an institutional framework was established and also what kind of implication these dynamics have on the region’s development prospects.

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1 See “Agreement between the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan on Cooperation in the Field of Joint Management on Utilization and Protection of Water Resources from Interstate Sources”. Available at www.icwc-aral.uz/statute1.htm.
The energy and irrigation systems in Central Asia were among the most complex ones; hence, they required a high level of coordination. Often the Soviet rule in the region was seen as being based on “divide and rule”, in which “disputes over water reinforced the national distinctiveness of the republics, thus limiting the potential for regional political cooperation, which would threaten Soviet control” and “as competition for water increased, the republics had little choice but to ask Moscow to intervene, a role Moscow willingly undertook” (O’Hara, 2000, p. 378).

On the other hand, the water-energy infrastructure was built disregarding the borders of administrative units (or treating them as a mere formality), making the system highly connected and the republics interdependent from one another. Some have argued in this regard that the Soviet rule was based on the “integrate and rule” principle instead (Wegerich, 2008, p. 85). As such, the dissipation of central administration, and fragmentation of water and energy management and planning left States unable to ensure the required level of coordination, threatening the operation of the old management system. Micklin (2000, p. 3) respectively suggested that the lack of power “to dictate water management policy in the region” was among the factors that contributed to heightened tensions among States.

At the same time, while the Soviet water management system was preserved, other regional approaches that supported it, such as food and energy exchanges, disappeared (Wegerich, 2004). New policy priorities arose in the post-1991 period, and the countries proceeded with national food and energy security policies, which sometimes clashed with the interests of other States, especially along upstream and downstream lines. For example, the privatization of State and collective farms in upstream Kyrgyzstan in the early 1990s resulted in the growth of private farms that changed the agricultural practices from livestock to cash crops, and consequently led to greater demand for water (Wegerich, 2004). The small changes at the country level had impacts on the water use and allocation at the transboundary level.

Looking at the nature of conflict in the two river basins of interest, one can distinguish similar yet different dynamics and causes. In general, three conflict points can be defined: water as a commodity; infrastructure building; and conflict between hydropower and irrigation regimes of water facilities.

The first conflict point has evolved around water being treated as a commodity that should be paid for. This approach emerged as a result of the pitfalls of the established water management system, which favoured downstream irrigation. The arrangements considered that the upstream States were to store water in winter to release it during vegetation season. The emanating hydropower was purchased by the downstream States. The energy deficit during winter was covered by coal, oil and gas deliveries from downstream to upstream States.
Shortly after independence, the downstream countries of Kazakhstan and Uzbekistan set market prices on their fuel,\(^2\) forcing upstream countries to shift to a hydropower generation regime, which meant that water was released in winter to generate more electricity. This intensified the conflict as the operation of the hydropower facilities led to a water deficit during the vegetation season and floods in the non-vegetation season. In 1997, the Upper House of the People’s Representatives of Kyrgyzstan passed a resolution in which water was recognized as a commodity, and in 2001, water was reiterated as a state property under the Law on Interstate Use of Water, which should be paid for by other States. In response, Uzbekistan cut deliveries of natural gas to Kyrgyzstan and accused it of failing to follow existing agreements.

The failure of the newly established water regime to arrest the growing disagreements among States can be attributed to the very nature of the agreement. Despite the widespread belief that “once cooperative water regimes are established through treaties, they turn out to be impressively resilient over time, even between otherwise hostile riparians, and even as conflict is waged over other issues” (Wolf, Yoffe and Giordano, 2003, p. 2). It is important to note that if components of a treaty are not implemented or are unequal in terms, favouring interests of one actor over a collective will result in “poor cooperation” or even “non-cooperation” (Zeitoun and Mirumachi, 2008, p. 303).

The reconfirmed water management system in Central Asia reflected the Soviet legacy, which was based on unequal water distribution aimed at enhancing irrigation productivity in the region (Wegerich, 2004), and failed to consider economic interests and the needs of Soviet Central Asian republics. The system did not respond to political interests and economic priorities of newly emerged countries either. For example, while it was agreed that water should be used in the same manner as during the Soviet period, the costs of operation and maintenance of infrastructure were inflicted on upstream States (Wegerich, 2004). On the other hand, while the focus was on water allocation, no real mechanism for dealing with disputes was developed.

The second conflict point evolved around building new infrastructure and was inherent to both river basins. In the Syr Darya, the plans of Kyrgyzstan to complete the

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\(^2\) Although both countries are well endowed with energy resources, in the early 1990s, they faced challenges in providing energy to upstream States at the subsidized rates previously applied. The Soviet economic orientation policy resulted in high dependence of States on the goods that they did not produce. Uzbekistan had unrealized energy producing potential, which made it a net energy importer. It faced world market prices for wheat and energy products, while also running a trade deficit in energy and consumption goods. For Kazakhstan, one of the key challenges was the connectivity between regions. Respectively, although the country had rich oil and coal reserves, these commodities were mainly concentrated in the western and northern provinces of Kazakhstan. The southern provinces were dependent on power imports from neighbouring Central Asian States.
construction of the Kambar-Ata I reservoir to meet the winter peak of domestic energy demand was opposed by downstream Uzbekistan, which feared the sustainability of water supplies. The conflict here is not as profound, partly because of lack of clarity regarding investments.

The conflict in the Amu Darya basin, on the other hand, was about transboundary resource abstraction. Tajikistan, which generates up to 80 per cent of the river’s water resources, but is not well endowed with fossil fuels, wanted to construct the world’s tallest hydropower plant on the Amu Darya tributary – the Vakhsh River – to achieve energy security. The project was planned in 1976, but was stopped in the 1990s. After independence, Tajikistan attempted to attract external investments to complete construction, however, disagreements and strong opposition from the lower riparian States effectively blocked financing for the project. The Government of Tajikistan argued that construction would allow better regulation of the river flow, which would equally benefit downstream States’ irrigation needs. Studies suggest, however, that “Rogun\(^3\) does not play a significant role in helping enhance summer flows for use in downstream irrigation” (Bekchanov and others, 2015, p. 869). The construction of the dam would result in a significant increase in hydropower production with relatively minor adverse impacts on downstream irrigation if it is implemented through a “cooperative optimal basin-wide management” (p. 869). However, if the benefits from hydropower generation are unilaterally maximized, it will only marginally improve energy production benefits, while significantly affecting the downstream agricultural sector (Bekchanov and others, 2015).

In the past few years, the situation is believed to have greatly been altered to a more positive direction. Uzbekistan, which opposed the hydraulic projects in upstream States, has begun to change its policy in support of such projects, and has even expressed interest in participating in them. It is, however, too early to judge about the outcome of Uzbek initiatives and see the extent at which the old policies have been altered. On the other hand, it is unlikely that upstream countries would really allow the participation of downstream riparians in their strategic projects. Essentially, the issue is not only about having those facilities, but also exercising effective control over their operation.

The last but not least point of conflict to look at is the one between hydropower operation and irrigation modes of hydraulic facilities of the region. The earlier described conflict points are connected to the water for irrigation and water for hydropower dilemma. Lack of an effective mechanism that addresses the interdependencies and diverse needs and interests of States results in a zero-sum situation around the

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\(^3\) The name of the hydropower dam.
operation of hydraulic facilities. As an example, there is an inherent fear among the downstream States that the facilities might potentially be used as tools to maximize power. As such, plans to build the Rogun Dam on the Vakhsh River were perceived as an aspiration of Tajikistan to gain more control over water resources, and thus win more power over downstream riparian States.

The latter point can also be traced to the nation- and State-building needs beginning in the early 1990s. According to Allouche (2005, p. 108), the emergence of nation-States translates into the need of State-building that can be understood as a State’s “capacity to monitor, circumscribe and control resources and people within its territory.” In this respect, water is considered as an indispensable element of a State’s ability to exercise control over its territory. In Central Asia, after the elimination of the authority of Moscow, the nation-building problems became more salient; water became an issue of national concern, whereas the control over territory was equalized to direct control over natural resources, including water (Allouche, 2005). This can be seen from States’ national legislation as well. For example, in the Water Code of Kazakhstan, it is stated that “the water fund of the Republic of Kazakhstan is an exclusive state property”; and the Law of the Republic of Uzbekistan on Water and Water Use stipulates that “water is the State ownership – the national wealth of Uzbekistan – and is subject to rational use and government protection.”

