

BELIEFS ABOUT PUBLIC SPENDING AND EFFICIENT EXPENDITURES IN PUBLIC PROCUREMENT OFFICERS

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This document describes the pre-analysis plan for the research project “Beliefs About Public Spending and Efficient Expenditures in Public Procurement Officers”. It lays out the theoretical model and pre-specifies the data analysis that will be ran before examining the data, and will be available for public access at <https://www.socialscienceregistry.org/>. The empirical analysis is conducted by using data from the National Authority of Public Procurement, Chile Compra. In Appendix Letter [A1](#), Chile Compra explicitly states that researchers can have access to the public procurement system data from October 15, 2020, onward. This is to notice the reader that while the initial date of the project is June 2020, this pre-analysis plan has been specified before any member of our research team have had access to the required data to perform the data analysis, and we hope this gives credibility to our research design –both theoretical and empirical.

1 Basic Design

With the objective of improving efficiency in public procurement, the Public Budget Office (DIPRES) of the Chilean Government has mandated the research team to design a series of information interventions aimed at highlighting the benefits and costs of efficiency in public spending, as well as reducing frictions in the search for low cost purchases, all with the ultimate objective of changing the institutional culture of efficiency within Public Services (PS) and thus reduce overspending in their public purchases. We implement different interventions depending on the level of responsibility within each PS treated, i.e. whether the person is the Director of the PS (top-level or principal) or the person is a “buyer” (bottom-level or purchasing agent). In all cases the intervention consists of

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different “information treatments”, explained below.

The sample consists of 184 PS of Chilean Government. These entities comprise approximately 8,500 buyers who make public purchases using the e-commerce platform <https://www.mercadopublico.cl>, which is regulated by the National Authority of Public Procurement, Chile Compra. We are able to follow each purchased item within this platform on a daily basis, at the item-buyer level. We test whether different outcomes related to these purchases change across treatment assignment.

We further test for the mechanisms driving the effect of information treatments on purchasing behavior. In particular, we examine the role of efficiency culture on the public procurement behavior of bureaucratic institutions. The research question specifically asks: **Does top-bottom alignment of beliefs about the benefits/costs of efficiency in public purchases matters to increase the level of efficiency in public procurement?**

To answer this question, we elicit beliefs of top and bottom members on different dimensions of the purchasing process and on the beliefs they have about other members’s beliefs about the purchasing process. For example, we measure beliefs about how important is efficiency in public spending for each individual and whether they believe that their organization cares about efficiency, how likely they believe their purchases are being monitored, and what do members believe about these beliefs for other members within the organization or for other organizations in the system.

2 A sketch of the model

Public purchases are made by a purchasing agent (“buyer”) who works for a given Public Services (PS). All purchases are audited – there is no autonomy. Among different prices available the agent chooses an option. So she can choose the minimum price or a price above this minimum. For any given public purchase, we define p , the over-expenditure or over-price associated to the purchase, as the difference between the price chosen and the minimum price available for the same product¹, and it is given by:

$$p = x + \omega(1 - s) \tag{1}$$

where x is the agent’s units of leisure/laziness. The more laizy the agent, the larger the over expenditure associated to purchases made by her². $\omega(1 - s)$ is the marginal cost of searching for a product, which is proportional to search frictions, $(1 - s)$. Think of ω as the marginal cost of using the e-commerce platform for public purchases which can be also thought as the buyer’s online search ability. The larger the marginal cost ω faced by the agent, the larger the over expenditure

¹The outcome could change to another measure of inefficiency such as whether the agent executes purchases directly to a provider or uses a competitive bidding, where the former is considered as less efficient, on average

²You may also use an active interpretation and think on x as bribes.

associated to purchases made by her³. Finally, think on $s \in (0, 1)$ as the quality of the platform for purchasing products (gadgets, surfing tools, graphic presentation of alternatives). The better the platform's quality s , the lower the search frictions, and thus the lower the over expenditure⁴.

Utility of the purchasing agent is given by:

$$U(x) = \gamma \ln(x) - sx - \mu x \quad (2)$$

where, $\gamma \ln(x)$ is the utility from not exerting effort, which is scaled by $\gamma > 0$, the degree to which the agent believes that efficiency does not matter for the principal. Then, if γ is low, it means that the agent believes that the boss believes that "Efficiency is beneficial for the PS", i.e. generating savings is known to be important to the principal, which works as an incentive for the agent to not be lazy (reduce leisure x), but increase effort in searching for the minimum price or at least search for a more efficient purchase. We assume that agents have limited freedom to disagree with the principal and that the institutional culture is transmitted through a top-down movement, i.e., if the buyer/agent believes that her boss/principal values efficiency, then agents act accordingly.

The second term, sx , is the utility cost of using the e-commerce platform, which increases with the quality of the technology. If quality (s) is high (platform is easy to navigate), then the officer has less incentives/excuses for being lazy. Finally, the third term, μx , with $\mu > 0$, is the degree to which the agent believes that being inefficient is punishable. In the same spirit than γ , here μ is going to be interpreted as the degree to which the agent/buyer believes that the principal/boss believes that overspending/inefficiency is detrimental for the institution and so there could be pecuniary and/or non-pecuniary costs of being inefficient/lazy. Therefore, γ regulates x through beliefs about the benefits associated to low x , while μ regulates x through beliefs about the costs associated to high x .

Optimal leisure and over-price is then given by:

$$x = \frac{\gamma}{\mu + s} \quad (3)$$

$$p = \frac{\gamma}{\mu + s} + \omega(1 - s) \quad (4)$$

Hence, over-price is always decreasing in s , the platform's quality. However, notice that this will not do all the job alone. Indeed, even if we implement the best possible platform (one that makes

³ ω can also be interpreted as the cost of principal of monitoring the buyers' behavior.

⁴One could also think of quality s as the capacity of the platform to monitor buyers' purchasing behavior. For instance, there exists a monitoring technology of easy use (low ω), and of good quality (high s), all of which should reduce over-price.

search frictions $1 - s$ to vanish), the optimal over-price will still depend on the beliefs γ and μ . In particular, if there are no search frictions, $s \approx 1$, (i.e., after the implementation of our technology), then over-prices depend only on $\frac{\gamma}{1+\mu}$, i.e., the strength of both beliefs.

3 Information Treatments and Experimental Design

Our information intervention aims to tackle γ and μ . In particular, they are designed to affect the beliefs of both the principal/boss and agents/buyers about the benefits and costs of overspending (see section 4 for a specific definition of overspending), as well as to provide a practical guidance to reduce overspending, all with the ultimate objective of changing the institutional culture of efficiency within Public Services (PS) and thus reduce overspending in their public purchases.

In line with our model, we define two types of information interventions: γ and μ treatments, each of which is designed to recover the corresponding structural parameter of the model (see Section 5 for a pre-analysis plan of the structural estimation).

γ treatments: We want to lower γ , i.e., increase the buyer’s belief that efficiency does matter to the boss of the PS⁵. To do so, we first affect the boss’s belief about the importance of budget efficiency by providing an online course on “What’s the importance of efficiency and savings in public procurement and how can your organization reduce overspending”. This should change beliefs at the top level of the PS. We assume such a change in beliefs flows downwards through the base of the organization (buyers).

Second, we provide the agents information about the purchasing performance (overspending) at both the PS level and buyer level. The information is delivered through a monthly report signed by DIPRES, which includes information on the level of overspending during the previous 12 months (dissagregated by type of purchase), and it includes a list of recommendations and tools oriented to help the buyer improve efficiency in public spending. The report is updated month by month.

Buyers receive monthly emails with summary information about their levels of overspending in the mailing text as well as the login credentials to download the monthly report from a centralized platform (www.gastoeiciente.cl). Likewise, bosses receive a monthly report with information regarding the purchasing performance (overspending) of the PS, but randomly assign (at the PS level) whether the report also includes information about overspending at the buyer level (“T1, Public

⁵We define the boss as either the executive director (ED) of the service or the director of finance (DAF) of the service.

treatment") or not ("T2, Private treatment")⁶. That way, for buyers in T1, the intervention will let the boss know the purchasing performance of every buyer, and will let the buyer know that their information on purchasing performance is known by the boss. In contrast, for agents in T2, the information about the individual performance is private, i.e., the boss do not have access to it (although we do not acknowledge the buyer that the information is private, and so he could still believe with some probability that the boss is acknowledged about her performance). For an example of the reports sent to buyers and boss in each treatment arm, see Appendix.

Note that both "Public" and "Private" treatments are expected to increase the belief that efficiency does matter to the boss. Indeed, just using one of them would allow us to estimate the structural parameter γ . We use the "public" treatment to test the extent to which making the information on purchasing behavior public (instead of keeping it privately) enforces the public service to change the efficiency culture within the organization. In particular, we hypothesize that:

- The "Public treatment" will allow the principal to track the purchasing behavior of agents, and thus use that capacity to discipline the purchasing behavior of agents.
- The "Public treatment" will ease the flow of information about efficiency on public purchases from the bottom to the top level of the organization, i.e., the principal will have a better knowledge about the leakages underlying inefficiency in public expenditures (this is not obvious in the case of the "Private" treatment since in that case the boss has no access to individual performances)

More generally, we hypothesize that the boss' access to information on individual performance can change institutional culture to the extent that it can be used to change the behavior of its members. This is based on the idea that organizational culture is the product of recursive interactions between information and actions (which in turn produce new information and new actions). When the information is private, the interpretation of the information received (and thus the beliefs about the information and the changes in behavior derived from it) is relegated to the personal evaluation only. Instead, when information is public, its interpretation is more likely to be driven by the organizational discourse, especially if this is managed by a principal with enough enforceable power to change both the organizational discourse and the actions that are expected to be followed from that discourse.

