The impact of the Covid pandemic public policies in Chile on consumption

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Abstract

Using survey data, I simulate the counterfactual impact of the Chilean policies during the pandemic on household consumption. I find that aggregate consumption would have fallen by 16.7% in the absence of public transfers and a quarantine flexibilization policy. Consumption would still fall by 10.2% with a quarantine flexibilization policy but without public transfers. Overall, with a quarantine flexibilization and all the public transfers combined, household consumption was still 6.2% below its pre-pandemic period. Relative to a scenario with quarantine flexibilization but without income transfers, I find that the income, tax, monetary policy, expenses measures were the most progressive policies and increased total consumption by 2.2%, while the debt deferral and pension withdrawals increased consumption by 0.7% and 1.3%, respectively. The policies' impact is highly heterogeneous, with 21.5% of the households increasing their individual consumption relative to its pre-pandemic level.

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1 Introduction

Chile has suffered from the global crisis induced by the Covid-19 pandemic, with a National Emergency decreed on March 16 of 2020. The cost of the pandemic are estimated to be around 1.3 to 2 percentage points of annual GDP for each month of strict containment measures, with annual GDP growth in Chile for 2020 being -5.8%, which represents a drop in 7.5 percentage points in annual GDP growth relative to the previously estimated trend (Central Bank of Chile 2021).

This article provides an estimate of the impact of the Covid shock and the public policies implemented to mitigate the crisis on the consumption of the Chilean households. As a developing economy, Chile has a significant amount of socioeconomic inequality, reporting a Gini coefficient of 0.46 in 2017, the second highest among the OECD countries (OECD 2021). Chile also has a large fraction of informal workers relative to the developed economies[1], with several workers having no access to official unemployment insurance. It is also the case that in Chile many households are either entirely formal or entirely informal (OECD/ILO 2019), therefore many families are unable to compensate losses in informal employment by resorting to a family member with more secure income. Furthermore, around 10% of the Chilean households have no access to credit (Madeira 2019), being unable to finance shortfalls in income with debt. For these reasons, it is important to analyze whether the heterogeneous impact of the policy measures across families of different backgrounds. Among the policies implemented there was a general tax deferral, a monetary policy rate reduction of 150 basis points, an employment protection scheme for workers with a frozen schedule or reduced hours, income support programs targeted at the poor and middle class, a voluntary deferral of debt payments offered by banks and other financial institutions, a government sponsored loan and three pension withdrawal programs from the individual pension accounts.

To estimate the impact of the different public policies I use the Chilean Household Finance Survey (*Encuesta Financiera de Hogares*, in Spanish, hence on, EFH). The EFH data has detailed information on the family demographics, the income and labor status of its members, plus the assets (real estate, financial portfolio and pension accounts) and debts across different loan categories.

[1] Informal workers represent around 28% of the labor force in Chile, which is high compared to the 18% informal employment rate in developed economies (OECD/ILO 2019). However, Chile's informal employment as a fraction of the labor force is similar or below most Latin American countries and it is substantially below the 70% informal employment rate estimated for the entire developing and emerging countries (OECD/ILO 2019).

This survey has therefore broad information on several categories, which are required to estimate the impact of the different policies, which may differ according to the overall household income level, the number of children, the number of retirees, the income of each member, whether the workers are on a formal labor contract or not, families' public utilities expenditures, the value of their properties, the funds of their pension accounts and the values of their debts across different loan types (credit cards, mortgages, installment loans). I aggregate the different policies in 3 groups (public policies (tax deferral, monetary policy, income and expenses support), debt deferral, pension withdrawal policies) and analyze their cumulative effect together. The first set of public policies (tax deferral, monetary policy, income and expenses support) comprises a set of many policies implemented by the authorities that involve transfers to the households, while the debt deferral and pension withdrawal policies involve transfers from private agents (banks, other private lenders, the private managers of the workers' individual pension accounts) to the households. Finally, I analyze the counterfactual impact on consumption of the quarantine flexibilization policy ("Step by Step", in Spanish, *Paso a Paso*) which relaxed gradually the mobility restrictions across counties.

The EFH dataset is an essential tool for calibrating the impact of the different policies, due to: i) its comprehensive information on demographics (income support policies depend on the number of members and income of each household); ii) exhaustive information on the real assets of the household (which is essential for evaluating the real estate tax deferral); iii) information on the debt value of different types of loans, such as mortgages, installment loans, credit cards and lines (essential to calibrate the effects of the debt deferral programs), and iv) information on the value of the individual pension accounts (essential for evaluating the impact of the pension withdrawals). The availability of this information at the household level allows to portray the heterogeneity of the policy benefits across individual households, rather than an analysis of representative agents.

To calibrate the impact of the different policies on household consumption, I consider four major components: i) an expenditures model for each of the 12 categories of goods, ii) a simulation of the heterogeneous labor shocks received by workers before and during the pandemic, iii) the transfers received by each household according to the different policies implemented during the pandemic, and iv) a rule of thumb calibration of the Covid restrictions on the consumption of different goods combined with a monthly dataset of the quarantine stages in each Chilean county. The empirical model of consumption choice across 12 types of goods obtains the empirical

elasticities of consumption according to current income, permanent income, home ownership, number of children, adults and retirees, plus the age and education of the household head, which are estimated from detailed expenditure information available from the Chilean Family Expenditures Survey. The estimated model of expenditures is then applied to the EFH sample to obtain the simulated expenditures before the pandemic and for each month during the pandemic. These simulated expenditures of the EFH sample apply the demographic characteristics of each household in combination with the income and unemployment rates estimated from the Chilean Employment Survey (Madeira 2015) for each type of worker (given by the workers' sex, region, education and industry) during 2019 for the pre-pandemic and between March of 2020 and March of 2021 for the pandemic period. I then consider the transfers received by each family according to each public policy implemented during the pandemic and a simulation of how each worker was affected by the frozen labor contracts and reduced work hours of the Employment Protection Law in Chile, which were calibrated according to the demographics, loans and properties of each family plus according to the number of workers in frozen contracts and reduced work hours in each month of the pandemic period. I then apply exogenous expenditure shocks due to the quarantine restrictions, which are imposed on an ad hoc basis through a comparison of estimates obtained during the pandemic period for other countries, such as the USA, France, Denmark and the UK (Baker et al. 2020, Coibion et al. 2020, Bounie et al. 2020, Andersen et al. 2020, Hoke et al. 2020). The simulated consumption for each household in the pandemic period is then obtained as a weighted average between the pre-pandemic period expenditures and the expenditures simulated for each stage of the quarantine flexibilization, with more strict quarantine stages implying a smaller weight of the pre-pandemic expenditures. The weight between pre-pandemic and quarantine stage period expenditures is then specified according to the households' county of residence and its "Step by Step" quarantine stage at a monthly frequency. The simulated results are therefore based on several strong assumptions regarding the consumption choice model and the shocks experienced by households. However, the simulated results compare well to aggregate results for the monetary costs of each policy and the estimated variation in consumption observed by national accounts during this period.

The simulated results show that aggregate consumption would have fallen by 16.7% relative to the pre-pandemic level in the absence of transfers to the households and a quarantine flexibilization policy. With the quarantine flexibilization and in the absence of household transfers, aggregate

consumption would fall by 10.2%, but the support policies softened this to a fall of 6.2%. Almost all the families benefitted from the public support, increasing their consumption relative to a no policy scenario. Individual consumption relative to 2019 for each household changed between -15% to +7.5% once all the policies are accounted for. Around 78.5% of the households still decreased their consumption during the pandemic, while 21.5% increased their consumption.

Our study is related to a growing literature on how surveys can inform about the financial problems faced by families (Ampudia et al. 2016, Meriküll and Rõõm 2020), especially in developing countries like the Latin America region (Amarante and Brun 2018, Gandelman 2016) where there is a significant share of informal employment (Madeira 2018), government budget restrictions (Bustillo et al. 2019), and a diversity of policies must be implemented to reach heterogeneous households (Amarante and Brun 2018, Lluberas 2019). Household finance surveys are increasingly used to study families' decisions on savings and borrowing (Christelis et al. 2013, Le Blanc et al. 2015, Bover et al. 2016). Finally, this study is also related to the recent studies of the effects of the Covid pandemic (Baker et al. 2020, Coibion et al. 2020). Our study adds to this literature by using detailed microeconomic data to calibrate the crisis' heterogeneous impact of the pandemic and its related public policies on consumption in Chile, which complements other studies analyzing the effects on the Chilean household mortgage and consumer loan default during this period (Madeira 2021) or the recent study of Barrero et al. (2020) studying the effect of the policy transfers on income and consumption. Relative to Barrero et al. (2020), our analysis is done at the individual level of each household in the sample and not a representative agent framework by income quintiles[2]. A disadvantage of our framework is that the perceived consumption reported by households in a survey are far below the consumption aggregates in national accounts data. For instance, the total consumption in our survey dataset for 2017 corresponds to just 34% of the

[2]It is worth noting that the analysis of Barrero et al. (2020) is not calibrated at the individual household level. Their analysis instead uses the fraction of income subsidies (from the CASEN 2017) and the fraction of the consumer and mortgage debt (from the EFH 2017) of each income quintile, then it assumes that each income quintile receives a proportional fraction of the total value of each policy. This analysis is more similar to a representative agent framework with 5 agents, rather than an analysis of heterogeneous households based on the available micro-data. Also, their analysis rests on the strong assumption that the public income benefits of the Covid policies were distributed in the same way as the other public subsidies in 2017. In the same way, their analysis does not reflect that consumer installment loans and credit cards or lines are treated differently in terms of the debt deferral programs.

GDP, while the fraction of consumption for the households and non-profit institutions was 63.4% in national accounts. This under-reporting has several causes, with some being that households are reporting out-of-the-pocket expenditures and do not consider the payments of private insurance or government paid health services or education (Attanasio and Pistaferri 2016), while other causes are due to the under-reporting of some goods such as alcohol or videogames which are subject to social stigma (Crossley and Winter 2014). Furthermore, survey data of consumption tends to under-report expenditures in durables (Attanasio and Pistaferri 2016), which were the type of goods that increased the most during the last quarter of 2020. Another weakness in the methodology of this article is that all the analysis is done in partial equilibrium and there is no consideration of general equilibrium effects between consumption, government spending and revenues and firms' activity. Finally, this article analyzes the impact on consumption of the quarantine flexibilization policy, but, due to a lack of data, the analysis is unable to study how consumers substituted across different goods and stores as restrictions in mobility changed (see Goolsbee and Syverson 2021).

This work is organized as follows. Section 2 describes the Chilean Household Finance Survey, while section 3 summarizes the quantitative calibration of each policy measure. Section 4 reports the estimates of the empirical consumption model of the individual household, while section 5 summarizes the counterfactual impact of each policy on the consumption of different goods and across households during the pandemic period. Finally, section 6 summarizes the policy implications.

