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A diagnosis and reactivation proposal for Peru

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Building back better after the COVID-19 pandemic: A diagnosis and reactivation proposal for Peru

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Electronic publication. First edition. Lima, November 2021

In line with GRADE's objectives, the purpose of the Research Documents series is to disseminate the studies conducted by the organization's researchers in a prompt manner and, encouraging exchanges among members of the scientific community. This will enrich the final research product, enabling the scientific community to adopt solid technical criteria for the political decision-making process. Its publication requires an internal blind peer review process.

The opinions and recommendations provided in this document are those of the authors, and do not necessarily represent the points of view of GRADE, nor of its sponsoring institutions. The authors disclose no conflicts of interest related to the present study, its results, or interpretations of them. The study and publication are funded by the International Development Research Centre (IDRC) and Overseas Development Institute (ODI).

Research director: María Balarin
Assisting editor: Diana Balcázar Tafur
Copy editing: Alessandra Pinasco
Cover design: Elena González
Layout: Amaurí Valls / Impresiones y Ediciones Arteta E.I.R.L.

A catalog record of this report is available from the National Library of Peru (Legal deposit No. 2021-13757)
Hecho el Depósito Legal en la Biblioteca Nacional del Perú N° 2021-13757.
ISBN: 978-612-4374-47-0

CENDOC / GRADE

JARAMILLO, Miguel & Bruno ESCOBAR

Building back better after the COVID-19 pandemic: a diagnosis and reactivation proposal for Peru / Miguel Jaramillo & Bruno Esobar. Lima: GRADE, 2021. (Documentos de Investigación, 121).

ECONOMIC ANALYSIS, ECONOMIC RECOVERY, PUBLIC INVESTMENT, COVID-19, PERU

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ABSTRACT

In this policy-oriented paper, we provide a pre- and post-pandemic socioeconomic analysis of Peru, along with a financially sustainable five-year Building Back Better recovery plan, which emphasizes the urgency of addressing some of the country's structural weaknesses. We underscore the importance of public investment for this effort, but widen the focus to include current public expenditure, in order to take steps towards building a more universal social protection system. We show that this also contributes to reducing the gender imbalances in the labor market that the pandemic exposed and exacerbated. We provide a financial programming exercise that demonstrates that the plan is financially responsible under a reasonable fiscal rule. Four core ideas stand out from our analysis. Firstly, while public investment can be key to reigniting economic growth, it does not go very far in tackling structural weaknesses. Secondly, public spending in health can actually achieve this from two fronts: by beginning to build a universal access social protection system and by addressing gender imbalances in the labor market. Thirdly, focusing public discussion on social protection enables a broader approach to policy reform by including formal employment and productivity enhancing reforms, which are essential for the sustainability of a broad social protection system. Finally, we also show that the sector mix in public investment has an impact on employment results, both in terms of the volume of jobs generated and their gender composition.

INTRODUCTION

The COVID-19 pandemic has shaken the world like no other in modern history. As Alcázar et al. (2021) point out, the Global South has been affected in terms of its prospects for economic growth, crippling sectors such as tourism and services during 2020 and for the foreseeable future, as well as reverting much of the progress on social well-being made in the past decades. Structural weaknesses pervading many southern countries – such as high levels of economic informality, lack of fiscal space and increasing and persistent gender gaps – have deepened the pandemic's impact and caused the policy response to be limited and less effective.

We can get a good picture of the pandemic's impact by first reflecting on the labor market. In the short term, it is leading to wage losses and millions of layoffs, as well as cutting off many potential sources of income. Its effects are more pronounced for informal workers – the majority of the work force in the Global South – since they do not have a support network for unexpected unemployment spells and negative health shocks, and their access to social protection systems is very limited. Moreover, women in developing countries are impacted even more by the crisis, since they are overrepresented in the service and retail sectors, which were the most gravely affected by the pandemic. Thus, in the medium term, it is expected that a deep economic recession will exacerbate unemployment, poverty and inequality, as well as worsening gender-based violence in the home. In

the long term, the destruction of social capital and the documented interruption of education at all levels (Agostinelli et al., 2020) will, in the absence of profound policy interventions, undoubtedly result in productivity losses.

The pandemic has had a heavy impact on Peru, both socially and economically, as well as at a human level; the country suffers from all of the aforementioned structural weaknesses to a great extent. Since the initial wave of infections, there has been much discussion as to how to reactivate the economy after lockdowns as quickly as possible. Following the integral approach by Keane et al. (2021), in this document we engage in this discussion with a set of concise proposals aiming to boost the economy in a solvent manner – that is, complying to sensitive fiscal rules – and, additionally, to build back better regarding the pre-pandemic context.

While business-as-usual policies are key as part of the first line of action during a crisis (e.g. the monetary authority cutting interest rates near to zero), in order to return to pre-COVID growth paths, according to te Velde (2020), Building Back Better policies will add to its set of targets the need for addressing long-term socioeconomic issues, particularly gender equality. In Peru's case, we identify two such policies.[1] Firstly, regarding infrastructure, we propose a plan focused on increasing public investment execution in order to close infrastructure gaps, with special urgency for health and education projects. Also, when taking physical investments into consideration, we underscore the opportunity to focus on climate-resilient low-carbon infrastructure, in order to mitigate inevitable climate change and protect the poor living in climate-risk areas. Secondly, in the health sector, we

1 We would like to thank the researchers, policy experts and staff at Videnza Consultores for their support in this process.

propose an expenditure and investment expansion to the local health protection system, in order to match its budget with its proposed benefit plan. For years now, Peru has lacked a social protection system; it has been a pending issue for the country. We believe this is the first step towards building this system. We maintain that this proposal can boost economic activity and lead to welfare improvements, such as protecting vulnerable populations, lowering inequality and creating jobs focused on women, as well as being financially viable within reasonable assumptions.

The rest of the document is divided into five sections. In Section 1 we provide a comprehensive overview of the evolution of the Peruvian economy and socioeconomic indicators since the early 2000s, considering its hallmarks and drawbacks. In Section 2, we describe the pandemic's impact on economic activity, the labor market, different gender equality measures, the health system and socioeconomic indicators. In Section 3, we describe in detail the Government's fiscal response and the Central Reserve Bank's monetary policy during the pandemic, giving credit where credit is due but criticizing where we must, as we do with the public health response. In Section 4, we describe our reactivation plan, with a Building Back Better perspective. We also present the results of the simulations of the plan's effect on economic activity – using simple fiscal multipliers –, on employment – using international employment multipliers for Peru's region – and on public finances – using an abridged version of the financial programming model employed by the local Ministry of Economy and Finances (MEF). In Section 5 we delve deeper into the welfare-improving effects of the infrastructure and healthcare plans, by way of detailed literature reviews. Finally, we present our conclusions.

1. THE CONTEXT BEFORE THE PANDEMIC SHOCK

Peru's macroeconomic performance, 2001-2019

Peru was, unfortunately, in a difficult context when the COVID-19 pandemic struck, quite possibly at the start of a trough in the country's business cycle. Peru was in the middle of an extended slowdown, having experienced high levels of growth –between 6% and 10% – during an economic boom which went from 2000 to 2010. As Figure 1.1, panel (A), shows, throughout the decade of 2010, quarterly GDP growth rates started decreasing, going below 5% (horizontal solid line) for all quarters after 2014, with growth rates around 2% by 2019. For Peru, as a developing country with great growth expectations at the beginning of the 21st century, these rates were already far from ideal.

Figure 1.1 also presents the evolution of the GDP's expenditure-side components across the remaining three panels. All components of the GDP exhibit similar downward trends during the late 2010s. Private consumption growth rates mirror the GDP trend. The Central Reserve Bank and most consultancy agencies attribute this evolution in private consumption to a slowdown in formal employment growth and a stagnation in real wages.

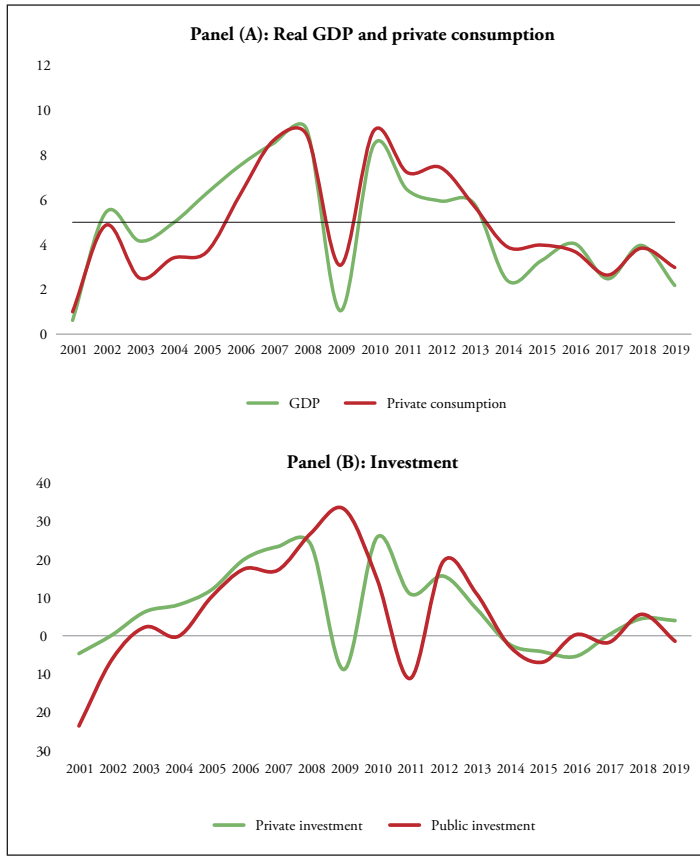
Both public and private investment have also dropped in the last few years, as shown by their growth rates in panel (B). Again, at the start of the decade, investment inflow was increasing at an accelerated pace, with rates around or above 10%, but private investment

decreased or barely grew in most of the years following 2013. This recent reluctance to invest in Peru reflects businesses' concerns regarding our unpredictable sociopolitical situation. Mining projects – a major focus for large investments – were halted and compromised, and the Odebrecht corruption scandal shook the construction sector, even leading to President Pedro Pablo Kuczynski's resignation. As a result, between 2018 and 2019 private investment growth rates have showed depressed levels.

This investment slump is troubling, since Peru's infrastructure quality and development rank among the lowest in the LAC region: 88 out of 141, according to the World Economic Forum's Global Competitiveness Report in 2019 (WEF, 2019). Very recently, the MEF launched a National Infrastructure and Competitiveness Plan (PNIC) which estimated the infrastructure gap at 50% of the GDP and identified a portfolio of projects valued at around 28% of the infrastructure gap (MEF, 2019). However, the 2021 pre-electoral report launched by the MEF revealed that a year later, by December 2020, barely 3,3% of the PNIC had been executed (MEF, 2021a). Indeed, funding public investment projects in Peru is not as hard as efficiently executing the allotted budgets, avoiding social conflicts and project paralysis, as well as rampant corruption (CGR, 2019). As we will see, our fiscal expansion proposal is based on increasing efficiency in public investment execution.

Ever since the early 2000s, Peru has maintained a strong macroeconomic stability record. This is embodied in the Central Reserve Bank's commitment to low inflation targets, between 1% and 4%, quick action during recessions and sizable international reserves of around US$ 70 billion, worth about 20 months of imports. Moreover, Peru's MEF has been committed for years to its own strict fiscal rules, which currently aim at a 1% deficit and a 30% public debt

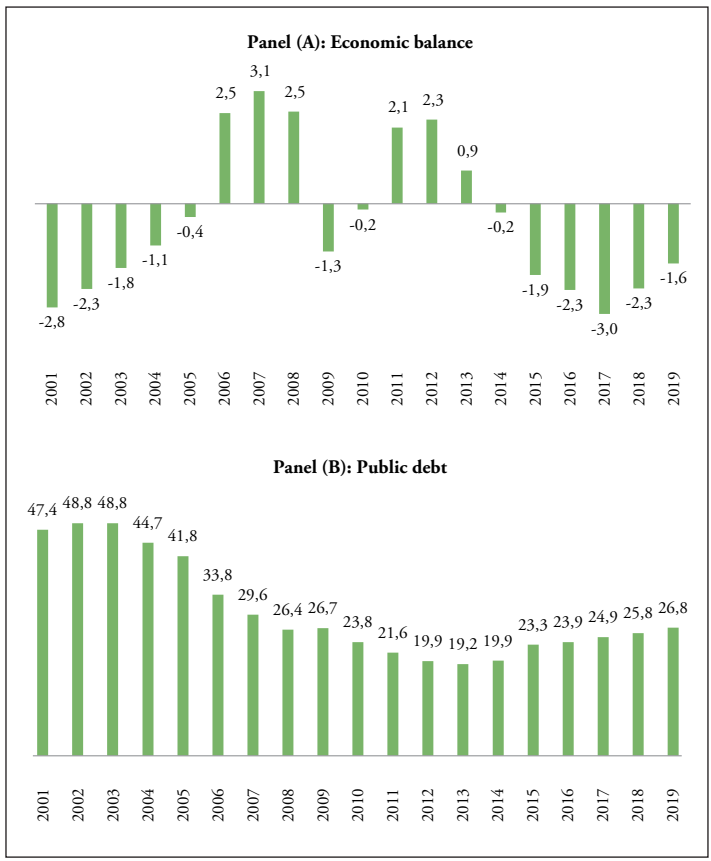
Figure 1.1
Evolution of real GDP and its expenditure-side components – YoY % Change



Source: Central Reserve Bank of Peru. Compiled by authors.

ratio. As we can see in Figure 1.2, in the past two decades, deficits have never exceeded 3% (of the GDP), in spite of the aforementioned issues in recent years, and fiscal deficit closed at 1,6% in 2019. As a result, the public debt ratio has substantially decreased from nearly 50% in 2001 and had been kept below 30% for years.

Figure 1.2
Economic results for the non-financial public sector – % of the GDP



Source: Central Reserve Bank of Peru. Compiled by authors.

Summing up, Peru experienced an economic boom in the 2000s and the first half of 2010s, which was backed by a responsible handling of public finances and a capable monetary authority. However, growth in Peru was much lower in the second half of the 2010s and severely low in 2019, well below the rates expected of an emerging

economy. All GDP components have been sluggish: consumption (due to a stagnating labor market), investment (due to an increasing loss of confidence by investors) and exports (due to adverse international factors).