IV. WATER SECURITY IN SOUTHERN CAUCASUS

In Southern Caucasus, the rivers of Kura and Araks are the main water arteries. Approximately 65 per cent of the basin is in the countries of Southern Caucasus, while the rest is shared between the Islamic Republic of Iran (19.5 per cent) and Turkey (15.1 per cent). The key tributaries of the Kura River are the Mtkvari and the Postkhovi, originating from Turkey, and the Debet and the Agstay, from Armenia. The Araks River originates in Turkey, but continues as a border between Armenia and Turkey, Azerbaijan and Turkey, Armenia and the Islamic Republic of Iran, and Azerbaijan. Water distribution is uneven, with Georgia being the most water-abundant country, and Azerbaijan being the most water scarce. Seventy per cent of the water sources in Azerbaijan come from outside the country.

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6 For this paper, Azerbaijan, Armenia and Georgia comprise the Southern Caucasus region.
Most of the literature on Southern Caucasus focuses primarily on the conflict between Armenia and Azerbaijan over the Nagorno-Karabakh as an ethnic and territorial confrontation between the two countries. However, water is one of the cross-cutting factors linked to peace and stability in the region, which is often overshadowed by the above territorial dispute.

7 The Nagorno-Karabakh conflict is between Armenia and Azerbaijan over the Nagorno-Karabakh region and surrounding districts. During the Soviet period, the Nagorno-Karabakh had autonomous status under Azerbaijan Soviet Socialistic Republic. It had a mixed population consisting of Armenians, who lived predominately in the hills and the Azerbaijanis, who were concentrated in the plains. Although the mountainous part of Karabakh was given to Azerbaijan as per a decision of Kavburo (the Bolshevik Caucasian Committee), the decision was never fully accepted and led to protests in 1945, 1965, and 1977. After the breakup of the Soviet Union, the wish of Nagorno-Karabakh Autonomous Oblast to secede from Azerbaijan and union with Armenia resulted in a conflict between the latter two that began in 1991 and ended in 1994, resulting in the death of thousands of people and the displacement of more than 500,000 people. In 1994, the ceasefire was signed and the Organization for Security and Co-operation in Europe Minsk Group was established to mediate the conflict. The efforts have reportedly failed, and the talks were frozen. For more information, see De Waal (2005) and Organization for Security and Co-operation in Europe (2009).
Similar to Central Asia, the breakup of the Soviet Union transformed the Soviet portion of the Kura-Araks basin into a transboundary, shared by three States – Armenia, Azerbaijan and Georgia. The basin, which feeds the region’s agriculture (fruits and grapes in the mountainous areas of upstream States, and cotton in the downstream State of Azerbaijan), is a lifeline for the three States for sustaining their socioeconomic development. To date, one of the pressing problems is the pollution of the basin and lack of adequate cooperation stemming from ongoing political conflict between Armenia and Azerbaijan. Although good cooperation exists at the bilateral level, to ensure good management of shared watercourses, the establishment of an efficient multilateral water management scheme with participation of all countries concerned, including those not regarded as Southern Caucasus, is required.8

Water cooperation in the Kura-Araks basin and the Nagorno-Karabakh conflict are mutually connected. The Transboundary Freshwater Dispute Database, established by Oregon State University, has shown that most water-related conflict events that took place in the basin between 1991 and 2003, especially between Armenia and Azerbaijan, were related to the Nagorno-Karabakh conflict.9 The intensity of these interactions varied from “small-scale military acts” as the most intense to “minor official exchanges” as the most positive event during the given period, meaning that such conflictual pattern results in minimal interaction regarding the establishment of a multilateral water management mechanism.10 Accordingly, it can be concluded that resolution of water-related issues in the region is closely linked to resolution of the Nagorno-Karabakh conflict.

It should be pointed out that the water factor is often overlooked in the above conflict, but its role is twofold: on the one hand, it underpins the water and energy security of Nagorno-Karabakh and partially of Armenia, while on the other hand, it is critical for the development, security and safety of the neighbouring regions of Azerbaijan.

Discussions on the conflict usually unfold around the strategic importance of Nagorno-Karabakh with regard to military security, transportation network, and economic viability (Dietzen, 2014). This area has, however, another strategic role, namely water security.

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8 The Kura-Araks river basin is shared by Armenia, Azerbaijan, Georgia, the Islamic Republic of Iran and Turkey.

9 See Transboundary Freshwater Dispute Database. Available at http://gis.nacse.org/tfdd/internationalEvents.php. For more details also review Wolf (1999).

10 The Transboundary Freshwater Dispute Database was developed as part of the Basins at Risk project. It documents the historical water relations in transboundary water basins worldwide. To better reflect the level of event intensity in the basin, the Water Event Intensity Scale has been developed. For more information, see Yoffe and Larson (2001).
The lion’s share of water that flows into the area is formed in Kalbajar. The district provides about 60 per cent of the water that flows into Karabakh. It also sustains the Vorotan River, which, in turn, helps to replenish Lake Sevan in Armenia. Lake Sevan sources about 80 per cent of the water resources of Armenia (Dietzen, 2014).

The two regions of the former Nagorno-Karabakh is also home to the widely discussed and contested Sarsang Dam. The dam, which was built in the 1970s on the Tartar River, provides 40 to 60 per cent of Karabakh electricity. It has a capacity of 560 million cubic meters ($m^3$), and is at about 700 meters above the sea level (Rzayev, 2015). According to Azerbaijani officials and experts, the risk associated with the Sarsang Dam may be the result of obsolescence of hydraulic facilities and equipment, and growth in intensity of calamities worldwide, which may have an impact on the disasters in the Caucasus.

In 2015, upon the request of Azerbaijan, the issue pertaining to the physical condition of the Sarsang Dam was brought to the Parliamentary Assembly of the Council of Europe. The Assembly’s rapporteur at the time emphasized that the lack of regular maintenance of the dam is threatening the entire area, and asserted that “the inhabitants of bordering regions of Azerbaijan are deliberately deprived of water”. In January 2016, the Assembly passed a resolution in which it considered that “the deliberate creation of an artificial environmental crisis must be regarded as ‘environmental aggression’ and seen as a hostile act by one State towards another...” and while noting that “the lack of regular maintenance work for over twenty years on the Sarsang reservoir, located in one of the areas of Azerbaijan occupied by Armenia, poses a danger to the whole border region,” requested “the Armenian authorities to cease using water resources as tools of political influence or an instrument of pressure benefiting only one of the parties to the conflict.”

The resolution was adopted by 71 votes with 42 against and 49 abstaining. Commenting on the resolution, an Armenian official declared that the adoption of such resolution undermines the efforts aimed at resolving the Nagorno-Karabakh conflict (NEWS am, 2015).

The Sarsang Dam represents a security dilemma, as it can potentially be used as political leverage or a military tool because of its strategic location and the impact it may cause. Some Azerbaijani officials indeed claimed that there was a risk of dam destruction for military purposes during the first days of the Nagorno-Karabakh conflict in the early 1990s. Accordingly, the insecurities are deeply engrained in this dispute with Azerbaijan, framing this status quo as “hydro-terror” against their country (Rzayev, 2015).

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At the same time, although water plays a large role in security dynamics of the region, “it is not likely to trigger large-scale violence,” but rather “increase the existing tensions over resources with catalytic and far-reaching effects for the region” (Ivanova, 2009). Accordingly, failure to recognize its strategic role in the security of Armenia and unrecognized Nagorno-Karabakh would certainly put the peace talks into a deadlock. Recognizing and addressing the complexity of the water-security nexus in the region would help in tailoring the solutions and confidence-building measures required to attain peace.

V. DISCUSSION

From the sections above, the complexity of the nexus between water and other non-water related issues can be observed, be they energy, security, or other developmental aspects. Based on that, four key lessons can be deduced.

First, the regional water security problems are linked to many issues, which are not always water related but rather are associated with the developmental dimension. Although there is often an intuitive connection between water issues and hydropower and agriculture through the water-energy-food/agriculture nexus, that is actually an oversimplification. The problem of inefficient cooperation among States might also be rooted to national security, State-building, social stability and other issues not deeply analysed in this paper. As the focus of this paper was narrowed down to certain elements, only the tip of an iceberg was covered. Future solutions should embrace the complexity of the issue and be based on holistic approaches.

Second, it is important to avoid overly simplified conclusions and solutions. The prevailing mistrust and zero-sum logic are the result of many factors, which may be difficult to track if coverage is limited to only the water sector. In addition, the disintegration processes in the regions seem to continue (Makeev, 2018), which hinder the prospects of meaningful water cooperation.