2 The Chilean Household Finance Survey

To quantify the potential policy impact I use a sample of 4,549 households from the most recent Household Finance Survey (EFH) wave, implemented in 2017. This survey has detailed measures of the household's demographics, income, assets (financial portfolio, real estate) and debts, including mortgage, educational, auto, retail and banking consumer loans. Households also report whether they applied for any loans, any rejected loan applications, and the motives of their consumer loan contracts. Furthermore, I use the survey's information to obtain a measure of each household i's permanent income, given as the sum of its non-labor income (a_i) plus the labor earnings of each labor force member k: $P_{i,t} = a_i + \sum_k P_{k(i),t}$. The permanent income of each household member is given by $P_{k(i),t} = (Y_{k,i}(1 - u_{k,i,t}) + Y_{k,i} rr_{k,i} u_{k,i,t})$, where $Y_{k,i}$ is worker k's earnings when in

Table 1: Income and demographics of the Chilean consumers

Education of the survey's respondents	Fraction of the households (in %)	Age (years)	Current Income $Y_{i.t}$ (in UF, monthly)				Permanent Income $P_{i.t}$ (in UF, monthly)			
		Mean	Mean	P25	P50	P75	Mean	P25	P50	P75
All households		47.5	61	24	39	70	67	28	44	74
Elementary education	15.5	58.4	30	16	24	36	34	20	27	40
Secondary education	39.5	48.9	42	22	33	53	45	25	36	55
Technical or Some college	14.3	41.9	58	29	45	69	63	34	49	76
College education	25.3	43.2	94	36	65	112	103	47	70	127
Post-graduate education	5.4	41.8	151	63	108	200	161	67	118	213

Education and age correspond to the household respondent (the member of highest income).

All values use household weights.

employment, $u_{k,i,t} = u(x_{k(i)}, t)$ is its probability of being in an unemployment spell, and $rr_{k,i}$ is its replacement ratio of income during unemployment relative to the earnings while working, conditional on the mean of workers with similar characteristics of education, sex, age, industry, income quintile and region in the Chilean Employment Survey (Madeira 2015, 2018). The EFH survey has an over representation of richer households, since rich households have more complex finances in terms of assets and debts and also represent a higher portion of the economic activity. To adequately correct for the over representation of wealthier households, all the statistics in this article use expansion factors (or population weights), meaning each observation is weighted with a number f_i representing the statistical number of households equivalent to i.

Table 1 shows the age, current household income and permanent household income, according to the education of the household head. More than half of the household heads have completed the secondary school or less, with more educated households also reporting on average a younger age. There is a significant amount of income inequality in Chile, with the percentile 75 showing a current or permanent income that is almost three times the income reported by the percentile 25 of the households. Furthermore, there is a strong education premium in Chile, with postgraduate educated households reporting an average income that is more than twice the average household income. Income increases significantly with each education level: households with a college degree have more than twice the average income of those with just a secondary education and the households with a postgraduate degree earn more than 50% the income of those with a college degree.

In Table 2 I summarize some characteristics of the households' assets, according to the household size as measured by the number of its members. It shows that 62.7% of the households own their

Table 2: Real assets, debts, pension accounts, and loan default by household size

Household size	Fraction of the households (in %)	Home ownership (in %)	Pension balance to $P_{i,t}$ ratio	Arrears (90 days or more) (in % of the borrowers) Mortgage	Consumer loans
All households	100.0%	62.7%	4.38	0.9%	7.9%
Single members	14.1%	50.6%	5.08	0.6%	4.2%
Two members	22.9%	61.6%	4.69	0.5%	7.4%
Three members	22.4%	63.7%	4.27	0.5%	5.9%
Four members	23.3%	65.4%	4.57	1.1%	7.2%
Five members	10.8%	70.0%	3.65	2.3%	12.8%
Six or more	6.4%	68.1%	2.72	1.0%	14.9%

All values use household weights.

main home. This is relevant, because it shows that almost two thirds of the households should have been able to benefit from the deferral of the real estate tax payments implemented in Chile. Only 14% of the households are composed of a single person. Home ownership is increasing with the household size, while the pension balance to income ratio decreases significantly with additional members. Finally, the data shows that less than 1% and 8% of the borrowers have defaulted on their mortgage and consumer loans, respectively. However, the fraction of borrowers with arrears in mortgages or consumer loans increases significantly for households with four members or more. Therefore most household borrowers should have been with no arrears and able to take advantage of the debt deferral programs implemented by the Chilean banks and other lenders.

3 Policy measures taken in Chile to soften the Covid shock

3.1 Description of the policy programs

Since March 19 the authorities announced initiatives to contain the economic crisis, including fiscal measures, a delaying by the Financial Market Commission of the Basel III standards for banks, plus a monetary policy rate cut, bank credit lines and liquidity measures by the Central Bank of Chile (García 2021). The household related measures can be roughly grouped in terms of three categories: i) public policies such as income and expenses support, plus tax relief and lower interest rates through monetary policy, ii) debt deferral policies, and iii) pension withdrawal measures.

The income and expenses plus tax relief and monetary policy reduction include:

i) a Covid voucher announced in March targeted at poor families with no formal income (50,000 pesos for each child, with a minimum of 50,000 pesos per family in case of no children) and then substantially expanded afterwards[3];

ii) the Employment Protection Law, which allows companies to give workers access to income through the public unemployment insurance system while temporarily suspending their activity or retaining the workers on a 50% labor schedule;

iii) a deferral of the public utilities' payments;

iv) on May 17 the government also announced the distribution of 2.5 million food baskets with a value around 40 USD each for families in the two lowest income quintiles;

v) a deferral of the real estate tax for properties appraised below 133 million pesos;

vi) a temporary reduction of the stamp tax on revolving debt and new loans with a maturity of 6 months or less to 0%;

vii) a deferral of the tax debts targeted at lower income citizens and small companies;

viii) a reduction in the monetary policy rate of 125 basis points.

The debt relief measures include:

i) a deferral implemented voluntarily by commercial banks and credit unions allowing the next 3 installment payments (or 6 payments at some banks) on mortgages and commercial loans to be paid at the end of the credit maturity;

ii) a flexible payment scheme for credit cards and lines of credit, allowing one payment deferral;

[3]By May the government announced a larger Family Emergency Income (*Ingreso Familiar de Emergencia*, IFE, in Spanish). The first payment of the IFE in May was targeted at families within the first three income quintiles and with an estimated value of more than half of their income coming from informal labor. For the two lower income quintiles, the program gave 65, 130, 195, 260, 304, 345, 385, 422, 459, 494 thousand monthly pesos for households with a respective size of 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 or more members. In the third income quintile the program gave 43, 86, 130, 173, 203, 230, 257, 281, 306, 330 thousand monthly pesos for households with a respective size of 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 or more members. In June, July and August, the IFE payments were expanded to the lowest 4 income quintiles, giving 100, 200, 300, 400, 467, 531, 592, 649, 705, 759 thousand monthly pesos for households with a respective size of 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 or more members. Another payment of the IFE was implemented during December of 2020 as a Christmas bonus.

A Middle Class bonus was announced in August with a single payment (not to be repeated) for workers that lost at least 30% of their income relative to the previous year, giving 500, 400, 300, 200 and 100 thousand pesos for workers with a prior monthly income, respectively, between 400 thousand and 1.5 million, 1.5 and 1.6 million, 1.6 and 1.7 million, 1.7 and 1.8 million, and between 1.8 and 2 million pesos.

iii) in August of 2020 the tax administration sponsored a program of zero interest rate loans of up to 650,000 pesos[4], which was available for workers that had a monthly income above 400,000 pesos during 2019 but that experienced an income fall above 30% after the beginning of the pandemic in 2020. This tax administration sponsored loan had a top amount no higher than 650 thousand pesos, with each worker being able to request up to 3 loans during a period of three months. For the repayment of this zero interest rate loan, the government would make an amortization in the annual tax returns of each worker in 2022 for 10% of the loan amount, and a 30% amortization 2023, 2024 and 2025. The yearly tax collected loan amount would be limited to up to 5% of the yearly taxable income, plus a smaller installment equivalent to 3% of the monthly wage. The remaining debt would be forgiven after 2025 if the loan amount is not yet repaid.

On July 30th of 2020 the Congress implemented an exceptional measure that allowed all workers to withdraw a significant amount of up to 150 UF[5] (around 5,500 USD) from their accumulated individual pension accounts[6]. Each member of the pension system (anyone who has held a formal job in the past) can withdraw up to 100% of its funds for accounts with a value below 35 UF, up to 35 UF for accounts between 35 and 350 UF, up to 10% of the funds for accounts between 350 and 1,500 UF, and 150 UF for accounts above 1,500 UF. Although this measure is not a loan, it can be viewed as a similar measure as a household borrowing from his own future pension income. A second Pension Withdrawal was legislated on December 10th of 2020. A third Pension Withdrawal was implemented on the 28th of April of 2021, but its analysis is not considered in this article, because it is limited to studying the impact of measures during the 13 month period between March of 2020 and March of 2021. This policy measure was possible because Chile has a social security mostly based on compulsory contributions (up to a maximum taxable wage) that workers make to pension funds in private companies. In ordinary times, these pension funds can only be used after age 65, but this law allowed for a withdrawal in cash, check or deposit, without penalties.

[4] This corresponds roughly to 820 USD if one applies the 2020 average exchange rate of 792 pesos per USD.

[5] UF is a real monetary unit applied in Chile, which is updated according to the official consumer price inflation (CPI) index. 1 UF was roughly equivalent to 35.7 USD during the first three quarters of 2020.

[6] Since the pension withdrawal is a large single payment that cannot be repeated in the following months, I assume that households add the amount gradually to their monthly income. In particular, I assume that households that lost more than 25%, 5% to 25%, 1% to 5%, 0% to 1%, of their income during the Covid crisis will spend their pension withdrawal over a period of 12, 18, 24 and 36 months, respectively.

3.2 Calibration of the different public policies

To evaluate the public policies I evaluate each month between March of 2020 and March of 2021, updating the monthly income of each household based on three components: i) the unemployment rate of each group of workers at each month t based on their type given by x_k = (gender, age, education, industry, residence in capital area or not), ii) the fraction of the labor force that in each period enters a frozen work relationship (FW_t) or a reduced hour schedule (RW_t), iii) the public support policy benefits received by the households during the Covid crisis ($ps_{i,t}$).

