



THE IMPACT OF THE COVID-19 CRISIS ON INCOME DISTRIBUTION
UNDER DIFFERENT PROTECTION SCHEMES: THE CASE OF SPAIN

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The CEQ logo is a stylized graphical representation of a Lorenz curve for a fairly unequal distribution of income (the bottom part of the C, below the diagonal) and a concentration curve for a very progressive transfer (the top part of the C).





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ABSTRACT

I used household survey data to microsimulate the impact of the COVID-19 crisis on income distribution in Spain. I estimate the cost of potential lockdowns on income under three different protection scenarios: no minimum income state protection, 2020's *Ingreso Mínimo Vital* (IMV) and the former *Renta Mínima de Inserción* (RMI). Results show that COVID crisis reduces income for the entire income distribution and, even in the context of a relatively efficient redistributive system, increases inequality and poverty at various levels. The IMV approach is the most efficient one in smoothing the impact of the COVID-19 crisis on income distribution. It may be necessary to rise taxes and to reduce other expenditure policies to maintain current protection in a context of lower public revenues.

JEL Codes: H22, I3.

Keywords: Fiscal Incidence, Inequality, Poverty, Social Spending, COVID, Spain

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Abstract

I use household survey data to microsimulate the impact of the COVID-19 crisis on income distribution in Spain. I estimate the cost of potential lockdowns on income under three different protection scenarios: no minimum income state protection, 2020's *Ingreso Mínimo Vital* (IMV) and the former *Renta Mínima de Inserción* (RMI). Results show that COVID crisis reduces income for the entire income distribution and, even in the context of a relatively efficient redistributive system, increases inequality and poverty at various levels. The IMV approach is the most efficient one in smoothing the impact of the COVID-19 crisis on income distribution. It may be necessary to rise taxes and to reduce other expenditure policies to maintain current protection in a context of lower public revenues.

1 Introduction

Available forecasts suggest that World's Gross Domestic Product (GDP) will experience a deeper contraction in 2020 than during the 2008-2010 financial crisis. Consequences on income distribution, poverty and inequality must be explored to test the efficacy of available policies to alleviate the social effects of the crisis under these extreme circumstances. Using households survey data, I estimate the impact of the COVID-19 crisis in Spain's income distribution under different protection schemes.

During the last 30 years all sort of structural and ad-hoc policies have been implemented worldwide to protect left-behind individuals during economic downturns. However, in the last years, inequality has arisen as a big social concern and redistributive policies have been perceived as insufficient (Immervoll et al., 2006); (Bourguignon, 2011).

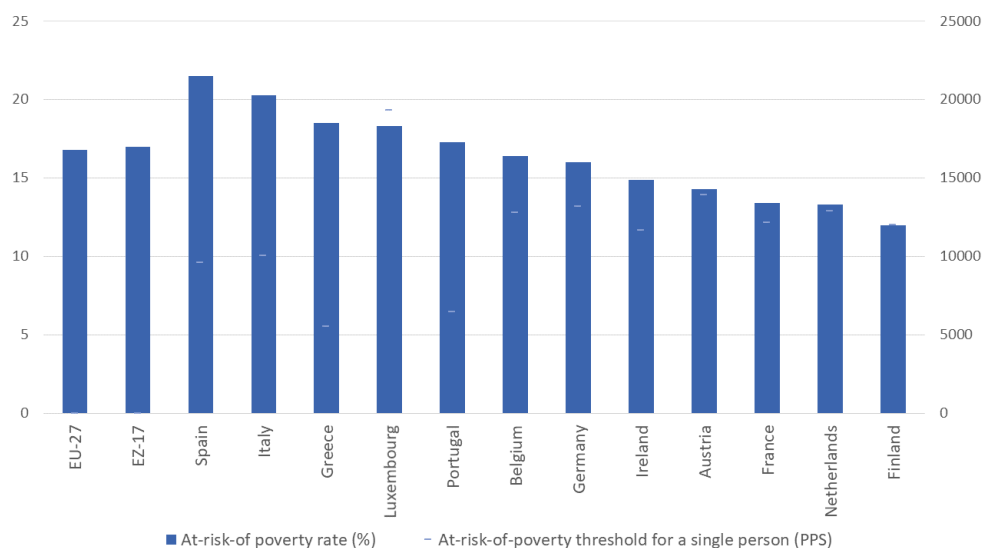
The context of countries with a developed welfare state is the most adequate to test the impact of policies designed to alleviate downturns' social effects. Spain fulfills the condition of having, both, a developed welfare state, and high poverty and inequality rates; Spain is the country in the Eurozone with the highest at-risk of poverty rate, as it can be seen in Figure 1. It is also one of the countries most affected by the COVID-19 outbreak (Pollán et al., 2020).