More formally, we define the "Public treatment" (T1) as a treatment where:

⁶Note that the public procurement data containing the records of public purchase transactions is confidential data managed by ChileCompra for designing reports on the global spending of the Government. It is not available to the public, and not even to government institutions like public services. Not having access to this data makes implausible for PSs to be able to calculate their level of overspending by their own.

1. The principal/boss receives an invitation to do a course on “What’s the importance of efficiency and savings in public procurement and how can your organization reduce overspending”. The invitation is received in June-August 2020
2. During the period September 2020 - December 2021, the principal/boss receives a monthly report including information about:
 - Performance indicators of efficiency in public expenditures at the PS level
 - Performance indicators of efficiency in public expenditures at the agent/buyer level, ranked from highest to lowest level of overspending.
3. During the period September 2020 - December 2021, the agents/buyers receive a monthly report including information about:
 - Performance indicators of efficiency in public expenditures at the PS level
 - Indicators about their own performance on efficiency in public expenditures
 - A specific message indicating that their boss has access to the information regarding their own performance on efficiency in public expenditures.

Likewise, we define the “Private treatment” (T2) as a treatment where:

1. The principal/boss receives an invitation to do a course on “What’s the importance of efficiency and savings in public procurement and how can your organization reduce overspending”. The invitation is received in June-August 2020
2. During the period September 2020 - December 2021, the principal/boss receives a monthly report including information about:
 - Performance indicators of efficiency in public expenditures at the PS level
3. During the period September 2020 - December 2021, the agents/buyers receive a monthly report including information about:
 - Performance indicators of efficiency in public expenditures at the PS level
 - Indicators about their own performance on efficiency in public expenditures.

Therefore, the two main differences between T1 and T2 are:

1. In T1 the boss has access to information on buyers’ performance about efficiency in public expenditures (this is not the case of T2, where the boss does not have access to that information); and

2. In T1 buyers are acknowledged that the boss has access to such information (this cannot be the case of T2 since the boss does not have access to that information).

Placebo treatment. Importantly, there is still the question of whether the effects of γ treatments (either T1 or T2) on beliefs are due to the direct effect of the information contained in the report or just the indirect effect of being monitored (Hawthorne effects). To test for this, within T1 and T2 groups, we randomly assign 1/4 of the agents to receive only a Placebo treatment, i.e., the agent monthly receive a simple message indicating that her overspending is being monitored, but do not provide any type of information about individual performance. This way we can test for the presence and magnitude of Hawthorne effects on performance.

μ treatment: μ is the degree to which the belief that “inefficiency is punishable” is shared among members. In order to alter such belief, DIPRES designed a new budget evaluation rule to assess the efficiency of PS. The rule is designed to punish next-year budget of services that incur in large overspending in the previous year. The new budget evaluation rule is planned to start by the beginning of year 2021. We will inform the new rule to γ treatment services⁷.

Sample Frame. DIPRES considers 236 Public Services in its annual negotiations. Of these, 10 were discarded because they are considered autonomous, having a different negotiation process than the rest. In addition, another 40 Public Services were discarded because they have a very high hierarchy (e.g., a ministry). Finally, two public services involved in the evaluation, the Chilean budget office and the public procurement office, were also discarded. This leaves a total of 184 Public Services considered in the evaluation. At the buyers level, these 184 Public Services of the State comprise a total of 8,373 users who have made purchases between July 2019 and July 2020.

Experimental Design. The experiment is run in two phases. In phase 1 we implement the γ treatments only, which goes from June to December 2020 (see Table 1). Then, from January 2021 onward (Phase 2), we introduce the μ treatment (see Table 2). The unit of randomization is the PS.

Out of 184 services, in phase 1 (June - December 2020) we randomly assign 61 PS to T1 (“Public”; 2,887 buyers), 62 PS to T2 (“Private”; 2,916 buyers), and 61 PS to the control group (2,570 buyers), and we stratify the randomization by ministry (higher-level organization) to which the PS belongs, and for whether the PS suffered a cut on the assigned budget or not in the 6 months before June 2020. Then, in phase 2 (January - December 2021), T1 and T2 groups are informed about the the New Budget Evaluation Rule to be imposed by DIPRES, while Control group is not informed at all. Finally, within T1 and T2 groups, 1/4 of buyers are randomly assigned a placebo message instead of the report, so that we can test for Hawthorne effects.

⁷This is the second phase of the experiment. Some details about treatment implementation are still under discussion. For instance, the cutoff defining “high” overspending has not yet been defined. How the services will be informed is not defined either.

Power Calculation. The statistical power to identify a given effect size will depend on the model specification, and in particular whether we use buyer or PS level data, since sample sizes vary widely between the two cases. As detailed in Section 5, our preferred specification when using buyer level data is a cross-section regression of the average overspending in the post treatment period against the treatment dummies and a set of pre-treatment covariates. Instead, in the case of PS level data, our preferred specification exploits multiple pre-periods of data and thus estimate the treatment effects through a panel level regression. We will thus present two power analyses, one for each type of specification.

For the case of buyer-level analysis, we estimate MDEs assuming $\alpha = 0.05$, $\sigma^2 = 1$, $power = 0.8$, and a take-up rate of 95%. On γ treatment, we refer to take-up rate as the proportion of buyers in treatment PSs whose bosses read the information contained in the reports. On μ treatment, we refer to the take-up rate as the proportion of buyers in treatment PSs whose bosses are effectively acknowledged about the new DIPRES rule. Using pre-treatment data on overspending at the buyer level, we estimate an intra-cluster (i.e., intra-service) correlation of 0.0044. Assuming no adjustment for pre-treatment behavior and one data point per buyer at follow-up, the minimum detectable effect (MDE) for γ treatment effects is 0.076 SD when comparing the full sample of treatment units (either in $T1$ or $T2$ groups) against the control group; the MDE is 0.087 SD when comparing $T1$ group against the C group; the MDE is 0.087 SD when comparing $T2$ group against the C group; and the MDE is 0.085 SD when comparing $T1$ group against $T2$ group. Then, for μ treatment, note that this is intended to both $T1$ and $T2$ groups, so the MDE is, accordingly, 0.076 SD.

For the case of PS-level analysis, we aggregate the information about overspending at the month-service level and exploit time series variation (see details in Section 5). For estimating γ effects, we take May 2019 - May 2020 as pre-treatment monthly-periods, and June - December 2020 as post-treatment monthly-periods. Then, for estimating μ effects, we take January - December 2020 as pre-treatment monthly-periods data and January - December 2021 as post-treatment monthly-periods data. Both pre-treatment and post-treatment multiple periods will play a role in increasing the statistical power of the experiment. We estimate MDEs assuming $\alpha = 0.05$, and $\sigma^2 = 1$. Using 12 waves of monthly pre-treatment data on average overspending per service, we estimate an autocorrelation coefficient of 0.07 (order 1). We assume that for 7 post-treatment monthly waves the between-waves correlation will be 0.20— a bit large than baseline correlation due to the treatment effect. Hence, for γ treatment effects, the statistical power to identify a 0.1 SD effect size is 0.86 when comparing the full sample of treatment units (either in $T1$ or $T2$ groups) against the control group; it is 0.76 when comparing $T1$ group against the C group; it is 0.76 when comparing $T2$ group against the C group; and it is 0.76 when comparing $T1$ group against the $T2$ group. Then, for μ treatment, note that this is intended to both $T1$ and $T2$ groups, so the statistical power to identify

an effect size equal to 0.1 SD is, accordingly, 0.86.