The unemployment risk ($u_{k,t}$) of the EFH workers k are based on the mean statistics for 108 worker types (given by a vector x_k of their education, age, industry, residence in capital area or not) from the Chilean Employment Survey (ENE) between March of 2020 and March of 2021. The unemployment risk $u_{k,t}$ is defined as the probability that the worker is unemployed at a given period ($U_{k,t} = 1$) conditional on his characteristics x_k. Conditional on the workers' characteristics $x_k = \{$Santiago Metropolitan area or not, Industry (primary, secondary, tertiary sectors), Gender, Age ($\leq$ 35, 35 $-$ 54, $\geq$ 55), Education (secondary school or less, technical degree, college)$\}$, the empirical estimation of the probabilities $u_{k,t}$ is obtained as $u_{k,t}(x_k) = \Pr(U_{k,t} = 1 \mid x_k) = \frac{\sum_v 1(U_{v,t}=1, x_v=x_k)}{\sum_v 1(x_v=x_k)}$ and the replacement ratio of income during unemployment as $rr_{k,t}(x_k) = \frac{\sum_v W_{v,t} 1(x_v=x_k, U_{k,t}=1) / \sum_v 1(x_v=x_k, U_{v,t}=1)}{\sum_v W_{v,t} 1(x_v=x_k, U_{k,t}=0) / \sum_v 1(x_v=x_k, U_{v,t}=0)}$, with $U_{v,t}$ and $W_{v,t}$ being the unemployment status and labor earnings of worker v at time t in the ENE survey and its income module (available only for the fourth quarter of each year). The replacement ratio of income was only obtained for 2019, which is the most recent ENE year with income information available. The vector x_k of characteristics was chosen in order to have the same variables in the EFH, EPF and ENE survey datasets, since some of the labor variables (such as occupation or a detailed industry code) are available in the ENE survey but not in the EFH survey since the latter is not a specialized labor survey. Furthermore, since the Chilean Employment Survey only measures income in the fourth quarter (October to December) of 2020 and such income data is not yet publicly available, I consider only income shocks due to unemployment and do not model other types of income shocks.

Using the 108 different types k of workers from the Chilean Employment Survey for each month between March of 2020 and March of 2021, I then simulate the household income as:

1) $Y_{i,t} = ps_{i,t} + a_i + \sum_k Y_{k,i} rr USHOCK_{i,k,t} + Y_{k,i}(1 - USHOCK_{i,k,t})$,

with $rr = 0.60$ denoting the replacement ratio of income during unemployment, $Y_{k,i}$ being the EFH survey's reported working income for worker k in household i, a_i non-labor income, $USHOCK_{i,k,t} = \max(1(\eta^u_{i,k,t} \leq u_{i,k,t}), 1(\eta^{FW}_{i,k,t} \leq FW_t), 1(\eta^{RW}_{i,k,t} \leq RW_t))$ denotes whether the worker k of household i at time t experienced either unemployment or a frozen relationship or reduced hour schedule, and $\eta^u_{i,k,t}, \eta^{FW}_{i,k,t}, \eta^{RW}_{i,k,t}$ being pseudo-uniform random numbers. Data for the probability of workers entering into a frozen relationship (FW_t) or a reduced schedule (RW_t) in each month was obtained from the Chilean Administrator of the Unemployment Insurance, with series only available at an aggregate level and with no heterogeneity across workers.

The total public benefits $ps_{i,t}$ received by household i in period t considers the sum of the total income, expenses and monetary policy support ($psY_{i,t}$) with the debt deferral and tax sponsored loan policies ($psDs_{i,t}$) and the pension withdrawal policies ($psPension_{i,t}$):

2) $ps_{i,t} = psY_{i,t} + psDs_{i,t} + psPension_{i,t}$.

The benefit value of the public support measures received by each household, $ps_{i,t}$, is calibrated using their income, children, real estate properties, county of residence, loans (mortgages, consumer loans, credit cards, lines of credit, and other debts). To account for the time-variation of the programs I create dummy variables with the name of the month in capital letters denoting a benefit introduced that month and kept afterwards, ex: $MARCH_t \equiv 1(t \geq March - 2020)$.

The income and expenses support for each household i includes the time-changing Covid $Voucher_{i,t}(x_i)$ (which depends on the time period plus the household income quintile, whether the household had no formal income, the number of household members, and whether the household had a formal income loss above 30%) plus an estimate from the monthly benefits of deferral of the public utilities' expenses, Exp_i. The benefits of the deferral of the public utilities correspond to the median estimate of the expenses in utilities $MExp(x_i)$ from the Chilean Family Expenditure Survey of 2017, based on families with similar characteristics (x_i includes the log of the households' permanent income, the number of members and children), but this deferral is limited to 10 UF per year[7], plus

[7] I calibrate UF=28,877 pesos, which represents its average value between March of 2020 and March of 2021.

15 cubic meters of water per month (roughly 10,000 pesos) and 60 months of a free internet plan provided by the state (roughly, 30,000 pesos): $Exp_i = \min(MExp(x_i), \frac{10UF+12\times10000+30000}{12})$.

The Employment Protection Law benefits are then estimated as:

3) $EPL_{i,t} = \sum_k 0.40 \times 1(\eta^{FW}_{i,k,t} \leq FW_t)Y_{k,i}fe_{k,i} + 0.30 \times 1(\eta^{RW}_{i,k,t} \leq RW_t)Y_{k,i}fe_{k,i}$,

with $fe_{k,i}$ being a dummy denoting whether worker k has a formal employment contract.

The real estate tax deferral for each household i is given as $RETD_i = (0.00025/3)(\sum_{v=0}^{3} V_{i,v}1(V_{i,v} \leq 133,000,000))$, with $V_{i,v}$ denoting the survey reported property appraisal value and $v = 0, 1, 2, 3$ being the main family home and up to 3 other properties that may be owned by the family. The tax rate 0.025% is applied to properties every quarter, but it is divided by three to be measured monthly. The deferral of tax debts is taken to be the VAT rate (19%) for the monthly income reported by households from their micro businesses or self-employment: $TDD_i = 0.19 \sum_k Y_{k,i}se_{k,i}$, with $se_{k,i}$ being a dummy variable for whether worker k is a micro-entrepreneur or in formal self-employment.

The benefit obtained from the lower stamp tax (a reduction from a monthly rate of 0.033% to 0%) and monetary policy rate is given as $B\_ST\_MPR_i = (0.00033+0.0125/12) \sum_{rt=1}^{3} \sum_{l=1}^{3} L_{i,rt,l}$, where rt denotes the debt type (1 bank credit card, 2 retail credit card, 3 bank credit line) and $l = 1, 2, 3$ denotes up to 3 loans reported by the household in each debt type, assuming that households keep similar amounts of revolving loans as in 2017. The Monetary Policy Rate reduction of 1.25% is divided by 12 to be measured in monthly terms. Other loan categories reported in the EFH, such as banking consumer installment loans, retail installment loans, educational, automobile and credit union debt, typically have maturities of 12 months or more and at a fixed interest rate, therefore these do not apply for lower stamp tax and interest rate. Also, since some households may become more indebted, while other households may lose access to debt during the pandemic, I do not include new loan creation to compute these benefits.

The total income, expenses and monetary policy support $psY_{i,t}$ for each month t is therefore:

4) $psY_{i,t} = Voucher_{i,t}(x_i) + EPL_{i,t} + B\_ST\_MPR_i + APRIL_t \times (Exp_i + TDD_i + RETD_i)$.

The flexible credit card scheme and the debt deferral for non-defaulting customers ($Df_i = 0$) is measured as $DebtD_i = (1 - Df_i)(\frac{1}{3} \sum_{rt=1}^{2} \sum_{l=1}^{3} L_{i,rt,l} + \sum_{rt=4}^{5} \sum_{l=1}^{3} Ds_{i,rt,l} + \sum_{v=0}^{3} Mds_{i,v})$, being equivalent to one third of the monthly bank and retail credit card bills ($rt = 1, 2$) plus the

debt service of banks and credit unions consumer installment loans ($Ds_{i,rt,l}$) and the mortgage debt service ($Mds_{i,v}$) for the main home ($v = 0$) and up to three other properties ($v = 1, 2, 3$). The government sponsored zero interest rate loan of up to 650,000 pesos (given in three monthly installments) for each worker with an above 30% income loss corresponds to a total household support of $PubLoan_i = \sum_k (650,000/3) 1(LossY_{i,k,t} \geq 0.30)$, with $LossY_{i,k,t}$ denoting the Income Loss faced by the worker k in the household i at time t in 2020 relative to its permanent income in 2019: $LossY_{i,k,t} = \frac{P_{i,k,t=2019} - Y_{i,k,t}}{P_{i,k,t=2019}}$, with $P_{k(i),t=2019} = (Y_{k,i}(1 - u_{k,i,t}) + Y_{k,i} rr_{k,i} u_{k,i,t})$ evaluated at the unemployment risk ($u_{k,i,t=2019} = u(x_{k(i)}, t)$) that a worker of his characteristics faced in 2019. The total policy support that households received in terms of a lower debt service (due to a lower monetary policy rate, lower stamp tax, and the debt deferral scheme) sums up as

$$5)\ psDs_{i,t} = MARCH_t \times \tfrac{6}{12} DebtD_i + AUGUST_t \times \tfrac{3}{8} PubLoan_i,$$

with the debt deferral amount of six installment payments being spread across the twelve months of the year, while the tax sponsored loan is spread over an eight month period.

I account for the pension withdrawals, with each withdrawal allowing every member of the pension system (anyone who has held a formal job in the past) to withdraw up to 100% of its funds for accounts with a value below 35 UF, up to 35 UF for accounts between 35 and 350 UF, up to 10% of the funds for accounts between 350 and 1,500 UF, and 150 UF for accounts above 1,500 UF. 97% of the workers requested their pension withdrawal within the first 2 months (Central Bank of Chile 2020). The value of the pension policy withdrawal for each k member is given by $pw^n_{k,i} = \min(PWI^n_{k,i}, 35UF) 1(PWI^n_{k,i} \leq 35UF) + 35UF \times 1(35UF < PWI^n_{k,i} \leq 350UF) + 0.10 \times 1(350UF < PWI^n_{k,i} \leq 1500UF) + 150UF \times 1(PWI^n_{k,i} > 1500UF)$, with $PWI^n_{k,i}$ denoting the pension account balance before the withdrawal is done. Therefore $PWI^{n=1}_{k,i} = PWI_{k,i}$ for the first pension withdrawal and $PWI^{n=2}_{k,i} = PWI_{k,i} - pw^{n=1}_{k,i}$ for the second pension policy withdrawal, with $PWI_{k,i}$ denoting the self-reported pension account balance in the EFH survey[8]. Note that the second pension withdrawal is by definition smaller than the first withdrawal, since several pension accounts are either fully withdrawn or substantially reduced after the first withdrawal. The impact of the two pension withdrawals on the monthly income is then given by

[8] $PWI_{k,i}$ is self-reported for the main household respondent, while for the other members it is imputed from a log-linear regression with their log-work income, gender, education level and a quadratic term of the age.

6) $psPension_{i,t} = AUGUST_t \times \frac{\sum_k pw_{k,i}^{n=1}}{n(LossY_{i,t})} + DECEMBER_t \times \frac{\sum_k pw_{k,i}^{n=2}}{n(LossY_{i,t})}$,

with $n(LossY_{i,t})$ denoting the parameter for the household to spread its spending of the pension withdrawals over several months according to their losses, $n(LossY_{i,t}) = 12$ if $LossY_{i,t} \geq 0.25$, 18 if $LossY_{i,t} \in (0.25, 0.05)$, 24 if $LossY_{i,t} \in (0.01, 0.05)$, 36 if $LossY_{i,t} \leq 0.01$.

