



BANGKO SENTRAL NG PILIPINAS

MONETARY POLICY SUB-SECTOR I | DEPARTMENT OF ECONOMIC STATISTICS

The Welfare Impact of the COVID-19 Pandemic:

**An Analysis of the Philippine Labor Market
using the CGE-Microsimulation Approach**

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1 Introduction

Contextualization

Pandemic lockdown measures have contracted economy on both the supply and demand sides, causing restrictions in production.

Gross Domestic Product by Final Expenditure Approach, Year-on-Year Growth Rate (%)

Accounts	Q1	Q2	Q3	Q4
Consumption	0.17	-15.30	-9.18	-7.26
Government	7.00	21.84	5.84	5.07
Investment	-12.08	-51.48	-39.52	-32.19
Export	-4.37	-33.50	-15.06	-10.24
Import	-7.36	-37.27	-20.70	-20.24
GDP	-0.73	-16.98	-11.59	-8.26

Source: Philippine Statistics Authority

Gross Domestic Product by Value Added Approach, Year-on-Year Growth Rate (%)

Accounts	Q1	Q2	Q3	Q4
Agriculture	-0.26	1.55	1.22	-2.52
Industry	-2.50	-21.78	-17.60	-10.56
Services	0.10	-17.09	-10.56	-8.02
GDP	-0.73	-16.98	-11.59	-8.26

Source: Philippine Statistics Authority



1 Introduction

Contextualization

Pandemic lockdown measures have contracted economy on both the supply and demand sides, causing restrictions in production.

The Philippine Labor Market under the Pandemic (%), April to October 2020.

Parameters	April	July	October
Labor force Participation Rate	55.69	61.94	58.74
Non-participation due to COVID-19 (as % of working age population)	12.73	5.43	4.58
Unemployment rate	17.60	9.96	8.74
Share of pandemic-induced unemployment	87.95	65.61	62.15
Displacement rate (with a job but not at work)	37.20	2.58	0.36
Total labor force dropout due to COVID and unemployment rate	32.94	17.22	15.34

Source: Philippine Statistics Authority

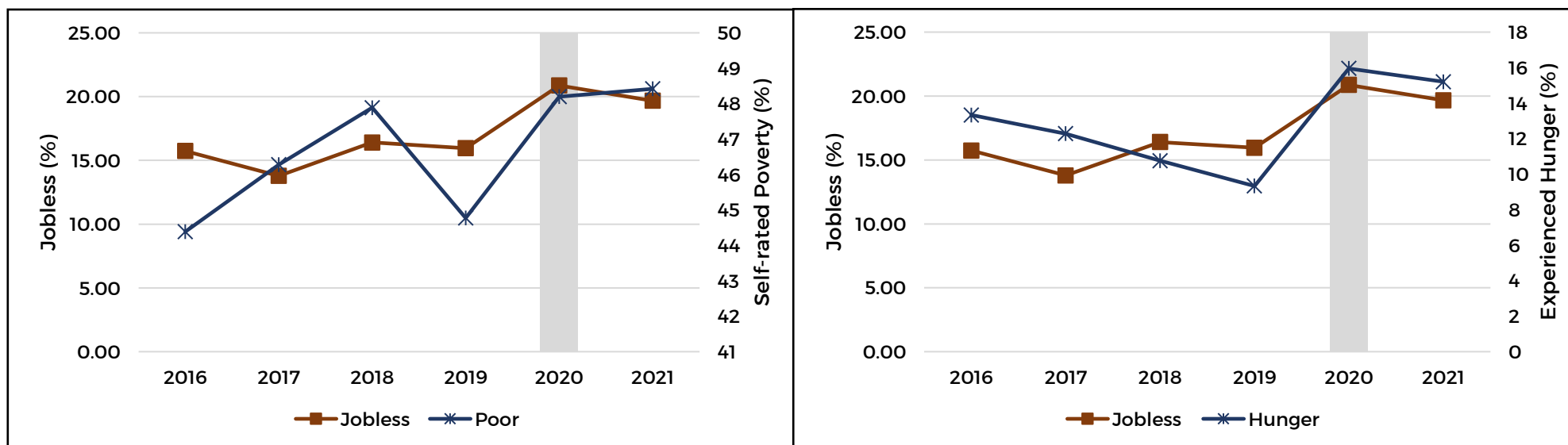


1 Introduction

Contextualization

Does the labor market effects of the pandemic cause welfare to decline?