Table 1: Phase 1: γ treatments

Level of Organization	Treatment type	Treatment 1	Treatment 2	Control
Top (N = 180 PSs)	Executive Director (ED)	N = 61	N = 62	N = 61
	Finance Director (DAF)	N = 61	N = 62	N = 61
	<i>ED and DAF receive...?</i>			
	Course (June-August 2020)	Yes	Yes	No
	Info on PS performance (Sept 2020 - Dec 2021)	Yes	Yes	No
	Info on Buyers performance (Sept 2020 - Dec 2021)	Yes	No	No
Bottom (N = 8,373)	Buyers	N = 2,165 (3/4)	N = 2,187 (3/4)	N = 2,570
	<i>Buyers receive...?</i>			
	Info on PS performance (Sept 2020 - Dec 2021)	Yes	Yes	No
	Info on own performance (Sept 2020 - Dec 2021)	Yes	Yes	No
	Message that info. is public	Yes	No	No
	Buyers	N = 722 (1/4)	N = 729 (1/4)	
	<i>Buyers receive...?</i>			
	Placebo Treatment (Sept 2020 - Dec 2021)	Yes	Yes	
	Total Buyers per treatment arm	2,887	2,916	2,570

Table 2: Phase 2: μ treatment

Level of Organization	Treatment type	Treatment 1	Treatment 2	Control
Top (N = 180 PSs)	Executive Director (ED)	N = 61	N = 62	N = 61
	Finance Director (DAF)	N = 61	N = 62	N = 61
	<i>ED and DAF receive...?</i>			
	Information from DIPRES about New Budget Evaluation Rule (January 2021)	Yes	Yes	No
Bottom (N = 8,373)	Buyers	N = 2,887	N = 2,916	N = 2,570
	<i>Buyers receive...?</i>			
	Information from DIPRES about New Budget Evaluation Rule (January 2021)	Yes	Yes	No

4 Measurement

Efficiency. First, we define p , overspending, as the potential savings that could be obtained if the purchased product had been replaced by another “comparable” product at a lower, “reference price”. This is particular to standardized products (e.g., toilet paper or printing paper). A comparable product is understood as a substitute or alternative product that serves the same function as the purchased product. Overspending is measured based on a “reference price”, which is the lowest available price among the group of products that were comparable to the one purchased during the specific date on which the product was purchased. Specifically:

$$\text{Overspending} = (\text{Purchased price} - \text{Reference Price}) \times \text{Purchased Units} \quad (5)$$

Overspending is arguably the main outcome of the study. A second measure associated with efficiency is the percentage of purchases made using each purchase procedure available among four different options: direct purchase (“Trato Directo”), competitive bidding for large amounts (“Licitaciones”), competitive bidding for low amounts (“Compra Agil”), and bidings through pre-specified product catalogs (“Convenio Marco”). Our prior here is that “Trato Directo” purchases generate larger overspending compared to the resting options, and that the most efficient purchasing procedure is “Convenio Marco”.

A third measure is associated with requests to transfer part of the budget from a particular item to another. We hypothesize that requests for budget transfers are a signal that Services are reacting negatively to the disclosure of information provided by DIPRES, i.e., instead of reducing overspending on public purchases related to Support Expenditure, they move the spending to Non-Support budget lines so that DIPRES cannot monitor their purchasing behavior. We explore two margins:

- Extensive margin: If the PS requests to move non executed budget destined for Support-type expenditure to Non-Support type expenditure, e.g. move budget destined to consume coffee or printing papers to (support-type) to budget lines destine to hire personnel or training sessions.
- Intensive margin: Amount of money requested to moved from one line of the budget to another.

Beliefs. We implement an online baseline survey to bosses and buyers to elicit their beliefs about the determinants of efficiency in public spending, how beneficial is efficiency (γ), and how costly is overspending (μ). The baseline survey was implemented during the period February - May 2020, and follow up surveys are planned to be implemented during 2021 so that we can track the evolution of beliefs over time. Based on the information gathered through the surveys, we build the following outcome indicators, which are organized in families of outcomes:

- Beliefs about budget's under-execution:
 - (i) Dummies on whether the individual believes that under-execution of the public budget assigned to the PS in year t implies that the assigned budget in period $t + 1$ diminishes, increase, or does not change.
 - (ii) Dummies on whether the individual believes that under-execution of the public budget assigned to the PS in year t , when the PS shows low overspending, implies that the assigned budget in period $t + 1$ diminishes, increase, or does not change.
 - (iii) Dummies on the degree of agreement with the idea that the assigned budget to the PS in period $t + 1$ is negatively affected by the level of under-execution of the budget assigned to the PS in year t ("strongly disagree"; "disagree"; "neither agree nor disagree"; "agree"; "strongly agree").
 - (iv) Dummies on the degree of agreement with the idea that the assigned budget to the PS in period $t + 1$ is negatively affected by the level of under-execution of the budget assigned to the PS in year t , even though the PS shows low overspending ("strongly disagree"; "disagree"; "neither agree nor disagree"; "agree"; "strongly agree").
- Beliefs about purchasing behavior:
 - (i) Dummies on the degree of agreement with the idea that PSs typically make public purchases at higher prices in order to avoid under-execution of the assigned budget ("strongly disagree"; "disagree"; "neither agree nor disagree"; "agree"; "strongly agree").
 - (ii) Dummies on the degree of agreement with the idea that PSs are pressured to fully spend the assigned budget ("strongly disagree"; "disagree"; "neither agree nor disagree"; "agree"; "strongly agree").
- Beliefs about budget assignment:
 - (i) Dummies on the degree of agreement with the idea that there are no clear rules about how is public budget assigned to PSs ("strongly disagree"; "disagree"; "neither agree nor disagree"; "agree"; "strongly agree").
 - (ii) Dummies on the belief about the level of importance that DIPRES attribute to the level of overspending shown by the PS when evaluating the budget to be assigned to the PS in $t + 1$ (7-degrees scale, being "1" the minimum level of importance and "7" the maximum level of importance).
- Beliefs about monitoring of public spending:
 - (i) Dummies on the belief about the level of monitoring of overspending that DIPRES exert over the PSs (7-degrees scale, being "1" the lowest level of monitoring and "7" the largest level of monitoring).

- Beliefs about costs associated to high levels of overspending:
 - (i) Dummies on the belief about the level of costs (monetary or reputational) associated to high levels of overspending (7-degrees scale, being "1" the lowest level of costs "7" the largest level of costs).
- Willingness to buy at lower prices (at the cost of lower quality) if overspending is monitored
 - (i) Dummies on whether the individual is willing to buy a cheaper product (at the cost of lower quality) if the proportion of purchases that are audited within ChileCompra system is 0.1%, 1%, 5%, 10%, 15%, 20%, 25%, or 30%.

5 Empirical Analysis

The unit of analysis is each purchase made by a buyer. Buyers are identified through a unique ID and can be linked to a unique PS. Our model from Section 2 states that, in equilibrium, the optimal overspending is given by:

$$p = \frac{\gamma}{\mu + s} + \omega(1 - s)$$

The last version of the e-commerce platform <https://www.mercadopublico.cl> is arguably of "high quality", i.e., of easy use for purchasing products (gadgets, surfing tools, graphic presentation of alternatives). We thus reasonably assume that $s \approx 1$, and derive an empirical counterpart by parameterizing the first order condition for p as:

$$\ln(p_i) = \alpha + \beta_1 \ln(\gamma_i) + \beta_2 \ln(\mu_i) + \epsilon_i \quad (6)$$

where i indexes a buyer. Our experiment is designed to estimate β_1 , the association between purchasing efficiency and the degree to which the agent believes that efficiency does not matter for the principal, and β_2 , the association between purchasing efficiency and the degree to which the agent believes that being inefficient is punishable. The experiment is run in two phases: Phase 1 (June - December 2020) and Phase 2 (January - December 2021). The random assignment of γ treatments (either T1 or T2) in Phase 1 allows us to pin down β_1 , while the random assignment of μ treatment in Phase 2 pins down β_2 .

Identification of β_1 . To identify β_1 in 6, we estimate linear regression models at both the buyer and PS levels.

Regression analysis at the buyer level. To reduce noise from the time series of monthly purchases of buyers, in the regression analysis we will pool (average) all purchases for each buyer for the period June - December 2020 and estimate the following regression as a cross section:

$$\ln(p_{ij}) = \alpha + \beta_{11}T1_j + \beta_{12}T2_j + X'_{ij}\gamma + \epsilon_{ij} \quad (7)$$

where i indexes buyer, and j indexes PS. $T1_j$ is a dummy that equals 1 if the buyer works for a PS assigned to the "Public Treatment", and zero otherwise. $T2_j$ is a dummy that equals 1 if the buyer works for a PS assigned to the "Private Treatment", and zero otherwise. X_{ij} is a vector of baseline control variables that include sampling estratum, the outcome at baseline, characteristics of the service, characteristics of the buyer, among other set of variables captured by the baseline survey. ϵ_{ij} is the error term that is allowed to be correlated across buyers within the same PS. We will cluster standard errors at the PS level and will use randomization inference to test the null hypothesis of no treatment effects. Note that in order to identify the parameters of the model, we cannot control for either buyer or PS fixed effects as these expand the same subspace than the treatment dummies, which are assigned at the PS level.

Importantly, the treatment may affect the decision of whether using the e-commerce platform or not for making public purchases on the part of the buyer. Hence, we will also estimate a version of (7) that considers sample selection bias when we use overspending derived specifically from purchases made at the e-commerce platform (instead of alternative mechanisms).

Regression analysis at the PS level. At the service level we will estimate the same regression in (7) averaging out outcomes of interest at the service level. In particular, we will aggregate purchases over time at the service level and exploit time series variation at both pre-treatment periods (May 2019 - May 2020) and post-treatment periods (June - December 2020). We will group the data monthly, bi-monthly or quarterly depending on the degree of noise in the time series data. The most flexible regression that we will estimate to take advantage of the panel structure is an event-study like regression of the following form:

$$\ln(p_{j\tau}) = \sum_{\tau=-k}^K \beta_{11,\tau} D_{\tau} T1_j + \sum_{\tau=-k}^K \beta_{21,\tau} D_{\tau} T2_j + W'_{j\tau} \gamma + \phi_{\tau} + \phi_j + \epsilon_{j\tau} \quad (8)$$

where j indexes PS, and τ indexes time. D_{τ} is a dummy variable that equals to one when the period takes a particular value for pre and post treatment period for $\tau = -k, \dots, -1, 0, 1, \dots, K$. We omit D_0 , the period before the start of the intervention so that all coefficients are read as the

average difference between treated and untreated units in a specific τ with respect to the period $\tau = 0$. $T1_j$ is a dummy that equals 1 if the buyer works for a PS assigned to the "Public Treatment", and zero otherwise. $T2_j$ is a dummy that equals 1 if the buyer works for a PS assigned to the "Private Treatment", and zero otherwise. $W_{j\tau}$ includes sampling stratum, characteristics of the service, outcome at baseline, baseline covariates as well as baseline outcomes interacted by time trends to allow for differential time trends for each service. ϕ_τ captures time fixed effects while ϕ_j are PS fixed effects. $\epsilon_{j\tau}$ is the error term. We will cluster the standard errors at the PS level and will use randomization inference to test the null hypothesis of no treatment effects.