The specific research question that I answer in this paper is to what extent minimum income state protection scheme in Spain is efficient in protecting the most vulnerable and in curbing inequality during the COVID-19 crisis and its aftermath.

From the methodological point of view, the construction of the CEQ core income concepts require the combined use of data from surveys (in our case three: ECV, "Encuesta de Presupuestos Familiares (EPF)", for the simulation of indirect taxes, and "Encuesta Nacional de Salud" for health care in-kind transfers) together with the fiscal-administrative data.

I examine the impact of different income shocks derived from potential lockdowns on income distribution and on poverty and inequality under three different policy courses: the lack of any additional protection for minimum incomes, the new *Ingreso Mínimo*

Figure 1: At risk-of poverty rates (left axis, %) and At-risk-of-poverty threshold for a single person (right axis, Euros per year)



Source: Eurostat.

Vital (IMV) (Boletín Oficial del Estado, BOE, 2020) and the former regional *Renta Mínima de Inserción* (RMI). I will refer to the scenario with no additional protection as the “no Universal Basic Income (NUBI)” one.

In the NUBI scenario, I take into account basic income, with the features explained in the Data and Methodology section, and I include all direct transfers (unemployment benefits, national family benefits, regional family benefits, non-contributory pensions and regularization from personal income taxes), but exclude any national or regional minimum income transfer.

RMI scenario includes all the transfers in the NUBI simulation, as well as the regional minimum income protection approach that was operating in Spain until the year 2020. RMI is a non-contributory transfer for residents between 25 and 65 years with no sufficient income. Quantities, duration and conditions for perception varied across different regions, as it is explained in Gómez-Bengoechea (2020).

Finally, in the IMV scenario I substitute RMI for the newly-approved, and still in its early operating phase, minimum income state protection. IMV centralizes the management of the transfer and establishes the same conditions and rules for the whole

country, with no regard for households region. Its regulation is very similar to the RMI in terms of eligibility, but the duration and the amount of the benefit are higher in almost all cases.

Results show that IMV is more efficient in curbing poverty and inequality than RMI, and, both of them, than NUBI. The worst effects are not on the poorest, but those (roughly) in the middle and wealthy groups of the ex ante income distribution.

This article is structured as follows. First, I explain the methodology followed for the construction of the main income concepts and of the different scenarios of income construction established for the purpose of this paper. Second, I present the results derived from the different scenarios. Finally, I present the costs of the different ad-hoc policies necessary to keep poverty rates constant.

2 Data and Methodology

I use microdata from the ECV Survey (*Encuesta de Condiciones de Vida*) 2018 to build the main income concepts necessary to estimate the COVID-19 crisis and policy response incidence on poverty and inequality. ECV is an income-based survey. It gathers information from 34,906 households and individuals and offers data both nationally and regionally. I will simulate the impact of different contraction scenarios on incomes at-risk due to the Covid-19 crisis.

The income concepts are constructed using the methodology of the Commitment to Equity Institute (CEQ), originally developed in Lustig (2018), and applied for Spain in Gómez-Bengoechea (2020). In this case, I use the information contained in the ECV 2018's update to characterize the different income concepts, its origin and its at-risk status. I update gross incomes for Spain to 2019 by the rate of growth of per capita GDP for 2019 multiplied by a so-called pass through of 0.85.