4 The empirical consumption model

4.1 Expenditures model estimates

To simulate the impact of the policy changes on consumption, I use expenditures data from a sample of around 15,000 households in the Family Expenditure Survey (in Spanish, *Encuesta de Presupuestos Familiares*, hence on EPF). The EPF is a detailed survey of expenditures (Attanasio and Weber 2010), collecting information from both memory and receipts over several visits (Madeira 2018). It measures expenditures in 12 divisions according to the United Nations' Classification of Individual Consumption According to Purpose (COICOP). Those 12 divisions of household consumption are labelled as: D1 (Food and non-alcoholic beverages), D2 (Alcoholic beverages, tobacco and narcotics), D3 (Clothing and footwear), D4 (Housing, water, electricity, gas and other fuels), D5 (Furnishings, household equipment and routine household maintenance), D6 (Health), D7 (Transport), D8 (Information and communication), D9 (Recreation, sports and culture), D10 (Education services), D11 (Restaurants and accommodation services), D12 (Other goods and services: insurance, financial services, personal care, social protection and miscellaneous goods and services). I estimate an empirical model of household consumption for each division d:

7) $\ln(c_{i,d}) = \beta_d \left[\ln(Y_i), \ln(P_i), z_i\right] + \varepsilon_{i,d}$,

where i denotes the household, Y_i is the monthly income of the household, P_i is the monthly permanent income of the household, z_i is a vector of demographic information (such as ownership of the main household home, ownership of other real estate properties, five-year dummies for the age of the household head, dummies for the highest education obtained by the household head,

plus the number of adults aged 19 to 65, children and senior members in the family), and $\varepsilon_{i,d}$ is an idiosyncratic term that is independent across households (i) and divisions (d).

Note that the consumption in surveys is substantially different from national accounts. In particular, the total consumption in the EPF survey dataset for 2017 corresponds to just 34% of the GDP, while the fraction of consumption for the households and non-profit institutions was 63.4% in national accounts. The difference between national accounts' consumption and survey self-reported consumption does not necessarily imply that one of the data sources is incorrect, but rather that these datasets have a different definition for consumption (Attanasio and Pistaferri 2016). For instance, households are reporting their perceived consumption or out-of-the-pocket expenses for the survey interviews, while the national accounts also sum up consumption that is not directly made by the households but that include goods and services purchased by non-profit institutions (such as churches or non-governmental organizations) and by the government or public institutions (Attanasio and Pistaferri 2016). However, households may experience a different utility or perception of the goods if say the clothes, rental home or meals are chosen by the consumers themselves, rather than meals, housing or clothes purchased by non-profits or public institutions. Furthermore, households in the survey dataset are reporting their own "out-of-the-pocket" expenses on education and health, therefore the households are not reporting the additional expense that is made by either private insurance or public government subsidies for those services. These differences do not necessarily imply that the consumption survey is incorrect, but rather that the survey is obtaining a more personal measure of household expenditures. However, previous studies show that surveys show a substantial under-reporting of some goods such as alcohol or videogames due to social stigma (Crossley and Winter 2014). Surveys also tend to under-report expenditures in durables (Attanasio and Pistaferri 2016), because the expenditures in durables are converted to an estimated flow for the use of the durable good. This under-estimation of durable consumption can impact somewhat the analysis in this article, since the consumption for this type of goods increased substantially during the last quarter of 2020 (Central Bank of Chile 2021).

The results in Tables 3.1, 3.2 and 3.3 show that the current income (in log) is positively associated with Total Consumption and with all the divisions of consumption, except for Alcohol and Tobacco (which makes sense, since spending in products with addiction behavior should be immune to income fluctuations). Health and Other products are the most sensitive categories to

Table 3.1: Linear models of the log-expenditures for Total Consumption and divisions 1 to 4

Variables	Total	D1 Food	D2 Alcohol, tobacco	D3 Clothing & footwear	D4 Housing and fuel
ln(Income)	0.394***	0.185***	0.141	0.583***	0.068*
	(0.025)	(0.036)	(0.116)	(0.074)	(0.037)
ln(Permanent income)	0.290***	0.177***	0.286**	0.054	0.397***
	(0.028)	(0.040)	(0.128)	(0.082)	(0.041)
Main home ownership	-0.179***	0.010	-0.184***	-0.049*	-0.892***
	(0.010)	(0.014)	(0.042)	(0.028)	(0.014)
Ownership of other homes	0.109***	0.038	-0.052	-0.062	0.290***
	(0.022)	(0.032)	(0.088)	(0.062)	(0.032)
Number of minors	0.074***	0.175***	-0.078***	0.264***	0.023***
	(0.005)	(0.007)	(0.020)	(0.013)	(0.007)
Number of adults	0.129***	0.258***	0.290***	-0.015	0.038***
	(0.005)	(0.008)	(0.022)	(0.015)	(0.008)
Number of seniors	0.066***	0.300***	0.104	-0.183***	0.090***
	(0.016)	(0.024)	(0.070)	(0.047)	(0.024)
Secondary education	0.140***	0.055***	-0.114**	0.011	0.086***
	(0.011)	(0.016)	(0.051)	(0.033)	(0.016)
Technical education	0.298***	0.060***	-0.237***	0.123***	0.240***
	(0.016)	(0.022)	(0.068)	(0.045)	(0.023)
College education	0.402***	0.046**	-0.139*	0.221***	0.383***
	(0.016)	(0.023)	(0.071)	(0.047)	(0.024)
Postgraduate education	0.458***	0.011	-0.206**	0.243***	0.452***
	(0.024)	(0.035)	(0.102)	(0.069)	(0.035)
Observations	15,031	14,979	9,840	13,221	14,954
R-squared	0.671	0.336	0.070	0.242	0.418

Other Controls: Constant, 5-year age dummies for the household head. Education dummies are for the household head. The dummy for Elementary education is not included, because it corresponds to the constant.

Robust Standard-errors in (). ***,**,* denote 1%, 5% and 10% statistical significance.

the fluctuations of current income. Other categories such as Clothing, Furnishings, Recreation and Education also show a high sensitivity to current household income. The households' permanent income is also relevant for total consumption and all the consumption divisions, except for Clothing, Health and Education. Housing, Furnishings, Transport and Restaurants are the most sensitive categories to the permanent income of each household, with Transport showing the strongest marginal propensity to consume out of permanent income. Overall, the estimates of the log-linear model of consumption show a higher propensity to consume out of current income rather than out of permanent income. For instance, the effect of log income on Total consumption is 0.394 while for permanent income it is just 0.290. This result can be due to our lack of panel data on household expenditures, therefore our measure of permanent income is simply obtained from a weighted average of labor income with the unemployment probabilities of workers with similar characteristics, but such a measure of permanent income misses out on many idiosyncratic risk factors for each household and therefore the measurement error implies a reduction in the estimates for the absolute value of the coefficient (Wooldridge 2010).

Ownership of the main home is associated with lower total spending and lower spending in almost all divisions, except for Health and Other Goods. It is mostly associated with a lower spending in Housing items (due to home owners already having furnished their homes in previous years), but also to a moderate reduction in Alcohol-Tobacco and Restaurant expenses. Ownership of other homes (which can be destined for rent or vacations) is positively associated with total spending plus with higher spending in Housing and Fuel, Furnishings, Transport and Recreation. The number of children, adults and seniors in the household is positively associated with total spending and most consumption divisions, with a few exceptions (for instance, seniors spend less in Clothing or Restaurants, while children spend less in Alcohol). Children are particularly associated with higher expenditures on Food, Clothing, and Housing and fuel. Higher education levels are also associated with higher total spending across most product categories, except for Alcohol. College education, in particular, is strongly associated with expenditures in Education, Health, Communications, Restaurants, and Other products.

Table 3.2: Linear models of the log-expenditures for divisions 5 to 8

Variables	D5 Furnishings	D6 Health	D7 Transport	D8 Communication
ln(Income)	0.580***	0.850***	0.418***	0.438***
	(0.075)	(0.093)	(0.058)	(0.056)
ln(Permanent income)	0.388***	-0.079	0.494***	0.209***
	(0.083)	(0.102)	(0.064)	(0.062)
Main home ownership	0.042	0.057*	0.015	-0.014
	(0.028)	(0.033)	(0.022)	(0.021)
Ownership of other homes	0.214***	0.021	0.150***	-0.015
	(0.061)	(0.071)	(0.049)	(0.046)
Number of minors	0.066***	-0.0005	0.047***	0.019*
	(0.0136)	(0.016)	(0.011)	(0.010)
Number of adults	-0.070***	-0.019	0.204***	0.100***
	(0.015)	(0.018)	(0.012)	(0.011)
Number of seniors	-0.070	0.272***	-0.070*	0.064*
	(0.046)	(0.055)	(0.037)	(0.035)
Secondary education	0.059*	0.327***	0.141***	0.286***
	(0.033)	(0.041)	(0.026)	(0.025)
Technical education	0.182***	0.632***	0.255***	0.490***
	(0.044)	(0.053)	(0.035)	(0.034)
College education	0.303***	0.745***	0.263***	0.494***
	(0.047)	(0.056)	(0.037)	(0.035)
Postgraduate education	0.461***	0.739***	0.313***	0.392***
	(0.068)	(0.081)	(0.055)	(0.052)
Observations	13,196	12,206	14,035	13,681
R-squared	0.294	0.210	0.407	0.283

Other Controls: Constant, 5-year age dummies for the household head. Education dummies are for the household head. The dummy for Elementary education is not included, because it corresponds to the constant.

Robust Standard-errors in (). ***,**,* denote 1%, 5% and 10% statistical significance.

Table 3.3: Linear models of the log-expenditures for divisions 9 to 12

Variables	D9 Recreation	D10 Education	D11 Restaurants & accommodation	D12 Other
ln(Income)	0.601***	0.613***	0.497***	0.843***
	(0.072)	(0.147)	(0.075)	(0.055)
ln(Permanent income)	0.235***	0.188	0.371***	0.147**
	(0.079)	(0.164)	(0.083)	(0.061)
Main home ownership	0.007	0.032	-0.120***	0.051**
	(0.027)	(0.055)	(0.028)	(0.021)
Ownership of other homes	0.165***	0.003	0.031	0.062
	(0.059)	(0.125)	(0.061)	(0.047)
Number of minors	0.041***	-0.192***	-0.058***	0.096***
	(0.013)	(0.027)	(0.013)	(0.010)
Number of adults	0.042***	0.274***	0.175***	0.099***
	(0.015)	(0.032)	(0.015)	(0.011)
Number of seniors	-0.069	-0.021	-0.148***	-0.049
	(0.045)	(0.098)	(0.047)	(0.035)
Secondary education	0.019	0.618***	0.128***	0.206***
	(0.032)	(0.073)	(0.034)	(0.024)
Technical education	0.172***	1.510***	0.243***	0.416***
	(0.043)	(0.096)	(0.045)	(0.033)
College education	0.372***	1.951***	0.469***	0.496***
	(0.045)	(0.100)	(0.047)	(0.035)
Postgraduate education	0.513***	2.048***	0.659***	0.539***
	(0.066)	(0.137)	(0.068)	(0.052)
Observations	13,051	7,516	12,336	14,512
R-squared	0.288	0.280	0.320	0.470

Other Controls: Constant, 5-year age dummies for the household head. Education dummies are for the household head. The dummy for Elementary education is not included, because it corresponds to the constant.