Third, there needs to be a careful account of how water security problems are triggered and what they trigger. For example, Spoor and Krutov (2003) argue that the competition over water resources in Central Asia may intensify growing irredentist sentiments and partly drive inter-ethnic confrontation. There is lack of direct causality between the two, but when looking at the resource constraints as a threat multiplier, “it is more productive to conceive of conflict as a social process rather than a causal relationship between scarcity and violence” (Bichsel, 2009, p. 125).

Finally, climate change is another complicating factor not covered in this paper, but worth mentioning. In Central Asia and Southern Caucasus, climate change-related risks are somewhat similar – that is, the disruption of water resources and reduction in long-term water reserves. The assessment of the change in water regime in the
Commonwealth of Independent States, including those in Central Asia and Southern Caucasus, according to climate change scenarios, indicates that water stocks will decline further in areas that already experience scarcity. At the same time, declines in precipitation during summer will threaten food security, while growth of average temperatures will make the habitat less comfortable for living (Blinov, 2012).

The dynamics at which climate change will drive the regional security situation are also diverse and complex. According to the Stockholm International Peace Research Institute, water stress caused by climate change will have severe implications on the lifestyles of people living in the areas dependent on agriculture of arid and semi-arid zones. This can pose a serious threat to the livelihood of marginalized groups and is, therefore, linked to human security issues. The team from the institute suggested that there is a “concern that recent shifts in precipitation – and predicted future shifts – will increase competition over scarce water resources, both within and between states” (Mobjörk and others, 2016, p. 6). The adaptation to and mitigation of the effects of climate change requires bold measures at the country and the interstate level. Already there are problems to develop the necessary solutions because of unresolved disputes. For example, in 2015, during the high-level segment of the twenty-first session of the Conference of the Parties (COP 21) of the United Nations Framework Convention on Climate Change (UNFCCC)\(^\text{12}\) meeting, an Azerbaijani official stated that the “efficient realization of climate change mitigation and adaptation actions are conditioned by the ability of Azerbaijan to exercise effective control over its territory”\(^\text{13}\).

VI. CONCLUSION AND RECOMMENDATIONS

In this paper, the complexity of water-security nexus in Central Asia and Southern Caucasus and its connection to development of both regions is investigated. The analysis suggests that water security is multidimensional and is linked to many other non-water related issues. Accordingly, it cannot be dealt with in isolation. Building on these interdependencies, the following policy solutions are proposed.

Reaching an agreement that deals with existing tensions in Central Asia related to conflicting modes of hydraulic facilities’ operation and new infrastructure building should consider going beyond the traditional approach of linking only water and energy. Instead, the viable strategy should be based on “linking of upstream-downstream issues with issues “beyond” the river that facilitates quid pro quos and side payments” (Ho, 2017, p. 144). To this end, the negotiations need to be broadened to address

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\(^{12}\) Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC).

existing challenges holistically. Although some suggest that the linkages can be made in relation to financial resources, energy resources, political linkages and data to encourage positive-sum solutions (Wolf, 1997), in Central Asia, it is imperative to consider the domestic level political peculiarities of each State that influences the interstate cooperation patterns, and begin from low-hanging fruits and gradually expanding the cooperation mode to new areas.

At the same time, it is critical to move towards enhanced benefit sharing stemming from cooperation and usage of shared water resources. While benefit sharing should be considered as complementary to issue-linkaging, it must be carried out through a phased approach by moving towards issues of “existential matter” only systematically. This requires refocusing from water’s physical volumes to the values coming from water use in the economic, social, political, and environmental spheres. Over time, the benefits “may include reduced effects of hydrologic variability, flood and drought mitigation, increased system-wide yields of water, improved environmental management, and hydropower generation” (Qaddumi, 2008, p. 4).

At the country level, the focus should be on lessening the water-intensity of countries’ economies and their exports. Data suggest that Kazakhstan and Turkmenistan are net exporters of both green and blue water,14 Kyrgyzstan is a net importer of both, and Tajikistan and Uzbekistan import green water and export blue water (Stucki and Sojamo, 2012). Consequently, while water allocation from transboundary sources remains critical in ensuring water security, reduction of water intensity may mitigate a number of pressing issues, especially in downstream States and water-scarce basins.

In Southern Caucasus, bringing about peace requires a systemic approach that involves crossing the boundaries of issue areas. Although some scholars suggest that starting the talks from water may be one of the entry points to begin future peace talks, as was the case in Southern African States where water became “one of the foundations for cooperation” or during “picnic table” talks between Israel and Jordan in 1953 on management of the Jordan River amid war between them (Wolf and others, 2006, p. 3), without proper confidence-building measures, this might not extend far. As mentioned earlier, the mere existence of an agreement does not necessarily mean effective cooperation between participating States. The goal in Southern Caucasus should be to find the middle ground among countries in order to lay a foundation for countries to prosper together. The measures should be comprehensive and systemic with water becoming one of the many key elements at the table.

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14 According to Malin Falkenmark, an expert on sustainable use of water, there are two types of water – blue and green water. Water from aquifers, lakes, and dams is generally understood to be blue water, and the moisture in soil and plants is referred to as green water. For more information, see Falkenmark and Rockström (2006).
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Water security in Central Asia and Southern Caucasus


Despite gains in reducing the mortality rates of infants and children in Asia and the Pacific, millions continue to die each year from preventable causes. A growing body of research highlights that more generous maternity leave has significant development benefits, especially with regard to infant mortality and child health outcomes. Little is known, however, about the impact of national maternity leave policies specifically in Asia and the Pacific.

The objective of the present paper is to evaluate whether paid maternity leave affects infant and child mortality in 34 countries of Asia and the Pacific between 1991 and 2016, using a fixed effects model. The results indicate that national guarantees of paid maternity leave are associated with lower infant mortality overall and lower under-five mortality, in particular among the upper-middle income countries. These results are consistent with research indicating that paid maternity leave is likely to allow new mothers time to breastfeed, care for ill babies and ensure that their children receive vaccinations.

Efforts to expand paid maternity leave across the region could make a substantial difference in parents’ ability to care for their children and also facilitate the emotional and physical recovery of mothers, contribute towards increased income security, promote employment continuity and advance gender equality. In line with international standards, the duration of leave, wage replacement rate and extent of coverage should be carefully considered to ensure the full effectiveness of maternity leave policies. Furthermore, in the context of a burgeoning informal economy in which women are distinctly overrepresented, it is hoped that the findings of this paper will influence Asian and Pacific Governments to learn from the experience of other countries in ensuring legal provision of paid maternity leave and also extending much-needed maternity protection coverage to women workers beyond the formal sector.

**JEL classification:** J13, J16, I12, I18

**Keywords:** childcare, maternity, mortality rates, entitlements
I. INTRODUCTION

Maternity protection is a fundamental human right enshrined in the Universal Declaration of Human Rights,\(^1\) among other key frameworks, and is an indispensable element of comprehensive work–family policies (ILO, 2014). The duration of maternity leave and the level of income replacement, in addition to the observance of the provisions in practice, are central factors in assessing maternity protection legislation and its association with women’s health, their status in the workforce and gender equality at work, in general.

Research indicates that there are clear costs associated with very short leave provision and a low level of income replacement, as mothers may not be ready to return to work and are thus associated with a high risk of dropping out of the labour market altogether (Keck and Saraceno, 2013). It also has a considerable effect on facilitating emotional and physical recovery, ensuring employment continuity and, by sustaining a mother’s economic independence, it can act to challenge the traditional gender division of labour in the household (Grimshaw and Rubery, 2015).

In Asia-Pacific countries, the provision of maternity leave is generally available to workers in the formal sector. The average duration of maternity leave in the region had been gradually increasing (figure 1). It must be noted, however, that some countries have not changed the length of their maternity leave allowances in this period, such as Indonesia and Japan, and that one country, Papua New Guinea, grants unpaid maternity leave.

Of the 46 economies\(^2\) in Asia and the Pacific with available data, 40 of them\(^3\) mandate maternity leave, 24 mandate paternity leave and just 13 mandate parental leave. In addition, public childcare services are provided by just 25 economies, while parents receive allowances for children under six years old in only 17 countries.\(^4\)

The International Labour Organization stipulates that mothers should be entitled to a minimum paid maternity leave of 14 weeks (Convention No. 183)\(^5\) and encourages

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\(^1\) Resolution 217 A (III).