Socioeconomic indicators

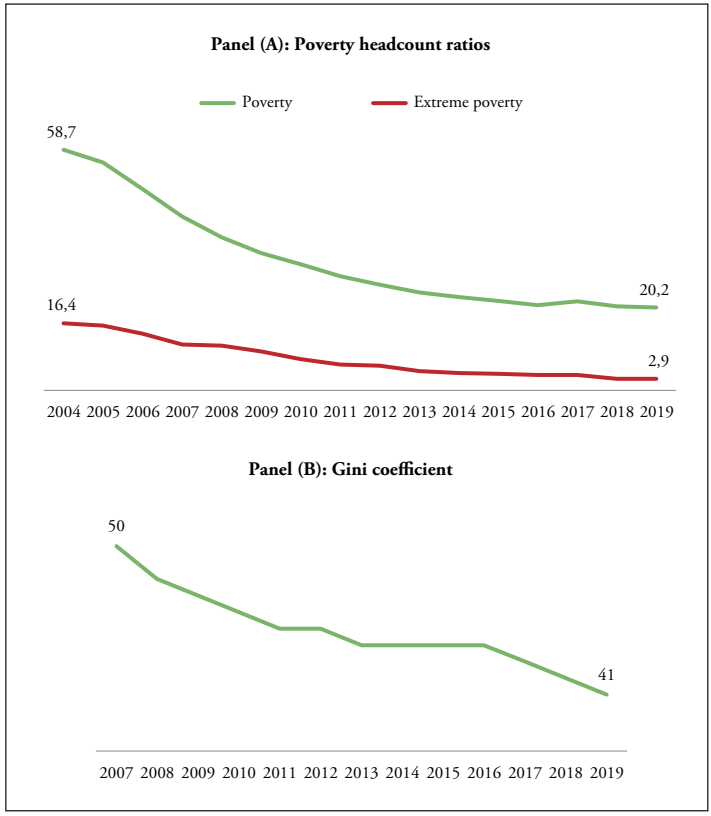
Peru's position regarding several welfare indicators has steadily and noticeably improved over the last two decades. Chief among them is a decrease in the poverty and extreme poverty headcount ratio, which went from 58,7% and 16,4% in 2004 to 20,2% and 2,9% in 2019, respectively, as shown in panel (A) of Figure 1.3. That is, the official poverty rate fell by more than 32 percentage points and extreme poverty was nearly eradicated in this period. This is a landmark achievement within the LAC region, where Peru has been considered an example of high economic growth accompanied by positive economic development (Ferreira et al., 2013; Genoni and Salazar, 2015). Indeed, in addition to poverty, monetary inequality – measured by the Gini coefficient for household incomes – has gone from 50 to 41 points, as shown in panel (B) of Figure 1.3. This is a remarkable stylized fact, considering that (i) LAC was the most unequal region in the world in the last century (Gasparini, 2004), (ii) inequality in developed economies has increased substantially according to prominent authors,[2] and (iii) this reduction is robust to top income underreporting in the local household survey (Winkelried and Escobar,

2 The World Inequality Database is a think tank that recompiles some of the most accurate inequality estimates. See, for example, Atkinson et al. (2011) for a documentation of the increase in inequality in the developed world in the last few decades, and Piketty et al. (2018) for a very recent estimation of top income shares in the United States.

2021). Furthermore, Winkelried and Torres (2019) document that all inter-temporal upwards economic mobility measures (i.e. rising to a higher income class) saw an increase during the economic boom, while downwards economic mobility measures (e.g. probability of falling below the poverty line) saw a decrease.

However, Peru carries over severe structural weaknesses worth mentioning. Firstly, the labor market is rampant with informality. The

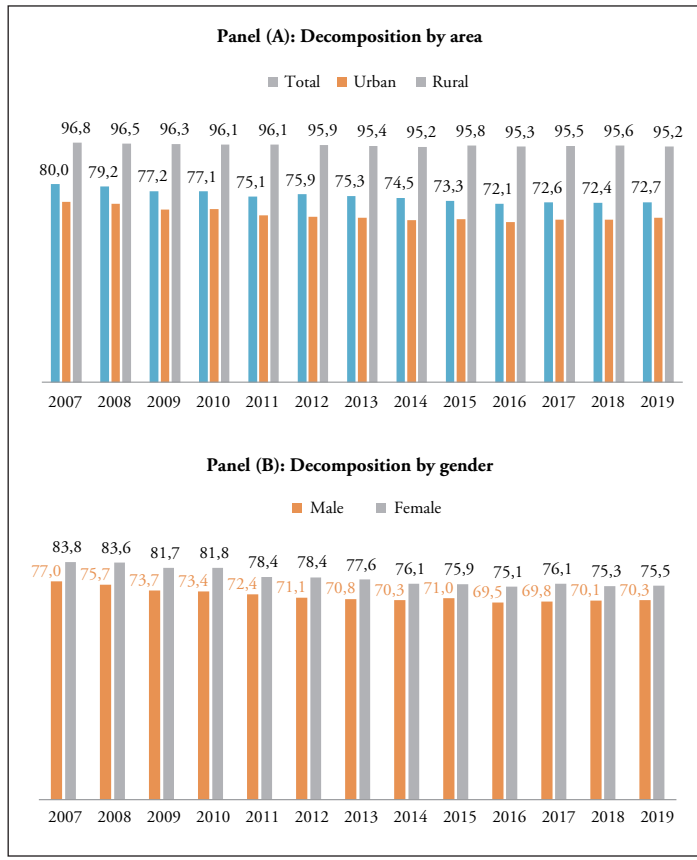
Figure 1.3
Pre-pandemic welfare indicators – Percentage points



Source: ENAHO 2004-2019 and Lavado and Liendo (2020). Compiled by authors.

national labor informality rates, as shown in the blue bars of panel (A) of Figure 1.4, show a modest decrease from 80 to 72,7 in the last two decades.[3] The problem is that these levels are way above the 10

Figure 1.4
National-level labor informality rates - % of EAP



Source: Enaho 2007-2019. Compiled by authors.

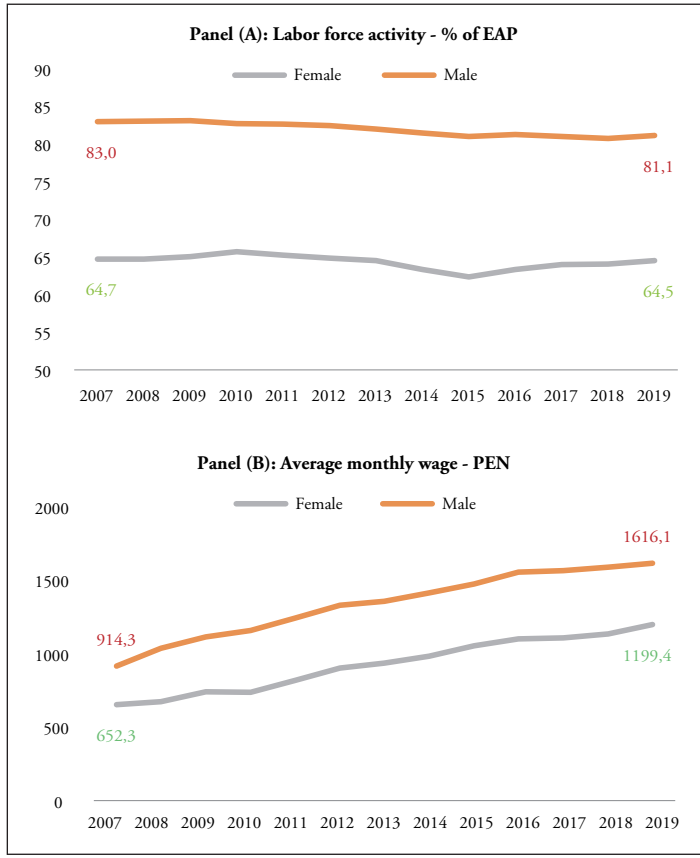
3 This is a noteworthy decrease within the context of a formalization episode in Latin America. Labor informality decreased 5 pp between 2005 and 2015, from 49 to 44% (Chacaltana, 2019).

to 20% rates of developed countries, or even the 20 to 30% rates of neighbor Chile, according to ILO data in 2019 (ILO, 2021); in fact they are 20 percentage points above the regional mean. Second, this figure hides sizable heterogeneity, since informality is more prominent among vulnerable groups. Continuing with panel (A), informality in urban areas is between 60 to 70%, while formality is barely existent in the rural areas. In panel (B) we decompose the informality rate by gender, and find that there is a consistent 5 percentage point gap (or more for some years) between the male and female informality rates.

The informality gender gap is a core driver of other disparities between men and women in the labor market. Figure 1.5 shows gender differences in labor force activity and average monthly wages in panel (A) and panel (B), respectively. The persistence of the gaps in both panels is striking. The activity rate shows a gap between 17 to 19 percentage points throughout all years. The average monthly wage has increased for both subgroups, with female wages showing a slightly higher annual percentage increase (5,2%) compared to male wages (4,9%). Still, this is not fast enough to erase the wage gap, as female wages are over S/ 400 less (or 26% less) than male wages on average. It is no surprise, then, that under these conditions female employment and wages have been struck disproportionally higher during the pandemic (Jaramillo and Ñopo, 2020).

Finally, even though health investment and expenditure has increased considerably over the past two decades, it has arguably been poorly executed. To illustrate the first point, panel (A) of Figure 1.6 shows that insurance rates have increased tremendously between 2005 and 2019. When formerly only a third of the population was insured, now nearly everyone has some type of insurance. Coverage has been boosted in part by the expansion of Essalud, the State's healthcare company that automatically grants insurance to formal workers.

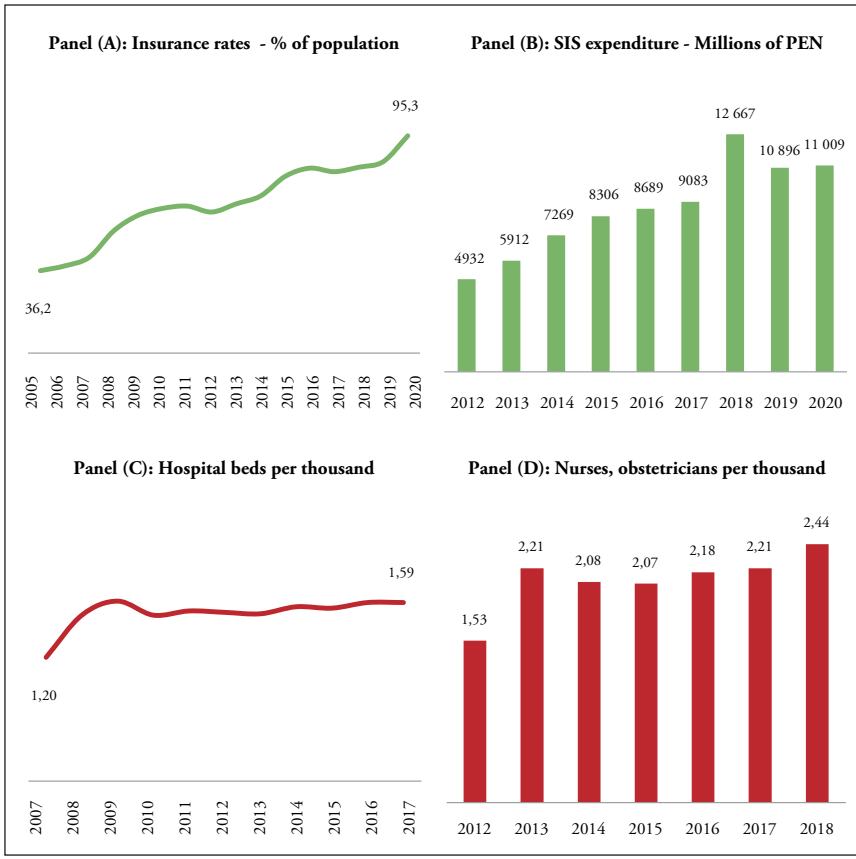
Figure 1.5
Gender disparities in the labor market



Source: Enaho 2007-2019, INEI (2020). Compiled by authors.

However, it has increased mostly due to the creation and forcible expansion, since 2012, of the national Integrated Health Insurance (SIS), a universal health system that provides basic health insurance coverage to previously uninsured people. As a result, expenditure in the main SIS service, the Essential Health Insurance Plan (PEAS), has more than doubled since 2012, as shown in panel (B) of Figure 1.6.

Figure 1.6
Statistics for the Peruvian healthcare system



Source: Panel (A) – Seinfeld (2021), from ENAHO 2005-2015 and SuSalud (2021). Panel (B) – SIAF-MEF, computed using the procedure by Mosqueira (2015) and Seinfeld (2021). Panels (C) and (D) – World Bank's WDI (2021).
Compiled by authors.

Moreover, even before the start of the pandemic there was a lack of basic equipment and personnel across the public health system. Panel (C) shows that the number of hospital beds has stagnated for years at 1,5 per thousand people. Meanwhile, in panel (D) we can see that the

relative number of nurses and obstetricians has increased by 60% to 2,4 per thousand; however, this is still much lower than, say, the same figure in Chile during 2018 (13,3). In short, the health system was ill-equipped for pandemic demands and very soon became oversaturated.[4]

External sector and Free Trade Agreements

The Peruvian economy is heavily dependent on the export sector and can be aptly described as small and very open. Specifically, mining activities and subsequent mineral exports are significant drivers for economic growth, in the same measure as they are factors for volatility. The thrift of the mining sector itself depends on the international price of metals and minerals, as well as the growth of our biggest trading partners, such as China and the United States; more generally, terms of trade have non-negligible effects on our yearly growth.

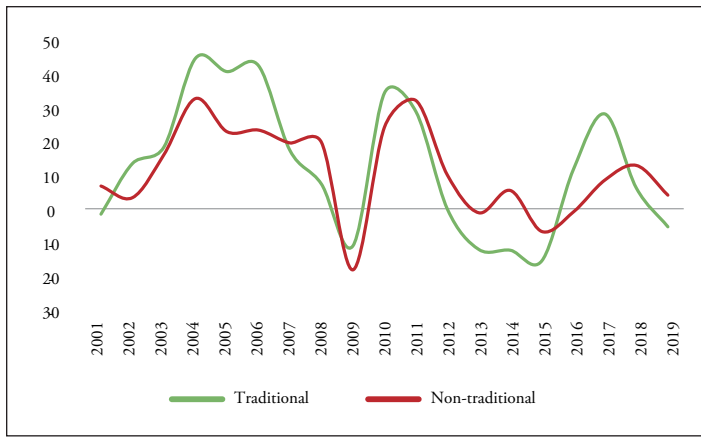
Regarding the external sector, traditional exports have decreased since mid-2018, as shown in Figure 1.7. That is, there has been a decline in commodities and minerals exports, which are a major driver for Peruvian growth. Several international factors have been blamed for this: worse terms of trade, a slump in metal prices, the deceleration of China and US-China trade conflicts. Non-traditional exports, mainly tourism, have seen a steady growth over the same period; however, they represent a much lower fraction of total exports.

4 There are many more problems within the Ministry of Health. The recent public health bicentennial diagnostic by Seinfeld (2021) is a useful read. To name a few core issues: Record digitalization is minimal (e.g., medical histories), and the same applies to surgeries in most hospitals. The system is overburdened with bureaucratic bottlenecks. There are multiple stakeholders behind the most standard procedures, such as procuring medicines for SIS affiliates; this hinders the transfer of funding resources and medicines.