Robust Standard-errors in (). ***,**,* denote 1%, 5% and 10% statistical significance.

4.2 Summarizing the policy impact on consumption

I then apply the estimated models (β_d) to the EFH households to obtain the counterfactual impact on consumption of the policies p for each month t between March of 2020 and March of 2021:

8) $c^p_{i,t,d} = (1 + CovCS_d) \exp(\beta_d \left[\ln(Y_{i,t}(ps^p_{i,t})), \ln(P_i), z_i\right])$, with $c^p_{i,t,sum} = \sum_{d=1}^{12} c^p_{i,t,d}$,

where $CovCS_d$ is an exogenous pandemic shock which decreases spending in some divisions d (such as Clothing, Restaurants, or Transports), while increasing spending in other areas (such as Food at home and Housing). $Y_i(ps^p_{i,t})$ is calculated with a different amount of public transfers ($ps_{i,t}$) for each category of the public policies $p \in$ (No policies: $ps^p_{i,t} = 0$, Tax-MPR-Income-Expenses support: $ps_{i,t} = psY_{i,t}$, Debt deferral policies: $ps_{i,t} = MARCH_t \times \frac{6}{12} DebtD_i$, All debt policies: $ps_{i,t} = psDs_{i,t}$, Pension withdrawals: $ps_{i,t} = psPension_{i,t}$, Debt plus pension policies: $ps_{i,t} = psDs_{i,t} + psPension_{i,t}$, All policies: $ps_{i,t} = psY_{i,t} + psDs_{i,t} + psPension_{i,t}$) and with a no Covid shock (the income distribution observed in 2019) as a baseline. The All debt policies include the government sponsored household loans besides the debt deferral policy, but the size of the tax sponsored loans was small relative to the debt deferral program (Barrero et al. 2020).

The Chilean counties were not under a complete quarantine over the entire pandemic period, therefore I account that there were periods with less restrictive consumption conditions according to the county of residence of the household (this information is available from the EFH survey). For this reason I use county level data at a monthly frequency for the Chilean quarantine phase program "Step by step" (from the Spanish, *Paso a Paso*). For the county of each household i at time t, I build a weight $PP_{i,t}$ that is equal to 0, 0.25, 0.40 and 0.66, according to if the quarantine of the county in that month is complete, second open phase, third open phase and fourth open phase. The counterfactual consumption of the household is then a weighted average between its consumption in a non-pandemic area (given by its consumption with the 2019 simulated income, $c^{2019}_{i,d}$) and the simulated consumption of the household under a quarantine restricted area ($c^p_{i,t,d}$):

9) $\tilde{c}^p_{i,t,d} = PP_{i,t} c^{2019}_{i,d} + (1 - PP_{i,t}) c^p_{i,t,d}$, with $\tilde{c}^p_{i,t,sum} = \sum_{d=1}^{12} \tilde{c}^p_{i,t,d}$.

Finally, I summarize the individual household specific and the aggregate consumption impact of each policy type p on each consumption division d by calculating the ratios:

10) $AC^p_{i,d} = \frac{\sum_{t=2020:03}^{2021:03} \tilde{c}^p_{i,t,d}}{13 \times c^{2019}_{i,d}}$, with $AC^p_{i,Sum} = \frac{\sum_d \sum_{t=2020:03}^{2021:03} \tilde{c}^p_{i,t,d}}{13 \times \sum_d c^{2019}_{i,d}}$,

11) $AC^p_{d} = \frac{\sum_i \sum_{t=2020:03}^{2021:03} \tilde{c}^p_{i,t,d}}{13 \times \sum_i c^{2019}_{i,d}}$, with $AC^p_{Sum} = \frac{\sum_d \sum_i \sum_{t=2020:03}^{2021:03} \tilde{c}^p_{i,t,d}}{13 \times \sum_d \sum_i c^{2019}_{i,d}}$.

Similar consumption ratios were built for a scenario without the "Step by step" program, that is assuming that the quarantine phase was always complete ($PP_{i,t} = 0$):

12) $AC^p_{i,d}(PP_{i,t} = 0) = \frac{\sum_{t=2020:03}^{2021:03} c^p_{i,t,d}}{13 \times c^{2019}_{i,d}}$, with $AC^p_{i,Sum}(PP_{i,t} = 0) = \frac{\sum_d \sum_{t=2020:03}^{2021:03} c^p_{i,t,d}}{13 \times \sum_d c^{2019}_{i,d}}$,

13) $AC^p_{d}(PP_{i,t} = 0) = \frac{\sum_i \sum_{t=2020:03}^{2021:03} c^p_{i,t,d}}{13 \times \sum_i c^{2019}_{i,d}}$, with $AC^p_{Sum}(PP_{i,t} = 0) = \frac{\sum_d \sum_i \sum_{t=2020:03}^{2021:03} c^p_{i,t,d}}{13 \times \sum_d \sum_i c^{2019}_{i,d}}$.

4.3 Size of the public benefits received by the households

Table 4 summarizes the size of each set of policies affecting the Chilean households as a fraction of the GDP. The total policy support of 15.1% of GDP is slightly lower than the 17.4% reported in Table 5 from Barrero et al. (2020). The individual policy amounts also match well with Barrero et al. (2020), except for the second pension withdrawal which is somewhat underestimated. Note that Barrero et al. (2020) used the exact amounts from the budgets of each policy and then divided the aggregate amounts by quintiles. The exercise of this article proceeds in a different fashion, since the numbers of each policy are calibrated for each individual household in a finite sample, therefore the aggregated survey numbers do not necessarily match the exact budget of each policy.

The numbers obtained in Table 4 for each policy amount are quite close to the budget numbers. The Employment Protection Law of 0.6% matches the budget amounts for the policy between March of 2020 and March of 2021 from the Chilean Administrator of the Unemployment Insurance - this number is only slightly higher than the 0.5% of GDP from Barrero et al. (2020), which did not account for the first quarter of 2021. The Income Vouchers (which sum the Covid voucher, the Family Emergency Income voucher, and the Christmas voucher) sum up to 1.4% of GDP, which is just slightly below the 1.5% value reported in Barrero et al. (2020). The Middle Class Subsidy plus Tax sponsored loans policy sums up to 1% of GDP, which is similar to the 0.9% of GDP in Barrero et al. (2020). The debt deferral program amounts to 1.8% of the GDP in our calibration, which is somewhat higher than the 0.7% value in Barrero et al. (2020), but this can be explained

Table 4: Public support (March 2020-March 2021) as a fraction of GDP (in %)

	All	By income quintile				
	households	1	2	3	4	5
Survey consumption over GDP: no benefits scenario	23.6	1.3	2.7	3.5	5.4	10.8
Monetary policy and no stamp tax	0.4	0.0	0.0	0.1	0.1	0.2
Expenses and tax deferral[a)]	0.4	0.1	0.2	0.1	0.0	0.0
Employment Protection Law	0.6	0.0	0.0	0.1	0.1	0.4
Income Vouchers (Covid, Family Emergency Income, Christmas)	1.4	0.2	0.4	0.4	0.4	0.0
Middle Class Subsidy plus Tax sponsored loans	1.0	0.1	0.2	0.2	0.2	0.2
Income, Expenses, Taxes, Monetary Policy,	3.7	0.4	0.9	0.8	0.8	0.8
Debt deferral	1.8	0.0	0.1	0.2	0.3	1.2
Debt deferral plus tax sponsored loans	2.7	0.1	0.2	0.3	0.6	1.4
First Pension Withdrawal	6.2	0.3	0.7	1.1	1.7	2.4
Second Pension Withdrawal	3.4	0.1	0.3	0.5	0.9	1.7
First and Second Pension Withdrawals	9.6	0.4	1.0	1.5	2.5	4.1
All policies	15.1	0.8	2.0	2.5	3.7	6.1

a) Tax deferral includes property taxes, VAT, income and tax debts.

due to the fact that their work considers only the debt deferral amounts obtained by August of 2020. The first pension withdrawal is about 6.2% of the GDP, which is slightly below the 6.9% value reported in Barrero et al. (2020). The second pension withdrawal obtained from the EFH calibration is just 3.4% of the GDP, which is significantly below the 6.7% value reported in Barrero et al. (2020), but this result is to be expected due to the under-reporting of financial assets and pension amounts that is common in survey datasets (Christelis et al. 2013, Bover et al. 2016).

Table 5 shows the fraction of households that received no benefits for each group of policies, finding that only 0.2% of the households did not receive any support. However, there are big differences across groups of policies. Only 6.5% and 0.9% of the households were excluded from, respectively, the pension withdrawals and the Income, taxes, monetary policy reduction (MPR), expenses support. Debts, on the other hand, are concentrated on the richer households. Around 54.6% of the households did not benefit from the deferral of the loans, with this fraction being as high as 80.9% and 70.3% for the households in the income quintiles 1 and 2. Therefore the large majority of the poorer households did not benefit from the debt deferral, while only 28.9% of the households in the upper income quintile did not benefit from the loan deferral programs.

In terms of the distribution of the benefits among households with positive amounts ($ps^p_{i,t} > 0$),

Table 5: Income increase ($ps^{p}_{i,t}/Y^{No\ policies}_{i,t}$) from the policy benefits

Income Quintile	Income, taxes, MPR, expenses				Debt deferral			
	Fraction with no benefits (%)	P25*	P50*	P75*	Fraction with no benefits (%)	P25*	P50*	P75*
All	0.9	3.9	9.1	19.8	54.6	2.2	4.3	8.0
1	0.0	13.0	24.1	49.0	80.9	1.9	5.0	11.2
2	0.0	10.9	18.0	31.6	70.3	1.9	3.7	6.7
3	0.2	5.7	11.2	20.0	55.8	2.3	4.2	7.3
4	1.8	3.3	6.8	13.2	49.0	2.4	4.7	8.8
5	2.0	1.2	2.6	4.4	28.9	2.2	4.3	7.8
Income Quintile	Pension withdrawal				All policies			
	Fraction with no benefits (%)	P25*	P50*	P75*	Fraction with no benefits (%)	P25*	P50*	P75*
All	6.5	1.1	3.5	7.6	0.2	9.6	18.6	32.0
1	12.4	0.1	2.6	6.5	0.0	16.1	32.2	59.3
2	8.3	0.6	3.4	7.4	0.0	16.0	26.7	42.4
3	6.6	1.3	3.8	8.8	0.2	11.5	20.5	31.1
4	3.2	1.4	4.1	8.4	0.4	8.7	15.7	26.4
5	4.2	1.7	3.5	6.5	0.2	5.5	9.7	17.0

* The percentiles 25, 50 and 75 of the ratio of benefits to income ($ps^{p}_{i,t}/Y^{No\ policies}_{i,t}$) are calculated only for the households that received a positive amount of benefits, that is for those with $ps^{p}_{i,t} > 0$.