I define the “Base Income” for the analysis at the household level as in Lustig et al. (2020). Base Income is estimated as the addition of labor income, capital income, other households transfers, contributory pensions and direct public transfers. Direct public transfers include unemployment benefits, non-contributory pensions, national

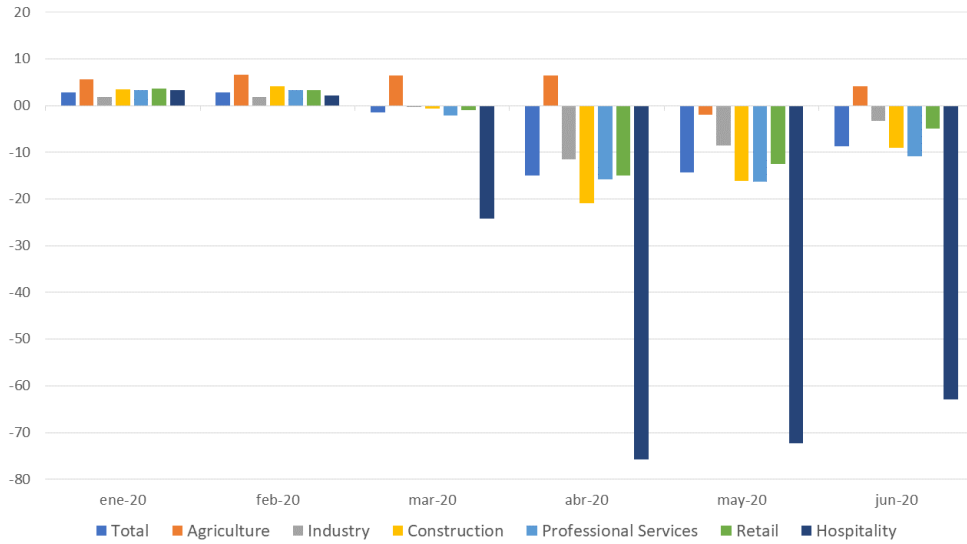
and regional family-related transfers, and the minimum income state protection scheme of each of the three considered scenarios. This income indicator is equivalent to the one referred as Gross Income in (Lustig et al., 2020).

I separate Base Income in two categories: safe and at-risk income. Safe income is defined as those aimed at individuals that work for safe industries. Safe industries are identified from the answers in the ECV according to their exposure to potential Covid-19 related lockdowns. At-risk income is defined conversely.

Exposed industries to potential lockdowns are the following: manufacturing, construction, retail, hospitality, financial industry, real-estate sector, education, arts and recreation, and other professional activities. Other private and public industries are considered to be “safe” or, at least, with no relative incidence from the lockdowns derived from the Covid-19 crisis management. Those would be: agriculture, extracting industries, energy and water supply, logistics, information and communications, public services, health care and other social services.

Figure 2 shows the cumulative evolution of compensation per sector during the three months of strict lockdowns in Spain. Results show that Hospitality (which includes Tourism), Construction and Services are the industries whose exposure to the Covid-19 crisis is higher. Households whose source of income depends on those industries will be the ones more affected by each of the scenarios proposed in this article.

Figure 2: Cumulative evolution of compensations by sector, February 2020 = 100.



Source: Spain's National Tax Office.