In spite of volatile international conditions, a pillar for international trade policy over the past two decades in Peru have been the multiple Free Trade Agreements (FTAs) which have been signed and come into effect. To be more precise: twenty-one FTAs have come into effect since the year 2000, there are four signed FTAs that have yet to come into effect, and seven FTAs are currently being negotiated. Peru has multilateral agreements with all South American countries, a bilateral agreement with Mexico, a trade promotion agreement with the United States and FTAs with sizable markets such as Canada, South Korea, Japan, the European Union, Australia and the United Kingdom. As a result, the majority of Peru's partners enjoy almost nil tariffs on trade and low non-trade barriers, around 8% according to recent estimations by Ferrantino et al. (2020)

However, recent changes in Peru's political landscape during the pandemic have brought protectionism back to the agenda. There is

Figure 1.7
Peruvian exports (FOB) growth rates



Source: Central Reserve Bank of Peru. Compiled by authors.

talk of walking out of several FTAs signed between 2000 and 2020, while imposing tariffs to induce import substitution and foster the local industry. For example, one of Peru's largest signed FTAs is the CPTPP (Canada, Mexico, Peru, Chile, Japan, Malaysia, Vietnam, Singapore and Brunei Darussalam) and it could be at risk, since it has not yet come into effect. Peru has not yet completed the domestic ratification process and the CPTPP is now under close inspection by Congress. The new Government has claimed that it will revise all FTAs. For post-pandemic economic recovery, such anti-trade policies are a categorical step in the wrong direction. Whatever protection these restrictions may provide for local industries, it is paid by consumers with higher prices in the short run and lower productivity in the long run (Keane et al., 2021).

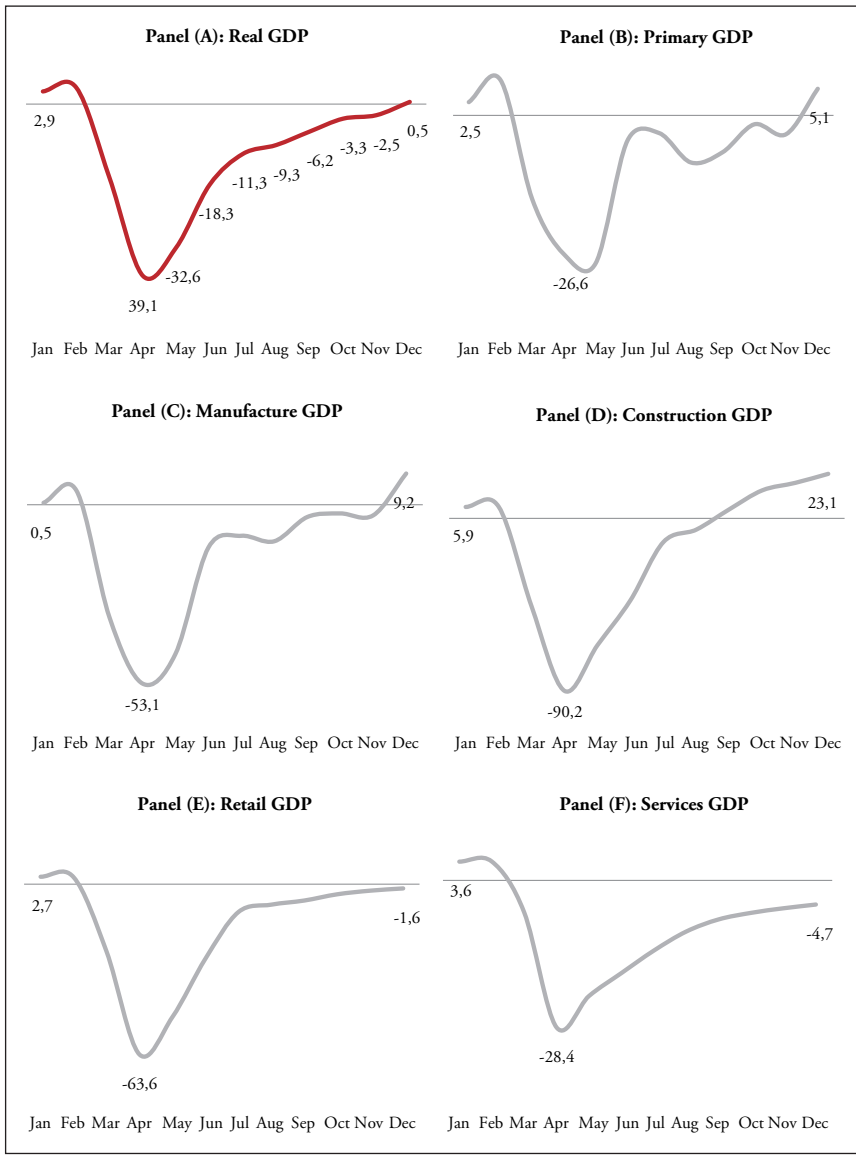
2. THE PANDEMIC'S IMPACT

Production shock and forecasts

The pandemic caused a massive disruption in production across all economic sectors in 2020. Figure 2.1, panel (A), presents the drop in real monthly GDP throughout the year. From a stagnant 3% growth rate in January and February, the economy shrank by nearly -39,1% in April, -32,6% in May and -18,3% in June vis-à-vis the previous year. Later, during the third quarter, the economy showed some recovery, measuring -6 and -11%. However, we should note that these figures would be terrible in any interpretation. By December, the economy had gone back to positive (minimal) growth, after nine consecutive months of severe recession.

Although production in nearly every country has been negatively affected by the pandemic in 2020, Peru's case is at the top end of the distribution. As reported by Bloomberg, Peru's GDP contraction of 30,2% in the second quarter of 2020 was the highest in the world. We consider this to be, undeniably, a consequence of the strict quarantine policies imposed by the Government. As shown in Figure 2.2, Peru's Government response quickly escalated to being very high, in comparison to laxer policies in countries such as Chile and the United States, and were kept strict for many months after March. The main Government response was mandating a national lockdown for three months. Activity and businesses slowly reopened during the third

Figure 2.1
Real GDP collapse in 2020 – YoY % change

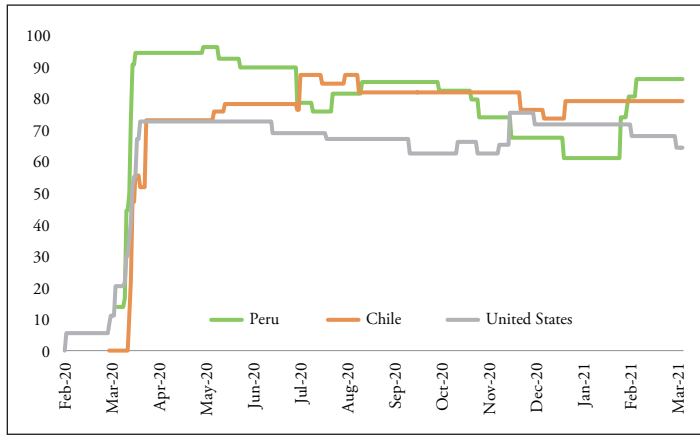


Source: Central Reserve Bank of Peru. Compiled by authors.

quarter, as determined by the government, and more prominently during the fourth quarter. This was a deliberate choice: in the words of former Minister of Economy and Finances María Antonieta Alva, the economy was deliberately put in a comatose state in order to provide stress relief for the health sector (MEF, 2020).

Lockdowns impacted the main sectors of the economy, with differing intensity and persistence. Panels (B) through (F) of Figure 2.1 show GDP growth for mining, manufacture, construction, retail and services. Admittedly, all sectors underwent substantial contractions during the second quarter of 2020. This was particularly so in April, when construction halted almost completely, with over a 90% reduction compared to April 2019, followed by retail (63,6%), manufacture (53,1%), services (28,4%) and the primary or extractive sector (26,6%), composed mainly of agriculture, fishing and mining. However, recovery

Figure 2.2
Oxford's Government response stringency index



Source: Hale et al. (2021): Oxford COVID-19 Government Response Tracker. Compiled by authors.

has been disparate. Construction, manufacture and extractive activities began to grow again in late 2020, while output in retail and services is still shrinking. Within the services sector, the hospitality and tourism industries have suffered the most, due to social distancing measures. Restaurants have adapted, to a certain extent, by strengthening their delivery channels. However, entertainment businesses and tourism face a great deal of uncertainty regarding a return to pre-pandemic activity levels even within 2021. As we will see later, this has serious implications for equity.

Peru's real 2020 GDP closed with an 11,1% reduction regarding the previous year. With the economy having partially adapted to the new pandemic normal, it was clear by the end of 2020 that an equally proportional rebound in 2021 and growth above potential after 2022 were feasible. Table 2.1 summarizes forecasts for the 2021-2026 period, which correspond to the next electoral term. The first rows are for local institutions, while the next three regard international organizations. Local institutions are much more optimistic about growth opportunities for Peru, forecasting a 10% growth at least for 2021.

Table 2.1
Real GDP growth forecast – YoY % change

Institution	2021	2022	2023	2024	2025	2026
MEF	10,5	4,8	4,5	4,2	3,6	3,6
BCR	10,7	4,5				
BBVA	9,0	4,3				
World Bank	10,3	3,9	3,5			
IMF	8,5	5,0	4,9			

Source: MEF (2021b), BCR (2021); BBVA (2020), World Bank (2021) - Global Economic Prospects June 2021 Update; IMF (2021) – Article IV Country Press Release: March 2021 Update.

By contrast, the World Bank (2021a) and the IMF (2021) point to a growth of 10,3 and 8,5%, respectively. Since these forecasts date from June 2021, at most, we have more information at our disposal, particularly following the presidential election results and the administration change. While it is pretty established that growth in 2021 will be around 10%, local experts now consider that potential growth might shrink to 3%.

Employment shock with a gender perspective

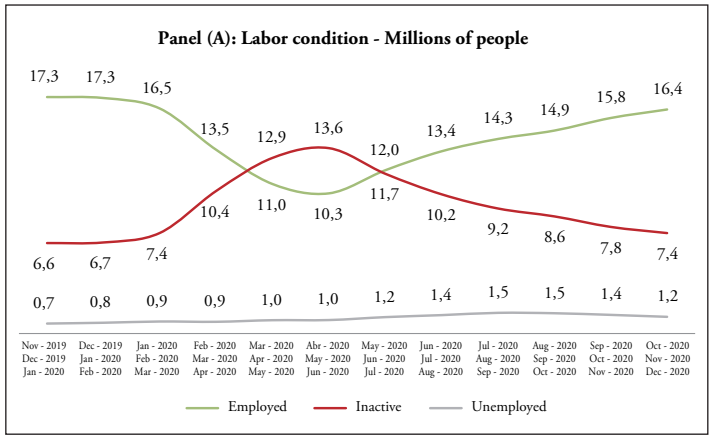
The decline in production, at its core, is a result of labor market dynamics during the lockdown months. With many industries incapable of quickly moving their operations to a remote work environment, many businesses closed and millions were unable to work. Panel (A) of Figure 2.3 shows the brutal loss of jobs in 2020. During the first quarter of the year, 16,5 million people were employed. In the next quarter, there was a decrease of more than 6,2 million. It also shows that the majority did not become unemployed, but rather became mostly inactive (13,6 million in the second quarter of 2020). While the situation improved significantly as businesses reopened during the year's third quarter, there were still 3 million less people with jobs than at the beginning of the year and 2,6 million more inactive people, and the unemployed have steadily increased by 0,8 million. By the end of the year, Peru's employment was only 1 million below pre-pandemic levels, and seemed to be en route for a full recovery; however, the current and prolonged second wave of infections and lockdowns has no doubt depressed employment again.

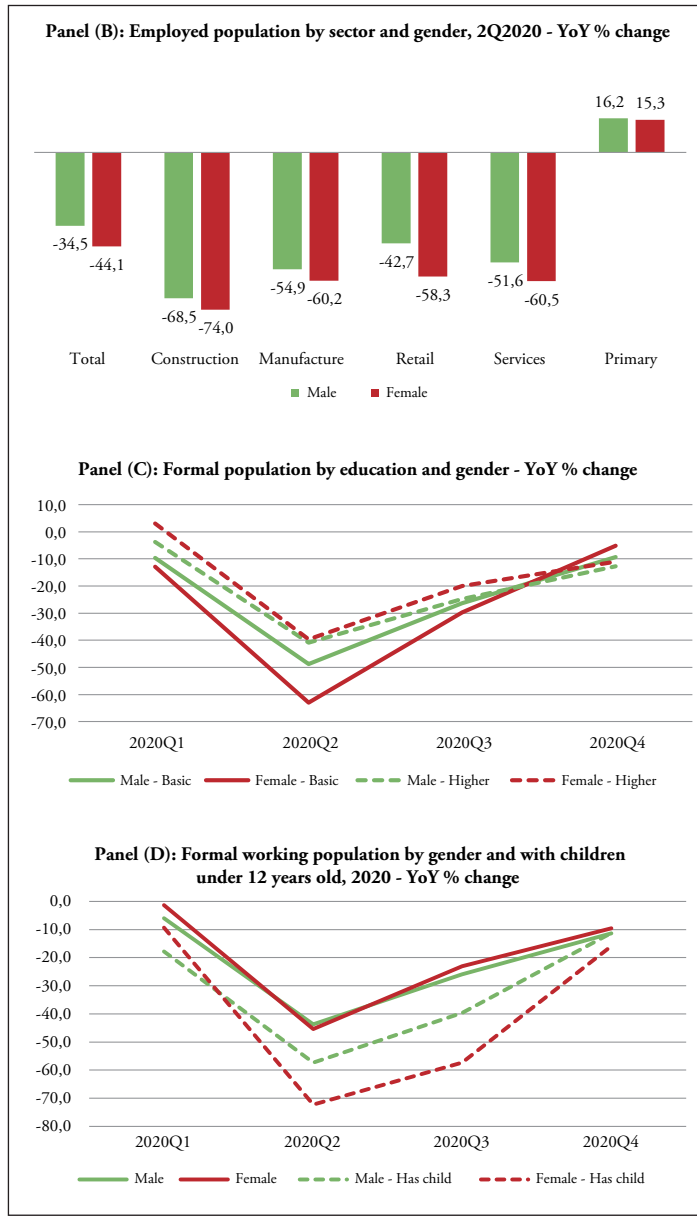
The sector decomposition of this decline raises more particular alarms, particularly regarding gender. Panel (B) shows the 12-month

percentage change of employed people by economic sectors and gender for the second quarter of 2020. As expected, the loss of employment matches the corresponding loss of GDP for both genders; however, in every sector, women lost proportionally more jobs than men. Construction (-68,5% for men, -74,0% for women) and manufacture (-54,9% for men, -60,2% for women) experienced the sharpest employment loss, closely followed by retail (-42,7% for men, -58,3% for women) and services (-51,6% for men, -60,5% for women). As many primary businesses were deemed essential, employment in the primary sectors did not decrease, and presumably more people moved to work into primary sector businesses. The uneven loss of female employment in services and retail is especially alarming, given that more than 80% of all employed women were working in these areas (Jaramillo and Ñopo, 2020). Thus, the pandemic is bound to have a disproportionate impact in specific groups, particularly women.

To complement this idea, in panel (C) we study again the loss of formal employment according to gender, adding a differentiation

Figure 2.3
The pandemic's impact on employment levels according to gender





Source: Panel (A), (B): INEI (2021) Technical Report. Panels (C) y (D): Enaho 2019-2020. Compiled by authors.

regarding educational attainment: either basic (completed high school or less) or any superior education. The data reinforces the assumption that more vulnerable populations suffered more job losses, due to a lack of further education (the basic education group in solid lines), and that, moreover, the decrease seen among women with lower education was higher than among their male counterparts by over 10 percentage points.