Table 5 shows that the median household beneficiary increased his income 18.6% relative to a scenario with no policies, while the percentiles 25 still increased their income by 9.6% and the upper percentile 75 increased its income by 32%. Looking at the impact of all policies it is clear that these had a progressive effect, with higher increases of income (whether in the percentile 25, 50 or 75) for the lowest income quintiles. The group of policies given by Income, taxes, monetary policy reduction (MPR), expenses support had the strongest impact. Besides being not only the group with the lowest amount of non-beneficiaries, but also the policy group with the highest income increase, with an income increase of 3.9%, 9.1% and 19.8% for its percentiles 25, 50 and 75 of beneficiaries, respectively. It is also noticeable that the Income, taxes, monetary policy reduction (MPR), expenses support is the most progressive of the policy groups, with its impact (whether in the percentile 25, 50 or 75) being strongest for the lowest income quintiles. The debt deferral and the pension withdrawal policies, on the other hand, had a fairly homogeneous impact on the income growth of its beneficiaries, independently of the income quintile. This shows that the pension withdrawals and debt deferral were not progressive policies at all, since the highest quintiles received similar ratio of benefits relative to income and in absolute money amount that is much more due to their higher income levels (as shown in Table 1).

5 The impact of the different public policies on consumption

Table 6 shows the results of the estimated policy impacts for the aggregate consumption (AC_{Sum}) and its divisions (AC_d) for the months of July and August of 2020, which mark the peak of the contagion in Chile and the full implementation of different policies. The last 3 scenarios (Pension withdrawal, All debt policies, All policies) are implemented for the month of August to include also the impact of the pension withdrawal and tax sponsored loans. In other aspects such as the quarantine status of each county and the unemployment rate of the different workers, the months of July and August are roughly similar. The exogenous Covid expenditure shocks ($CovCS_d$) use a calibration that is very loosely based on the experience of other countries for the expenditures on different products and stores during the days before and after the start of the pandemic and its quarantines, such as the USA, France, Denmark and the UK (Baker et al. 2020, Coibion et al. 2020, Bounie et al. 2020, Andersen et al. 2020, Hoke et al. 2020). There is a wide range of uncertainty

surrounding the effects of the pandemic on different products due to several reasons, such as: i) hoarding of products or delaying of purchases for a few weeks later; ii) quarantines in different countries had different restrictions in mobility, hours of operation for the stores and also different definitions for the list of allowed "essential goods", iii) consumer decisions on spending could have been affected not just by their quarantine restrictions, but also due to their expectations about their own income and the future development of the crisis and its quarantines, iv) the classification of goods in studies such as Baker et al. 2020, Coibion et al. 2020, Bounie et al. 2020, Andersen et al. 2020, Hoke et al. 2020 differs substantially from the United Nations' Classification of Individual Consumption According to Purpose (COICOP). Since there is no equivalent data on the variation of consumption before and during the first few weeks of the quarantines in Chile, then there is substantial uncertainty and guesswork for the exogenous shocks to spending.

The exogenous shocks for consumption consider a value of +10% for Food, which is roughly in between the +25% estimated for the USA by Baker et al. (2020), +30% for France (Bounie et al. 2020), +9% for Denmark (Andersen et al. 2020) and the +7% for the UK (Hoke et al. 2020), although Coibion et al. 2020 estimated a value of -15% for the USA based on survey data of expectations. For Alcohol and Tobacco I consider a negative impact of -10% for Chile because the quarantines imposed strong restrictions on non-essential goods stores and also curfew hours starting at 21h00. This value for alcohol and tobacco is similar to France, although other countries found either no effects or even positive increases in these products: other studies found a change in spending of -2% for Food/Beverages in the USA (Baker et al. 2020), -10% for France (Bounie et al. 2020), and +19.3% for the UK (Hoke et al. 2020). For Clothing, footwear and textiles, I apply a value of -10%, which is roughly in between the -7% found for the USA by Baker et al. 2020, the +36% estimated for the USA by Coibion et al. 2020, the -95% for France (Bounie et al. 2020) and the -30.3% found for the UK (Hoke et al. 2020). For Housing expenses (such as rent, heating and maintenance) I apply a value of 0% for Chile, which is roughly between the -15% found for the USA (Coibion et al. 2020) and the +11% for the UK (Hoke et al. 2020). For Furnishings I apply a value of -20% for Chile, which is roughly comparable to the -22% found for the USA (Coibion et al. 2020), -24.7% for Denmark (Andersen et al. 2020), -15% for the UK (Hoke et al. 2020) and the -95% found for France (Bounie et al. 2020). For Health products I apply a value of +5% for Chile, which is below the +15% found for Pharmacy and Medical goods in France (Bounie et

al. 2020), but above the +0.5% found for Health goods and services in Denmark (Andersen et al. 2020) and the -20% found for Health goods and services in the USA (Coibion et al. 2020). Health expenditures are particularly difficult to compare across countries due to different coverages of private and public insurance for either hospitalization, doctor appointments or pharmacy. For Transport I apply a value of -40% for Chile, which is roughly in between the -80% found for gas stations in France (Bounie et al. 2020), the -55.7% found for Denmark (Andersen et al. 2020), the -26.5% found for the UK (Hoke et al. 2020), the -31% found for the USA by Coibion et al. 2020, or the -61% and -42% found, respectively, for Public transit and Air Travel in the USA by Baker et al. 2020. For Communications I apply a value of 0% for Chile, since I was unable to find any comparable value in studies for the other countries. For Recreation I apply a value of -30% for Chile, which is conservative compared to the -42% found for the USA by Coibion et al. 2020, the -55% found for the USA by Baker et al. 2020, the -100% for leisure and -50% for bookstores found in France (Bounie et al. 2020) and the -51.9% for Denmark (Andersen et al. 2020), but it is higher than the -17.6% found for the UK (Hoke et al. 2020). For Education I apply a value of -35% for Chile, which is similar to the -33% found for the USA by Coibion et al. 2020. For Restaurants I apply a value of -30% for Chile, which is similar to the -30.7% found for the UK (Hoke et al. 2020), but worse than the -18% found for the USA (Baker et al 2020) and better than the -75% found for France (Bounie et al. 2020) and the -64% for Denmark (Andersen et al. 2020). For the Other products I apply a value of -20% for Chile, which is conservative relative to the -32% found for the USA (Coibion et al. 2020) and the -39.2% found for the UK (Hoke et al. 2020). Finally, at the end of this section I apply two alternative versions for the exogenous shocks to consumption, which consider a more negative impact of the quarantine on the spending of each product division.

For the total consumption (the aggregate Sum of all categories) the Covid shock implies a decrease in 17.2% in a no policy scenario. Relative to the no policy scenario, the Income, tax, monetary policy reduction (MPR), expenses support imply an increase in consumption of 3.4%, while the debt deferral increased consumption by just 1.2%. The first pension withdrawal in August by itself would have increased consumption by 5.5%. However, the sum of all Debt (including the debt deferral and the tax sponsored loans) and pension policies had a positive impact of 8% on consumption for the month of August. With all policies, the impact in August shows an increase of 10.1% relative to a no policy scenario. This almost full recovery in consumption matches well

Table 6: Impact (AC_d^p) of the different policies on aggregate consumption (in %)
AC_d^p: ratio relative to aggregate consumption in 2019
One month impact of each policy

Period (2020) Consumption Division	Exogenous Covid shock ($CovCS_d$)	July No policy	July Income, Tax, MPR & Expenses	July Debt deferral policy	August Pension withdra-wals	August Debt and pension policies	August All policies
1: Food	+10	105.4	109.2	106.3	105.9	107.9	109.8
2: Alcohol	-10	86.0	88.8	86.6	89.9	91.4	93.0
3: Clothing	-30	65.7	69.8	67.2	75.2	78.3	81.2
4: Housing	0	96.1	98.6	96.5	98.1	99.2	100.2
5: Furnishings	-20	75.3	78.7	77.0	82.7	85.7	88.2
6: Health	+5	96.6	103.3	99.5	100.8	106.5	111.8
7: Transport	-40	57.6	59.9	58.5	68.2	70.0	71.5
8: Communications	0	94.4	99.0	95.9	97.9	101.1	104.1
9: Recreation	-30	65.9	69.3	67.4	75.2	78.1	80.5
10: Education	-35	61.1	63.9	62.4	71.6	74.1	76.1
11: Restaurants	-30	66.2	69.2	67.5	75.4	77.8	79.8
12: Other	-20	73.9	78.5	76.2	82.3	86.5	90.1
Sum (AC_{Sum})		82.8	86.2	84.0	88.3	90.8	92.9

with the national accounts reports for August of 2020 (Central Bank of Chile 2021).

The Covid shock in July-August had an heterogeneous impact across products, because of the exogenous effect of the lockdown on shopping and grocery plus the income elasticities of each good (β_d). Consumption after the Covid increased in the sectors of Food, Housing, Health and Other Goods, while it dropped for all the other goods. The most hurt sectors are Transport, Education, Restaurants, Clothing and Recreation. All the consumption divisions expand by several points after All the policies are implemented, even if some sectors do not reach the levels of 2019. The Clothing, Health, Transport, Education, and Other goods (financial products, personal services and others) are the sectors with highest improvement in consumption, while the Food, Alcohol and Housing types of products had the lowest consumption expansion after the implemented policies.

Table 7 shows the impact of the different policies on the household consumption between March of 2020 and March of 2021. It differs substantially from Table 6, because the 13 month period considered in Table 7 includes months with lower quarantine restrictions and lower unemployment rates than the July-August months portrayed in Table 6 (the "peak" of the pandemic). Now the simulations for the scenario of no policies predict a fall in consumption of 10.2% for this period, which is significantly better than the 17.2% drop for the July of 2020 period alone. Similarly, all

Table 7: Impact (AC_d) of the different policies on aggregate consumption (in %)
AC_d: ratio relative to aggregate consumption in 2019
Period March 2020-March 2021
Counterfactual simulations with the Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*)

Consumption Division	Exogenous Covid shock ($CovCS_d$)	No policy	Income, Tax, MPR & Expenses	Debt deferral policy	Pension withdra-wals	Debt and pension policies	All policies
1: Food	+10	103.9	106.1	104.3	104.9	105.8	107.3
2: Alcohol	-10	91.8	93.4	92.1	92.4	93.0	94.1
3: Clothing	-30	79.3	82.0	80.3	80.9	82.5	84.4
4: Housing	0	98.0	99.4	98.3	98.5	99.0	99.9
5: Furnishings	-20	85.0	87.4	86.1	86.7	88.3	89.9
6: Health	+5	98.6	103.4	100.5	101.9	104.9	108.4
7: Transport	-40	73.9	75.4	74.5	74.9	75.8	76.8
8: Communications	0	97.2	100.2	98.1	98.9	100.5	102.5
9: Recreation	-30	79.2	81.5	80.1	80.7	82.2	83.8
10: Education	-35	76.2	78.2	77.1	77.6	78.9	80.3
11: Restaurants	-30	79.4	81.4	80.2	80.7	81.9	83.3
12: Other	-20	84.4	87.6	85.8	86.8	89.1	91.3
Sum (AC_{Sum})		89.8	92.0	90.5	91.1	92.3	93.8

the policy scenarios show a higher level of consumption than for the months of July-August alone. Relative to the no policy scenario, the Income, tax, monetary policy reduction (MPR), expenses support imply an increase in consumption of 2.2%, while the debt deferral by itself and the debt plus policies (debt deferral, tax sponsored loans, pension withdrawals) increased consumption by 0.7% and 2.5%, respectively. The two pension withdrawals alone would have increased consumption by just 1.3%. With all policies, consumption increased 4% relative to no policies.