\(^2\) Data are not available for the following economies: Democratic People’s Republic of Korea; Turkmenistan; Tuvalu; American Samoa; Cook Islands, French Polynesia; Guam; Macao, China; Nauru; New Caledonia; Niue; and Northern Mariana Islands.

\(^3\) The following economies do not legally mandate unpaid or paid maternity leave: Marshall Islands, Micronesia (Federated States of), Palau and Tonga. Notably, Australia and New Zealand mandate parental leave, which can be shared between the mother and father as they choose.


countries to go even further in ensuring maternity leave periods of at least 18 weeks (Recommendation No. 191). Moreover, two other maternity-specific conventions of the International Labour Organization (ILO) (No. 3 of 1919 and No. 103 of 1952) provide for a compulsory leave period of six weeks after childbirth, during which the mother must not be allowed to work.

In terms of compliance with Convention No. 183 on duration of maternity leave, only 19 countries in Asia and the Pacific provide paid maternity leave that exceeds 14 weeks (98 days). Furthermore, only 12 countries adhere to Recommendation No. 191 by providing at least 18 weeks (126 days).

In conformity with Convention No. 183, the cash benefits paid during maternity leave should be at least two thirds of a woman’s previous earnings. Of the countries in Asia and the Pacific that mandate paid maternity leave, 29 pay 100 per cent of average wages, 10 provide less than 100 per cent and three pay less than the recommended two thirds.

It is important to bear in mind that the coverage of workers by maternity protection provisions depends on various factors, including the extent to which the law is actually implemented, and consequently, the share of the legally protected population which benefits from its application. Annex II provides estimates of the proportion of women receiving maternity benefits in countries of Asia and the Pacific with available data. On average, countries in the region cover only approximately 33.4 per cent of women giving birth for cash maternity benefits.

Most maternity cash benefit schemes and employer liability provisions cover primarily women in formal employment. Several countries, however, are beginning to adjust their legal frameworks to extend maternity protection coverage to certain categories of workers in the informal economy, and, in so doing, facilitate their transition to the formal economy. They have also taken measures to overcome the financial and administrative barriers that have stood in the way of covering these categories of previously uncovered workers.

Mongolia, for instance, provides universal maternity protection coverage through a combination of mechanisms. Formal employees are covered by social insurance on a mandatory basis and receive a replacement rate of 100 per cent of their covered wage for four months. Herders, self-employed and workers in the informal economy can join the scheme on a voluntary basis and receive maternity cash benefits for four

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7 C003 - Maternity Protection Convention, 1919 (No. 3), 1st ILC session, 29 November 1919.
8 C103 - Maternity Protection Convention (Revised), 1952 (No. 103), 35th ILC session, 28 June 1952.
months at a replacement rate of 70 per cent of their selected reference wage after 12 months of contributions. In addition, maternity cash benefits under the Social Welfare Scheme are provided to all pregnant women and mothers of infants regardless of their contribution to the social insurance scheme, status in employment or nationality. Since 2007, the benefits are delivered through one stop shops, a unified service delivery system, including social welfare, social insurance, employment counselling and civil registration. To meet the needs of rural and nomad women, all of the country’s provinces and most districts have one stop shops, and a mobile one stop shop van is provided for residents in particularly remote areas (ILO, 2016a; 2016b).

Accordingly, it is hoped that the findings of the present paper will influence Governments to learn from the experience of Mongolia and other countries in ensuring maternity benefits coverage for all women workers, in both the formal and informal sectors.

II. EXAMINING PAID MATERNITY LEAVE AND CHILD MORTALITY IN ASIA AND THE PACIFIC

Although the mortality rate for children under five years in Asia and the Pacific has fallen by more than 50 per cent since 2000, millions of infants and children still die each year from preventable causes, and a notable proportion of these deaths take place in low- and middle-income countries of the region. Building on the context set out above, the objective of this section is to probe further into examining the association between paid maternity leave and child health outcomes in Asia and the Pacific.

There is evidence that supports the hypothesis that more generous maternity leave has significant development benefits, in particular when referring to infant mortality and health outcomes (Fallon, Mazar and Swiss, 2017; Nandi and others, 2016). Little is known, however, about the impact of national maternity leave policies, specifically within the context of Asia and the Pacific.

Accordingly, a fixed effects model is used to evaluate whether paid maternity leave affects infant and under-five mortality rates in countries representing the five subregions of Asia and the Pacific (South and South-West Asia, North and Central Asia, South-East Asia, East and North-East Asia, and the Pacific).

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10 Infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births in a given year.

11 Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age of five, if subject to age-specific mortality rates of the specified year.
Data

Through a dataset based on publicly available statistics on paid maternity leave complemented with narrative evidence of the dates when legislative changes were enacted, paid maternity leave between 1991 and 2016 in 34 Asia-Pacific countries is examined for this paper using complete data available for this time period.12

Data on maternity leave are collected from the Women, Business and the Law database of the World Bank and through narrative evidence on legislative changes from the NATLEX and Working Conditions Laws databases of ILO. Further details on the legislative provisions related to the duration of maternity leave in these countries are provided in annex I.

Data on infant and under-five mortality, immunization rates and health expenditures are collated from the Health Nutrition and Population Statistics database of the World Bank. In addition, data on average years of schooling are retrieved from the Global Educational Attainment dataset provided by the Institute for Health Metrics and Evaluation. The remaining data are primarily obtained through the World Development Indicators database of the World Bank.

The main policy variable of interest is the duration of paid maternity leave (in days) and the outcome variables of interest are the mortality rates of children – in their first year (infant) and under the age of five years. The potentially moderating effects of immunization rates, education, health expenditures, and other economic and development factors are controlled for.

Figure 1 shows a plot of the average duration of maternity leave (in days) in Asia and the Pacific from 1991 to 2016. Aside from the overall increase in the duration of maternity leave in the region, the graph shows that upper-middle income countries have generally maintained the longest maternity leaves across this time period. This can partly be explained by the inclusion in this income group of the country with the longest maternity leave in the region (Islamic Republic of Iran, 270 days) and former Soviet countries, Azerbaijan and the Russian Federation, which place a strong emphasis on social protection and maternity protection provisions.

Data on duration of maternity leave from 1991 to 2016 are not available for the following economies: Democratic People’s Republic of Korea; Georgia; Kazakhstan; Kiribati; Maldives; Marshall Islands; Micronesia (Federated States of); Palau; Samoa; Timor-Leste; Tonga; Turkmenistan; Tuvalu; American Samoa; Cook Islands; French Polynesia; Guam; Hong Kong, China; Macao, China; Nauru; New Caledonia; Niue; and Northern Mariana Islands.
Figure 1. Duration of maternity leave in Asia and the Pacific, 1991–2016


Note: All, full sample; LMCs, low- and lower-middle income; UMCs, upper-middle income; HICs, high-income countries.

As illustrated in figures 2 and 3, there have been marked improvements in reducing infant and under-five mortality rates in Asia and the Pacific, with a decline of more than fifty per cent in both cases. A closer look through a granular lens, however, shows that progress has been heterogeneous across countries: for instance, Afghanistan (low-income) and Pakistan (lower-middle income) still have high levels of infant and under-five mortality, which have been stagnating in recent years.
Figure 2. Infant mortality rates in Asia and the Pacific, 1991–2016

![Figure 2. Infant mortality rates in Asia and the Pacific, 1991–2016](image)


**Note:** All, full sample; LMCs, low- and lower-middle income; UMCs, upper-middle income; HICs, high-income countries.

Figure 3. Under-five mortality rates in Asia and the Pacific, 1991–2016

![Figure 3. Under-five mortality rates in Asia and the Pacific, 1991–2016](image)