Finally, in panel (D) of Figure 2.3 we explore the pandemic's uneven effects on formal employment for women with children. It is clear that the loss of formal employment for men and women without further conditions has been much the same. However, for people with children, the share of jobs lost during the second quarter was over 50% for men and over 70% for women. This squares with concerns regarding the impact of the pandemic on the care economy. School closures, home confinement and a general reduction in the supply of paid care have thrusted the responsibility of caring for children and the elderly onto women's shoulders. This has forced millions in the developing world into labor inactivity, or more precisely, into laborious but unpaid care work in their own households (Diallo et al., 2020). In Peru's case, women with children have left the workforce during most of 2020 in order to tend to their household, seeing as how over 60% lost their jobs even in the third quarter.

Health shock

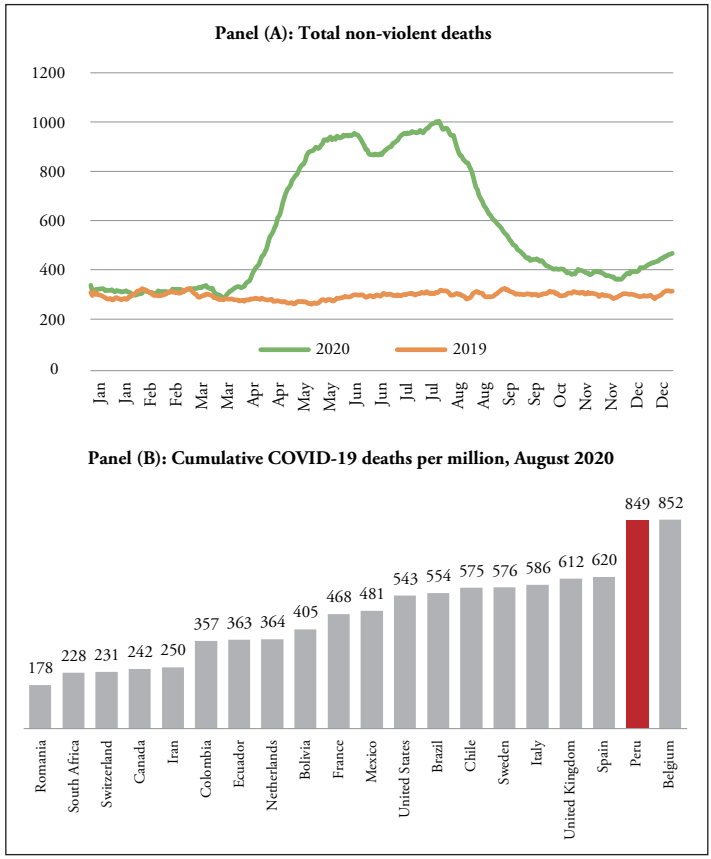
It is worth asking whether the deliberate restrictions on economic activities mitigated the pandemic's impact on health. While we may never know to what extent our policy response curbed the death toll, we do know that the health system was overwhelmed anyway, and

performed poorly by international comparison. In panel (A) of Figure 2.4, we show the smoothed curve of total non-violent deaths in 2019 and 2020. The difference between both curves, known as the excess deaths curve, is a practical metric to quickly proxy deaths due to COVID-19, since official figures can be imprecise and tend to underestimate the real figure. We had a bimodal first wave of infections that lasted for almost an entire semester, the same couple of quarters when restrictions were the most stringent. Non-violent deaths nearly quadrupled at this period's peak. Then, in panel (B), we compare Peru's cumulative deaths per million with those in several large countries by late August 2020, during the peak of our first wave. At that point in time, Peru had the second highest cumulative death toll in the world among countries with a population larger than 5 million.

In the previous section, when we described the pre-pandemic context for the health sector, we established that Peru suffered from an equipment deficiency, as well as understaffing and inefficient implementation. Undoubtedly, these factors contributed to the collapse of the health system, which at the peak of the first wave of infections was completely oversaturated and incapable of providing critical healthcare to COVID-19 ICU patients.

However, Jaramillo and Lopez (2021) provide the first rigorous empirical evidence that structural conditions alone cannot predict Peru's poor performance in public health efficacy, as measured by aggregate proportional COVID-19 deaths and excess deaths. Instead, they argue that the Government's response in attempting to contain COVID-19 shares a substantial part of the blame. Errors include the use of serological testing as an official diagnostic tool for the most part of 2020, the absence of contact tracing after case detection and the complete absence of an epidemiological surveillance system. The authors use insights from behavioral sciences to underscore the failed attempts

Figure 2.4
The pandemic's health impact in deaths



Source: Panel (A) – SINADEF open data platform. Panel (B) – Our World in Data (2020). Compiled by authors.

Notes: Excess deaths in panel (A) are, visually, the difference between the green and orange lines. Both have been filtered with a 7-day moving average. Panel (B) shows accumulated official COVID-19 deaths per million since January 21st and up until August 26th, 2020.

at an effective centralized communication strategy which were at the forefront of these mistakes. Such a strategy views the human response to health policies from a scientific and evidence-based perspective,

recognizes their biases and acts accordingly in order to nudge people into making the healthiest choice.

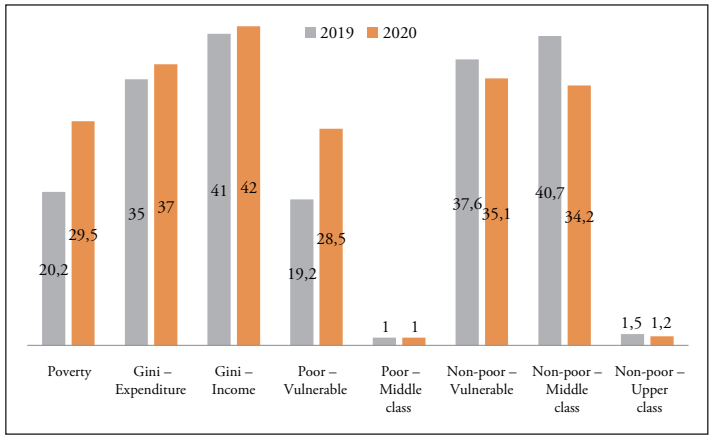
Deterioration of socioeconomic indicators

The decline of the economy feeds back onto socioeconomic indicators by effectively reversing much of the development progress made in the last two decades. Initially, Lavado and Liendo (2020) forecasted poverty levels, the Gini coefficient and a socioeconomic distribution for 2020. Their results are summarized in Figure 2.5, which includes a 95% confidence interval as error bars for 2020 estimations. The most unfortunate step backwards corresponds to the increase in the poverty rate, from 20,2% in 2019 to 29,5% in 2020. That is, nearly 3 million people are expected to fall below the expenditure poverty line. Sadly, their estimates were validated by INEI's official datum of 30,1% for the year.

The authors do not expect the Gini coefficient – in income and expenditure – to increase significantly, since their error bars cross 2019. However, people distribution across income and expenditure groups will shift significantly. We should bear in mind that a household is considered vulnerable if it has a daily per capita income of less than $12,4; it is middle-class if it has a daily per capita income of $12,4 to $64, and it is upper-class if its daily per capita income is above $64. Lavado and Liendo (2020) estimate that the poor-vulnerable group will have increased by 9,3 percentage points by the end of 2020. What is striking is that most of this change derives from middle-class households falling below the poverty line (6,5 percentage points); the rest is mostly a result of vulnerable households near the poverty line falling below it during 2020 (2,5 percentage points). A

very minor fraction comes from upper-class households falling below the poverty line (0,3 percentage points).

Figure 2.5
Forecast for socioeconomic indicators



Source: Lavado and Liendo (2020).

Notes: Poverty is a simple headcount ratio. Gini coefficients are bounded by 0 (full equality) and 100 (maximum inequality). Poor is defined according to a poverty line and per capita household expenditure. Vulnerable households have a daily per capita income of less than $12,4. Middle-class households have a daily per capita income of $12,4 to $64. Upper-class households have a daily per capita income above $64.

3. THE GOVERNMENT'S MACROECONOMIC RESPONSE

In the previous section we described the pandemic's impact on economic activity together with the public health response. Here we address the Government's fiscal and monetary response, aimed at providing relief during the pandemic and at reactivating the economy. This section is mostly based on the Pre-electoral 2016-2021 Report (MEF, 2021a) for the fiscal response, and the Central Reserve Bank's December 2020 Inflation Report (BCR, 2020).

Fiscal response

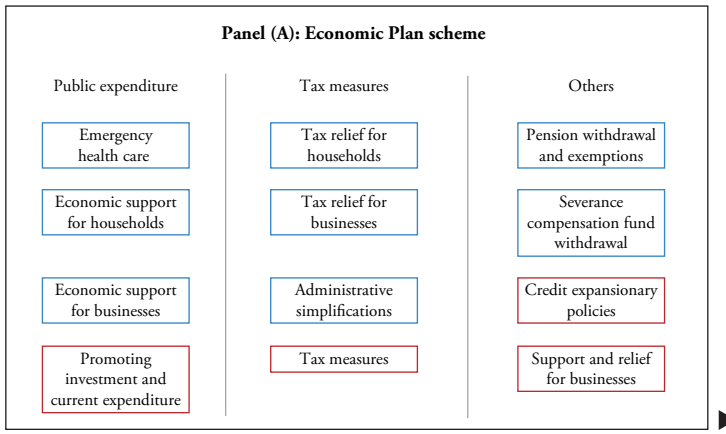
In its Economic Plan (MEF, 2021a), the MEF and the central Government deployed a set of public expenditure, tax measures and unique short-term actions to provide liquidity and credit support. The plan revolved around two stages (pandemic contention and the subsequent economic reactivation) and had four pillars for action: (i) immediate emergency attention, (ii) household support, (iii) business support and (iv) a liquidity provision in order to avoid the collapse of the credit system, coupled with measures to support and reactivate the economy. Panel (A) of Figure 3.1 orders the components of the plan, while panel (B) shows the plan's budget by cornerstone as a percentage of GDP. We should note that the liquidity provision is not directly spent, but rather serves as a guarantee to back up business loans. Still,

the other cornerstones amount to nearly 8% of GDP. We proceed to describe in detail the components of each cornerstone.

Firstly, the Government rushed to reinforce emergency and immediate medical care. This included strengthening the healthcare system by repurposing several facilities for COVID-19 testing and care purposes, acquiring COVID-19 tests, purchasing protective equipment for healthcare workers and armed forces and hiring additional personnel, among others. Other measures involved increasing hygiene in public spaces (schools, hospitals, public transport, streets).

Secondly, the Government deployed several lump-sum subsidies for vulnerable households. The highest billing subsidy was a universal vulnerable household transfer of S/ 760, available for 8,5 million households, which is approximately 1,9% of the GDP. Further support for vulnerable households included goods baskets, fractioning utility payments, acquiring tablets for students in public schools studying from

Figure 3.1
Economic Plan description and expenditure



Panel (B): Expenditure

Category	2020		2021	
	USD millions	% of GDP	USD millions	% of GDP
By function				
Immediate emergency	1562,0	0,9	2250,0	1,1
Household support	8760,0	4,9	2500,0	1,2
Economic recovery	1928,0	1,1	1500,0	0,7
Liquidity provision	19 964,3	11,1	4000,0	1,9
Support for businesses	3353,8	1,9	-	-
By fiscal accounts				
Wages	538,5	0,3	210,8	0,1
Goods and services	2872,0	1,6	2739,8	1,3
Transfers	5026,0	2,8	2529,0	1,2
Capital investment	538,5	0,3	843,0	0,4
Other capital expenditures	179,5	0,1	0,0	0,00

Source: MEF (2020, 2021b). Translated by authors.

Notes: The GDP for 2020 (2021) is S/ 718 million (S/ 843 millions) with an assumed PEN-to-USD exchange rate of 4. Data for 2020 is updated up until August 2021. Liquidity provision and businesses are almost entirely based on either tax reliefs or credit provision. In 2020, household support spending is unfortunately mixed with its tax relief component, so that the total spending by function does not match spending by fiscal accounts.

home, among other bonuses.[5] Tax relief measures consisted of granting extensions for income tax declaration and payment. The Government mandated a free withdrawal of S/ 2400 from severance payment individual funds (compensación por tiempo de servicios, or CTS) that all

5 It should be noted that the Government, at the same time, imposed restrictions on the use of the legal figure known as perfect suspension from work (meaning the labor relationship is suspended due to the impossibility of working) and passed regulation introducing a mandatory approval by the Ministry of Labor to any such suspension. In the case the suspension was granted, it mandated that suspended workers would still benefit from Essalud and receive a monthly S/ 760 during suspension.

formal wage workers receive when their contract is terminated. Finally, in a very controversial move, the Government approved a withdrawal of 25% from all individuals' private pension funds in the middle of 2020, in addition to a 4 tax-unit withdrawal in late 2020 for all people who had been unemployed for 12 months or more. Congress is currently debating further pension release laws.

Thirdly, the main business support measures involved a payroll subsidy, wherein the employer received pay equivalent to no more than 35% of the wage of workers earning less than S/ 1500 per month. Further subsidies included a 35% to 55% subsidy for hiring formal workers. Tax relief measures extended the deadlines for annual tax declaration and CTS deposits, as well as the disposal of detraction accounts.

Fourthly, the Government launched multiple liquidity programs to back up low rate loans for businesses in need of funding for their working capital, and pressured by short-term obligations that could otherwise bankrupt them.[6] The largest program, Reactiva Perú, allotted S/ 60 billion (around US$ 15 billion or 8,7% of GDP) for loans granted to companies of all sizes. As reported by the BCR (2021), the program was successful at targeting the sectors most affected by the pandemic and preventing further employment losses. Of all firms with Reactiva loans, 96,2% are micro-businesses, with less than 11 workers. From a sectorial perspective, Table 3.1 shows that firms in the services sector comprise the biggest group of Reactiva according to number (41,5% of all firms), while primary sector Reactiva firms employ 50% of all formal jobs mapped according to administrative data. Further disaggregation provided by the Central Reserve Bank

6 Unlike the previous three policy axis, this one does not fall strictly under fiscal policy, since it does not involve immediate revenue or expenditure for the Government, but neither is it conventional monetary policy, given the central Government's direct loan guarantee. We chose to describe strictly monetary policies in the next subsection.

Table 3.1
Reactiva Peru: Firms and formal jobs

Sector	Firms in Reactiva		Jobs in Reactiva Firms	
	Number	%	Thousands	%
Primary sector	2339	1,7	1977	41,1
Manufacture	13 416	9,6	320	6,6
Construction	4615	3,3	376	7,8
Retail	37 148	26,6	99	2,1
Services	40 975	29,3	323	6,7
Services for businesses	12 397	30,3	268	31,2
Transportation	10 977	26,8	137	15,9
Restaurants	4137	10,1	65	7,6
Personal services	2874	7,0	26	3,0
Health services	2541	6,2	47	5,5
Education	1801	4,4	99	11,5
Hotels	1565	3,8	13	1,5
Travel agencies	1436	3,5	34	4,0
Others	3247	7,9	171	19,9
Others	222	0,2	859	17,8
Total	**139 690**	**100,0**	**4814**	**100,0**

Source: BCR (2021).