3 Results

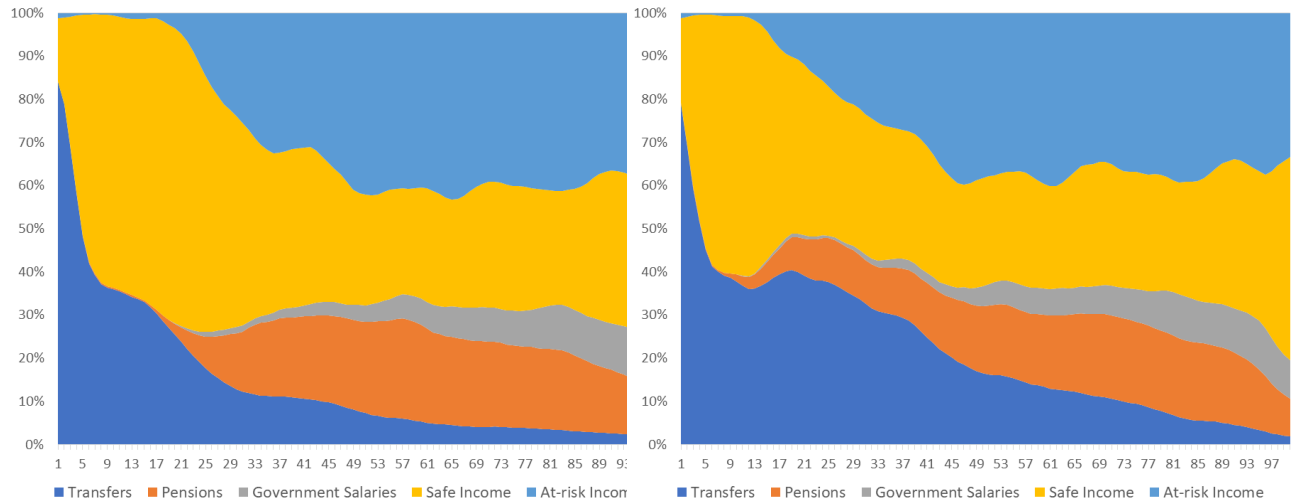
In this section, I present the composition of pre-crisis incomes across the income distribution and the incidence of potential lockdowns on poverty for the three minimum income state protection scenarios.

3.1 Composition of Pre-Crisis Income

Figure 3 shows the composition of pre-crisis incomes across the entire income distribution for three scenarios. Each scenario includes 5 categories of income: public transfers, contributory pensions, government salaries, safe income and at-risk income.

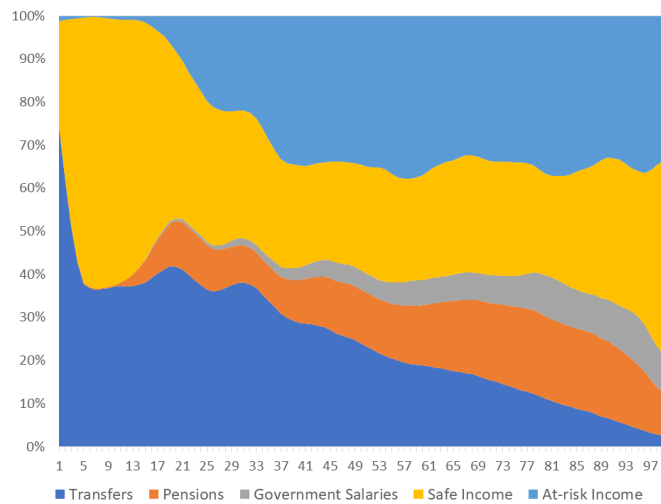
Data for the three scenarios show the important role that public transfers play for the first income centiles. Public sector, through transfers, contributory pensions and salaries dominates between 40% and 50% of total income for the centiles 10 to 80.

Regarding at-risk income, it represents around 30% of total income for centiles 30 to 100. Safe income behaves in a similar way, but it grows significantly for the first and last centiles. First centiles include incomes derived from essential low-skilled jobs, like agriculture or logistics. Last deciles group workers whose income comes from positions



(a) NUBI Scenario

(b) RMI Scenario



(c) IMV Scenario

Figure 3: Composition of Income under different protection schemes

in which online working is more feasible (financial sector, for example) and with an available at-home internet connection (Brussevich and Khalid, 2020).

Two conclusions can be derived from this income distribution. The first one is that around 30% of households income is at-risk of disappearing in case of a new lockdown. The second one is the dependence of the public sector that Spanish income have in one way or another.