In a scenario of no policies, consumption after the Covid would have increased for Food, while dropping for all the other goods, with the most hurt sectors being Transport, Education, Recreation, Restaurants and Clothing. All goods expand by several points after all the policies, but among the hurt sectors only Housing, Health and Communications increase enough to recover the losses relative to 2019. Health and Other goods (financial products, personal services and others) show the highest improvement in consumption, increasing, respectively, 10% and 7% after all the policies. Communications, Clothing, Furnishings and Recreation also grow by around 5% after all the policies are implemented. This stands in contrast to the strong growth in the consumption of durables found after the pension withdrawals were implemented in Chile, which showed record sales of cars and other durables (Central Bank of Chile 2021). This is due to purchases of durables being

Table 8: Impact ($AC_d^p(PP_{i,t}=0)$) of the different policies on aggregate consumption (in %)
$AC_d^p(PP_{i,t}=0)$: ratio relative to aggregate consumption in 2019
Period March 2020-March 2021
Counterfactual results without Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*)

Consumption Division	Exogenous Covid shock ($CovCS_d$)	No policy	Income, Tax, MPR & Expenses	Debt deferral policy	Pension withdra-wals	Debt and pension policies	All policies $PP_{i,t}=0$	All policies $(PP_{i,t})^*$
1: Food	+10	106.4	110.0	107.2	107.9	109.4	111.8	107.3
2: Alcohol	-10	86.5	89.1	87.0	87.4	88.4	90.2	94.1
3: Clothing	-30	66.0	70.3	67.5	68.3	70.7	73.9	84.4
4: Housing	0	96.7	98.9	97.1	97.4	98.2	99.7	99.9
5: Furnishings	-20	75.6	79.3	77.3	78.0	80.5	83.1	89.9
6: Health	+5	97.9	105.4	100.9	102.7	107.4	112.9	108.4
7: Transport	-40	57.2	59.6	58.2	58.7	60.1	61.7	76.8
8: Communications	0	95.4	100.1	96.9	98.0	100.4	103.7	102.5
9: Recreation	-30	66.0	69.6	67.6	68.2	70.6	73.2	83.8
10: Education	-35	61.0	64.1	62.3	63.0	65.1	67.2	80.3
11: Restaurants	-30	66.3	69.5	67.6	68.2	70.1	72.3	83.3
12: Other	-20	74.5	79.5	76.9	78.1	81.6	85.2	91.3
$AC_{Sum}^p(PP_{i,t}=0)$		83.3	86.8	84.5	85.2	87.1	89.5	93.8
$AC_{Sum}^p(PP_{i,t})^*$		89.8	92.0	90.5	91.1	92.3	93.8	

* The values of $AC_{Sum}^p(PP_{i,t})$ and $AC_d^p(PP_{i,t})$ are taken from Table 7 to make the comparison easier between the scenarios with and without the quarantine flexibilization program.

under-estimated by consumption surveys, since such goods are imputed as a flow of use rather than as lumpy purchases that change strongly during the business cycle (Attanasio and Weber 2010).

Table 8 shows the counterfactual impact of the different policies on consumption during March 2020 to March 2021 under a full quarantine policy and no flexibilization of activity from the "Step by step" program: $PP_{i,t}=0$. The results for the "All policies scenario" show that total consumption was 4.3% higher with the quarantine flexibilization. There are also substantial differences across product divisions with the quarantine flexibilization program. Without the quarantine flexibilization program there would have been more expenses in Food, Health and Communications, but less consumption for the other products especially Clothing, Recreation and Education which would have been 10% lower. Furnishings and Other Goods consumption would also have been around 6% lower without the quarantine flexibilization program. Furthermore, the quarantine flexibilization program insures a higher consumption between 5.2% to 6% more for the scenarios with just a few individual support policies implemented instead of the All policies scenario. The difference is substantial for the scenario with No Support Policies, since in that case

Table 9: Fraction of the households that decreased or increased their consumption relative to 2019 (in % of all the households): Period March 2020-March 2021

Consumption change	No policy	Income, Tax, MPR & Expenses	Debt deferral policy	Pension withdrawals	Debt and pension policies	All policies
With Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*):						
Decreased consumption	100	87.3	99.5	97.8	94.8	78.5
Increased consumption	0.0	12.7	0.5	2.2	5.2	21.5
Without Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*):						
Decreased consumption	100	88.6	99.5	98.7	96.5	81.5
Increased consumption	0.0	11.4	0.5	1.3	3.5	18.5

the quarantine flexibilization program insures 6.5% more in total consumption.

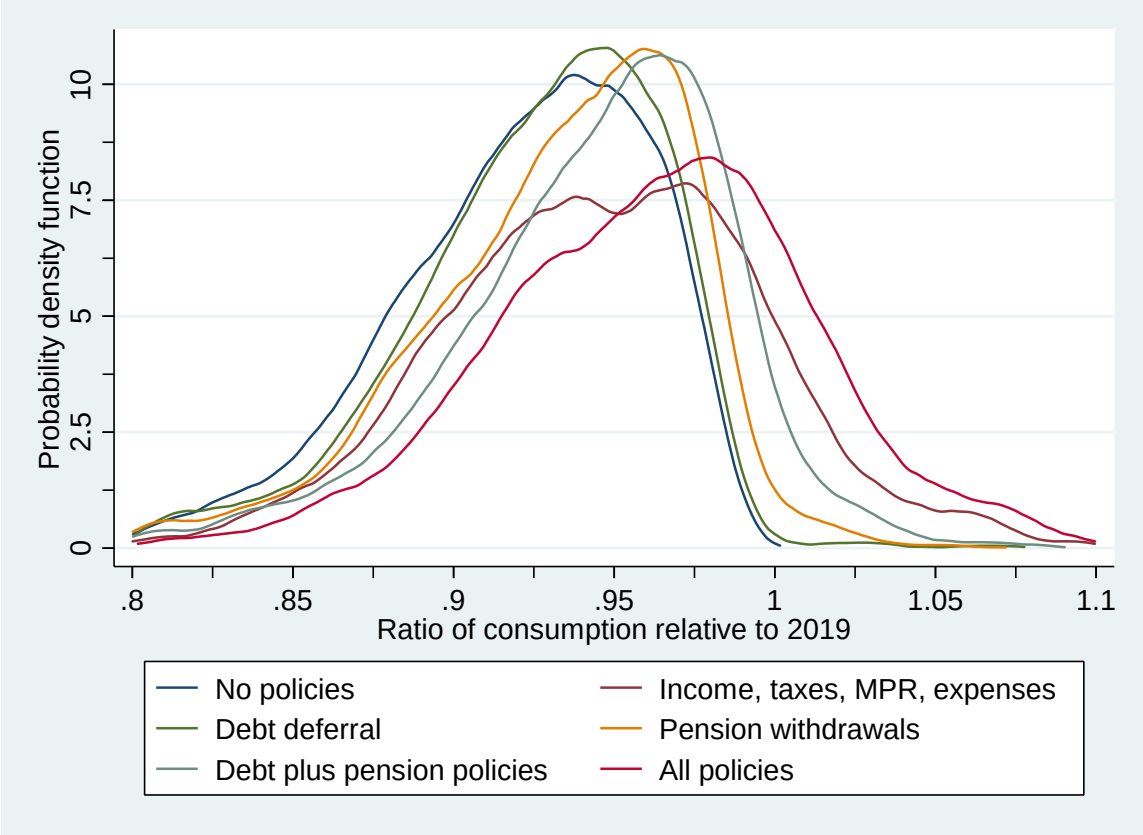
Table 9 shows the fraction of families that either decreased or increased their consumption relative to 2019 for each policy, including the scenarios with and without quarantine flexibilization. No family kept its consumption exactly at the same level as in 2019. The results show that with the quarantine flexibilization and all the transfer policies implemented together, around 21.5% of the households increased their consumption during the pandemic period relative to 2019.

Now I show how the results are affected by alternative specifications of the model calibration. Table 10 shows two robustness checks regarding the exogenous pandemic shocks to consumption, which imply a more negative effect of the restrictions for the purchase of some goods. Alternative 1 considers that the pandemic has no impact on Food and Health goods, instead of the positive impact considered in the baseline calibration. Alternative 2 considers that the pandemic has a negative impact on all products and considers a worse effect for Food, Clothing, Housing, Furnishings, Health, Transport, Recreation, Restaurants and Other goods. The estimates for total consumption in Alternative 1 are slightly below those in the Baseline (see Table 8), showing for the no policy scenario a fall in consumption of 11.6% and 19.1%, respectively, with and without the quarantine flexibilization program. Under the all policies scenario, Alternative 1 shows a drop in consumption of 7.7% and 13%, respectively, with and without the quarantine flexibilization program. The estimates for total consumption in Alternative 2 are much lower than in the Baseline (Table 8), showing for the no policy scenario a fall in consumption of 15.7% and 25.9%, respectively, with and without the quarantine flexibilization program. Under the all policies scenario, Alternative 2 shows a drop in consumption of 12.3% and 20.6%, respectively, with and without the quarantine flexibilization program. However, both Alternative 1 and Alternative 2 coincide with the Baseline in

Table 10: Impact on the total consumption (in %) under alternative shocks to spending AC_d^p: ratio relative to aggregate consumption in 2019
Period March 2020-March 2021
Counterfactual results with Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*)