Self-Rated Poverty, Hunger, and Joblessness in the Philippines (%), 2016 - 2021.



Source: Social Weather Stations.



1 Introduction

Research Problem

HOW DEEP WOULD THE IMPACT OF THE ONSET OF THE COVID-19 PANDEMIC HAVE BEEN ON **POVERTY** AMONG FILIPINO HOUSEHOLDS IN THE ABSENCE OF MITIGATIONS?

CAN POLICY INTERVENTIONS SUCH AS CASH ASSISTANCE **REVERSE** ANY OF THE PANDEMIC'S WELFARE-REDUCING EFFECTS ON HOUSEHOLDS?

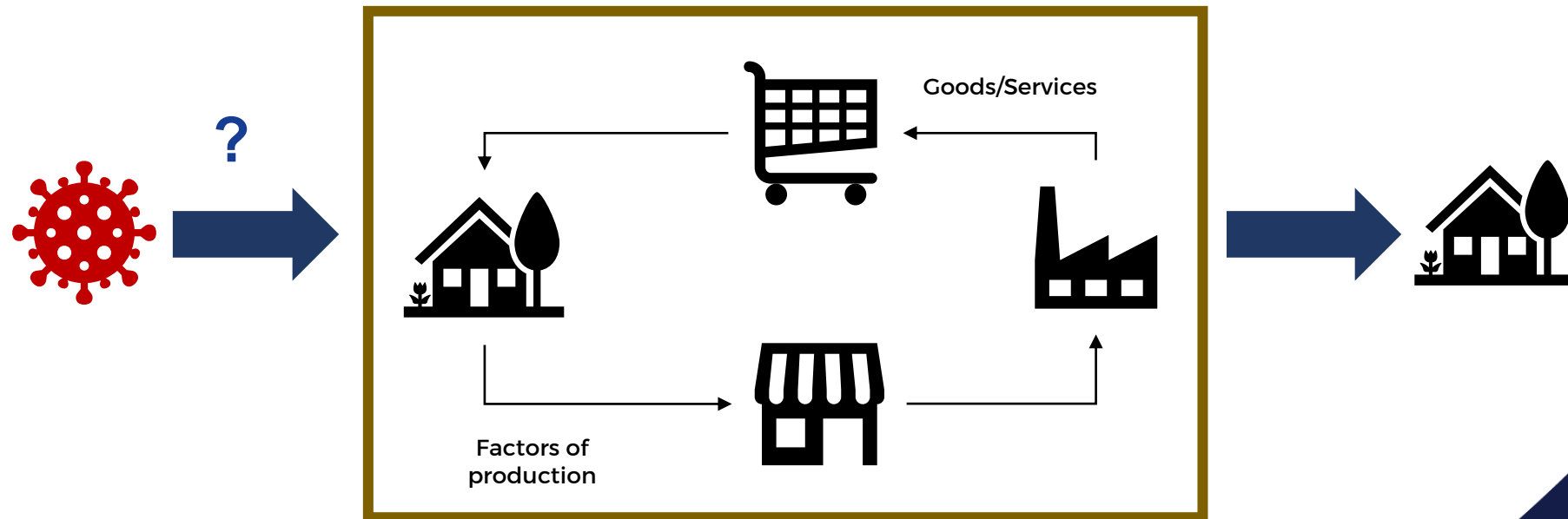


2 Literature Review

MICROSIMULATION STRATEGIES

Microsimulation strategies and the **partial equilibrium** framework may not account the interdependence of markets and sectors in the economy.