Figure 3 also shows important differences between the three protection mechanisms studied in this article. Under the NUBI model, centiles 1 to 3 receive a higher percentage of their income in the form of transfers than in the other two cases; this is caused by the decrease on total incomes considered in that scenario, derived from the absence of any minimum income state protection mechanism.

The biggest impact of RMI and IMV can be seen in centiles from 4 to 25. That's where we can see a higher percentage of public transfers. For the case of the IMV scenario, transfers represent a higher percentage of income than in the RMI scenario. Transfers fall below 20% of total income after decile 22 in the NUBI model, after decile 41 in the RMI case and after decile 55 in the IMV case.

Following Lustig et al. (2020), Table 1 shows the range of possible income losses as we vary both the probability that a household loses at-risk income (down the rows) and the share of that at-risk income it loses (across the columns). The possible outcomes are very wide, ranging from near zero to almost 19% of pre-crisis income.

I narrow the focus of the article on those outcomes that have income losses similar to the IMF's October 2020 World Economic Outlook (IMF, 2020) projections for the decline in GDP. I have highlighted them in grey in Table 1. They form an "iso-loss" curve that runs diagonally through the table. I choose the two results closest to the corners of the table where either the smallest proportion of households lose much income (upper right) or the largest proportion of households lose smaller amounts of income (lower left). I will refer to them as the "concentrated" and "dispersed" losses scenarios.

Table 1: Income losses as a % of total household income

	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10%	0.2%	0.4%	0.6%	0.8%	0.9%	1.1%	1.3%	1.5%	1.7%	1.9%
20%	0.4%	0.7%	1.1%	1.5%	1.9%	2.2%	2.6%	3.0%	3.3%	3.7%
30%	0.6%	1.1%	1.7%	2.2%	2.8%	3.3%	3.9%	4.4%	5.0%	5.5%
40%	0.7%	1.5%	2.2%	2.9%	3.6%	4.4%	5.1%	5.8%	6.6%	7.3%
50%	0.9%	1.8%	2.8%	3.7%	4.6%	5.5%	6.4%	7.3%	8.3%	9.2%
60%	1.1%	2.2%	3.3%	4.4%	5.5%	6.6%	7.7%	8.8%	9.9%	11.0%
70%	1.3%	2.6%	3.9%	5.2%	6.5%	7.8%	9.1%	10.4%	11.7%	13.0%
80%	1.5%	3.0%	4.5%	5.9%	7.4%	8.9%	10.4%	11.9%	13.4%	14.8%
90%	1.7%	3.4%	5.1%	6.8%	8.5%	10.1%	11.8%	13.5%	15.2%	16.9%
100%	1.8%	3.7%	5.5%	7.4%	9.2%	11.1%	12.9%	14.8%	16.6%	18.5%

Note: Cells in grey correspond to losses similar to the loss projections by IMF (2020); cells in dark grey correspond to the “concentrated losses” and “dispersed losses” scenarios described in the text. Source: Author’s calculations based on ECV (2019)

3.2 Impact on poverty and inequality

Table 2 shows the incidence of poverty using three poverty thresholds: the US \$1.9, \$3.2 and \$5.5 a day international poverty lines (in 2011 purchasing power parity). I study the evolution of those magnitudes both for the concentrated and dispersed losses scenarios under the three aforementioned protection mechanisms.

Results show that the concentrated losses scenario is the most problematic in terms of poverty; poverty ratios are higher, in all cases, for this case than for the dispersed losses one. Almost 0.6 million, 0.45 million and 0.39 million new poor arise as a consequence of potential lockdowns for the \$5.5 a day line under the different protection schemes considered.

From the point of view of the public protection, RMI and IMV reduce poverty significantly in any all cases. IMV shows a better performance in reducing poverty than RMI, with more than 350 thousand people escaping from the \$5.5 a day poverty line, for the concentrated losses scenario.