Notes: The % columns for subcategories within the services sector show the fraction of firms or jobs over the total of sector firms in Reactiva Peru.

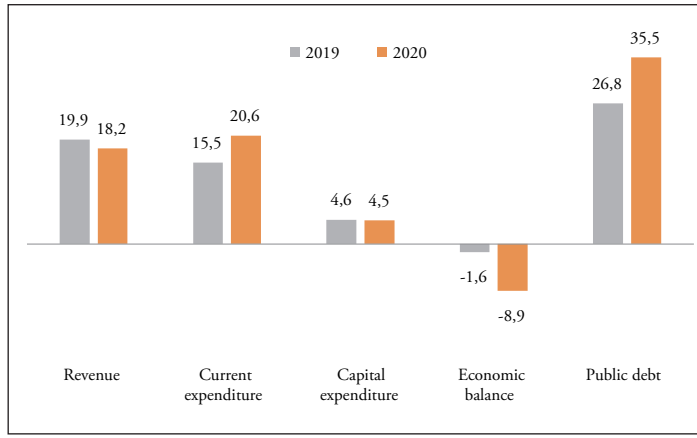
shows that, within the services sector, businesses involving direct contact (e.g. transport, restaurants, personal and health services) comprise over half of the Reactiva sector service firms. In terms of job losses, the Central Reserve Bank showed that employment in Reactiva firms decreased by 5% during 2020, and 7,4% in non-Reactiva firms.

Other specialized credit programs included FAE MYPE, which aimed to guarantee loans for small businesses and micro-businesses,

FAE Agro, for agricultural activities, and FAE Turismo, for the tourism sector. The Family Housing Bond has the purpose of financing new housing acquisition for over 20 thousand lower-income households. The Government also repurposed the temporary employment program Trabaja Perú to provide temporary jobs for thousands of unemployed people. Finally, as part of their active investment plan, the Arranca Perú I/II programs have been assigned a budget of nearly S/ 7 712 millions, in order to accelerate public investment and infrastructure maintenance.

Total COVID-19 expenditure is summarized in panel (B) of Figure 3.1 as percentage of the GDP. Nearly 4,7% of the GDP was dedicated to current expenditure for COVID-19 purposes – with transfers accounting for most of the expenditure. Capital expenditure for COVID-19 amounted to 0,4% of GDP. Overall, the Economic Plan posed a substantial extraordinary expenditure during 2020. While the Government made use of US$ 5 billion from its accumulated Fund for Fiscal Stability, as shown in Figure 3.2, the sharp 5 percentage point increase in fiscal expenditure was not met with any increase in taxes aimed at balancing the fiscal accounts to some degree; it was rather met with a 1,7 percentage point decrease in government revenues instead. As a result, the economic balance plunged to a deficit of 8,9% of the GDP. Not only is this 7,3 percentage points higher than the 2019 deficit; it is more than double the figure of any negative balance since 2000. Consequently, public debt rose from 26,8% to 35,5% of the GDP between 2019 and 2020, with most of the funding for the Economic Plan coming from new external debt through the issue of sovereign bonds. While these measures were necessary to mitigate the economic impact of the pandemic, local experts have noted that we must be careful and delineate a conservative fiscal plan for the upcoming years. As our calculations show in the next sections, we must

Figure 3.2
Public financial accounts - % of GDP



Source: MEF (2021b). Compiled by authors.
Notes: Economic balance refers to the non-financial public sector account.

slightly revise upwards fiscal limits embedded in the rules, but to no more than 40% debt-to-GDP and 1,5% deficit.

Monetary and financial response

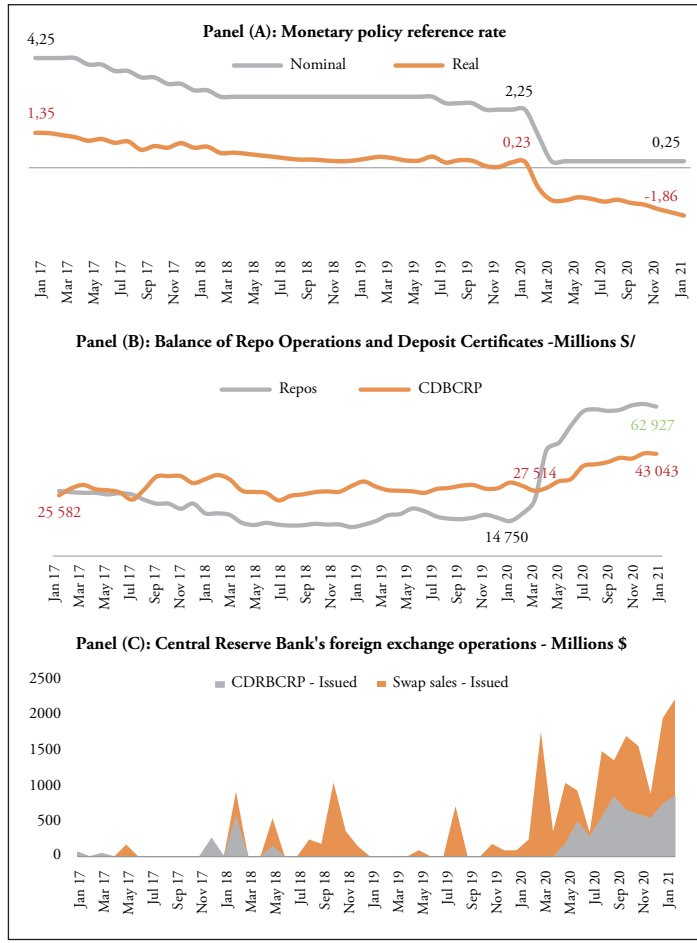
In general, the Central Reserve Bank's swift and innovative counter-cyclical policies have contributed in great measure to prevent a complete collapse of the credit system and a surge in macroeconomic variables, such as inflation and the exchange rate. Figure 3.3 describes the three main components of the Central Reserve Bank's monetary and financial response to the crisis. Firstly, as shown in panel (A), as soon as national lockdowns were imposed the Central Reserve Bank lowered the nominal reference rate to near 0. It was kept at that level until August 2021,

as inflationary expectations spiked up when the new government took over. As a result, until that point the real reference rate has been negative and decreasing since April 2020. Likewise, although not shown in the figure, the Central Reserve Bank supplemented rate cuts with more flexible reserve requirements for commercial banks. Early in April and May 2020, local currency reserve requirement rates were lowered from 5% to 4%, along with a reduction from 1% to 0,75% of the minimum current account requirement for banks in the Central Reserve Bank accounts. Foreign currency requirements were reduced from 50% to 9%. These have not yet been revised at the time of writing.

The Central Reserve Bank took unprecedented measures to guarantee the continuation of credit payment in the private sector and to inject further liquidity into the economy. Their main instruments are shown in panel (B) of Figure 3.3. Between April 2020 and January 2021, and backed by the central Government, the Central Reserve Bank auctioned off and issued the Reactiva Perú loans through repo operations on values, currency and state-backed loans for businesses and banks. Therefore, repos surged more than four times between April 2020 and January 2021. To sterilize excess liquidity from this process, around S/ 16 billion (around US$ 4 billion) in Certificate Deposits were issued during the pandemic in 2020. Reactiva Perú has had an arguably progressive positive impact on credit: According to COFIDE and the Central Reserve Bank, nearly 88,7% of all businesses with a Reactiva credit are small businesses and micro-businesses, and hold a 46% share of the total credit auctioned by the Central Reserve Bank.

Committed to its floating exchange rate regime, the Central Reserve Bank intervened on a regular basis in the foreign exchange market in order to reduce volatility and curb pressures for depreciation. Panel (C) in Figure 3.3. shows the evolution of the main FX

Figure 3.3
Central Reserve Bank key interventions



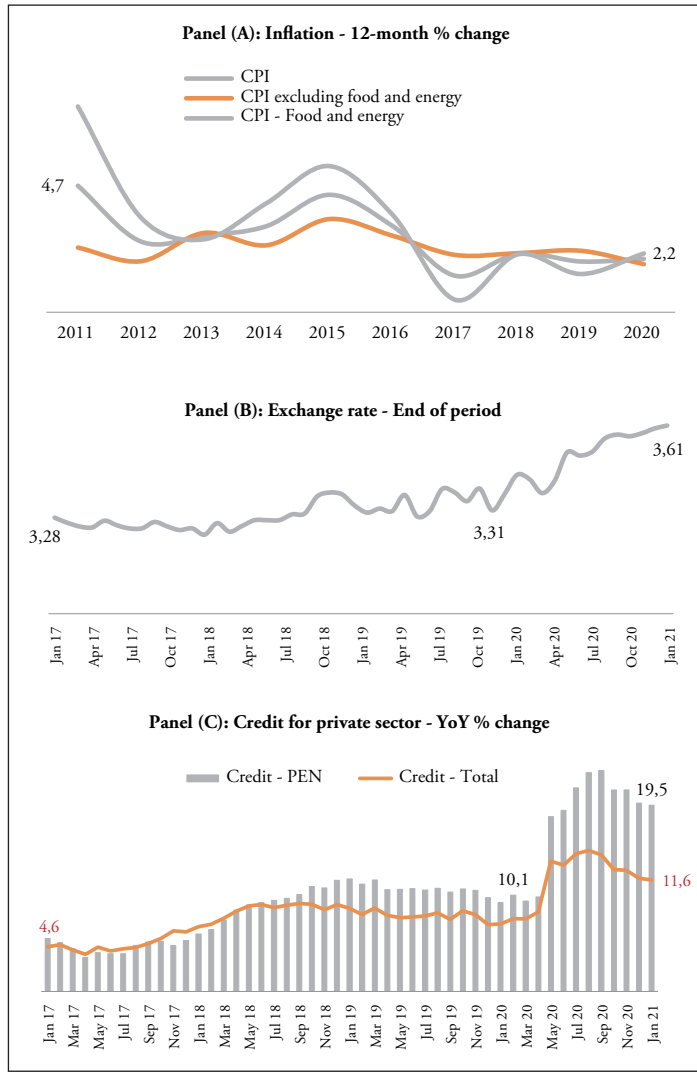
Source: Central Reserve Bank of Peru. Compiled by authors.

Notes: In panel (A) we compute the real reference rate by deducting the 12-month inflation expectations from the nominal rate. In panel (B), repo operations include repos on values, currency and Reactiva Perú colocations, while CDBCRP stands for Central Reserve Bank of Peru Deposit Certificates, an instrument used to regulate liquidity. In panel (C), CDRBCRP stands for Central Reserve Bank of Peru Readjustable Deposit Certificates, whose value, unlike CDBCRPs, adapts to exchange rate changes.

instrument deployed by the Central Reserve Bank during the pandemic. These are Readjustable Certificate Deposits (CDR) and Sales of Currency (USD/PEN) Swaps. Swap sales to commercial banks spiked to over $10 billion in several key moments when the Central Reserve Bank deemed it necessary to take action in order to limit the depreciation of local currency; for instance, when political scandals had a negative impact on international perspectives regarding Peru. CDR (Certificate Deposits whose values adjust to exchange rate dynamics) were progressively issued since the beginning of the pandemic to compound the dollar sale effort. Additionally, the Central Reserve Bank intervened in spot sales of foreign currency valued at $ 22 billion.

The results of the Central Reserve Bank's intervention, summarized around some key variables in Figure 3.4., speak for themselves. While the Central Reserve Bank points out that inflationary pressures were minimal during last year, it is still remarkable that inflation – Panel (A) – closed at 2,2% near the 2% target, with minimal differences when deducing the Food and Energy CPI in the computation. This serves to reinforce the message that the Central Reserve Bank is strongly committed to inflation targets and has no problem adhering to target bands even during recession times. While the dollar exchange rate increased from 3,3 to 3,6 during last year, downward pressures at several points in panel (B) show that FX market operations contributed to preventing a more pronounced depreciation. Finally, credit in the private sector has expanded much more during 2020 than in the previous three years, as shown in panel (C), with annual growth rates above 20% for most of the pandemic. Further calculations by the Central Reserve Bank confirm that this credit expansion is due in large part to the Reactiva Perú efforts, and that the sectors where Reactiva was most useful were those most gravely affected by the pandemic recession: construction, retail, services and fishing. Other

Figure 3.4
Evolution of inflation, credit and FX market



Source: Central Reserve Bank of Peru.

Notes: In panel (A), CPI stands for Consumer Price Index. In panel (B), the nominal exchange rate is defined as PEN-to-USD ratio. In panel (C), we use a constant exchange rate to sum local currency and foreign currency credit.

positive results not shown in Figure 3.4 include a modest increase in the slope of the Central Reserve Bank's yield curve and a reduction in the debt dollarization coefficient, from 25,9 in December 2019 to 21,1 in October 2020.

4. STIMULUS PLAN: FISCAL MULTIPLIER AND FINANCIAL PROGRAMMING SIMULATIONS

Plan description

In Table 4.1, we present a summary of our expenditure-side fiscal proposals, our baseline assumptions and the MEF implied investment plan and baseline assumptions from the Pre-election Report for the 2016-2021 period (MEF, 2021a).

We first introduced some changes to the Government's projections for GDP growth. There is consensus for a 10% growth rebound in 2021. However, the Fiscal Council, an autonomous expert commission appointed by and advising the MEF, has warned against an optimism embedded in the MEF projections regarding future private and public investment and consumption for 2022 onwards. Recovery in 2022 depends on the expectations of economic agents concerning private investment, which has seen a drastic fall in recent months. For 2023 onwards, we impose a completely passive 3,0% growth, which broadly corresponds to recent estimations of 3,5% potential growth computed in 2018 (BCR, 2018) minus a potential growth shock of -0,5 pp due to the health crisis and uncertainty about the future.

The MEF recovery plan contained in the Pre-election Report is based on measures aimed at reactivating private and public investment. In order to estimate the size of their fiscal expansion plan, in the first row of Table 4.1 we computed the difference between the projection of nominal capital expenditure for each year and capital expenditure in

the latest non-recession year, 2019. Our investment plan for the 2021-2025 period, valued at a total of S/ 50 billion, is anchored on three pillars: (i) execution of 30% of the PNIC (S/ 30 billion), (ii) increased use of the Special Public Investment Project (PEIP) modality, to accelerate the execution of socially relevant projects (S/ 10 billion), and (iii) a 33% increase in the efficiency of investment resource transfers from the National Government to local and regional governments (S/ 10 billion). We assume there is a linear increase in public investment between 2021 and 2025. As it turns out, our plan roughly matches the MEF plan, as shown in Table 4.1.