Regarding the interpretation of the parameters, we have that:

- β_{11} at each τ identifies the effect of providing "public information" about performance on overspending (relative to not receiving any information), conditional in that the new DIPRES rule about budget evaluation has not been implemented (remember that we are just using pre-December 2020 data).
- β_{12} at each τ identifies the effect of providing "private information" about performance on overspending (relative to not receiving any information), conditional in that the new DIPRES rule about budget evaluation has not been implemented.
- $\beta_{11} - \beta_{12}$ at each τ identifies the differential effect of providing "public" versus "private" information about performance on overspending, conditional in that the new DIPRES rule about budget evaluation has not been implemented.

Finally, we will also estimate a version of (7) where we aggregate the data at the service level to estimate a cross section regression.

Identification of β_2 . Next, to identify β_2 in (6), we will follow the same specification than regressions (7) and (8) but considering post-treatment data as that of January - December 2021, i.e., after the implementation of the μ treatment. For instance, regarding the interpretation of the parameters for the event-study like regression analysis (equation 8), we have that:

- β_{21} at each τ identifies the effect of informing the new DIPRES rule about budget evaluation on overspending (relative to not receiving any information), conditional on had been provided "public information" about performance in Phase 1.
- β_{22} at each τ identifies the effect of informing the new DIPRES rule about budget evaluation on overspending (relative to not receiving any information), conditional on had been provided "private information" about performance in Phase 1.
- $\beta_{21} - \beta_{22}$ at each τ identifies the differential effect of informing the new DIPRES rule about

budget evaluation on overspending, conditional on had been provided “public” instead of “private” information about performance in Phase 1.

Effects on beliefs about overspending. In order to test for the effects on beliefs, we will replicate the same estimation strategy but using beliefs indicators as the dependent variable. These will be cross sectional regressions at the PS and buyer level.

Hawthorne Effects. In order to test for the presence of Hawthorne effects of the information treatment at the buyer level, we will replicate the same estimation strategy in (7), but will add two additional dummies to the model. One is a dummy that equals 1 if the buyer works for a PS assigned to T1 but was assigned to the Placebo treatment (and zero otherwise), and the other is a dummy that equals 1 if the buyer works for a PS assigned to T2 but was assigned to the Placebo treatment (and zero otherwise). More specifically, the regression model follows the same structure, but adds the aforementioned dummies as:

$$\ln(p_{ij}) = \alpha + \beta_{11}T1_j + \beta_{12}T2_j + \beta'_{11}T1_j^P + \beta'_{12}T2_j^P + X'_{ij}\gamma + \epsilon_{ij} \quad (9)$$

The model is described for Phase 1, but follows the same structure for identifying Phase 2 parameters. Regarding the interpretation of the parameters, we have that:

- α is the control group mean of overspending.
- β'_{11} identifies the effect of working in a PS whose boss received “public information” about performance on overspending (relative to not receiving any information), but the buyer did not receive any information on performance but just received a message indicating that his overspending is being monitored by DIPRES.
- β'_{12} identifies the effect of working in a PS whose boss received “private information” about performance on overspending (relative to not receiving any information), but the buyer did not receive any information on performance but just received a message indicating that his overspending is being monitored by DIPRES.
- $\beta_{11} - \beta'_{11}$ identifies the Hawthorne effect in buyers working in PS assigned to T1
- $\beta_{12} - \beta'_{12}$ identifies the Hawthorne effect in buyers working in PS assigned to T2

Heterogeneous Effects. We will further estimate heterogeneous treatment effects across the following families of potential mediators⁸:

⁸Some of these dimensions corresponds to data that may or may not be collected in practice, and thus the estimation of heterogeneous effects will depend on the effective availability of the data.

- Organizational characteristics of the PS:
 - (i) Number of employees working in the PS;
 - (ii) Whether the PS has decentralized offices in other regions of the country
 - (iii) Number of offices attached to the PS
- Boss' human capital:
 - (i) Years of education
 - (ii) Graduate degree
 - (iii) Years of experience in the public sector
- Buyers' human capital:
 - (i) Grade obtained in the ChileCompra annual test designed to measure the ability of buyers to understand the public procurement process, navigate the platform, and be efficient.
 - (ii) Whether the buyer approved the ChileCompra annual test or not
- Previous Performance:
 - (i) Level of overspending in the previous year
 - (ii) Proportion of purchases made by "Trato Directo" in the previous year.
 - (iii) If the PS requested to move non executed budget destined for Support-type expenditure to non-Support type expenditure in the previous year
- Beliefs:
 - (i) Beliefs about budget's under-execution
 - (ii) Beliefs about purchasing behavior
 - (iii) Beliefs about budget assignment
 - (iv) Beliefs about monitoring of public spending
 - (v) Beliefs about costs associated to high levels of overspending
 - (vi) Willingness to buy at lower prices (at the cost of lower quality) if overspending is monitored.

Multiple Hypothesis Testing. In studies with multiple outcomes, a few statistically significant effects may emerge simply by chance. The larger the number of tests, the greater the likelihood of a type I error. We reduce the risk of false positives deriving from an examination of large numbers of individual outcomes by using Holm (1979) Family-Wise Error Rates (FWER) to adjust the

p -values of the individual tests as a function of the number of outcome variables within each family of outcomes. For instance, as described in section 4, we pre-define four outcomes in the family "Beliefs about budget's under-execution", hence for that family of outcomes we will test four null hypotheses. In particular, as dictated by Holm (1979), the marginal p -values associated to each of the four null hypotheses will be ordered from smallest to largest: $\hat{p}_{n,(1)} \leq \hat{p}_{n,(2)} \leq \hat{p}_{n,(3)} \leq \hat{p}_{n,(4)}$ with their corresponding null hypotheses labeled accordingly: $H(1), H(2), H(3), H(4)$. Then, $H(s)$ is rejected if and only if $\hat{p}_{n,(j)} \leq \frac{\alpha}{S-j+1}$ for $j = 1, \dots, 4$. In other words, the method starts with testing the most significant hypothesis by comparing its p -value to α/S , just as the Bonferroni method. If the hypothesis is rejected, then the method moves on to the second most significant hypothesis by comparing its p -value to $\alpha/(S-1)$, and so on, until the procedure comes to a stop. In all cases, we compute Holmes FWER corrections at the 10% level of statistical significance.

A Appendix

Figure A1: Authorization for accessing Chile Compra data

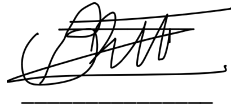
ChileCompra
Ministerio de Hacienda
Gobierno de Chile
Monjitas 392
Santiago - Chile

September, 15th, 2020

To whom it may concern,

This letter is to state that professors Pablo Celhay (PUC Chile), Paul Gertler (UC Berkeley), Marcelo Olivares (Universidad de Chile), and Raimundo Undurraga (Universidad de Chile) are authorized by ChileCompra to use public procurement system data to estimate the effects of a series of information treatments designed by the Chilean Government (DIPRES) aimed at improving the efficiency in public spending. This is daily data comprising several years. We authorize these researchers to use the data for the aforementioned purposes from October 15, 2020, onward.

Sincerely,

A handwritten signature in black ink, appearing to be 'GB', is written over a horizontal line.

Guillermo Burr
Head of Research Unit
Direccion Chilecompra

EXAMPLE OF REPORT SENT TO **BUYERS IN T1 ("PUBLIC")** – SEE NEXT PAGE

Informe Mensual de Sobregasto

Nombre Servicio Público

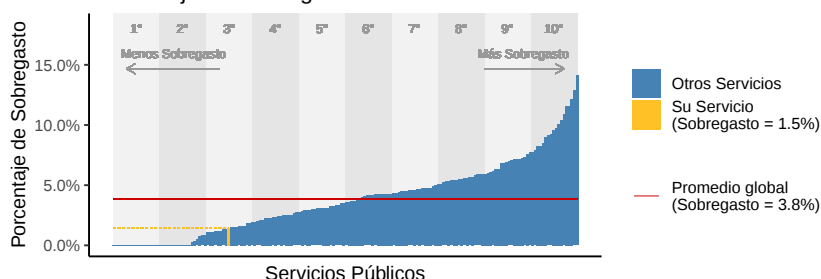
Octubre, 2020

Estimado Nombre Apellido,

A continuación le presentamos información relevante sobre el estado del gasto ejecutado por el Servicio en el cual usted se desempeña, para el período Septiembre 2019 - Septiembre 2020. El reporte incluye un análisis de compras a nivel agregado, como también desagregado para cada usuario que ejecuta compras dentro de la plataforma de Mercado Público. Le informamos que **su promedio de Sobregasto como usuario es de un 7%.** Usted se encuentra entre el 25% de los usuarios de su Servicio con mayor Sobregasto. Para su conocimiento, **la información contenida en este informe ha sido enviada a las Autoridades de su Servicio.** Usted puede realizar cualquier consulta relativa a este informe a gastoeiciente@dipres.gob.cl.