Consumption Division	Baseline Exogenous Covid shock ($CovCS_d$)	Alternative 1 Exogenous Covid shock ($CovCS_d$)	Alternative 1 No policy	Alternative 1 All policies	Alternative 2 Exogenous Covid shock ($CovCS_d$)	Alternative 2 No policy	Alternative 2 All policies
Counterfactual results with Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*)							
1: Food	+10	0	98.1	101.1	-5	95.4	98.2
2: Alcohol	-10	-10	91.9	94.2	-10	92.2	94.3
3: Clothing	-30	-30	79.2	84.3	-35	76.6	81.2
4: Housing	0	0	98.1	99.9	-5	95.5	97.0
5: Furnishings	-20	-20	84.9	89.8	-25	82.2	86.7
6: Health	+5	0	95.6	104.9	-5	93.0	101.8
7: Transport	-40	-40	73.9	76.8	-50	68.2	70.6
8: Communications	0	0	97.1	102.5	0	97.4	102.6
9: Recreation	-30	-30	79.1	83.7	-50	67.7	71.0
10: Education	-35	-35	76.2	80.2	-40	73.5	77.2
11: Restaurants	-30	-30	79.4	83.2	-50	68.0	70.7
12: Other	-20	-20	84.2	91.2	-30	78.8	84.8
AC_{Sum}^p			88.4	92.3		84.3	87.7
Counterfactual results without Quarantine Phasing Policy (Step by Step, i.e. *Paso a Paso*)							
1: Food	+10	0	96.8	101.6	-5	92.3	96.7
2: Alcohol	-10	-10	86.7	90.2	-10	87.0	90.4
3: Clothing	-30	-30	65.8	73.7	-35	61.3	68.5
4: Housing	0	0	96.8	99.7	-5	92.4	94.9
5: Furnishings	-20	-20	75.4	83.0	-25	70.9	77.9
6: Health	+5	0	93.0	107.3	-5	88.6	102.2
7: Transport	-40	-40	57.2	61.6	-50	47.8	51.5
8: Communications	0	0	95.3	103.6	0	95.6	103.8
9: Recreation	-30	-30	65.8	73.0	-50	47.2	52.2
10: Education	-35	-35	60.9	67.1	-40	56.5	62.2
11: Restaurants	-30	-30	66.2	72.2	-50	47.5	51.7
12: Other	-20	-20	74.3	85.0	-30	65.2	74.5
AC_{Sum}^p			80.9	87.0		74.1	79.4

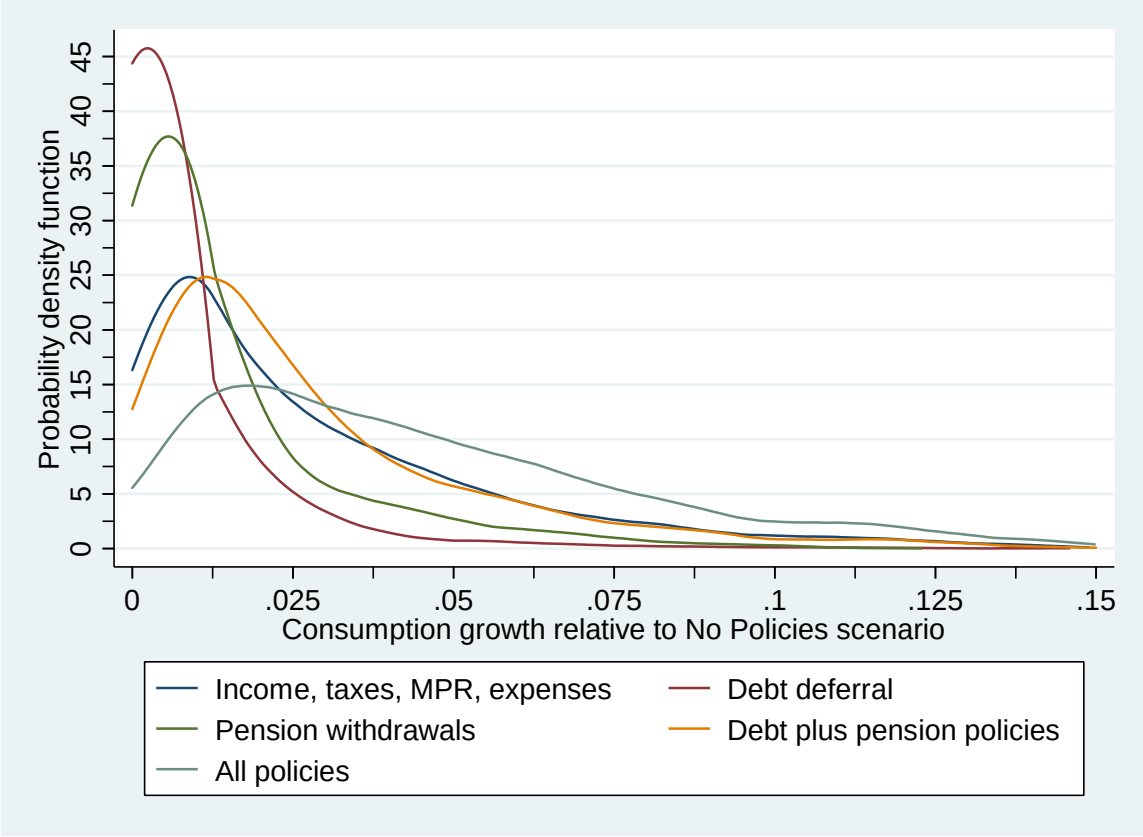
Figure 1: Distribution of the simulated household consumption after the Covid shock (March 2020-March 2021) with different policies in relation to the pre-pandemic period (2019)



terms of the big impact of the quarantine flexibilization, which is 7.5% and 10.2%, respectively, for Alternatives 1 and 2 under the no policy scenario and 5.3% and 8.3%, respectively, for Alternatives 1 and 2 under the all policies. The alternatives also coincide with the Baseline in terms of the substantial impact of the all policies, which increase consumption by 3.9% and 3.4% under Alternatives 1 and 2, respectively (for the case of the quarantine flexibilization program scenarios).

Figure 1 shows the heterogeneous policy impact on the distribution of the households' consumption relative to their individual consumption in 2019 ($AC^{p}_{i,Sum}$). Figure 2 shows the individual consumption growth relative to the scenario with no policy support ($\frac{AC^{p}_{i,Sum} - AC^{NoPolicies}_{i,Sum}}{AC^{NoPolicies}_{i,Sum}}$). The probability density function in both figures is estimated with an Epanechnikov kernel using the Silverman's bandwidth rule. Both figures are based on the counterfactual simulations with the quarantine flexibilization. Figure 1 shows that the impact on consumption of the Covid shock in the No Policy scenario on consumption is centered between -20% to 0%, therefore all households decreased their

Figure 2: Increase of the individual household consumption (March 2020-March 2021) after each group of policies relative to the No policies scenario



consumption due to the pandemic. The individual consumption improves significantly with each policy, especially with the Income, taxes, monetary policy reduction (MPR), expenses support, which shows a consumption difference relative to 2019 between -15% to +5%. With all the policies combined, the consumption difference relative to 2019 changes to between -15% to +7.5%.

Figure 2 shows that all the policies analyzed increased the individual consumption of all the households relative to the no policies scenario, therefore not a single household reduced its consumption after each policy. The debt deferral had a small impact for most households, with most households increasing their consumption by less than 2.5% and a modal increase around 0.4%. The Income, tax, monetary policy reduction (MPR), expenses support had a wide impact, with the individual consumption of each household increasing between 0% and 5% and a modal increase of 1.2%. This is a very efficient impact for the Income group of policies, since this group of policies implied just one third of the budget of the pension withdrawals. The pension withdrawals implied

an increase in individual consumption between 0% and 3.75%, with a modal increase around 0.8%. The debt plus pension policies (debt deferral, tax sponsored loans, pension withdrawals) jointly had a substantially higher impact, increasing individual consumption between 0% and 5%, with a modal increase around 1.3%. Finally, the "All policies" scenario increased individual consumption between 0% and 10% relative to the "No Policies" scenario, with a modal increase of 1.8%. In summary, all households increased their consumption relative to the No Policies scenario.

6 Conclusions

Using micro-data from the Household Finance Survey (EFH), this work estimates the counterfactual impact of the Covid crisis' public policies on the Chilean household consumption. The work provides an analysis of the demand shock in Chile across households and different products, although other works emphasize that Covid implied an heterogeneous supply and demand shock across sectors (Brinca et al. 2020, Rio-Chanona et al. 2020, Guerrieri et al. 2020). The public policies implemented in Chile included transfers above 15% of GDP in liquid funds to the households and also a quarantine flexibilization policy (Step by step, or Paso a Paso in Spanish). I separate the policies involving transfers to the households as: i) income, tax deferral, monetary policy reduction, and expenses support, ii) debt deferral and tax sponsored loans, iii) pension withdrawals.

Based on the calibration from the EFH sample, the income, tax, monetary policy, expenses support amounted to 3.3% of the GDP in transfers for the households, while the debt policies and the pension withdrawals amounted to 2.7% and 9.6% of the GDP. However, the income group of policies showed the most progressive distribution, with transfers of 0.4% of the GDP for the first income quintile and around 0.8% of the GDP for each of the other income quintiles. Although the lowest income quintile receive a lower money amount, the transfer represented a higher relative income increase for those families, and therefore this group of policies had a strongly progressive design. The debt policies and pension withdrawals were much less progressive, implying, respectively, a transfer of only 0.1% and 0.4% of the GDP to the lowest income quintile, while transferring 1.4% and 4.1% of the GDP to the top income quintile, respectively. Only 0.9% of the households did not benefit from the income group of policies, while 54.6% and 6.5% of the households did not benefit from the debt deferral and pension withdrawals, respectively. Furthermore, the income group of

policies implied a much stronger increase in income for the lowest income quintiles, while the debt deferral and pension withdrawals implied higher income increases for its beneficiaries in the top income quintiles. The reason is because the pension withdrawals benefit more the higher income families and those with formal employment, while the debt deferral benefits are concentrated on the top income households which have larger mortgages and consumer loans.

Total consumption could have fallen by 16.7% in a scenario with no policy transfers to the households and no quarantine flexibilization. Just with the quarantine flexibilization policy, the authorities softened the blow to consumption to a fall of 10.2% relative to a no-pandemic scenario. Without the quarantine flexibilization program there would have been more expenses in Food and Health, but less consumption for the other products such as Clothing, Recreation, Education, Furnishings and Other goods. Relative to a scenario with quarantine flexibilization but without income transfers, I find that the income, tax, monetary policy, expenses measures increased total consumption by 2.2%, while the debt deferral and pension withdrawals increased consumption by 0.7% and 1.3%, respectively. The debt plus pension policies combined (deb deferral, tax sponsored loans, pension withdrawals) could have increased consumption by 2.5%. However, with all the policies combined there was an increase in consumption of 4% relative to a scenario with no income transfers. With the quarantine flexibilization and all the transfer policies, the total consumption between March of 2020 until March of 2021 was still 6.2% below the pre-pandemic level. This drop of 6.2% is just slightly below the fall of 7.4% in national accounts' consumption during the last three quarters of 2020 and the first quarter of 2021 relative to the last quarter of 2019.

Finally, there was no household that reduced its consumption after the transfer policies. Relative to a scenario with no transfers, the all policies combination increased individual consumption between 0% and 10% for most households, with a modal increase of 1.8%.

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