**Note:** All, full sample; LMCs, low- and lower-middle income; UMCs, upper-middle income; HICs, high-income countries.
Table 1. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (All)</th>
<th>Std. Dev. (All)</th>
<th>Mean (LMCs)</th>
<th>Std. Dev. (LMCs)</th>
<th>Mean (UMC)</th>
<th>Std. Dev. (UMCs)</th>
<th>Mean (HICs)</th>
<th>Std. Dev. (HICs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paid maternity leave (days)</td>
<td>92.32</td>
<td>31.95</td>
<td>88.67</td>
<td>32.84</td>
<td>101.07</td>
<td>34.74</td>
<td>91.46</td>
<td>18.63</td>
</tr>
<tr>
<td><strong>Dependent variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality rate, infant (per 1 000 live births)</td>
<td>33.67</td>
<td>25.73</td>
<td>46.37</td>
<td>24.07</td>
<td>23.23</td>
<td>15.60</td>
<td>5.24</td>
<td>2.42</td>
</tr>
<tr>
<td>Mortality rate, under-5 (per 1 000 live births)</td>
<td>44.20</td>
<td>36.34</td>
<td>61.82</td>
<td>35.41</td>
<td>28.37</td>
<td>19.64</td>
<td>6.59</td>
<td>3.09</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average years of schooling per capita, female</td>
<td>8.46</td>
<td>3.51</td>
<td>6.85</td>
<td>3.19</td>
<td>9.33</td>
<td>2.13</td>
<td>12.71</td>
<td>1.36</td>
</tr>
<tr>
<td>Immunization, DPT (% of children ages 12–23 months)</td>
<td>83.99</td>
<td>16.11</td>
<td>78.17</td>
<td>17.86</td>
<td>91.99</td>
<td>8.70</td>
<td>92.66</td>
<td>6.01</td>
</tr>
<tr>
<td>Current health expenditure (% of GDP)</td>
<td>4.92</td>
<td>2.14</td>
<td>4.67</td>
<td>2.09</td>
<td>4.58</td>
<td>1.17</td>
<td>6.21</td>
<td>2.78</td>
</tr>
<tr>
<td>Log GDP per capita</td>
<td>8.78</td>
<td>1.14</td>
<td>8.39</td>
<td>0.98</td>
<td>9.31</td>
<td>0.91</td>
<td>9.33</td>
<td>1.37</td>
</tr>
</tbody>
</table>

**Note:** All, full sample; LMCs, low- and lower-middle income; UMCs, upper-middle income; HICs, high-income countries. The number of observations for the dependent variables is 884 for the full sample, 520 for LMCs, 208 for UMCs and 156 for HICs.

**Empirical methodology**

Political and economic structures can change over time. Various country-specific characteristics can influence paid maternity leave policies and infant or under-five mortality, but all of these factors may not be fully measurable in the dataset. For panel data, a random effects model or a fixed effects model can be used to measure the effect of changes on an outcome variable. A random effects model assumes
no correlation between the error terms and explanatory variables. In cases in which a number of unobserved time-invariant factors are assumed to be correlated with explanatory variables, a fixed effects model is preferred, as it controls all the unobserved time-invariant characteristics and makes the estimated coefficient less likely to be biased. As various unobserved country-specific characteristics, such as policy and economic structures, culture, religion, and social norms, are assumed to be correlated with child mortality, a fixed effects model is used. The Hausman test confirms the correlation between unobserved time-invariant effects and explanatory variables.

By integrating existing data that contain variables of interests, such as maternity leave, child mortality, immunization rates, health expenditure, education, and other country-specific characteristics, a potentially important research question can be addressed at a low cost. Various socioeconomic, political and cultural factors that may or may not change over time are expected to affect the explanatory variables and the outcome variable. Under the assumption that unobserved time-invariant factors are correlated with explanatory variables, a fixed effects model is used to examine the causes of changes. One drawback in using a fixed effects model with existing data might be that all the time-variant variables cannot be controlled. Inclusion of other observed time-variant variables may partially address this issue, but at the same time, it is necessary to be cautious, as it may increase the errors in the model.

Similar to specification of Aslim, Panovska and Tas (2019), the model is defined as follows:

\[ y_{it} = \alpha_i + \beta ML_{it} + \gamma X_{it} + \rho_t + \epsilon_{it} \]

where \( y_{it} \) is the infant or under-five mortality measure of interest for country \( i \) at year \( t \). The policy variable of interest is \( ML_{it} \) which captures paid maternity leave in terms of days for country \( i \) at year \( t \). Control variables, denoted as \( X_{it} \), include immunization rates, female average years of schooling (15 to 44 years of age), and health expenditures (% of gross domestic product (GDP)). The percentage of children aged 12 to 23 months immunized for diphtheria, pertussis, and tetanus is used as a variable in the under-five mortality models because of the significant number of vaccine-preventable deaths. The variables on schooling and health expenditures reflect the differences in institutional structures across markets. Average years of schooling and health expenditures are used as a proxy for education and health trends at the aggregate level, respectively. Log GDP per capita is also included to account for economic development. Year and country fixed effects are captured by \( \rho_t \) and \( \alpha_i \), respectively. The error term is \( \epsilon_{it} \). The objective of this fixed effects model is to estimate the coefficient \( \beta \) of the maternity leave policy variable.
Results

Tables 2a and 2b provide the estimates for all countries of the correlation between paid maternity leave and the mortality rates of infants and children under five years old. The countries are separated into three groups by level of income, as classified by the World Bank:¹³ (i) low- and lower-middle income (LMCs); (ii) upper-middle income (UMCs); and (iii) high-income (HICs).¹⁴

Table 2a. Estimating the correlation between paid maternity leave and infant mortality in Asia and the Pacific

<table>
<thead>
<tr>
<th>Policy variable</th>
<th>All (1)</th>
<th>LMCs (2)</th>
<th>UMCs (3)</th>
<th>HICs (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity leave</td>
<td>-0.0249**</td>
<td>-0.0521</td>
<td>-0.0169*</td>
<td>0.0115*</td>
</tr>
<tr>
<td></td>
<td>(0.00938)</td>
<td>(0.0276)</td>
<td>(0.00792)</td>
<td>(0.00533)</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization</td>
<td>-0.201***</td>
<td>-0.199***</td>
<td>-0.204***</td>
<td>0.00947</td>
</tr>
<tr>
<td></td>
<td>(0.0275)</td>
<td>(0.0337)</td>
<td>(0.0495)</td>
<td>(0.0146)</td>
</tr>
<tr>
<td>Health expenditures</td>
<td>0.720***</td>
<td>0.600*</td>
<td>-1.144***</td>
<td>-0.318***</td>
</tr>
<tr>
<td></td>
<td>(0.196)</td>
<td>(0.269)</td>
<td>(0.308)</td>
<td>(0.0889)</td>
</tr>
<tr>
<td>Schooling</td>
<td>14.95***</td>
<td>12.14***</td>
<td>19.22***</td>
<td>-0.777</td>
</tr>
<tr>
<td></td>
<td>(1.171)</td>
<td>(1.566)</td>
<td>(3.522)</td>
<td>(0.563)</td>
</tr>
<tr>
<td>Log GDP</td>
<td>-17.30***</td>
<td>-15.88***</td>
<td>-16.88***</td>
<td>-4.600***</td>
</tr>
<tr>
<td></td>
<td>(1.291)</td>
<td>(2.672)</td>
<td>(1.172)</td>
<td>(0.572)</td>
</tr>
<tr>
<td>Year</td>
<td>FE</td>
<td>FE</td>
<td>FE</td>
<td>FE</td>
</tr>
<tr>
<td>N</td>
<td>493</td>
<td>289</td>
<td>128</td>
<td>76</td>
</tr>
<tr>
<td>R² overall</td>
<td>0.381</td>
<td>0.205</td>
<td>0.147</td>
<td>0.0845</td>
</tr>
<tr>
<td>R² within</td>
<td>0.831</td>
<td>0.855</td>
<td>0.929</td>
<td>0.889</td>
</tr>
<tr>
<td>R² between</td>
<td>0.494</td>
<td>0.367</td>
<td>0.116</td>
<td>0.223</td>
</tr>
</tbody>
</table>

Note: All of the specifications include country fixed effects. Standard errors are in parentheses. Significance levels are: *0.05; **0.01; ***0.001. All, full sample; LMCs, low- and lower-middle income countries; UMCs, upper-middle income countries; HICs, high-income countries; FE, fixed effects.


Please refer to annex I for the income group categorizations (as per the World Bank) of each country in the sample.
The results show that in the case of infant mortality, there is an overall association of paid maternity leave with lower mortality in Asia-Pacific countries. Among all countries, a one-day increase in paid maternity leave reduces the infant mortality rate by 0.0249 deaths per 1,000 live births (p < 0.01). This is equivalent to 1.494 fewer deaths for every paid maternity leave of 60 days. The coefficient and the significance levels are lower in upper-middle income countries. The results are not statistically significant for low- and lower-middle income countries. Notably, immunization rates show a significant association with reduced infant mortality in most countries.