COMPUTABLE GENERAL EQUILIBRIUM AND MICROSIMULATION



2 Literature Review

THE COVID-19 PANDEMIC SCENARIO

Previous health crisis simulations show that **school and business closures** increase GDP losses by threefold. **Crowd avoidance** increases GDP losses as well.

Government restrictions tend to contribute more to GDP losses than direct economic losses due to deaths and isolation (due to contracting illness) in the labor force (Keogh-Brown et al. 2020).



3 Framework

Theoretical Framework

We illustrate the adjustments in the labor market following a **negative overarching economic shock**. Our model predicts that output shocks are partly **absorbed by unemployment rate and expected wages** (Pissarides 2000). We further extend the framework of Pissarides **into poverty effects** through Gottschalk and Danziger (1985).



3 Framework

Theoretical Framework

Wage determination must therefore maximize the weighted net returns of workers and firms from a job match (**Nash bargaining relationship**).

$$w(x) = (1 - \beta)b + \beta p(x + c\theta)$$

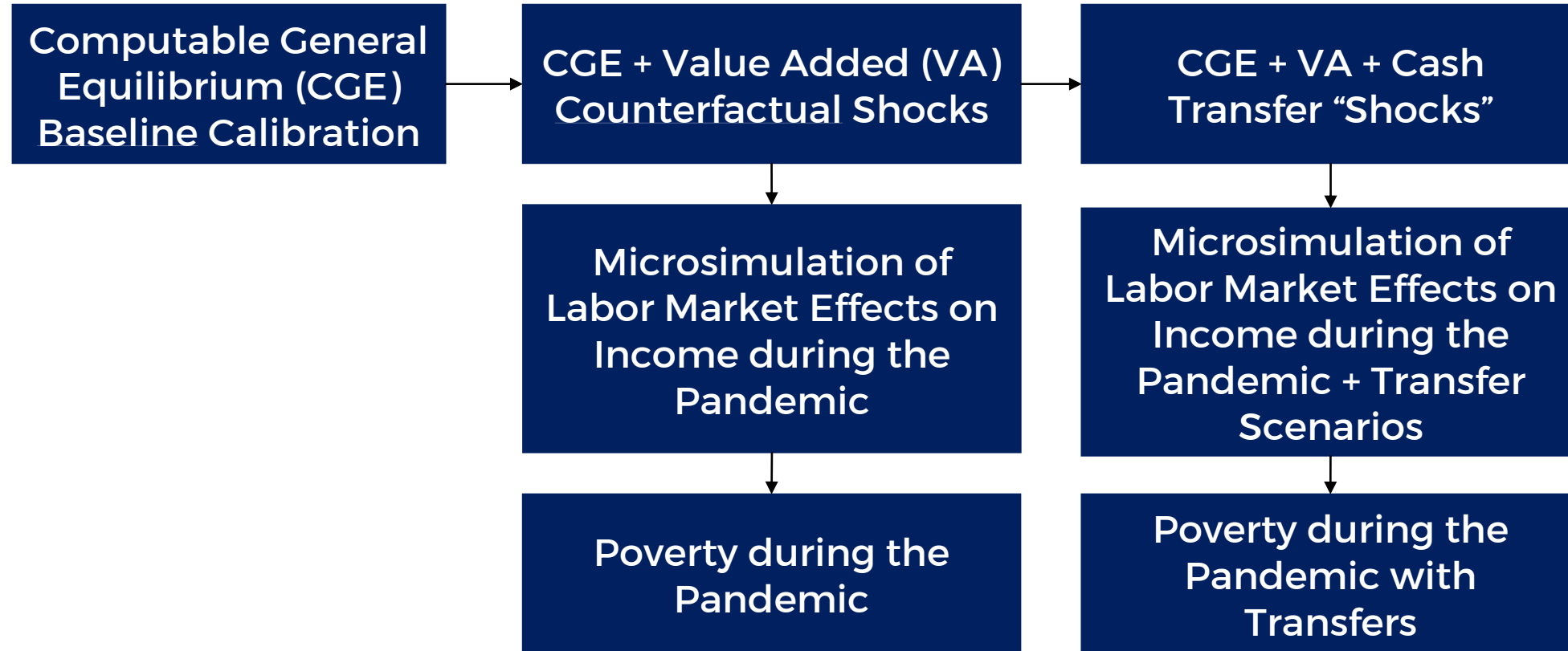
For any overall change in productivity or output, *expected* wages will change in the same direction:

$$\frac{\partial E[w(x)|x \geq R]}{\partial p} = \beta E[x|x \geq R] + \beta c \left[p \frac{\partial \theta}{\partial p} + \theta \right] > 0$$



3 Framework

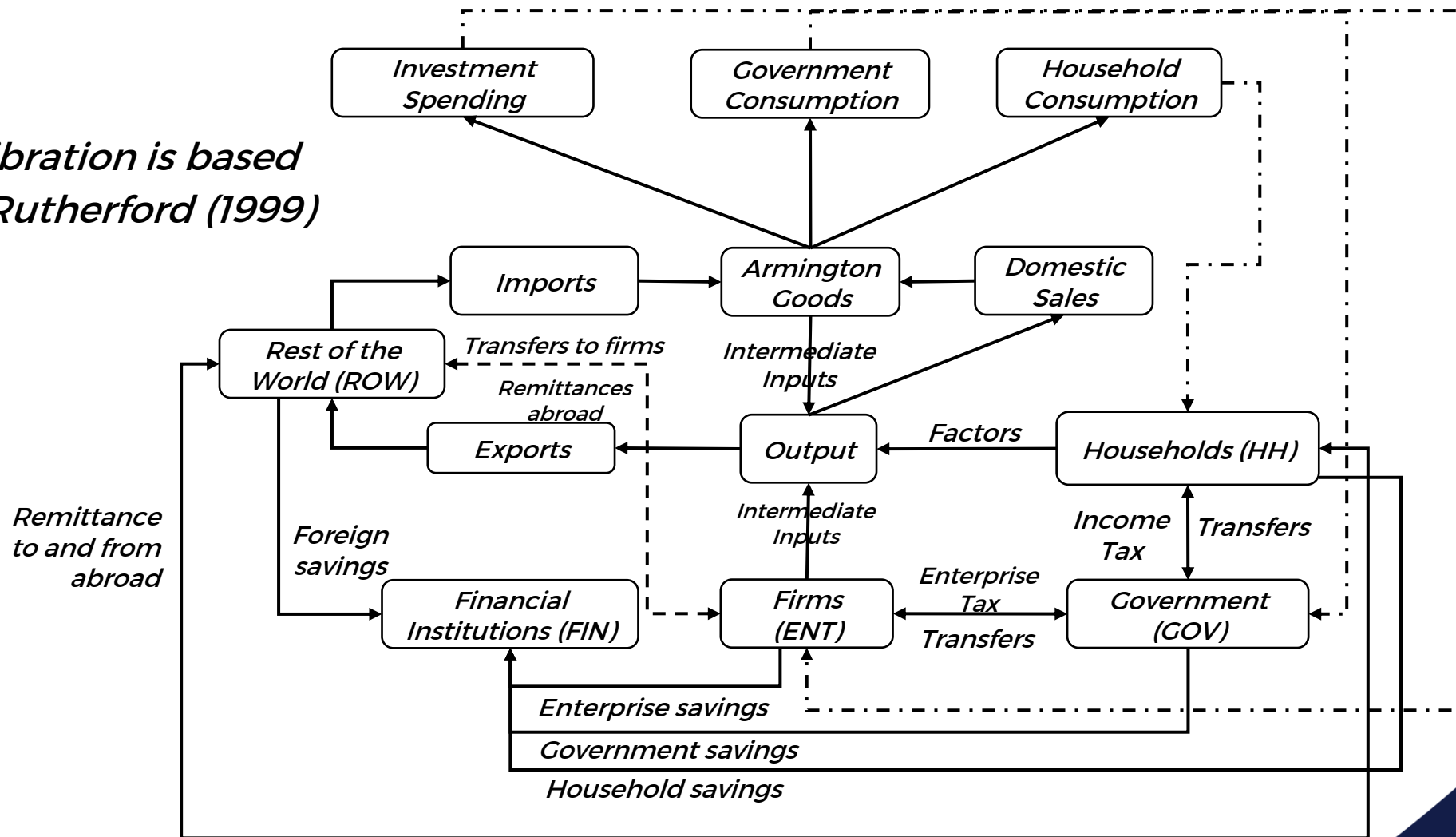
Empirical Framework



3 Framework

Empirical Framework

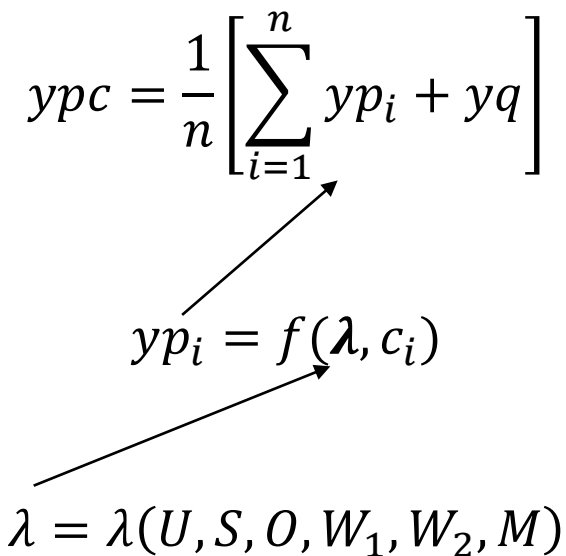
Calibration is based on Rutherford (1999)



3 Framework

Empirical Framework

The paper uses **Vos and Sanchez (2010)** for the **nonparametric (labor market focused) microsimulation** technique on the **2018 FIES-LFS**. Poverty simulations rely on the per capita income or consumption of households with n members.

$$ypc = \frac{1}{n} \left[\sum_{i=1}^n ypi + yq \right]$$
$$yp_i = f(\lambda, c_i)$$
$$\lambda = \lambda(U, S, O, W_1, W_2, M)$$


Per capita household income or consumption

Determinants of individual labor income

Determinants of the labor market condition



3 Framework

Empirical Framework

Value-added shocks are calculated from the GVA per sector in 2020 in proportion to 2019 from the Philippine Statistics Authority.

Counterfactual Shocks: Average Change in Value-Added per Macrosector (as proportion of 2020 to 2019 levels).

Parameters	2020-Q1	2020-Q2	2020-Q3	2020-Q4
Change in Agriculture VA	0.997	1.016	1.012	0.975
Change in Industry VA	0.969	0.808	0.913	0.954
Change in Services VA	1.001	0.815	0.860	0.896

Source: Philippine Statistics Authority



3 Framework

Empirical Framework

Policy simulations will be reflected both in the CGE and in the microsimulation. The paper uses three types of **hypothetical** policies for cash transfers based on Bhorat, Oosthuizen, and Stanwix (2021): (1) **limited** amelioration, (2) **boosted** amelioration, and (3) **broadened** amelioration + unemployment benefits.