Table 2: Incidence on poverty. “Concentrated” and “Dispersed Losses” scenarios

No UBI	Pre-COVID	Post-COVID	Change	New Poor
Panel (A) Concentrated Losses (100-70)				
1.9 \$ / Day	0.80%	1.67%	0.87%	410,316
3.2 \$ / Day	0.86%	1.79%	0.93%	439,783
5.5 \$ / Day	2.13%	3.38%	1.24%	589,162
Panel (B) Dispersed Losses (70-100)				
1.9 \$ / Day	0.80%	0.90%	0.09%	42,812
3.2 \$ / Day	0.86%	0.97%	0.12%	55,039
5.5 \$ / Day	2.13%	2.50%	0.37%	173,696
RMI				
Pre-COVID	Post-COVID	Change	New Poor	
Panel (A) Concentrated Losses (100-70)				
1.9 \$ / Day	0.46%	1.16%	0.70%	330,675
3.2 \$ / Day	0.48%	1.25%	0.77%	366,236
5.5 \$ / Day	1.44%	2.38%	0.94%	445,912
Panel (B) Dispersed Losses (70-100)				
1.9 \$ / Day	0.46%	0.50%	0.04%	18,539
3.2 \$ / Day	0.48%	0.54%	0.07%	30,919
5.5 \$ / Day	1.44%	1.62%	0.18%	83,833
RMV				
Pre-COVID	Post-COVID	Change	New Poor	
Panel (A) Concentrated Losses (100-70)				
1.9 \$ / Day	0.49%	1.14%	0.65%	307,127
3.2 \$ / Day	0.51%	1.22%	0.71%	334,347
5.5 \$ / Day	1.62%	2.45%	0.83%	394,821
Panel (B) Dispersed Losses (70-100)				
1.9 \$ / Day	0.49%	0.53%	0.04%	18,686
3.2 \$ / Day	0.51%	0.57%	0.06%	29,489
5.5 \$ / Day	1.62%	1.75%	0.13%	63,157

As a consequence of this, inequality, measured through the Gini index, shows a better performance under IMV than under RMI. This happens for the 10% and 100% extreme scenarios described in Table 1, as well for in the concentrated and dispersed losses cases. Figures 4 shows the results for this indicator.