In the case of under-five mortality, national guarantees of paid maternity leave are associated with lower child mortality, with 5 per cent statistical significance. For instance, the under-five mortality rate decreases by 0.0291 deaths per 1,000 live births
for an additional day of paid maternity leave. The statistical significance increases to the 1 per cent level in upper-middle income countries. This association is observed even after controlling for countries’ immunization rates, health expenditures as a percentage of GDP, female years of schooling and log GDP per capita.

In high-income countries, paid maternity leave may be a less significant factor in relation to either infant or under-five mortality, as such leave has been mandated for several decades in most cases and accordingly, other factors are likely to be now playing a greater role. These include birth defects and chromosomal abnormalities, injuries and conditions in mothers that also affect their children.

Analyses to assess the robustness of the results are also conducted. A dummy variable that takes a value of 1 if a country has a maternity leave policy in a given year t and 0 if it does not. The main findings appear to be relatively robust to this alternative model specification. The results are consistent with the main results in terms of the association between maternity policy and infant and under-five mortality. The full set of results for the robustness checks is presented in annex III.

Discussion

The results indicate that national guarantees of paid maternity leave are generally associated with lower under-five mortality in countries of Asia and the Pacific. They also show that the less statistically significant results in relation to infant mortality suggest the need for further investigation on child health and development processes.

The overall findings are consistent with other research findings that support the importance of paid maternity leave to promote positive child health outcomes. For working mothers, maternity leave greatly enhances the probability of initiating and continuing breastfeeding for a healthy period of time (Yilmaz and others, 2002). In fact, the World Health Organization (WHO) recommends a minimum of six months of exclusive breastfeeding to achieve optimal growth, development and health benefits.\textsuperscript{15}

In addition, prior studies have also indicated that conflict between working hours of parents and the hours when immunizations are offered can lead to delays in attaining or neglect of much needed vaccinations (McCormick and others, 1997). Parental care is also especially important during the early months to ensure that the child receives the requisite nutrition and is raised in a setting where there is adequate sanitation (Nandi and others, 2016).

In addition, paid maternity leave has been shown to lead to positive outcomes for mothers, which indirectly may help reduce child mortality. Women who receive paid

\textsuperscript{15} Details on the World Health Organization’s infant feeding recommendation are available from www.who.int/nutrition/topics/infantfeeding_recommendation/en/index.html.
maternity leave not only have increased their income available during a critical time, but they are also more likely to stay employed after the child’s birth and not suffer a long-term wage penalty (Waldfogel, Higuchi and Abe, 1999). Paid parental leave also enables women to physically, mentally and emotionally recover from childbirth. For instance, studies have found that the availability of leave reduces the risk of post-partum depression (Chatterji and Markowitz, 2012). Across the spectrum of physical and emotional health, the length of leave is likely to make a substantial difference. According to some studies, it is only after at least 12 weeks of post-partum leave that mothers’ self-reported measures of vitality and physical health typically begin to improve (Dagher, McGovern and Dowd, 2014).

Despite the growing body of evidence that underscores the manifold benefits of maternity leave, there continues to be persistent obstacles to accessing maternity protection and barriers to implementing such policies in many countries across Asia and the Pacific. Eligibility criteria for maternity leave in many countries are often too restrictive to achieve universal protection. ILO estimates that approximately 15.6 million female domestic workers worldwide are not legally entitled to maternity leave (Addati, Cassirer and Gilchrist, 2014). Self-employed women, agricultural, casual or temporary workers, and migrants are also frequently excluded.

A key area of concern is that despite progressive legislation on paid maternity leave, the issue of financing these benefits still remains a challenge. For instance, in March 2017, the Parliament of India passed amendments to the Maternity Benefit Act, thereby granting women working in the formal sector a paid maternity leave of 26 weeks (182 days), an increase from the previous duration of 12 weeks (84 days). It should be noted, however, that as the employer is liable to pay these benefits, some critics argue that the policy could act as a disincentive to hire women. In addition, the disparity between the cost of hiring women compared to men may also lead employers to reduce women’s salaries to compensate for paying higher maternity leave benefits (Nikore, 2017).

There are a number of different methods of funding maternity cash benefits during maternity leave. The most commonly employed sources of funding in Asia and the Pacific are the following: employment-related social insurance (contributory schemes); the employer through the direct payment of maternity benefits (employer liability); and a combination of the two methods (mixed system). Less frequently employed are maternity benefits paid out of public funds (non-contributory schemes), which can finance maternity benefits individually or in conjunction with social insurance or the employers.

A shift from systems relying entirely on employer liability to more mixed systems has often proven to be more sustainable (Addati, Cassirer and Gilchrist, 2014). Finding
viable collective ways of financing maternity benefits without placing undue financial costs on the employer is essential to achieving effective maternity protection and gender equality at work. It should, therefore, become a priority in shaping policy.

Moreover, legislated paternity leave is a pivotal instrument to encourage men to take a greater role in childcare while promoting women’s career advancement. Such policies may include, among others, incentives to encourage men to use their legal entitlements to paternity or parental leave. In some countries, such as Portugal, bonuses are used to extend the total length of paid parental leave if it is shared among both parents (OECD, 2015). Sweden and Iceland have introduced a paternity leave scheme that can only be taken by the father and cannot be transferred to the mother, which has led to an increase in the number of fathers taking paternity leave (OECD, 2015). A study on the Quebec Parental Insurance Program in Canada, which improved compensation and reserved five weeks of leave for fathers, indicate that it greatly increases the rates at which fathers take leave and has made housework more gender-equal (Patnaik, 2019). This indicates that setting aside non-transferable leave specifically for fathers encourages the use of such leave. The knock-on effects include reducing the stigma of taking leave to spend time with the family, boosting positive labour market outcomes for women and creating a long-lasting change in patterns of behaviour at home.

Furthermore, some countries, such as Australia and New Zealand, are also dropping the distinction between maternity and paternity leave – opting instead for parental leave, which can be shared between the parents as they choose. Advocates argue that this gender-neutral approach is valuable in transforming traditional gender roles at home and in childcare.

III. POLICY RECOMMENDATIONS

The findings of the study reinforce the importance of increasing the adoption and availability of paid family leave to working parents across Asia and the Pacific. In this regard, the following priority areas of action for Governments in the Asia-Pacific region are recommended:

- Adopting and implementing inclusive laws and policies

Access to effective protection rests on labour legislation, policies and regulations that enshrine the right to maternity protection and work–family balance for all working women and men, including self-employed, informal, domestic and agricultural workers and those with non-standard contracts, without any discrimination. Greater efforts are also needed in raising awareness among employers and workers of maternity protection rights and through investing in monitoring and enforcement mechanisms.
Furthermore, improving data collection to measure the effective coverage of maternity protection legislation and its outcomes requires increased attention.

- Ensuring adequate wage replacement provisions

In accordance with international legal standards, the cash benefits paid during maternity leave should be at least two thirds of the employee’s previous salary, and for a period of not less than 14 weeks or preferably 18 weeks. This benefit should ideally be paid by social insurance or public funds at minimal or no cost to employers, in combination with public support measures and incentives, which especially target women in the informal sector, who are often left behind.

- Preventing and eliminating discrimination against women and men with family responsibilities

A comprehensive approach to preventing and combating the multiple forms of discrimination based on maternity and family responsibilities, including in relation to recruitment, retention and promotion, requires the establishment of adequate anti-discrimination frameworks supported by specialized authorities. Periodic review of anti-discrimination frameworks, enhanced guidance to employers and workers on how to comply, and collection and publication of data on discrimination based on family responsibilities increases accountability and public awareness of this issue. In addition, transforming discriminatory social norms by encouraging a shift towards a model in which men act as active co-parents is also crucial.

- Fostering continued research and data collection to inform evidence-based policies

Further research is essential to explore the mechanisms through which national-level family leave policies affect infant and child mortality and related development outcomes. Governments may wish to consider collaboration with academic institutes or United Nations entities to capitalize on emerging research in this area. One potential topic of interest is examining the impact of leave available specifically for parents to meet their children’s health needs, including for vaccination appointments or to seek medical care.