Policy Simulation of Cash Disbursement: Three Hypothetical Scenarios

Policy	Computable General Equilibrium		Microsimulation	
	Quarterly Disbursement	Covered Households	Quarterly Disbursement	Covered Households
Limited Amelioration	P 103.35 bn	Bottom 30%	P 5,000 to 8,000	Bottom 30%
Boosted Amelioration	P 206.70 bn	Bottom 30%	P 10,000 to 16,000	Bottom 30%
Broadened Amelioration	P 264.30 bn	Bottom 60%	P 5,000 to 8,000 P 8,000	Bottom 60% Unemployed

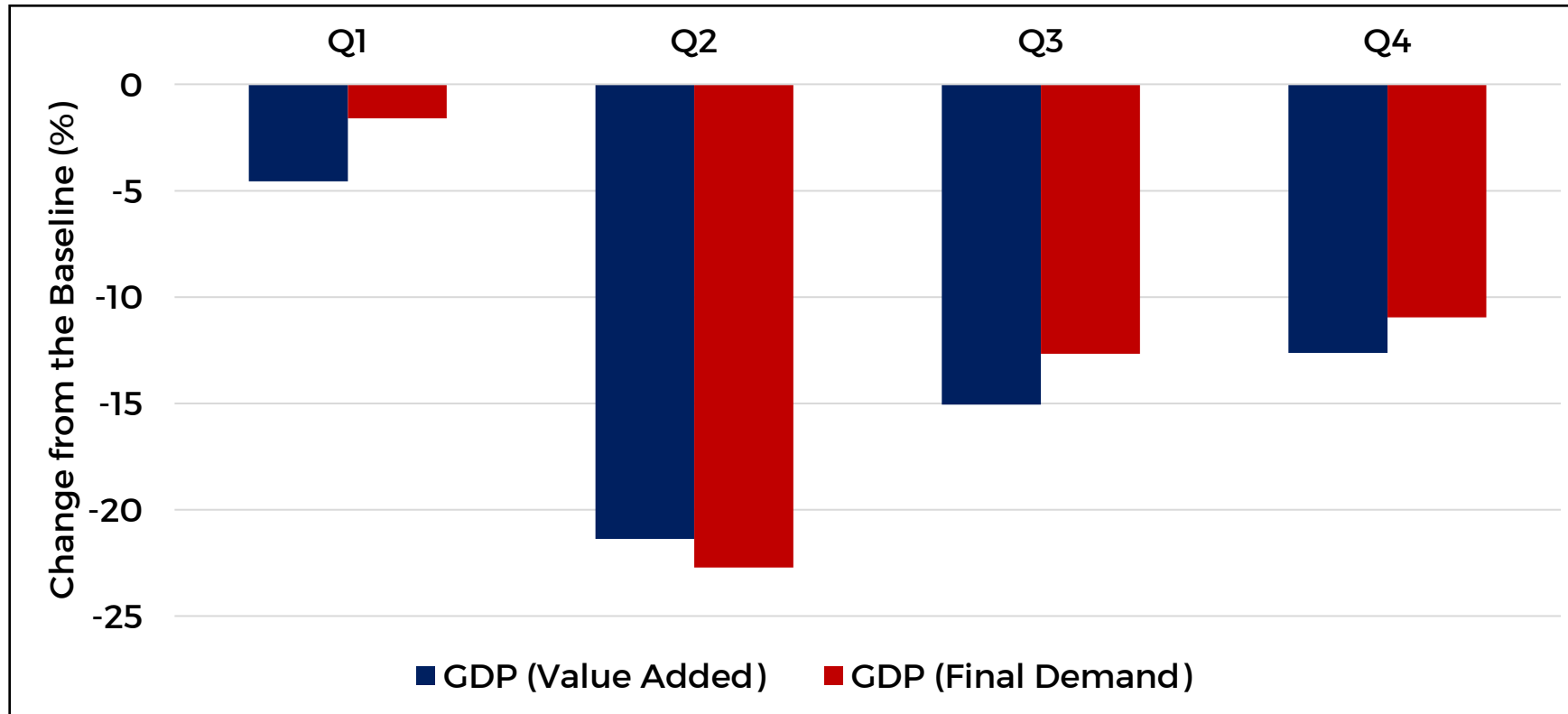
Source: Authors' calculations.