Where our plans differ is in the approach to public current expenditure. While the MEF maintains that public expenditure should satisfy the precise requirements for the provision of current public services, we see an opportunity for expansion in the health sector. Specifically, we aim to steadily increase Government expenditure in order to completely cover the Essential Plan for Health Insurance for SIS affiliates. In our current system, a sick informal worker is almost guaranteed to rely on the SIS; with Peru's high informality rates, this amounts to around 23 million people. However, the system is currently underfunded, covering only two thirds of MINSA's estimated expenditure-per-affiliate. As a result, the Government cannot meet the affiliates' demand most of the time, and sick people are forced to incur burdensome out-of-pocket costs. Our plan aims to bridge this gap: From S/ 11 billion spent in 2020, we estimate that expenditure must increase to roughly S/ 20 billion by 2025[7], after accounting for the number of SIS affiliates and an expected yearly population growth

7 We only model a current expenditure increase up to 2025 for a five-year plan. Past that point, we believe the new SIS budget already becomes part of the baseline budget and expenditure forecast, rather than an increase to the baseline budget.

of 1,8%, according to the World Bank.[8] This is a necessary step to achieve a true universal health system that is independent of the population's labor and formality status.

Table 4.1
Description of proposals

Description		2021	2022	2023	2024	2025
Public Investment plan - MEF						
Increase in public investment	(S/ million)	3265	7315	9409	11 981	14 564
compared to 2019	(% GDP 2019)	0,4%	1,0%	1,3%	1,7%	2,1%
Alternative Public Investment and Spending plan						
Increase in public investment	(S/ million)	5000	7500	10 000	12 500	15 000
compared to 2019	(% GDP 2019)	0,7%	1,0%	1,4%	1,8%	2,2%
Increase in PEAS expenditure	(S/ million)	1787	3575	5362	7149	8937
compared to 2020	(% GDP 2019)	0,2%	0,5%	0,8%	1,0%	1,3%
Annual fiscal expansion	(% GDP 2019)	0,9%	1,5%	2,2%	2,8%	3,5%
Baseline assumptions						
Real GDP growth		10,0%	4,0%	3,0%	3,0%	3,0%
Inflation		3,0%	2,0%	2,0%	2,0%	2,0%
Average PEN-to-USD		4,0	4,0	4,0	4,0	4,0

Source: MEF (2021a) and authors' estimations.

Notes: The first row for each proposal shows the increase in nominal public investment or expenditure compared to 2019, expressed in nominal PEN. The second row shows the same increase as a proportion of 2019's GDP, after deflating the future value of the investment/expenditure proposal using MEF's inflation projections.

8 For nominal reports of total health system affiliates, see SuSalud (2021).

Economic activity simulation

Both our and the MEF's fiscal plans can be mapped onto an economic equilibrium activity through a simple multiplier model. In Table 4.2 we present the Central Reserve Bank's official fiscal multipliers for income, expenditure, and investments in Peru during economic downturns (BCR, 2019). These multipliers map the marginal effect of a S/ 1 increase in income, expenditure, and investment in time t to demand-side GDP equilibrium in time t,t+1,…,t+5.[9] Using these parameters, we compute the GDP flow created by our fiscal plan, linearly add these flows to our baseline projections for the nominal GDP and recompute the path of real GDP growth up until 2026. From 2027 onwards we assume GDP growth will return to its potential level.

Table 4.2
Peruvian marginal fiscal multipliers during a recession

Year	Income	Expenditure	Investment
T	-0,25	0,23	0,49
t+1	0,00	0,99	1,04
t+2	0,00	-0,19	-0,11
t+3	0,00	-0,06	0,00
t+4	0,00	-0,04	0,00
t+5	0,00	-0,01	0,00
Cumulative	-0,25	0,92	1,42

Source: Central Reserve Bank of Peru. Inflation Report – December 2019. Compiled by authors.

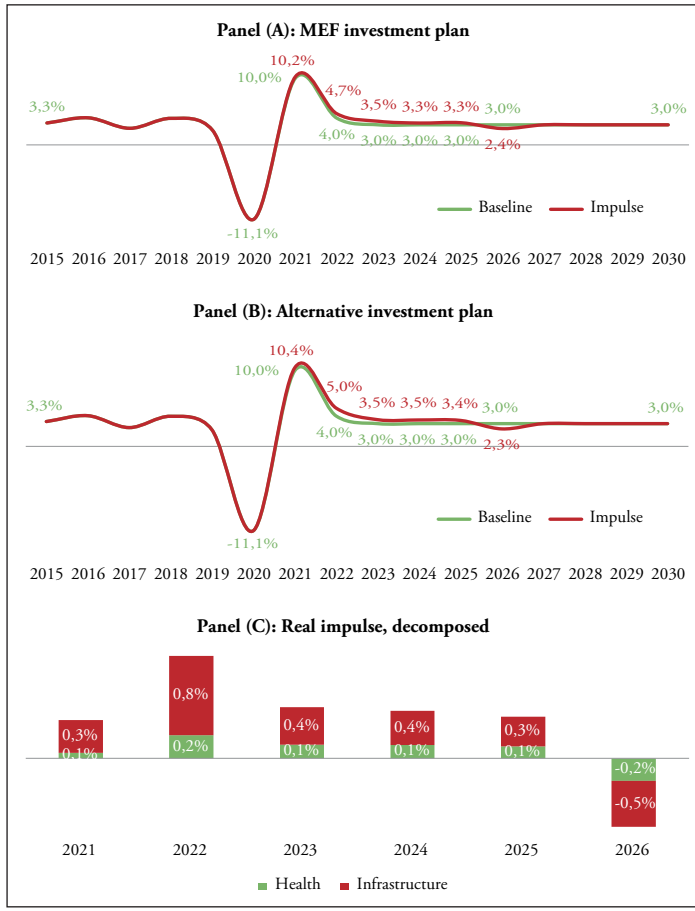
9 This multiplier in particular is a rough estimate for the case of current health expenditure. Further research venues could consider a closer estimation of the GDP multiplier effects of investment in labor intensive sectors, such as health and education.

Figure 4.1 shows the results of our GDP simulations. Green lines denote a baseline scenario, while red lines include the effect of the fiscal plans on the GDP. In panel (A) we present our implicit estimations regarding how the MEF's public investment plan contributes to their GPD projections for comparison. In 2022 and 2023, investment boosts GDP growth by 0,7 and 0,5 percentage points, respectively. In panel (B) we present the simulated effect of our fiscal plan on the GDP trajectory, compared to our baseline passive scenario. We estimate considerable boosts in GDP growth for the 2021-2025 period, with a modest crowding-out effect in 2026 that pushes growth below potential, although this can be compensated with additional reforms by 2026. In 2022, 2023, 2024 and 2025, our plan leads to a 1,0, 0,5, 0,5, and 0,4 percentage point increase in GDP growth, respectively. Even for 2021, GDP could increase by 0,4 percentage points. In panel (C) we decompose change in GDP growth between the baseline scenario and an impulse scenario (which we call real impulse) from panel (B) into the contributions made by the investment plan and the health insurance expenditure plan. This serves to show the relative relevance of the health plan in boosting GDP: while its contribution is minor in 2021 and 2022, it contributes to a quarter of the change in growth in 2023, a third of the change in 2024 and over a quarter in 2025.

Employment simulations

Investment plan sector distribution is highly relevant for employment outcomes. What could be the composition of our investment plan? For best reference, we could take as benchmark the composition of public investment for 2015-2019, estimated using publicly available data. This is a relevant landmark for public investment in Peru, since

Figure 4.1
Simulations for the path of real GDP growth with fiscal multipliers



Source: MEF, Central Reserve Bank of Peru and authors' estimations. Compiled by authors.
Notes: The path is expressed in terms of real GDP year-on-year percentage change. Impulse plans are described in Table 4.1, and its impact on GDP is portrayed here after applying the corresponding fiscal multipliers from Table 4.2. In Panel (A), the MEF's baseline scenario results from subtracting the multiplier effect of its investment plan on the GDP from their projected path of nominal GDP. In Panel (B), our baseline assumes a passive scenario in 2021 with 7% growth and potential growth of 3,5% from 2022 onwards. In Panel (C), real impulse is defined as the difference between the baseline and impulse growth rates from Panel (B). The decomposition then shows how much of the increase or decrease in growth is due to the infrastructure investment and the health current expenditure increase, separately.

the PNIC was launched in 2015. We present the portfolio composition of public investment in the first column in Table 4.3. This is a helpful starting point for a broad estimate of our fiscal plan's impact on job creation and its composition by gender. The third column in Table 4.3 shows the employment multiplier by sector per billion dollars of investment, estimated by the Pastor et al. (2020), while the fourth column shows the share of employed women in that sector, estimated by ILO (2021).

These figures allow us to map out job creation by sector and gender, presented in panel (A) of Figure 4.2. Our investment plan could generate a total of nearly 342 000 jobs between 2021 and 2025. We note that employment multiplier effects are based on capital-intensive projects, while labor-intensive projects or sectors may face even higher multipliers. Thus, our figures could understate the true effect on employment.

Nevertheless, the proportion of female jobs created (38,5%) is too imbalanced, particularly in transportation and sanitation. To address this issue, we have proposed a gender-focused portfolio, shown in the second column of Table 4.3. This portfolio assigns slightly less weight to transportation and sanitation, slightly more weight to education and a much larger weight to health projects. We can justify this on several grounds. Firstly, our plan envisions the Government using the PEIP modality to facilitate investments of maximum concern to society. Education and health fit this description. Investment in building schools is already embodied in the incumbent government's Bicentennial Schools project, valued at S/ 3 billion for the next three years; it is also a driver for human capital. Moreover, the PNIC identified a substantial infrastructure gap in healthcare, which has hardly been addressed with the 2% dedicated to health in the traditional investment portfolio. Secondly, our proposed increase in healthcare

expenditure must be accompanied by an expansion in treatment capacity and infrastructure, to be able to treat approximate 25 million SIS affiliates in 2025. Thirdly, due to a much higher share of women working in education and health, this new portfolio will create much more gender balanced jobs.

There is already a body of international evidence that has studied the labor multiplier effect of investment in the care services industry. According to the evidence from OECD countries compiled by De Heneau et al. (2017), if 2% of the GDP were invested in the care industry, this would translate to an overall increase of 2,4 to 6,1% in employment, reducing the gender gap by a tenth at the lowest and a half in the highest. By contrast, physical infrastructure investment creates only half as many jobs and typically increases the wage gap.

Indeed, as shown in panel (B) of Figure 4.2, it is clear that the amount of newly employed women is much higher than before. To be precise, the total share of women jobs created is now 45,19%. This is already higher than the general share of women employed in Peru, which is 40% (ILO, 2021). In fact, since more resources are dedicated to labor-intensive sectors, 24 000 additional jobs are created with this portfolio when compared to the traditional portfolio. Jobs in the health sector often require higher education and specialized training in the pertinent field; therefore, we expect most of the jobs created correspond to skilled labor.[10] Furthermore, a good number of these jobs are permanent, since they are associated with the expansion in health services.

10 Future research should delve deeper into the labor market skill composition across sectors. However, looking at neighboring Colombia for reference, we find over two thirds of the employed population in the health sector have completed post-secondary education, and close to 95% have finished high school.

This exercise serves to show that public investment should focus more on labor intensive sectors, since they create more jobs and, at least as far as education and health are concerned, they can improve gender balance in the work force.

Table 4.3
Composition of public investment and sector employment multipliers

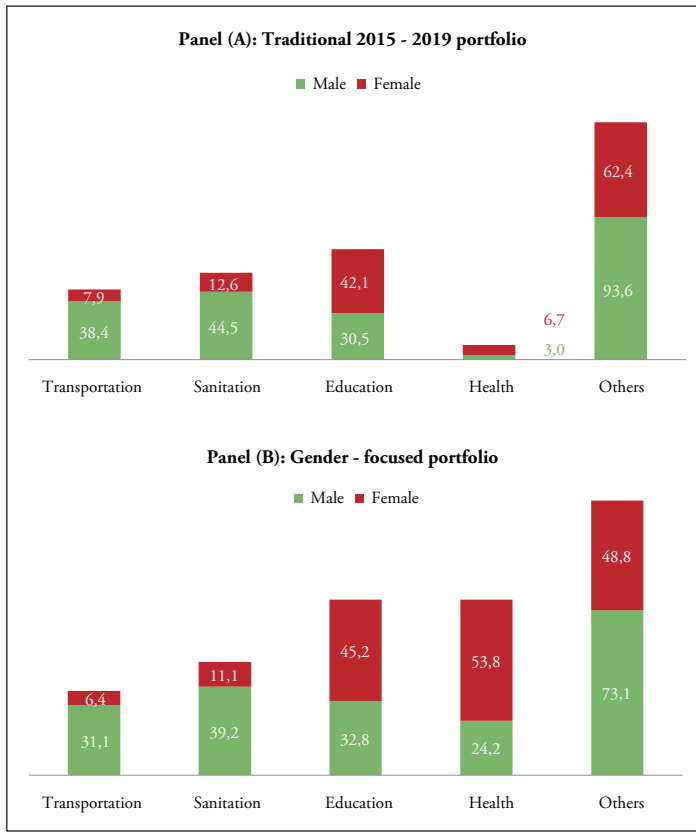
Sector	Portfolio 2015-2019	Gender-focused portfolio	Employment multiplier	Women in the sector
Transportation	28,4%	23,0%	11 722	17%
Sanitation	22,7%	20,0%	18 112	22%
Education	14,9%	16,0%	35 103	58%
Health	2,0%	16,0%	35 103	69%
Energy	0,9%	1,0%	49 893	5%
Others	31,1%	24,0%	35 103	40%

Source: Alcázar and Jaramillo (2021) from SIAF-MEF, Pastor et al. (2020), ILO (2021). Compiled by authors.

Notes: Portfolios are expressed as weights that sum to one. The multiplier indicates the number of job vacancies created for each additional billion dollars of investment. We use an exchange rate of 3,6 for the ratio PEN/USD. Multipliers were estimated by Pastor et al. (2020) for the LAC region. However, sector multipliers were only estimated for investment in transportation, sanitation and energy, and a total investment multiplier. We use the total multiplier as a reference for proxy for education and health employment multipliers. However, considering these are labor intensive sectors, these should be taken as lower bounds of the true multiplier.

However, in order to make these potential job vacancies a reality, some additional key issues must be taken into account. In particular, as we stated in our discussion regarding the care economy, without a carefully considered labor policy oriented towards the needs of women

Figure 4.2
Job creation in GRADE's investment plans by sector and gender – Thousands of jobs



Source: Alcázar and Jaramillo (2021) from SIAF-MEF, Pastor et al. (2020), ILO (2021), author's estimations. Compiled by authors.

Notes: The figure shows the decomposed total employment effects of the fifty billion PEN investment plan, with a total of 366 thousand jobs created, decomposed by sector and gender. Figures are expressed in thousands of people. Panel (A) uses the traditional portfolio composition from Table 4.3, while Panel (B) uses the proposed gender-focused composition, also from Table 4.3. The share of female jobs created with our gender-focused portfolio is 45,2%, while the traditional portfolio's share is 38,5%. Total jobs created in panel (A) and panel (B) amount to 341 700 and 365 700, respectively.