Another critical area of research is the obstacles facing countries in adopting maternity leave. An often-cited concern by developing countries is the costs of maternity benefits. One approach would be to look at the costs of social security more generally and consider the costs of maternity protection benefits. According to ILO calculations, a minimum package of social security is not only affordable and feasible even in the poorest countries, but it is conducive to social and economic development. Studies show that the initial gross annual cost (excluding access to
basic health care that it is already financed to some extent) is estimated to be in the range of 2.2 to 5.7 per cent of GDP (Pal and others, 2005). With respect to maternity cash and medical benefits in particular, the cost of financing maternity protection is low relative to other forms of social security and in most contexts, it is possible to finance a social insurance scheme providing cash maternity benefits for less than 0.7 per cent of covered wages.\textsuperscript{16}

When discussing affordability, it is also important to assess and contrast the costs of not providing adequate maternity protection, which include increased poverty, inequality and social exclusion resulting from the poor health or even death of women and children. Stenberg and others (2014) show that increasing health expenditures by just US$5 per person per year up to 2035 in 74 highly affected countries could yield up to nine times that value in economic and social benefits.

IV. CONCLUSION

The findings of the present paper suggest that paid maternity leave across the Asia-Pacific region could make a substantial difference in reducing child mortality. While maternity protection standards have been gradually improving in the Asia-Pacific region, the duration of leave available to women, and the amount of benefits, source of funding and coverage varies markedly among countries. The region still has a way to go in ensuring that all countries adhere to ILO Recommendation No. 191 by providing a minimum of 18 weeks of paid leave or ensuring an adequate wage replacement rate.

Beyond maternal and infant health, maternity leave can also contribute towards increased income security, promote employment continuity and advance gender equality in the workforce and the household. Nevertheless, in the context of a burgeoning informal economy in Asia and the Pacific in which women are distinctly overrepresented, further efforts are needed to extend coverage of maternity leave and benefits to women workers in the informal sector. It is hoped, therefore, that the findings of this paper encourage Governments to not only ensure the legal provision of paid maternity leave but to also extend much-needed maternity protection coverage to women workers in the informal economy. Through leaving no woman and child behind, the Asia-Pacific region will be able to make strides towards realizing the vision of the 2030 Agenda for Sustainable Development to achieve an inclusive future for all.

\textsuperscript{16} Based on data from the United States Social Security Administration and social security programmes around the world.
## Annex I

### Table A.1. Duration of paid maternity leave in countries of Asia and the Pacific (with available data)

<table>
<thead>
<tr>
<th></th>
<th>Country</th>
<th>Income group</th>
<th>Length of paid maternity leave (days)</th>
<th>Legislative provisions for duration of maternity leave and year of its enactment/amendment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Afghanistan</td>
<td>Low-income</td>
<td>90</td>
<td>2007: The Labour Code, Article 54 (1)</td>
</tr>
<tr>
<td>2</td>
<td>Armenia</td>
<td>Lower-middle income</td>
<td>140</td>
<td>2004: Labour Code, Article 172</td>
</tr>
<tr>
<td>4</td>
<td>Azerbaijan</td>
<td>Upper-middle income</td>
<td>126</td>
<td>1999: Labour Code, Article 125</td>
</tr>
<tr>
<td>5</td>
<td>Bangladesh</td>
<td>Lower-middle income</td>
<td>112</td>
<td>1939: Maternity Benefits Act 2006: Labour Act, Articles 45, 47(3)</td>
</tr>
<tr>
<td>6</td>
<td>Brunei Darussalam</td>
<td>High-income</td>
<td>91</td>
<td>2009: Employment Order, Article 91(1)</td>
</tr>
<tr>
<td>7</td>
<td>Cambodia</td>
<td>Lower-middle income</td>
<td>90</td>
<td>1997: Labour Law, Article 182</td>
</tr>
<tr>
<td>10</td>
<td>India</td>
<td>Lower-middle income</td>
<td>182</td>
<td>1961: Maternity Benefit Act, Article 6(2), (4) 2017: Maternity Benefit (Amendment) Act</td>
</tr>
<tr>
<td>11</td>
<td>Indonesia</td>
<td>Lower-middle income</td>
<td>90</td>
<td>1989: Law No.1, Labour Law, Article 13(2) 2003–2016: Act No. 13, Manpower Act, Article 82(1)</td>
</tr>
<tr>
<td></td>
<td>Country</td>
<td>Income group</td>
<td>Length of paid maternity leave (days)</td>
<td>Legislative provisions for duration of maternity leave and year of its enactment/amendment</td>
</tr>
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</tr>
<tr>
<td>12</td>
<td>Iran (Islamic Republic of)</td>
<td>Upper-middle income</td>
<td>270</td>
<td>1990: Labour Code, Article 76</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1995: Encouraging Breastfeeding and Protection of Breastfeeding Mothers Law, Article 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2013: Amendment to Family and Population Control Regulations Act, Article 2</td>
</tr>
<tr>
<td>13</td>
<td>Japan</td>
<td>High-income</td>
<td>98</td>
<td>1947: Labour Standards Act, Article 65(1)(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1991: Act on the Welfare of Workers Who Take Care of Children or Other Family Members Including Child Care and Family Care Leave, Articles 5, 6, 7, 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1991: Ordinance for Enforcement of the Act on the Welfare of Workers Who Take Care of Children and Other Family Members, Articles 4-2, 6, 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1998: National Personnel Authority Regulation amending NPA Regulation No. 15-14 (Hours of Work, Holidays and Leave). No. 15-14-6</td>
</tr>
<tr>
<td>15</td>
<td>Lao People’s Democratic Republic</td>
<td>Lower-middle income</td>
<td>105</td>
<td>2006: Labour Law (amended), Article 39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2013: Labour Law (amended), Article 98</td>
</tr>
<tr>
<td>16</td>
<td>Malaysia</td>
<td>Upper-middle income</td>
<td>60</td>
<td>1955: Employment Act, Article 37(1)(a) and (b)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1989: (i) Act No. 265, Employment Act, Article 37(1)(a), (ii) Act No. 265, Employment Act (with amendments), Articles 37(1)(a)(i) and 37(1)(d)(ii)</td>
</tr>
<tr>
<td>17</td>
<td>Mongolia</td>
<td>Lower-middle income</td>
<td>120</td>
<td>1999: Labour Law Article 104(1)-(3)</td>
</tr>
<tr>
<td>18</td>
<td>Myanmar</td>
<td>Lower-middle income</td>
<td>98</td>
<td>1954: Social Security Act, Chapter VI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2014: Leave and Holidays Act (1951), as amended 2014</td>
</tr>
</tbody>
</table>
### Table A.1. (continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Income group</th>
<th>Length of paid maternity leave (days)</th>
<th>Legislative provisions for duration of maternity leave and year of its enactment/amendment</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 Nepal</td>
<td>Low-income</td>
<td>52</td>
<td>1993: Labour Rules, Article 34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1993: Civil Service Rules, Article 59</td>
</tr>
<tr>
<td>20 New Zealand</td>
<td>High-income</td>
<td>126</td>
<td>1980: Maternity Leave and Employment Protection Act</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1987: Parental Leave and Employment Protection Act (No. 129), Article 9(1)</td>
</tr>
<tr>
<td>21 Pakistan</td>
<td>Lower-middle income</td>
<td>84</td>
<td>1958: West Pakistan Maternity Benefit Ordinance, Article 5(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2013: Khyber Pakhtunkhwa Maternity Benefits Act [No. XVIII] (provincial)</td>
</tr>
<tr>
<td>22 Papua New Guinea</td>
<td>Lower-middle income</td>
<td>0</td>
<td>---</td>
</tr>
<tr>
<td>23 Philippines</td>
<td>Lower-middle income</td>
<td>60</td>
<td>1989: (i) Republic Act No. 1161, Social Security Act (ii) Presidential Decree No. 1202, Amendment to Republic Act No. 1161, Section 7, (iii) Presidential Decree No. 1636, Amendment to Republic Act No. 1161, Section 11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1992: Republic Act No. 7322, Amendment to Republic Act No. 1161, Section 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1997: Republic Act No. 8282, Amendment to Republic Act No. 1161, Section 1</td>
</tr>
<tr>
<td>24 Republic of Korea</td>
<td>High-income</td>
<td>90</td>
<td>1953: Labour Standards Act, Article 74</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1987: Act on the Equal Employment for Both Sexes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2001: Amendment to Labour Standards Act</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2007: Act on Equal Employment and Support for Work-Family Reconciliation</td>
</tr>
<tr>
<td>Country</td>
<td>Income group</td>
<td>Length of paid maternity leave (days)</td>
<td>Legislative provisions for duration of maternity leave and year of its enactment/amendment</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------</td>
<td>--------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>Lower-middle income</td>
<td>84</td>
<td>1996: Labour Act and Rules, Article 42(1)</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Lower-middle income</td>
<td>84</td>
<td>1940: Maternity Benefits Ordinance (No. 32 of 1939) (Cap. 140) 1985: Maternity Benefits (Amendment) Act, No. 43 2018: Maternity Benefits (Amendment) Act, No. 15</td>
</tr>
<tr>
<td>Country</td>
<td>Income group</td>
<td>Length of paid maternity leave (days)</td>
<td>Legislative provisions for duration of maternity leave and year of its enactment/amendment</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------</td>
<td>--------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Turkey</td>
<td>Upper-middle income</td>
<td>112</td>
<td>2003: Labour Act, Article 74</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>Lower-middle income</td>
<td>126</td>
<td>1995: Labour Code, Article 233</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>Lower-middle income</td>
<td>84</td>
<td>1983: Employment Act (as amended up to 2010), Article 36(1)</td>
</tr>
</tbody>
</table>