4 Findings and Conclusion

Results and Discussion

Quarterly General Equilibrium Effects of the Pandemic on the Macroeconomy (%).



Source: Authors' calculations.

The decreases are driven by the large decreases in **industrial** and **services** value added.



4 Findings and Conclusion

Results and Discussion

At the onset of the pandemic (Q2), **without intervention**, the changes in **unemployment and wages** are consistent with the theoretical framework. The highest increases in unemployment and the highest decreases in wages occur in the second quarter.

General Equilibrium Effects of the Pandemic on the Labor Market and Capital without Transfers (%).

Parameters	Q1	Q2	Q3	Q4
Unemployment Rate	6.44	25.46	18.90	14.79
Change in High-Skilled Labor	-1.40	-21.33	-13.43	-9.58
Change in High-Skilled Labor Wage	-4.41	-20.02	-12.25	-11.01
Change in Low-Skilled Labor	-1.71	-21.74	-15.32	-10.77
Change in Low-Skilled Labor Wage	-6.01	-26.72	-15.65	-13.87
**Capital returns (from CGE results)	-4.12	-19.91	-15.56	-12.64

Note: Unemployment rate **does not** signify change.

Source: Author's calculations.

****Not to be fed into the microsimulation.**



4 Findings and Conclusion

Results and Discussion

At the onset of the pandemic (Q2), **poverty headcount will have increased by 14 percentage points** (increased by 14.8 million people). Overall, **reversals in the gains in welfare improvement** (i.e., poverty headcount) are evident.

Quarterly Microsimulation Results on the Welfare Effects of the Pandemic without Transfers, n = 30 iterations (%).

Parameters	Base	Q1	Q2	Q3	Q4	Year Ave
Poverty Headcount	16.85	18.60	30.57	25.79	23.67	24.66
Poverty Gap	3.91	4.60	11.44	8.56	7.26	7.97
Poverty Severity	1.34	1.80	9.06	5.80	4.40	5.27
Gini Coefficient (per capita consumption)	43.72	44.07	46.89	45.75	45.23	45.49
Gini Coefficient (labor income)	35.58	35.83	36.82	36.12	36.03	36.20

Source: Author's calculations.



4 Findings and Conclusion

Results and Discussion

Covering the low- and middle-income households in times of economy-wide shocks will have been effective in tempering the decrease in welfare (in absolute terms). However, the **limited and boosted scenarios** will have been more cost-efficient in reducing poverty headcount.

Year-Round Average Microsimulation Results on the Welfare Effects of the Pandemic with Transfers, n = 30 iterations.

Parameters	unit	No Assistance	Limited	Boosted	Broadened
Poverty Headcount	%	24.66	22.10	19.70	18.83
Poverty Gap	%	7.97	6.35	5.27	4.98
Poverty Severity	%	5.27	4.03	3.30	3.04
Gini Coefficient (per capita consumption)	%	45.49	44.43	43.56	43.20
Gini Coefficient (labor income)	%	36.20	36.25	36.49	37.71
Percentage point reduction in poverty headcount per billion PHP disbursed	pct pt	-	0.0124	0.0120	0.0111

Source: Author's calculations.



4 Findings and Conclusion

Conclusion and Implications

In summary:

1. **Reversals in welfare gains** in the past years are apparent should the welfare effects of the pandemic be left unmitigated.
2. **Trade-off** between a broader coverage of safety nets and a cost-efficient policy.
3. Welfare reductions will still occur even with transfers, but the reductions **will be moderated**.



4 Findings and Conclusion

Conclusion and Implications

Policy Implications:

1. **Broader coverage of assistance** can be considered to ensure safety nets not just for low-income families, but also to vulnerable middle-income households.
2. **Unemployment benefits** can be helpful to further temper increases in poverty and inequality.
3. The **robustness** of the vulnerable economic sectors must be ensured and must easily **retrofit** against future shocks.





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