Recuerde que la planificación de los gastos que realiza para su Servicio le permite hacer compras más eficientes, lo que puede llevar a ahorros significativos. Para este fin, los/as usuarios/as de ChileCompra tienen a su disposición el uso de distintos procedimientos de compra como Convenio Marco, Compra Ágil o Licitaciones, los cuales permiten hacer compras más planificadas que aquellas realizadas por otras alternativas de compra, como Trato Directo.

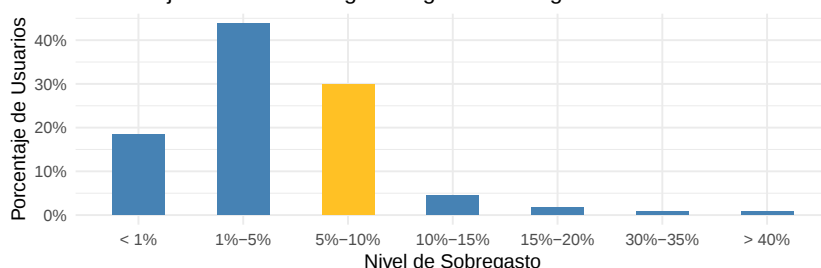
Porcentaje de Sobregasto a nivel de Servicio



Este gráfico muestra el Sobregasto realizado por cada Servicio Público del Estado, ordenados de menor a mayor Sobregasto (ver definición en Anexo). En **amarillo** se indica la posición relativa de su Servicio ¹.

El promedio de Sobregasto en su Servicio equivale a 1.5%, lo que implica que se encuentra entre los 50 Servicios con menor Sobregasto, de un total de 184 Servicios (se excluyen Servicios Autónomos y Subsecretarías). Sólo a modo de ejemplo, si tomamos en consideración únicamente compras realizadas vía Convenio Marco, el Sobregasto en su Servicio asciende aproximadamente a \$200 millones de pesos en este período.

Porcentaje de usuarios según rango de Sobregasto

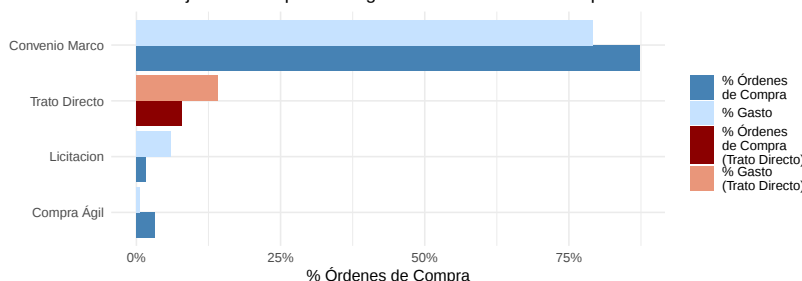


Este gráfico muestra el porcentaje de usuarios/as de ChileCompra pertenecientes a su Servicio según su nivel de Sobregasto. Por ejemplo, un 18% de los usuarios dentro del Servicio poseen un nivel de Sobregasto menor a 1%.

La barra **amarilla** indica al rango en donde Usted se ubica, relativo al resto de los usuarios de su Servicio. Su promedio de Sobregasto como usuario es de un 7%

En promedio, los usuarios de su Servicio han realizado un nivel de Sobregasto de un 5.1%.

Porcentaje de Participación según Procedimiento de compra.



Este gráfico muestra cómo se distribuye sus compras, según el tipo de procedimiento de compra.

Usted realizó el 87.3% de sus compras mediante Convenio Marco, lo cual corresponde a un 79.2% del gasto total que ha efectuado.

Recuerde preferir procedimientos de compra, como Convenio Marco, Licitaciones y Compra Ágil, que permiten planificar de mejor forma el gasto y obtener mejores precios.

Recuerde que haciendo búsquedas detenidas y planificando sus compras puede reducir su Sobregasto.

¹Para más información sobre buenas prácticas en la ejecución de compras públicas, DIPRES ofrece un curso online, al cual Usted puede acceder en el siguiente [link](#). El acceso al curso es individualizado. En caso que Usted desee que otras personas dentro de su Servicio accedan al curso, por favor escribir a gastoeiciente@dipres.gob.cl.

Anexo

Cálculo de Sobregasto

El Sobregasto es una medida de eficiencia para la compra de un producto estandarizado, es decir, para un producto que tiene atributos comparables a otros productos dentro del mercado. El Sobregasto asociado a la compra de un producto mide cuánto pudo haber sido el ahorro asociado a la compra si se hubiese comprado a un precio de referencia. Este precio de referencia corresponde al menor precio entre aquellos productos comparables y disponibles en la región de compra, al momento de ejecutar la compra. Para cada compra realizada por un usuario, existe un Monto de Sobregasto asociado, y un Porcentaje de Sobregasto asociado.

Suponga la compra de un producto en una fecha determinada. Al momento de realizarla, existe una diversidad de productos comparables que satisfacen la necesidad del comprador, cuya disponibilidad varía según la región de origen. Como señalamos anteriormente, el precio de referencia corresponde al menor precio entre aquellos productos comparables y disponibles en la región de compra. El Monto de Sobregasto en esta compra será entonces:

$$\text{Monto de Sobregasto} = (\text{Precio de Compra} - \text{Precio de Referencia}) \times \text{Cantidad de Compra}$$

Un usuario puede ejecutar múltiples compras en un período determinado, y cada compra tendrá asociada un Monto de Sobregasto distinto. Para obtener una métrica del Porcentaje de Sobregasto en las compras realizadas por un usuario, sumamos los Montos de Sobregasto asociados a cada compra, y dividimos por el gasto total ejecutado en esas compras.

Ejemplo: Supongamos que un usuario realiza dos compras en un período determinado. La primera es una resma de papel de impresora a 2100 CLP, cuyo precio de referencia es 1800 CLP. El Monto de Sobregasto asociado a esa compra será de $300 \times 1 = 300$ CLP. La segunda compra corresponde a 50 mascarillas desechables, a 190 CLP cada una, siendo su precio de referencia 130 CLP. El Monto de Sobregasto asociado a esa compra será de $60 \times 50 = 3000$ CLP. Luego, el porcentaje de Sobregasto asociado a las compras realizadas por el usuario para dicho período será calculado como:

$$\% \text{Sobregasto} = \left(100 \times \frac{300 + 3000}{1800 + 130 \times 50} \right) \% = 39.7\%$$

Luego, si queremos calcular el Porcentaje de Sobregasto a nivel de Servicio, se suman todos los montos de Sobregasto asociados a todas las compras realizadas por todos los usuarios del Servicio, y se divide por el gasto total asociado a dichas compras. Nótese que no todas las compras realizadas por el Servicio son atribuibles a productos estandarizables, y por lo tanto los resultados presentados en este informe pueden no corresponder a la totalidad de las compras realizadas por el Servicio en el período analizado.

En relación al proceso de cálculo del sobregasto para cada usuario. Cada usuario de ChileCompra tiene un código identificador de usuario que registra cada una de las compras realizadas por el usuario dentro de Mercado Público. Luego, para producir el reporte de sobregasto correspondiente a un usuario determinado, utilizamos la información de todas las compras asociadas a su código identificador. A su vez, el código identificador del usuario tiene asociado el correo electrónico del usuario, lo cual nos permite hacer llegar el reporte a cada usuario.

Recomendaciones

- Recuerde que usted puede utilizar Compra Ágil como alternativa a Trato Directo. De esta forma, podrá obtener una mayor oferta de productos y proveedores, accediendo a menores precios.
- Al realizar una compra a través de Compra Ágil o Trato Directo, detalle claramente el producto que desea comprar. Para esto le sugerimos buscar el producto en otros catálogos e identificar sus características relevantes de modo de especificarlas en su solicitud. De esta forma, se asegurará de recibir una amplia oferta de productos que satisfagan su necesidad de compra.
- Si desea reducir aun más el Sobregasto puede planificar sus compras y agruparlas en una sola orden de compra a través del catálogo electrónico de Convenio Marco, la cual podría ofrecer precios unitarios menores.