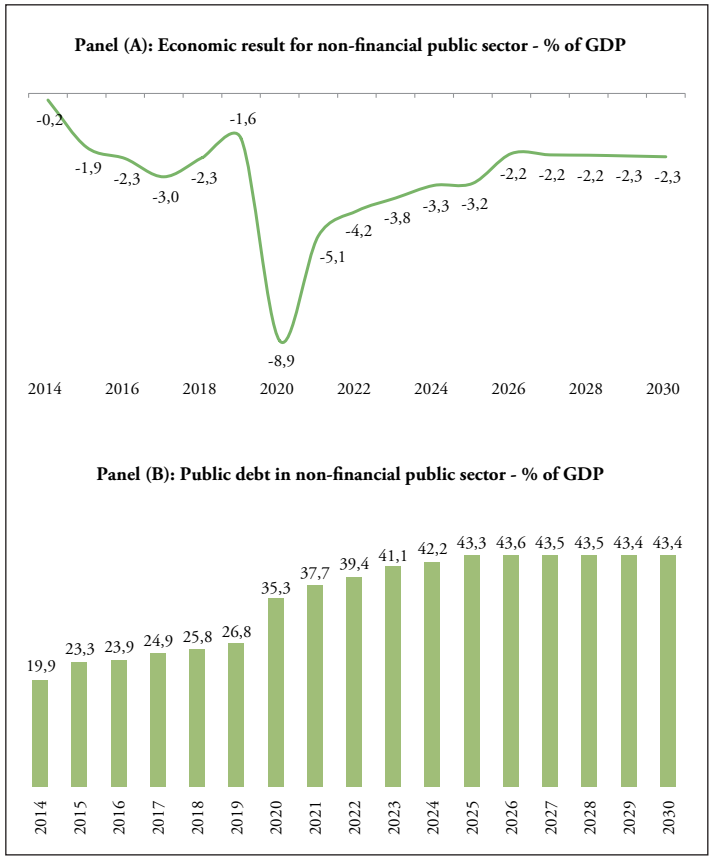
at home, women with children face a structural disadvantage and will remain housebound. Diallo et al. (2020) point towards some policy recommendations. To support the needs of these unpaid and paid care workers, governments could evaluate whether to expand their social protection safety nets, provide a minimum level of childcare services for these workers and give them priority access to food and basic services. In the longer term, governments should look at investing in the care economy, with the purpose of improving resilience for the future, by building home infrastructure (water and access to electricity, among others), and possibly even considering anti-discrimination policies in labor legislation. In fact, sanitation and health-oriented investments can create new job opportunities in the care economy.

Financial stability

Evidently, our fiscal plan will place a heavier burden on public financial accounts. The pandemic has already taken its toll on fiscal accounts, with a 9% Government deficit and an increase of 8,5 percentage points of the public debt ratio to GDP by the end of 2020. To explore the financial sustainability of our proposal, we rely on an abridged version of the MEF's financial programming model, which forecasts all financial accounts for the non-financial public sector using as input a path for GDP, prices, interest rates, depreciation expectations, Government expenditure and Government revenue. At its core, the model solves for public debt using a standard accounting model for an open economy.

As an initial exercise, we use as input our growth path from panel (B) of Figure 4.1. We replace the MEF's public investment estimates with our own (See Table 4.1) and add our estimate for health

Figure 4.3
Fiscal accounts after fiscal impulse without tax reforms



Source: Authors' estimations. Compiled by authors.

Notes: We used an abridged version of the MEF's financial programming model that estimates and forecasts Government budget surplus and deficit, as well as public debt for a given projection path of GDP, prices, Government income and Government expenditure. We use our baseline projections for GPD growth (see Table 4.1). For the years 2021-2025, we replace the MEF's public investment estimates with our own (idem) and add our estimate for health expenditure (idem) to the MEF's public current expenditure. We do not add any extraordinary tax increases to this simulation.

expenditure (Table 4.1) to the MEF's public current expenditure. The results of this programming exercise are presented in Figure 4.3, with panel (A) displaying Government surplus/deficit and panel (B) showing public debt, both as percentage of the GDP. What pops up is that both the medium-term deficit and public debt levels are exceedingly high, ending at 2,3% and 43,4%, respectively. This is well above the current 1-30 fiscal rule. As a reference, in the baseline GDP growth path delineated in the last row of Table 4.1. it would have a 1% deficit and 34,7% debt-to-GDP by 2030.

The figures for the plan appear to be prohibitive in terms of financial sustainability, at least given the current fiscal rule, but we can be more precise. Using the public accounts model, it is possible to solve the required long-term Government surplus that will stabilize a given level of public debt, a long-term growth rate, the cost of debt financing and an expected depreciation rate. Table 4.4 solves this minimal surplus rate for a handful of combinations of these four parameters, fixing GDP potential growth rate at 3,5% in particular. Castilla (2021) has estimated that interest rates lie between 4% and 6%, that average annual depreciation since 1995 has been around 2% and, most importantly, that no surplus higher than 1% can be committable, by looking at data between 1990 and 2019. With this in mind, he concludes that Peru can reasonably maintain public debt levels of 40% at most.

This is a very conservative view, considering that emerging markets worldwide have debt-to-GDP ratios of 64,4%, the LAC region average is 77,7% and even the booming emerging Asian markets show an average ratio of 67,6%. But we would rather err on the side of prudence, as (i) we have been facing sluggish growth for several years now, as seen in Figure 1.1, and solvency relies critically on potential growth, and (ii) prudence has been the defining feature of macroeconomic policy since the early 2000s, and we believe it should so remain.

Table 4.4
Minimal long-term primary Government surplus to stabilize public debt

Interest rate	Public debt				Depreciation
	30%	35%	40%	45%	
4.0%	0,1%	0,2%	0,2%	0,2%	2,0%
6.0%	0,7%	0,8%	1,0%	1,1%	4,0%
8.0%	1,3%	1,5%	1,7%	2,0%	6,0%
10.0%	1,9%	2,2%	2,5%	2,8%	8,0%

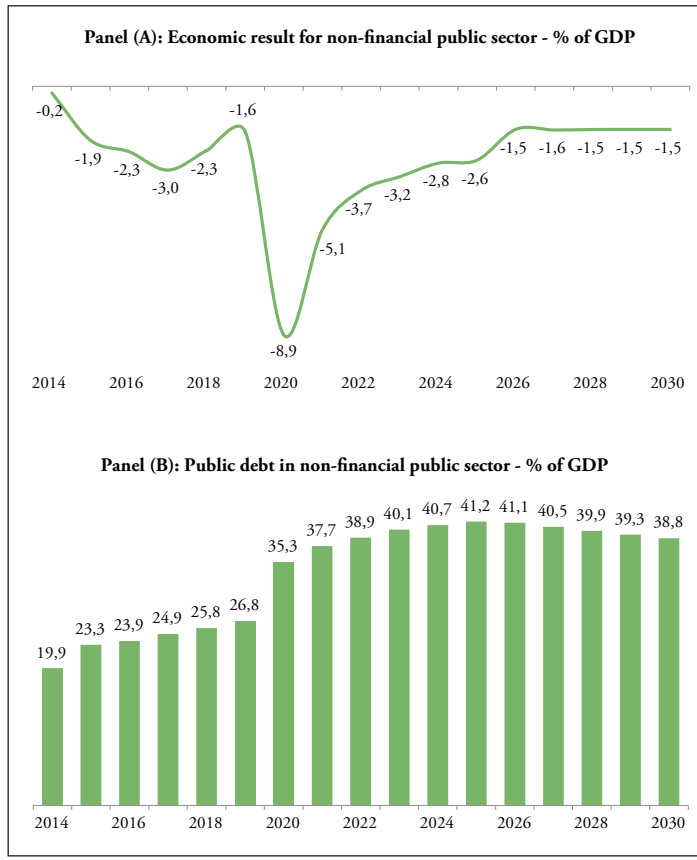
Source: Castilla (2021).

Notes: All computations of the minimal required surplus assume a 3,5% potential growth rate of the GDP for Peru. Both public debt and primary. Both public debt and Government surplus are expressed as percentage of GDP. Interest rate corresponds to a rate at which the Government pays its interest service, and depreciation is a measure of annual average depreciation.

To further strengthen fiscal accounts, we propose a second exercise which introduces minor tax reforms to the fiscal plan in order to make it more financially sustainable. With this exercise we show that even minor increases in tax efficiency can produce notable improvements in fiscal accounts. In practice, we simply introduce an exogenous yearly increase in Government revenue of 0,5 percentage points. Results for this exercise are presented in Figure 4.4. As shown in panel (A) and panel (B), respectively, deficit converges to 1,5% by 2026, while public debt goes barely above 40% for the years that encompass the plan and converges to 38% by 2030.

We believe this plan, that entails minor tax reforms, conciliates the need to reactivate the economy with a strong macroprudential stance. On the one hand, it states that Peru must accept a new fiscal rule of 1,5–40. This serves to acknowledge that rules must conform to the depth of this recession, and thus our Government should incur

Figure 4.4
Fiscal accounts with minor tax reforms



Source: Authors' estimations. Compiled by authors.

Notes: We used an abridged version of the MEF's financial programming model that estimates and forecasts Government budget surplus and deficit, as well as public debt for a given projection path of the GDP, prices, Government income and Government expenditure. We use our baseline projections for GPD growth (see Table 4.1). For the years 2021-2025, we replace the MEF's public investment estimates with our own (idem) and add our estimate for health expenditure (idem) to the MEF's public current expenditure. Furthermore, we add a constant extraordinary tax increase of 0,5% of the GDP to each year in this simulation.

more debt and higher deficit levels than has been its custom. On the other hand, because public debt does not exceed the 40% threshold, the plan still conforms to a prudent degree of fiscal responsibility.

Finally, we consider the tax reforms that could result in a 0,5 percentage point increase in taxes as a proportion of the GDP. We seek reforms that create a minimal distortion in economic activity, which, would in turn, produce a negligible impact on our forecast for GDP growth. According to Castilla (2021), a 1% increase in the general sales tax rate could increase tax revenues by as much as 0,3% of GDP. However, other, less distorting, routes also proposed by Castilla (2021) include: (i) increasing selective consumption taxes aimed at reducing negative externalities (average fiscal impulse: 0,2% of GDP); (ii) simplifying the tax architecture for small businesses, which at present promotes tax evasion (an additional 0,14% of GDP); (iii) saving on unnecessary spending caused by an inefficient public remuneration system (fiscal impulse: 0,25% of GDP); (iv) strengthening the property tax system to increase its efficiency (average fiscal impulse: 0,4% of GDP).

5. EX-ANTE EVALUATION OF PROPOSED WELFARE POLICIES

In this section we will carry out an exhaustive literature review, in order to identify the potential impacts of our policies on welfare. For infrastructure, we study the theory and evidence behind the notion that public investment in different sectors can be beneficial to productivity and human capital for low-income households, boost them out of poverty and eventually reduce inequality within the project's area of influence. For health, we take a look at the SIS objectives and its expansion, and review several studies regarding its welfare impact on vulnerable households. Our review reveals that while SIS can increase engagement among people in the formal healthcare system, it still does not cover their expenses in full, and thus it still has significant limitations.

Infrastructure, inequality and poverty

Government investment has the potential to improve the welfare of a country's population, both in theory and according to empirical evidence. Regarding the theoretical aspect, there are several instances where the product of a public investment project can greatly benefit low-income households. Public investment has externality qualities that can increase the productivity of the physical capital used by households and the small- and micro-businesses they may run. (Zhang

et al., 2013; Anderson et al., 2006). For example, in a rural area where electricity is unstable, a successful energy project can allow businesses to shift to automated operations and machinery, raising productivity. Indeed, a lack of basic public services forces businesses and households to engage in costly daily activities (Calderón and Servén, 2002). Road and transport infrastructure is renowned for substantially decreasing transport costs for businesses and opening markets between cities and towns (Fujita et al., 1999).

In the previous section we argued for certain projects occupying a larger portion of the investment portfolio (i.e., health and education). These projects have the further added value of being able to increase human capital accumulation and, eventually, long-run growth (Becker, 2007). In principle, health and sanitation infrastructure investment can foster better nutrition and health in infants, leading to a reduction in infant mortality and child malnutrition. Since early development is of paramount significance for adult life productivity, this leads to a productivity increase in the long run (Beach et al. 2016; Bleakley, 2010). High-quality public education is equally important, sowing the seeds of human capital accumulation in poor households and leveling the playing field, so that future generations can enter the labor market with similar opportunities regarding people from better-off households.

However, while there is potential for investment to have an impact on low-income households, in practice there are several concerns and issues that may leave this promise unfulfilled. It is essential for Government investment to match the needs of the vulnerable population (Fort and Paredes, 2015). It must also compete with private provision of the same goods and match their quality. For instance, if public education is worse than private education, low-income households will enroll their children in the former, while high-income

households will choose the latter; in time, this will only lead to a wider gap in human capital differences. Finally, the Government must have the management skills needed to appropriately handle the resources for thousands of projects simultaneously, delivering goods of the quality envisioned at the onset of the project. Along these lines, the more abilities found at Government level, the better it will be able to deliver on public goods and projects.

Several international studies have found evidence showing that public investment projects can be progressive. That is, they are statistically associated with – and even causally generate – a reduction in income inequality. To begin with, in correlational studies Fakthong (2012) finds that public investment in Thailand has been a major determinant behind the evidence of income convergence between low- and high-income households. Bathla, Kumar and Joshi (2018) find that public investment in health and education has the largest correlational incidence in reducing interstate differences among several indicators (e.g. road density, irrigation systems, health and education levels).

Causal international studies focus on the use of panel data, instrumental variables or both to identify a causal impact of investment on inequality. With their cross-country panel of 33 OECD countries, Fournier and Johansson (2016) find that subsidies and household benefit expenditure can reduce income inequality. Calderón and Servén (2004) use a cross-country panel of 121 countries between 1960 and 2000 to construct synthetic indices that approximate public investment and, using an Arellano-Bond lagged-difference identification strategy with GMM, they find that higher quality investments reduce overall inequality (Gini coefficient and top quintile income shares). Hooper et al. (2017) study infrastructure (road and education) investment in the United States between 1950 and 2020 with a panel fixed-effect model relating investment growth rates to end-of-decade regional Gini

coefficients. They estimate that higher investment growth rates lead to a reduction in inequality, while the reverse estimation (inequality to investment) is not significant. Later on, Hooper et al. (2018) revisited their study to add instrumental variables to their estimations and more inequality indices. Their instrument was the number of state representatives in the National Commission of Appropriations, which is positively related to investment rates for the state. They find that building roads leads to a decrease in inequality. However, other studies, such as Banerjee, Duflo and Qian (2020) for China, do not find any effect of proximity to roads on inequality reduction.

Until recently, Peruvian studies regarding the relationship between public investment and inequality have been rather scarce. Considering that income inequality has seen a major decline in recent years, as described in the panoramic diagnostic in Section 1, there is potential to uncover a causal relationship between these two variables. Correlational studies have shown promising results. Jaramillo and Saavedra (2011) have identified significant differences regarding access to basic services behind inequality factors. Baca et al. (2014) estimate a computable general equilibrium model that predicts lower national income inequality for a higher investment in health and education.