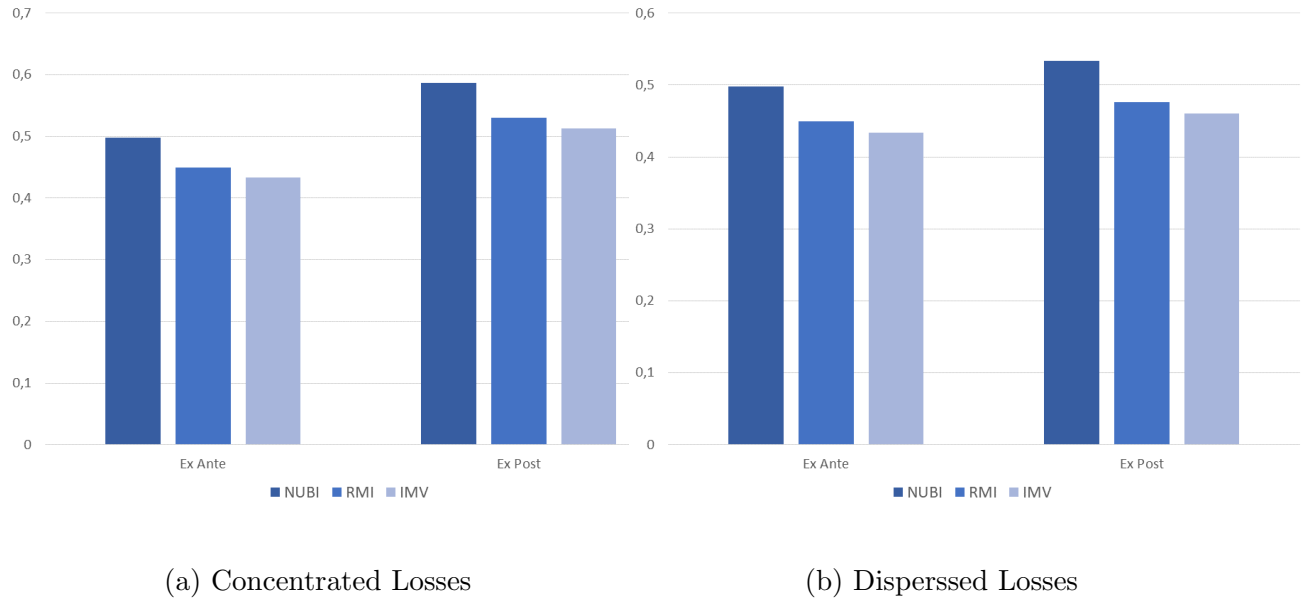


Figure 4: Gini index for concentrated and dispersed losses under different protection schemes

3.3 Impact on income mobility

In this section I present the impact on income mobility that the concentrated and dispersed losses scenarios have for NUBI, RMI and IMV simulations. Table 3 shows the percentage of population in each income group that fall to income groups below as a consequence of the economic contraction.

Large shares of medium and wealthy individuals fall from Groups 4 and 5 into medium class (Group 3) and into poverty (Groups 1 and 2). This happens both for the concentrated and dispersed losses scenarios. The impact of the different protection schemes can be felt on the mobility from Group 2 to Group 1 and from Groups 3 to groups 2 and 1; in all those cases a higher percentage of population falls into poverty under RMI protection than under IMV.

The same happens when I do not consider any protection at all. The percentage of individuals that fall from Group 2 to Group 1 is 1.6% higher than under RMI and 3 points higher than under IMV scheme. Furthermore, the percentage of individuals in Group 1 is almost twice as in the IMV model.

Figure 5 shows income decline for each percentile of the income distribution relative to Base Income. Households across the entire income distribution are worse off

Table 3: Inter-Income Group Mobility

Concentrated Losses					Dispersed Losses						
NUBI					NUBI						
1	2	3	4	5	1	2	3	4	5		
1	8.3%				1	8.3%					
2	0.1%	12.4%			2	0.2%	12.3%				
3	0.2%	0.7%	3.6%		3	0.0%	0.7%	3.9%			
4	0.1%	0.7%	1.9%	36.6%	4	0.0%	0.0%	1.0%	38.3%		
5	0.0%	0.0%	0.0%	4.8%	28.1%	5	0.0%	0.0%	0.0%	4.9%	27.9%
RMI					RMI						
1	2	3	4	5	1	2	3	4	5		
1	4.9%				1	4.9%					
2	0.1%	10.8%			2	0.1%	10.7%				
3	0.1%	0.3%	1.5%		3	0.0%	0.4%	1.5%			
4	0.0%	0.3%	1.2%	40.1%	4	0.0%	0.0%	0.2%	41.4%		
5	0.0%	0.0%	0.0%	5.4%	32.8%	5	0.0%	0.0%	0.0%	5.8%	32.5%
IMV					IMV						
1	2	3	4	5	1	2	3	4	5		
1	4.7%				1	4.7%					
2	0.1%	9.3%			2	0.1%	9.3%				
3	0.1%	0.3%	2.3%		3	0.0%	0.3%	2.5%			
4	0.0%	0.4%	1.5%	43.6%	4	0.0%	0.0%	0.4%	45.2%		
5	0.0%	0.0%	0.0%	5.0%	30.0%	5	0.0%	0.0%	0.0%	5.2%	29.8%

on average. For the non-anonymous analysis, losses are higher for the middle and higher deciles rather than the poorest, thanks to the role played by transfers and social protection.