EXAMPLE OF REPORT SENT TO **BOSSES IN T1 ("PUBLIC")** – SEE NEXT PAGE

Informe Mensual de Sobregasto

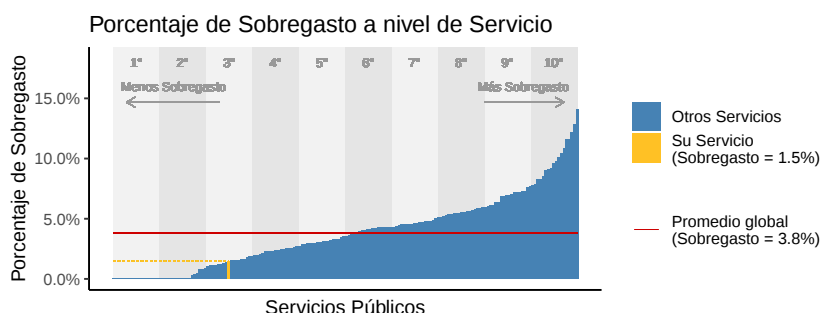
Nombre Servicio Público

Octubre, 2020

Estimado Nombre Apellido,

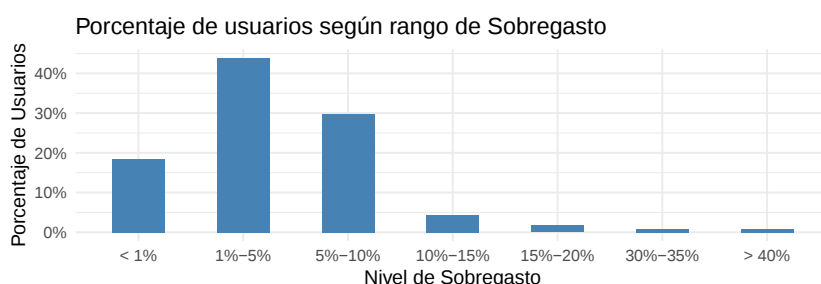
A continuación le presentamos información relevante sobre el estado del gasto público ejecutado por el Servicio en el cual usted se desempeña, para el período Septiembre 2019 - Septiembre 2020. El informe incluye un análisis de compras a nivel agregado de su Servicio, como también desagregado para cada usuario que ejecuta compras dentro de la plataforma de Mercado Público, de modo de facilitar la gestión del Sobregasto dentro de su Servicio. **Su Servicio se encuentra entre los 50 Servicios con menor Sobregasto**, de un total de 184 Servicios (se excluyen Servicios Autónomos y Subsecretarías). Usted puede realizar cualquier consulta relativa a este informe a gastoeficiente@dipres.gob.cl.

Recuerde que la planificación del gasto en su Servicio le permite realizar compras más eficientes, lo que puede llevar a ahorros significativos. Para este fin, los/as usuarios/as de ChileCompra tienen a su disposición el uso de distintos procedimientos de compra como Convenio Marco, Compra Ágil o Licitaciones, los cuales permiten hacer compras más planificadas que aquellas realizadas por otras alternativas de compra, como Trato Directo.



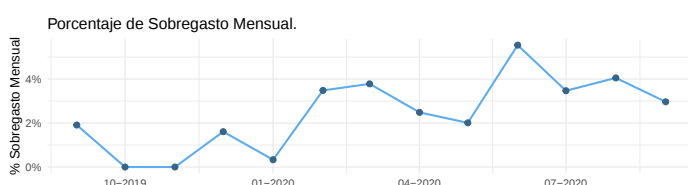
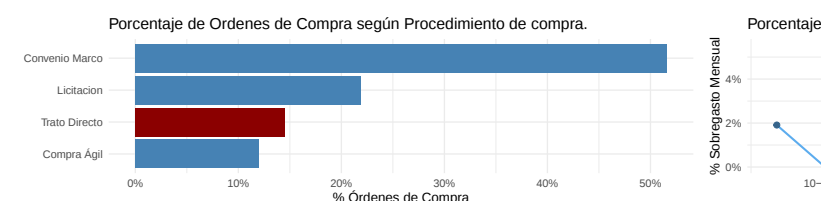
Este gráfico muestra el Sobregasto realizado por cada Servicio Público del Estado, ordenados de menor a mayor Sobregasto (ver definición en Anexo B). En **amarillo** se indica la posición relativa de su Servicio ¹.

El promedio de Sobregasto en su Servicio equivale a 1.5%, lo que implica que se encuentra entre los 50 Servicios con menor Sobregasto, de un total de 184 Servicios (se excluyen Servicios Autónomos y Subsecretarías). Sólo a modo de ejemplo, si tomamos en consideración únicamente compras realizadas vía Convenio Marco, el Sobregasto en su Servicio asciende aproximadamente a \$200 millones de pesos en este período.



Este gráfico muestra el porcentaje de usuarios/as de ChileCompra pertenecientes a su Servicio según su nivel de Sobregasto. Por ejemplo, un 18% de los usuarios dentro del Servicio poseen un nivel de Sobregasto menor a 1%.

En promedio, los usuarios de su Servicio han realizado un nivel de Sobregasto de un 5.1%. **Para que su Servicio pueda mejorar la eficiencia en gasto público, puede ser importante que usted le recuerde a los usuarios de su Servicio sobre la importancia de reducir lo más posible el Sobregasto en las compras.**



El gráfico a la izquierda muestra cómo se distribuye el total de compras por tipo de procedimiento. Su Servicio realiza el 51.6% de sus compras mediante Convenio Marco. **Recuerde preferir procedimientos de compra, como Convenio Marco, Licitaciones y Compra Ágil, los cuales permiten planificar de mejor forma el gasto y obtener mejores precios.** El gráfico a la derecha muestra cómo ha evolucionado el Sobregasto mensual de su Servicio en el período reportado.

Recuerde que haciendo búsquedas detenidas y planificando las compras puede reducir su Sobregasto.

En el Anexo A de este informe se listan cada uno de los usuarios activos de su Servicio, con su respectivo nivel de Sobregasto. Le informamos que DIPRES ha enviado a cada uno de ellos un reporte similar a este con información individualizada de su Sobregasto. Le sugerimos hacer un seguimiento con cada uno de ellos, y fomentar la planificación de las Compras Públicas dentro de su Servicio.

¹Para más información sobre buenas prácticas en la ejecución de compras públicas, DIPRES ofrece un curso online, al cual Usted puede acceder en el siguiente [link](#). El acceso al curso es individualizado. En caso que Usted desee que otras personas dentro de su Servicio accedan al curso, por favor escribir a gastoeficiente@dipres.gob.cl.

Anexo A

A continuación se muestra la lista de usuarios activos de su Servicio. La lista especifica el nivel de Sobregasto de cada usuario y el porcentaje del gasto del Servicio que es atribuible a las compras analizadas para cada usuario. Los usuarios se ordenan según el porcentaje de Sobregasto, de modo de facilitar la identificación de aquellos usuarios que requieren con más urgencia un cambio en su comportamiento de compra.

Nombre	Email	% Sobregasto	% Gasto
		> 40%	< 0.1%
		30%-35%	< 0.1%
		15%-20%	0.1%
		15%-20%	< 0.1%
		10%-15%	0.1%
		10%-15%	0.5%
		10%-15%	< 0.1%
		10%-15%	0.3%
		10%-15%	0.6%
		5%-10%	1.1%
		5%-10%	0.4%
		5%-10%	0.1%
		5%-10%	0.2%
		5%-10%	0.3%
		5%-10%	0.7%
		5%-10%	0.4%
		5%-10%	0.2%
		5%-10%	0.9%
		5%-10%	0.2%
		5%-10%	0.2%
		5%-10%	0.5%
		5%-10%	2.9%
		5%-10%	0.4%
		5%-10%	0.4%
		5%-10%	< 0.1%
		5%-10%	0.3%
		5%-10%	0.3%
		5%-10%	< 0.1%
		5%-10%	0.5%
		5%-10%	0.5%
		5%-10%	0.1%
		5%-10%	0.1%
		5%-10%	< 0.1%
		5%-10%	< 0.1%
		5%-10%	0.1%
		5%-10%	< 0.1%
		5%-10%	0.2%
		5%-10%	0.1%
		5%-10%	0.4%
		5%-10%	3.9%
		5%-10%	0.2%
		5%-10%	0.2%
		5%-10%	0.5%
		1%-5%	3.6%
		1%-5%	0.4%
		1%-5%	0.6%
		1%-5%	1.6%
		1%-5%	7.1%
		1%-5%	3.8%
		1%-5%	3.5%
		1%-5%	0.1%
		1%-5%	0.5%

(continuación)

Nombre	Email	% Sobregasto	% Gasto
		1%-5%	0.2%
		1%-5%	0.6%
		1%-5%	0.3%
		1%-5%	0.1%
		1%-5%	0.8%
		1%-5%	0.5%
		1%-5%	0.6%
		1%-5%	0.1%
		1%-5%	0.9%
		1%-5%	0.1%
		1%-5%	0.4%
		1%-5%	1.1%
		1%-5%	2.4%
		1%-5%	< 0.1%
		1%-5%	0.1%
		1%-5%	0.5%
		1%-5%	5.4%
		1%-5%	2.3%
		1%-5%	0.2%
		1%-5%	0.3%
		1%-5%	0.1%
		1%-5%	0.1%
		1%-5%	0.1%
		1%-5%	0.4%
		1%-5%	0.3%
		1%-5%	< 0.1%
		1%-5%	5.6%
		1%-5%	< 0.1%
		1%-5%	1.1%
		1%-5%	1.5%
		1%-5%	0.1%
		1%-5%	0.3%
		1%-5%	0.5%
		1%-5%	< 0.1%
		1%-5%	0.9%
		1%-5%	< 0.1%
		1%-5%	0.1%
		1%-5%	0.9%
		1%-5%	< 0.1%
		1%-5%	0.2%
		1%-5%	0.5%
		< 1%	0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	< 0.1%
		< 1%	0.1%
		< 1%	< 0.1%
		< 1%	7.3%

(continuación)

Nombre	Email	% Sobregasto	% Gasto
		< 1%	< 0.1%
		< 1%	14.9%
		< 1%	< 0.1%
		< 1%	0.2%
		< 1%	< 0.1%
		< 1%	6.5%
			100%

En Anexo B Usted puede encontrar la definición de %Sobregasto. En relación a %Gasto, éste es el porcentaje aproximado del gasto analizado del Servicio que es atribuible a las compras realizadas por el usuario.