Furthermore, some local studies have found that public investment has an impact in reducing rural poverty. Using propensity score matching, Escobal and Ponce (2002) argue that rural infrastructure rehabilitation has reduced poverty and increased the income of beneficiary households. Using a simultaneous equation model and panel data, Fort and Paredes (2015) show that public rural investment in roads, telecommunications and irrigation can reduce rural poverty through its intermediate effect on productivity, rural income and employment composition. Finally, Orco (2020) uses a panel on public expenditures for different sectors and regional poverty to estimate a

model that indicates a poverty-reducing and agriculture productivity-increasing effect of investment in health, education, environment and sanitation, among other sectors. The study, though, is limited in its causal claim, since it does not address concerns for reversal causality.

Reducing regional poverty is relevant in itself; however, it is also a necessary step for the reduction of income inequality. The most recent study that attempts to estimate a causal impact of public investment and regional inequality in Peru is Alcázar and Jaramillo (2021). They build a 2006-2019 panel data set combining a detailed regional-level public investment dataset from the MEF's Integrated Financial Administration System (SIAF) with household level survey data that serves to compute representative regional-level inequality indices. Their approach closely follows Hooper et al. (2017) as described above: using regional lagged investment growth rates, they estimate an arguably causal impact of investment on several measures of inequality. Their results indicate that public investment is progressive. Indeed, public investment is linked – arguably causally – with reductions in regional inequality, measured by Gini coefficient or income ratios of the richest quintile to the poorest quintile. An additional 100 million soles in investment across a five-year period (about 7% of average investment per region) reduces the regional Gini coefficient in 0,002; this suggests a rather small effect, though in the right direction.

In addition, they find heterogeneity regarding the level of government responsible for investment. Investment by the central Government (43% of total investment by the end of the period analysed) and by local governments (41%) is associated to a reduction in inequality, while investment by regional governments (16%) is not. This fits well with the idea that the national Government is equipped with more capabilities, autonomy and scale, allowing it to handle larger and more meaningful projects, while regional governments are, unfortunately,

understaffed, and lack both the management resources and the expertise required to execute projects of this stature (CGR, 2016; CPC, 2020). They have also found progressive effects at local government level. Driving these effects is, specifically, investment in water and sanitation. The authors therefore suggest that sanitation investment reduces inequality through its impact on health improvement and disease prevention.

To close this subsection, we underscore the opportunity to carry out climate-resilient investments that may mitigate the effects of climate change and the recurrent El Niño in the coast. The last El Niño event, in 2017, caused damages to sanitation infrastructure valued at S/ 20 billion, impacting housing, sanitation, agriculture and irrigation, health and road infrastructure.[11] Unfortunately, the infrastructure that is reconstructed after these events hardly ever prepares for future ones. The 2018 Plan for Reconstruction with Changes, valued at over S/ 25 billion, focused on building back better by implementing internationally validated protocols, aimed at building new, more resilient infrastructure, facing future El Niño events and the inevitable climate change (PCM, 2018). This was a first step in the right direction, since Peruvian national investment plans have largely ignored the international movement to further low-carbon climate-resilient (green) infrastructure.[12] In addition to infrastructure destruction, El Niño is largely credited for the 1 pp increase in poverty by the end of 2017. Thus, climate-resilient investment can also prevent further significant decline in the population's welfare.

11 See a note from Andina at this link: https://andina.pe/agencia/noticia-plan-reconstruccion-cambios-estima-inversion-s-25655-millones-681764.aspx

12 The OECD offers a trove of policy material regarding this subject. For further explanations on the imperative necessity of implementing green investments, see Vallejo et al. (2017) for a policy brief.

SIS, household spending and welfare

Social health insurance programs have rapidly expanded in the developing world (Hsiao and Shaw, 2007), in an attempt to address the well-documented issue of the poor having minimal access to formal health insurance, rather than informal and costly risk-sharing contracts (Banerjee and Duflo, 2007).[13] Many such programs use general taxation revenues to fund health plans aimed at covering the poor and vulnerable against a wide variety of illnesses and accidents, as well as protect them against the financial consequences of health shocks.[14] Whether the target population actually engages with the insurance, and whether it can create tangible welfare benefits for its affiliates beyond a nominal affiliation, is still open for debate, and requires further empirical analysis.

At present, SIS has an ambitious scope of action in Peru. It was created in 2001, although it was later divided into minor programs, with the purpose of providing health-care services and financial protection against health shocks for uninsured individuals (in particular, the poor). The SIS underwent several reforms in 2010 and up to its current legislation; this includes the PEAS, which covers 65% of the total costs resulting from illness, as well as two supplementary health plans, covering further discretionary needs. Therefore, in principle, the SIS covers a very comprehensive group of health shocks (Carpio et al. 2020). In 2019, former president Martín Vizcarra mandated

13 In Peru, by the late 1990s, barely 23% of Peruvians had health insurance, notwithstanding how many poor people may have had insurance (CEPLAN, 2011).

14 In the case of Peru, Torres (2019) finds that health shocks are a major determinant behind poverty vulnerability. That is, for households around the poverty line, accidents and illnesses can economically cripple a household and plunge it into poverty (below the poverty line).

universal health coverage for every Peruvian citizen by 2021. As a result, SIS coverage has risen from 20% in 2006 to 54% in 2018, and jumped to 70% in 2020. Similarly, these Government decisions are the main driver behind total health insurance coverage reaching 95,3, as shown previously in Figure 1.6.

As much as the SIS has expanded in size and scope last year, the case for its welfare benefits is, however, complex. Parodi (2005) found that an earlier iteration of SIS, the Maternal and Child Insurance, increased the probability of mothers with infant children giving birth in formal establishments. Bitrán, Asociados (2009) found a positive relationship between SIS affiliation and an uptake in preventative and therapeutic services. Estimates by Francke (2013) suggest that, even with budget limitations, SIS was instrumental in reducing infant mortality and anemia in Peru during the 2000s. Finally, Petrera and Jiménez (2018) find a negative correlation between out-of-pocket health expenditure and SIS affiliation. Unfortunately, these studies do not have a strong identification strategy to procure a reliably exogenous variation of SIS enrollment.

Very recently, SIS impact studies have made a major progress in identifying the causal impacts of SIS affiliation. Neelsen and O'Donnell (2017) estimate the impact of the 2007 reform in the SIS, which introduced the former Priority List of Sanitary Interventions (LPIS). They use a difference-in-difference (DiD) strategy that compares the target population's change in health care use with that of poor adults who already have coverage through employment-based insurance. They found positive effects on use of ambulatory care, medication and diagnostic tests. Bauhoff and Oroxom (2019) study the 2011 reform through a (DiD) strategy that compares infants eligible for SIS before the introduction of an ID requirement against ineligible infants, excluded from the SIS due to a lack of proper documentation.

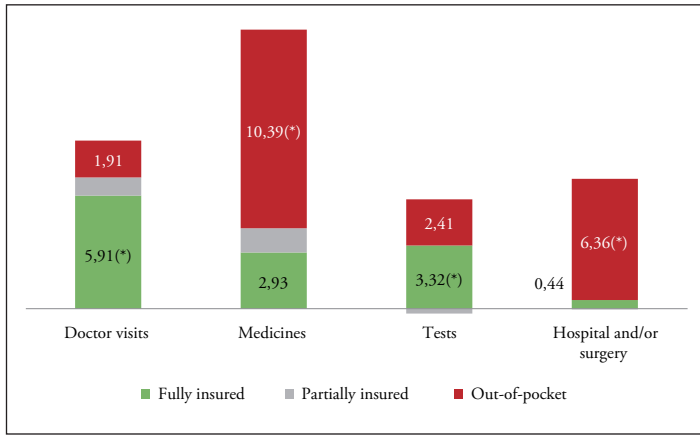
They do not find any effect on access to health-care services nor on health outcomes.

Bernal et al. (2017) offers the most comprehensive study – with a convincing strategy – on the impact of the SIS on their affiliates' household medical expenditure. Here, the authors worked closely with Minsa to recreate the Household Targeting Index which was directly used to determine whether an unemployed individual should be eligible for SIS affiliation; if so, that person was almost immediately enrolled. The criterion decision was based on a cut-off: individuals with an index below a certain threshold were eligible/enrolled without exception. By sampling households around the index cut-off, the authors used a sharp regression discontinuity design (RDD) to estimate causal impact of SIS affiliation to an out-of-pocket detailed expenditure level and use of health-care services, applying the detailed health expenditure module available in the Enaho. Among other results, they find a 7,8 percentage point increase in the probability of seeking medical attention for illness, symptoms, relapses or accidents, and a 12,3 percentage point increase in the probability of receiving therapeutic care for these scenarios.

However, their most striking results, summarized in Figure 5.1, really speak to the way the SIS operates. The figure shows the effect, in percentage points, of SIS affiliation on some items of health care use probability under three service payment systems: fully insured by the SIS, partially insured and out-of-pocket expenditure. Only statistically significant coefficients are marked with a (*) sign. SIS affiliations led to an increase in medical consultations and medicine use, as well as an uptake of medical analyses, hospital consultations and/or surgery. This was an increase by several percentage points, largely as explained by most of the literature described above. However, the authors remark that, while the increase in doctor consultations and medical

analyses was clearly funded by the SIS, the increase in medicine use, hospital consultations or surgery was mostly financed by out-of-pocket expenditures from the affiliates. The authors compound this point by then estimating the effect of SIS affiliation on detailed expenditure accounts. While SIS affiliation does not lead to any significant increase in expenditures in doctor consultations or medical analyses, it does lead to a 55% and 41% increase in medicine and hospital/surgery spending, respectively.

Figure 5.1
Effects of health insurance on health care use



Source: Table 1 from Bernal et al. (2017).

Notes: Point estimates show the effect, in percentage points, of SIS affiliation on health care use probability under three service payment systems: fully insured by the SIS, partially insured and out-of-pocket expenditure. Only estimates with (*) denote statistical significance at 95%.

A follow-up paper by Carpio et al. (2020) adapts the same RDD strategy, together with a novel dataset on child performance on standardized national math and reading tests, in order to estimate spillover effects of health insurance onto education. They found very large

and robust effects of SIS affiliation on children's test scores: 0,915 and 1,429 standard deviation increase in reading and math scores, respectively. The authors argue that an improved health status among children and their parents is the driving factor behind these relationships; the RDD shows that the SIS caused a decline in anemia rates for children and women of child-bearing age, which is strongly linked to a higher nutritional intake. Adding to the gender-equity value of this study, the effect is driven by girls, who benefit more across the entire test score distribution. However, they find no evidence of increased financial protection.

Summarizing the lessons from the previous RDD papers, it is clear that, considering its limitations, the SIS is strongly associated with an increase in formal medical care among its affiliates, and even some substantial spillover effects. Nevertheless, these limitations, as exposed by Bernal et al. (2017), cannot be swept under the rug. It is clear that the SIS has been effective in providing frontline medical attention from doctors, as well as diagnostics and medical analyses; however, it is not effective in covering medicine expenses or hospital and surgery costs, considering that out-of-pocket spending increases far more than what the Government supply can handle. This is perfectly consistent with Seinfeld's (2021) diagnosis, discussed in previous sections, that the SIS is operating within tight limits on budgets and specializes on providing a certain degree of medical attention, but forgoes purchasing enough medicine for its mass of affiliates. Moreover, we should note that most of these studies focus on data up to 2014, and as such, capture a period when the SIS budget was less constrained, given its mass of affiliates, and was financially solvent (Mosqueira, 2015). In recent years, with the surge in affiliates, it is much more likely that the SIS is even more saturated than it was a few years ago and could start to falter even at providing basic medical

care. We believe, therefore, that investing more in the SIS has become an urgent necessity.

CONCLUSIONS

We have based our analytical framework on the distinction between traditional recovery plans and a Building Back Better approach, where the former focuses on short-term recovery through conventional fiscal and monetary policies, while the latter, in addition to reigniting economic growth, will also consider long-term economic development while addressing social and environmental objectives (Keane et al., 2021). Along these lines, our paper stands out from local institutional recovery plans by approaching investment and public expenditure with an explicit concern regarding long-term development challenges, such as reforming social protection and addressing gender imbalances in the workforce.

We have presented a comprehensive diagnosis of the impact of the COVID-19 pandemic on the Peruvian economy. Although in the two previous decades Peru underwent a remarkable economic boom, where many social indicators (poverty, income inequality, social mobility) improved substantially, the pandemic posed a huge step backwards regarding several of these fronts. While some Government policy responses were swift and adequate – in particular, those undertaken by the monetary authority – many were controversial or plainly detrimental, especially in regards to public health policy. If anything, the pandemic has served to expose the deep structural weaknesses hindering our economic development, such as informality, poor public services and gender inequalities in the labor market.

We have identified two critical focal points regarding public investment and health expenditure that the Government can proactively use to both reignite the economy and address the structural weaknesses in the Peruvian economy. Firstly, we outline an ambitious public investment plan aimed at expanding execution and resource efficiency, as well as breaching infrastructure gaps, with an emphasis on service-oriented sectors. Secondly, we propose substantial investment aimed at expanding our social health insurance system, ensuring its budget can meet its obligations and properly cover all households. Not only do these measures have the potential to boost economic growth while keeping public financial accounts solvent; moreover, they aim to build back better after the pandemic by enhancing productivity, reducing income and social inequalities, and kick-starting the creation of a social protection system capable of shielding all citizens from external shocks.

Furthermore, strengthening access to health services could be a first step towards building a truly universal social protection system, one to which individuals have access not because of their labor status, but because they are citizens. At the same time, the implementation of this social protection system can provide the appropriate context for reforms in the labor market aimed at encouraging formal employment and enhancing productivity.

Four lessons stand out from our analysis. Firstly, while public investment can be key for reigniting economic growth, it does not go very far in tackling structural weaknesses. Secondly, public spending in health can actually achieve this on two fronts: beginning to build a universal access social protection system and addressing gender imbalances in the labor market. Thirdly, focusing public discussion on social protection will enable a broader approach to policy reform by including formal employment and productivity enhancing reforms, which are essential for a sustainable, expansive social protection system. Finally, we

also show that the sector mix in public investment has an impact on employment, both in terms of the volume of jobs generated and their gender composition.

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Building back better after the COVID-19 pandemic:
A diagnosis and reactivation proposal for Peru

Editing completed
in December 2021

Grupo de Análisis para el Desarrollo
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In this policy-oriented paper, we provide a pre- and post-pandemic socioeconomic analysis of Peru, along with a financially sustainable five-year Building Back Better recovery plan, which emphasizes the urgency of addressing some of the country's structural weaknesses. We underscore the importance of public investment for this effort but widen the focus to include current public expenditure, in order to take steps towards building a more universal social protection system. We show that this also contributes to reducing the gender imbalances in the labor market that the pandemic exposed and exacerbated. We provide a financial programming exercise that demonstrates that the plan is financially responsible under a reasonable fiscal rule. Four core ideas stand out from our analysis. Firstly, while public investment can be key to reigniting economic growth, it does not go very far in tackling structural weaknesses. Secondly, public spending in health can actually achieve this from two fronts: by beginning to build a universal access social protection system and by addressing gender imbalances in the labor market. Thirdly, focusing public discusión on social protection enables a broader approach to policy reform by including formal employment and productivity enhancing reforms, which are essential for the sustainability of a broad social protection system. Finally, we also show that the sector mix in public investment has an impact on employment results, both in terms of the volume of jobs generated and their gender composition.

ISBN: 978-612-4374-47-0