Note: For Australia and New Zealand, the duration of parental leave has been indicated as this provides paid leave that women may take at and around childbirth.
Annex II

Table A.2. Effective coverage for mothers with newborns receiving maternity benefits in countries of Asia and the Pacific (with available data), 2015 or latest available year

<table>
<thead>
<tr>
<th>Country</th>
<th>Mothers with newborns receiving cash benefits, 2015 or latest available year (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Armenia</td>
<td>61.0</td>
</tr>
<tr>
<td>2 Azerbaijan</td>
<td>14.0</td>
</tr>
<tr>
<td>3 Bangladesh</td>
<td>20.9</td>
</tr>
<tr>
<td>4 China</td>
<td>15.1</td>
</tr>
<tr>
<td>5 India</td>
<td>41.0</td>
</tr>
<tr>
<td>6 Kazakhstan</td>
<td>44.6</td>
</tr>
<tr>
<td>7 Kyrgyzstan</td>
<td>23.8</td>
</tr>
<tr>
<td>8 Mongolia</td>
<td>100.0</td>
</tr>
<tr>
<td>9 Myanmar</td>
<td>0.7</td>
</tr>
<tr>
<td>10 New Zealand</td>
<td>100.0</td>
</tr>
<tr>
<td>11 Philippines</td>
<td>9.0</td>
</tr>
<tr>
<td>12 Russian Federation</td>
<td>69.0</td>
</tr>
<tr>
<td>13 Tajikistan</td>
<td>59.5</td>
</tr>
<tr>
<td>14 Viet Nam</td>
<td>44.5</td>
</tr>
</tbody>
</table>


Note: Ratio of women receiving maternity benefits to women giving birth in the same year (estimated based on age-specific fertility rates published in the United Nations World Population Prospects: 2015 revision, or on the number of live births corrected by the share of twin and triplet births).
Annex III

Table A.3. Robustness check with a dummy variable
(1 if a country has a paid maternity leave policy, 0 if none)

3a: Infant mortality

<table>
<thead>
<tr>
<th></th>
<th>All (1)</th>
<th>LMCs (2)</th>
<th>UMCs (3)</th>
<th>HICs (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy variable</td>
<td>-0.836</td>
<td>-2.177*</td>
<td>0</td>
<td>-0.177</td>
</tr>
<tr>
<td></td>
<td>(0.735)</td>
<td>(1.013)</td>
<td>(.)</td>
<td>(0.195)</td>
</tr>
<tr>
<td>Immunization</td>
<td>-0.222***</td>
<td>-0.210***</td>
<td>-0.200***</td>
<td>0.00481</td>
</tr>
<tr>
<td></td>
<td>(0.0309)</td>
<td>(0.0356)</td>
<td>(0.0504)</td>
<td>(0.0177)</td>
</tr>
<tr>
<td>Health expenditures</td>
<td>0.723***</td>
<td>0.709*</td>
<td>-1.188***</td>
<td>-0.500***</td>
</tr>
<tr>
<td></td>
<td>(0.214)</td>
<td>(0.275)</td>
<td>(0.313)</td>
<td>(0.0864)</td>
</tr>
<tr>
<td>Schooling</td>
<td>14.96***</td>
<td>13.17***</td>
<td>23.29***</td>
<td>-1.055*</td>
</tr>
<tr>
<td></td>
<td>(1.349)</td>
<td>(1.691)</td>
<td>(3.012)</td>
<td>(0.442)</td>
</tr>
<tr>
<td>Log GDP</td>
<td>-12.92***</td>
<td>-7.392***</td>
<td>-16.07***</td>
<td>-1.511***</td>
</tr>
<tr>
<td></td>
<td>(1.205)</td>
<td>(2.101)</td>
<td>(1.128)</td>
<td>(0.304)</td>
</tr>
<tr>
<td>Year</td>
<td>FE</td>
<td>FE</td>
<td>FE</td>
<td>FE</td>
</tr>
<tr>
<td>N</td>
<td>542</td>
<td>318</td>
<td>128</td>
<td>96</td>
</tr>
<tr>
<td>R² overall</td>
<td>0.380</td>
<td>0.241</td>
<td>0.103</td>
<td>0.0272</td>
</tr>
<tr>
<td>R² within</td>
<td>0.782</td>
<td>0.839</td>
<td>0.926</td>
<td>0.764</td>
</tr>
<tr>
<td>R² between</td>
<td>0.501</td>
<td>0.433</td>
<td>0.0828</td>
<td>0.0503</td>
</tr>
</tbody>
</table>

Note: Standard errors are in parentheses. Significance levels are: *0.05, **0.01, ***0.001. All, full sample; LMCs, low- and lower-middle income countries; UMCs, upper-middle income countries; HICs, high-income countries; FE, fixed effects.
### 3b: Under-five mortality

<table>
<thead>
<tr>
<th></th>
<th>All (1)</th>
<th>LMCs (2)</th>
<th>UMCs (3)</th>
<th>HICs (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy variable</td>
<td>-2.287*</td>
<td>-3.756*</td>
<td>0</td>
<td>-0.662**</td>
</tr>
<tr>
<td></td>
<td>(1.024)</td>
<td>(1.449)</td>
<td>(,)</td>
<td>(0.203)</td>
</tr>
<tr>
<td>Schooling</td>
<td>23.47***</td>
<td>21.20***</td>
<td>28.18***</td>
<td>-0.410</td>
</tr>
<tr>
<td></td>
<td>(1.878)</td>
<td>(2.418)</td>
<td>(3.315)</td>
<td>(0.460)</td>
</tr>
<tr>
<td>Immunization</td>
<td>-0.323***</td>
<td>-0.318***</td>
<td>-0.169**</td>
<td>-0.0110</td>
</tr>
<tr>
<td></td>
<td>(0.0430)</td>
<td>(0.0509)</td>
<td>(0.0554)</td>
<td>(0.0185)</td>
</tr>
<tr>
<td>Health expenditures</td>
<td>1.111***</td>
<td>1.027**</td>
<td>-1.326***</td>
<td>-0.276**</td>
</tr>
<tr>
<td></td>
<td>(0.299)</td>
<td>(0.394)</td>
<td>(0.345)</td>
<td>(0.0901)</td>
</tr>
<tr>
<td>Log GDP</td>
<td>-16.74***</td>
<td>-13.92***</td>
<td>-19.31***</td>
<td>-0.413</td>
</tr>
<tr>
<td></td>
<td>(1.678)</td>
<td>(3.005)</td>
<td>(1.241)</td>
<td>(0.316)</td>
</tr>
<tr>
<td>Year</td>
<td>FE</td>
<td>FE</td>
<td>FE</td>
<td>FE</td>
</tr>
<tr>
<td>N</td>
<td>542</td>
<td>318</td>
<td>128</td>
<td>96</td>
</tr>
<tr>
<td>R² overall</td>
<td>0.423</td>
<td>0.260</td>
<td>0.0814</td>
<td>0.0328</td>
</tr>
<tr>
<td>R² within</td>
<td>0.780</td>
<td>0.837</td>
<td>0.936</td>
<td>0.838</td>
</tr>
<tr>
<td>R² between</td>
<td>0.542</td>
<td>0.438</td>
<td>0.0608</td>
<td>0.00377</td>
</tr>
</tbody>
</table>

**Note:** Standard errors are in parentheses. Significance levels are: *0.05, **0.01, ***0.001

All, full sample; LMCs, low- and lower-middle income countries; UMCs, upper-middle income countries; HICs, high-income countries; FE, fixed effects.
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