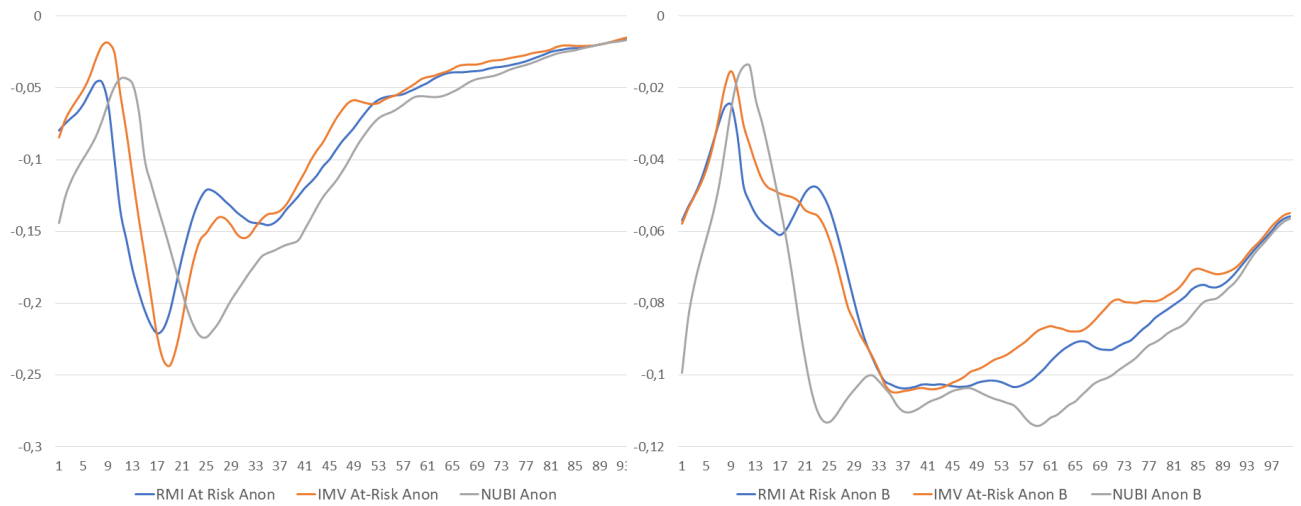
The relative homogeneity of at-risk and safe incomes for the entire distribution, as well as the fact the contributory pensions and salaries earned in the public sector are spread along the entire income distribution, explain the similar decrease in income for middle and high income groups. Non-anonymous results show the relatively small impact on white collar workers' incomes, who are CEO's, managers and researchers with internet access at home that can better adapt to lockdowns through online work.

The comparison between income reductions under the three protection scenarios offers interesting results. Not surprisingly, income decrease for the NUBI simulation



(a) Concentrated Losses. Non-Anonymous

(b) Dispersed Losses. Non-Anonymous



(c) Concentrated Losses. Anonymous

(d) Dispersed Losses. Anonymous

Figure 5: Incidence Curve for At-Risk Incomes

is higher than for RMI and IMV. Since the decrease in income is measured in relative terms with respect to gross income, the reduction experienced by the latter due to the absence of minimum income state protection in the NUBI simulation, explains that, for deciles 10 to 20, income decrease appears to be smaller than for RMI and IMV cases.

4 Conclusions

The impact of COVID-19 on the whole world has been dramatic, both in terms of lives taken and income losses. Countries with a more developed welfare state should be able to cope better with this extreme situation through its structural, and sometimes ad-hoc, policies.

The case of Spain is a paradigmatic one for the study of this problematic. The recent approval of the IMV allows me to test its role on smoothing the impact of the crisis and its performance relative to previous RMI and to the hypothetical nonexistence of other minimum income state protection schemes.

Results show that, under all microsimulations, IMV is more efficient in curbing poverty and inequality than RMI, and, both of them, than NUBI. The worst effects are not on the poorest, but those (roughly) in the middle and wealthy groups of the ex ante income distribution.

The challenge for the Spanish government is twofold. First, it needs to fine tune IMV performance; preliminary data shows that the number of recipients is well below initial projections. Second, it may be necessary to rise taxes and to reduce other expenditure policies to maintain protection policies in a context of lower public revenues. Furthermore, low productivity and current demographic dynamic could trigger the austerity debate in the aftermath of the COVID-19 crisis.

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