Anexo B

Cálculo de Sobregasto

El Sobregasto es una medida de eficiencia para la compra de un producto estandarizado, es decir, para un producto que tiene atributos comparables a otros productos dentro del mercado. El Sobregasto asociado a la compra de un producto mide cuánto pudo haber sido el ahorro asociado a la compra si se hubiese comprado a un precio de referencia. Este precio de referencia corresponde al menor precio entre aquellos productos comparables y disponibles en la región de compra, al momento de ejecutar la compra. Para cada compra realizada por un usuario, existe un Monto de Sobregasto asociado, y un Porcentaje de Sobregasto asociado.

Suponga la compra de un producto en una fecha determinada. Al momento de realizarla, existe una diversidad de productos comparables que satisfacen la necesidad del comprador, cuya disponibilidad varía según la región de origen. Como señalamos anteriormente, el precio de referencia corresponde al menor precio entre aquellos productos comparables y disponibles en la región de compra. El Monto de Sobregasto en esta compra será entonces:

$$\text{Monto de Sobregasto} = (\text{Precio de Compra} - \text{Precio de Referencia}) \times \text{Cantidad de Compra}$$

Un usuario puede ejecutar múltiples compras en un período determinado, y cada compra tendrá asociada un Monto de Sobregasto distinto. Para obtener una métrica del Porcentaje de Sobregasto en las compras realizadas por un usuario, sumamos los Montos de Sobregasto asociados a cada compra, y dividimos por el gasto total ejecutado en esas compras.

Ejemplo: Supongamos que un usuario realiza dos compras en un período determinado. La primera es una resma de papel de impresora a 2100 CLP, cuyo precio de referencia es 1800 CLP. El Monto de Sobregasto asociado a esa compra será de $300 \times 1 = 300$ CLP. La segunda compra corresponde a 50 mascarillas desechables, a 190 CLP cada una, siendo su precio de referencia 130 CLP. El Monto de Sobregasto asociado a esa compra será de $60 \times 50 = 3000$ CLP. Luego, el porcentaje de Sobregasto asociado a las compras realizadas por el usuario para dicho período será calculado como:

$$\% \text{Sobregasto} = \left(100 \times \frac{300 + 3000}{1800 + 130 \times 50} \right) \% = 39.7\%$$

Luego, si queremos calcular el Porcentaje de Sobregasto a nivel de Servicio, se suman todos los montos de Sobregasto asociados a todas las compras realizadas por todos los usuarios del Servicio, y se divide por el gasto total asociado a dichas compras. Nótese que no todas las compras realizadas por el Servicio son atribuibles a productos estandarizables, y por lo tanto los resultados presentados en este informe pueden no corresponder a la totalidad de las compras realizadas por el Servicio en el período analizado.

Recomendaciones

- Recuerde que usted puede utilizar Compra Ágil como alternativa a Trato Directo. De esta forma, podrá obtener una mayor oferta de productos y proveedores, accediendo a menores precios.
- Al realizar una compra a través de Compra Ágil o Trato Directo, detalle claramente el producto que desea comprar. Para esto le sugerimos buscar el producto en otros catálogos e identificar sus características relevantes de modo de especificarlas en su solicitud. De esta forma, se asegurará de recibir una amplia oferta de productos que satisfagan su necesidad de compra.
- Si desea reducir aun más el Sobregasto puede planificar sus compras y agruparlas en una sola orden de compra a través del catálogo electrónico de Convenio Marco, la cual podría ofrecer precios unitarios menores.

EXAMPLE OF REPORT SENT TO **BUYERS IN T2** (“**PRIVATE**”) – SEE NEXT PAGE

Informe Mensual de Sobregasto

Nombre Servicio Público

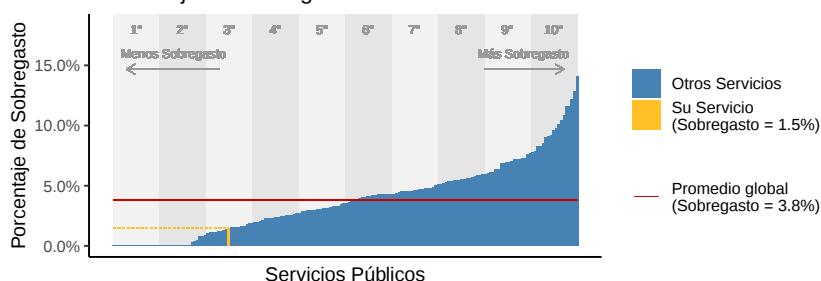
Octubre, 2020

Estimado Nombre Apellido,

A continuación le presentamos información relevante sobre el estado del gasto ejecutado por el Servicio en el cual usted se desempeña, para el período Septiembre 2019 - Septiembre 2020. El reporte incluye un análisis de compras a nivel agregado, como también desagregado para cada usuario que ejecuta compras dentro de la plataforma de Mercado Público. Le informamos que **su promedio de Sobregasto como usuario es de un 7%.** Usted se encuentra entre el 25% de los usuarios de su Servicio con mayor Sobregasto. Usted puede realizar cualquier consulta relativa a este informe a gastoeiciente@dipres.gob.cl.

Recuerde que la planificación de los gastos que realiza para su Servicio le permite hacer compras más eficientes, lo que puede llevar a ahorros significativos. Para este fin, los/as usuarios/as de ChileCompra tienen a su disposición el uso de distintos procedimientos de compra como Convenio Marco, Compra Ágil o Licitaciones, los cuales permiten hacer compras más planificadas que aquellas realizadas por otras alternativas de compra, como Trato Directo.

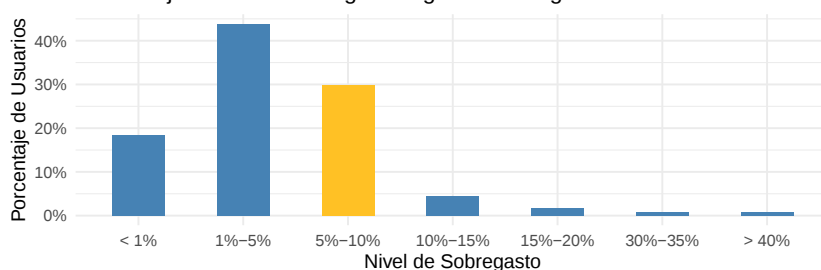
Porcentaje de Sobregasto a nivel de Servicio



Este gráfico muestra el Sobregasto realizado por cada Servicio Público del Estado, ordenados de menor a mayor Sobregasto (ver definición en Anexo). En **amarillo** se indica la posición relativa de su Servicio ¹.

El promedio de Sobregasto en su Servicio equivale a 1.5%, lo que implica que se encuentra entre los 50 Servicios con menor Sobregasto, de un total de 184 Servicios (se excluyen Servicios Autónomos y Subsecretarías). Sólo a modo de ejemplo, si tomamos en consideración únicamente compras realizadas vía Convenio Marco, el Sobregasto en su Servicio asciende aproximadamente a \$200 millones de pesos en este período.

Porcentaje de usuarios según rango de Sobregasto

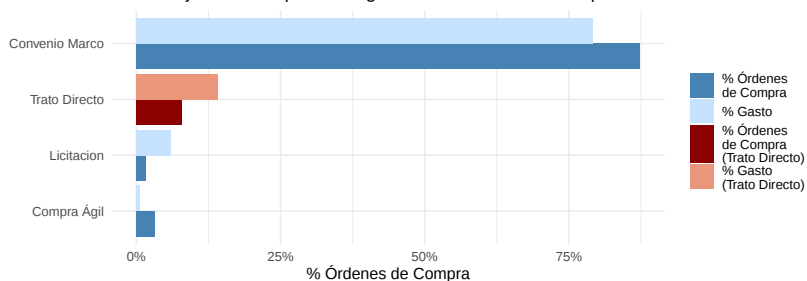


Este gráfico muestra el porcentaje de usuarios/as de ChileCompra pertenecientes a su Servicio según su nivel de Sobregasto. Por ejemplo, un 18% de los usuarios dentro del Servicio poseen un nivel de Sobregasto menor a 1%.

La barra **amarilla** indica al rango en donde Usted se ubica, relativo al resto de los usuarios de su Servicio. Su promedio de Sobregasto como usuario es de un 7 %

En promedio, los usuarios de su Servicio han realizado un nivel de Sobregasto de un 5.1%.

Porcentaje de Participación según Procedimiento de compra.



Este gráfico muestra cómo se distribuye sus compras, según el tipo de procedimiento de compra.

Usted realizó el 87.3% de sus compras mediante Convenio Marco, lo cual corresponde a un 79.2% del gasto total que ha efectuado.

Recuerde preferir procedimientos de compra, como Convenio Marco, Licitaciones y Compra Ágil, que permiten planificar de mejor forma el gasto y obtener mejores precios.

Recuerde que haciendo búsquedas detenidas y planificando sus compras puede reducir su Sobregasto.

¹Para más información sobre buenas prácticas en la ejecución de compras públicas, DIPRES ofrece un curso online, al cual Usted puede acceder en el siguiente [link](#). El acceso al curso es individualizado. En caso que Usted desee que otras personas dentro de su Servicio accedan al curso, por favor escribir a gastoeiciente@dipres.gob.cl.

Anexo

Cálculo de Sobregasto

El Sobregasto es una medida de eficiencia para la compra de un producto estandarizado, es decir, para un producto que tiene atributos comparables a otros productos dentro del mercado. El Sobregasto asociado a la compra de un producto mide cuánto pudo haber sido el ahorro asociado a la compra si se hubiese comprado a un precio de referencia. Este precio de referencia corresponde al menor precio entre aquellos productos comparables y disponibles en la región de compra, al momento de ejecutar la compra. Para cada compra realizada por un usuario, existe un Monto de Sobregasto asociado, y un Porcentaje de Sobregasto asociado.

Suponga la compra de un producto en una fecha determinada. Al momento de realizarla, existe una diversidad de productos comparables que satisfacen la necesidad del comprador, cuya disponibilidad varía según la región de origen. Como señalamos anteriormente, el precio de referencia corresponde al menor precio entre aquellos productos comparables y disponibles en la región de compra. El Monto de Sobregasto en esta compra será entonces:

$$\text{Monto de Sobregasto} = (\text{Precio de Compra} - \text{Precio de Referencia}) \times \text{Cantidad de Compra}$$

Un usuario puede ejecutar múltiples compras en un período determinado, y cada compra tendrá asociada un Monto de Sobregasto distinto. Para obtener una métrica del Porcentaje de Sobregasto en las compras realizadas por un usuario, sumamos los Montos de Sobregasto asociados a cada compra, y dividimos por el gasto total ejecutado en esas compras.

Ejemplo: Supongamos que un usuario realiza dos compras en un período determinado. La primera es una resma de papel de impresora a 2100 CLP, cuyo precio de referencia es 1800 CLP. El Monto de Sobregasto asociado a esa compra será de $300 \times 1 = 300$ CLP. La segunda compra corresponde a 50 mascarillas desechables, a 190 CLP cada una, siendo su precio de referencia 130 CLP. El Monto de Sobregasto asociado a esa compra será de $60 \times 50 = 3000$ CLP. Luego, el porcentaje de Sobregasto asociado a las compras realizadas por el usuario para dicho período será calculado como:

$$\% \text{Sobregasto} = \left(100 \times \frac{300 + 3000}{1800 + 130 \times 50} \right) \% = 39.7\%$$

Luego, si queremos calcular el Porcentaje de Sobregasto a nivel de Servicio, se suman todos los montos de Sobregasto asociados a todas las compras realizadas por todos los usuarios del Servicio, y se divide por el gasto total asociado a dichas compras. Nótese que no todas las compras realizadas por el Servicio son atribuibles a productos estandarizables, y por lo tanto los resultados presentados en este informe pueden no corresponder a la totalidad de las compras realizadas por el Servicio en el período analizado.

En relación al proceso de cálculo del sobregasto para cada usuario. Cada usuario de ChileCompra tiene un código identificador de usuario que registra cada una de las compras realizadas por el usuario dentro de Mercado Público. Luego, para producir el reporte de sobregasto correspondiente a un usuario determinado, utilizamos la información de todas las compras asociadas a su código identificador. A su vez, el código identificador del usuario tiene asociado el correo electrónico del usuario, lo cual nos permite hacer llegar el reporte a cada usuario.

Recomendaciones

- Recuerde que usted puede utilizar Compra Ágil como alternativa a Trato Directo. De esta forma, podrá obtener una mayor oferta de productos y proveedores, accediendo a menores precios.
- Al realizar una compra a través de Compra Ágil o Trato Directo, detalle claramente el producto que desea comprar. Para esto le sugerimos buscar el producto en otros catálogos e identificar sus características relevantes de modo de especificarlas en su solicitud. De esta forma, se asegurará de recibir una amplia oferta de productos que satisfagan su necesidad de compra.
- Si desea reducir aun más el Sobregasto puede planificar sus compras y agruparlas en una sola orden de compra a través del catálogo electrónico de Convenio Marco, la cual podría ofrecer precios unitarios menores.

EXAMPLE OF REPORT SENT TO **BOSES IN T2** (“**PRIVATE**”) – SEE NEXT PAGE

Informe Mensual de Sobregasto

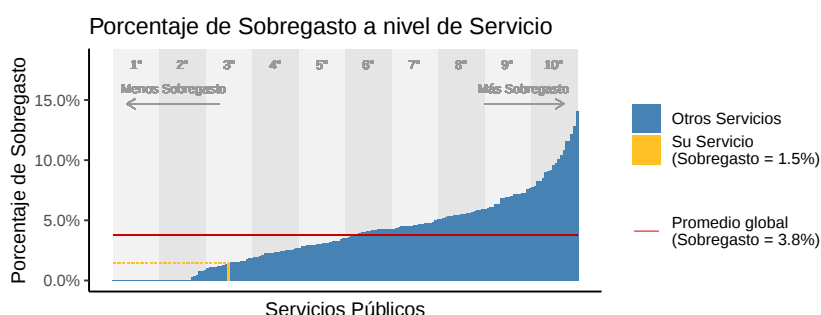
Nombre Servicio Público

Octubre, 2020

Estimado Nombre Apellido,

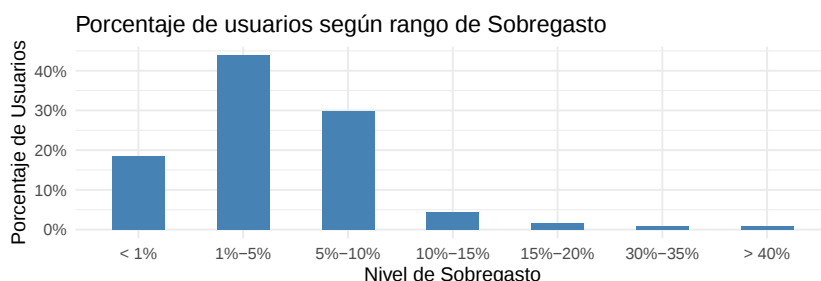
A continuación le presentamos información relevante sobre el estado del gasto público ejecutado por el Servicio en el cual usted se desempeña, para el período Septiembre 2019 - Septiembre 2020. El informe incluye un análisis de compras a nivel agregado de su Servicio, de modo de facilitar la gestión del Sobregasto dentro de su Servicio. **Su Servicio se encuentra entre los 50 Servicios con menor Sobregasto**, de un total de 184 Servicios (se excluyen Servicios Autónomos y Subsecretarías). Usted puede realizar cualquier consulta relativa a este informe a gastoeiciente@dipres.gob.cl.

Recuerde que la planificación del gasto en su Servicio le permite realizar compras más eficientes, lo que puede llevar a ahorros significativos. Para este fin, los/as usuarios/as de ChileCompra tienen a su disposición el uso de distintos procedimientos de compra como Convenio Marco, Compra Ágil o Licitaciones, los cuales permiten hacer compras más planificadas que aquellas realizadas por otras alternativas de compra, como Trato Directo.



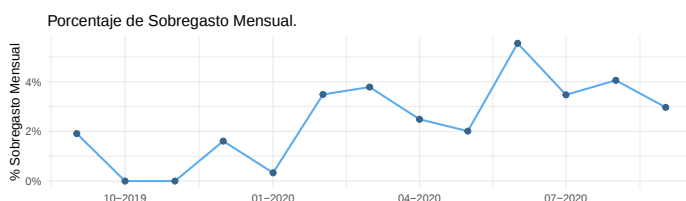
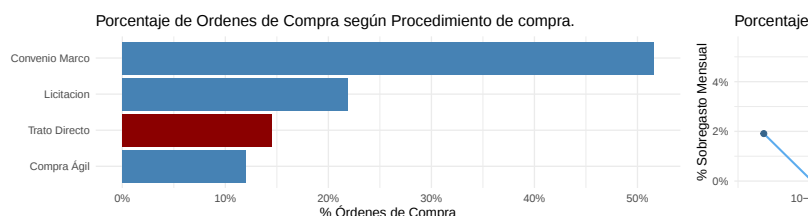
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Este gráfico muestra el porcentaje de usuarios/as de ChileCompra pertenecientes a su Servicio según su nivel de Sobregasto. Por ejemplo, un 18% de los usuarios dentro del Servicio poseen un nivel de Sobregasto menor a 1%.

En promedio, los usuarios de su Servicio han realizado un nivel de Sobregasto de un 5.1%. **Para que su Servicio pueda mejorar la eficiencia en gasto público, puede ser importante que usted le recuerde a los usuarios de su Servicio sobre la importancia de reducir lo más posible el Sobregasto en las compras.**



El gráfico a la izquierda muestra cómo se distribuye el total de compras por tipo de procedimiento. Su Servicio realiza el 51.6% de sus compras mediante Convenio Marco. **Recuerde preferir procedimientos de compra, como Convenio Marco, Licitaciones y Compra Ágil, los cuales permiten planificar de mejor forma el gasto y obtener mejores precios.** El gráfico a la derecha muestra cómo ha evolucionado el Sobregasto mensual de su Servicio en el período reportado.

Recuerde que haciendo búsquedas detenidas y planificando compras puede reducir su Sobregasto.

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Recomendaciones

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