INTERNATIONAL CENTER FOR PUBLIC POLICY

International Center for Public Policy
Working Paper 20-07
April 2020

Fiscal Decentralization and Life Satisfaction in Chile

Leonardo Letelier S.

José Luis Sáez Lozano

Georgia State University | Andrew Young School of Policy Studies

Georgia State University | Andrew Young School of Policy Studies

International Center for Public Policy
Working Paper 20-07

Fiscal Decentralization and Life Satisfaction in Chile

Leonardo Letelier S.
José Luis Sáez Lozano

April
2020

International Center for Public Policy
Andrew Young School of Policy Studies
Georgia State University
Atlanta, Georgia 30303
United States of America

Phone: (404) 413-0235
Fax: (404) 651-4449
Email: paulbenson@gsu.edu
Website: http://icepp.gsu.edu/

International Center for Public Policy
Andrew Young School of Policy Studies

The Andrew Young School of Policy Studies was established at Georgia State University with the objective of promoting excellence in the design, implementation, and evaluation of public policy. In addition to four academic departments, including economics and public administration, the Andrew Young School houses eight leading research centers and policy programs, including the International Center for Public Policy.

The mission of the International Center for Public Policy (ICePP) at the Andrew Young School of Policy Studies is to provide academic and professional training, applied research, and technical assistance in support of sound public policy and sustainable economic growth in developing and transitional economies.

ICePP is recognized worldwide for its efforts in support of economic and public policy reforms through technical assistance and training around the world. This reputation has been built serving a diverse client base, including the World Bank, the U.S. Agency for International Development (USAID), the United Nations Development Programme (UNDP), finance ministries, government organizations, legislative bodies, and private sector institutions.

The success of ICePP reflects the breadth and depth of its in-house technical expertise. The Andrew Young School's faculty are leading experts in economics and public policy and have authored books, published in major academic and technical journals, and have extensive experience in designing and implementing technical assistance and training programs. Andrew Young School faculty have been active in policy reform in over 40 countries around the world. Our technical assistance strategy is not merely to provide technical prescriptions for policy reform, but to engage in a collaborative effort with host governments and donor agencies to identify and analyze the issues at hand, arrive at policy solutions, and implement reforms.

ICePP specializes in four broad policy areas:

- Fiscal policy (e.g., tax reforms, public expenditure reviews)
- Fiscal decentralization (e.g., reform, intergovernmental transfer systems, urban finance)
- Budgeting and fiscal management (e.g., local, performance-based, capital, and multi-year budgeting)
- Economic analysis and revenue forecasting (e.g., micro-simulation, time series forecasting)

For more information about our technical assistance activities and training programs, please visit our website at icepp.gsu.edu or contact us at paulbenson@gsu.edu.

Fiscal Decentralization and Life Satisfaction in Chile*

Leonardo Letelier S.[1] and José Luis Sáez Lozano[2]

April 2020

Abstract

This research hinges upon the relationship between fiscal decentralization (FD) and subjective well-being (SWB) in Chile. We merge data from two household surveys (2011 and 2013) in which a life satisfaction question was included, with municipal-level information. By using a FD proxy that measures the share of municipal unconditional grants on all revenues, we produce an instrumental variable to test in the context of an ordered logistic multilevel model. Our contribution is twofold. First, we find evidence that, on average, FD does affect SWB positively. Second, we find this effect to depend on the satisfaction group in which individuals belong. Evidence from this study indicates that the effect in question is non-linear and that only high SWB groups are clearly benefitted. Since this reflects different priorities across SWB groups, this paper's evidence is a call for a more aggressive inter-municipal fiscal equalization scheme.

* This work was supported by CONICYT Scientific and Technological Research Commission (Grant FONDECYT N. 1171464, Chile), Proyectos de Exelencia from the Junta de Andalucìa (PAIDI: P18-TP-4475) and Proyectos I+D+i from the Programa Operativo FEDER de Analucìa (A-SEJ-154-UGR18).

[1] Institute of Public Affairs, University of Chile (lletelier@iap.uchile.cl)

[2] Department of International and Spanish Economics, University of Granada (josaez@ugr.es)

Introduction

It has been argued that decentralization in general—and fiscal decentralization (FD) in particular—may enhance the quality of local public goods (Oates 1972). The theoretical literature has provided numerous well-known hypotheses that support this. Among others, it has been argued that decentralization takes advantage of a more accurate knowledge of local authorities about their own constituency (Hayek 1945); that it encourages stronger accountability to people (Seabrihgt 1996, Escobar-Lemmon and Ross 2014); and that it raises the likelihood of more innovation in the design of effective public policies (Rose-Ackerman 1980, Kotsogiannis and Schwager 2006), among other factors. Nonetheless, the down side of decentralization has been widely documented (e.g., Treisman 2007, Boffa et al. 2016). The main caveats include public policy coordination problems, potential for moral hazard when the national level is seen as an insurance of last resort (Letelier 2011), scant professional expertise among subnational public personnel, and a higher likelihood of elite capture and corruption (Prud'homme 1995, Bardhan and Mookherjee 2006). In light of this debate, an extensive but not fully conclusive empirical literature has been developed to provide evidence on the likely effects of FD on a wide number of areas (e.g., Ahmad and Brosio 2009, Letelier 2012).

Our research builds upon previous empirical studies that show a systematic positive relationship between decentralization and life satisfaction (Frey and Stutzer 2000, 2002; Bjørnskov et al. 2008; Hessami 2010; Voigt and Blume 2012; Díaz-Serrano and Rodríguez-Pose 2012; and Sujarwoto and Tampubolon 2015). While results generally confirm the hypothesis that subnational autonomy improves individuals' life satisfaction, some relevant research questions are still unattended. First, there is the challenge as to how we can properly measure this autonomy, as it entails fiscal, administrative and political dimensions. This research focuses on

the fiscal dimension of decentralization, as it uses the share of unconditional grants on all municipal revenues as a proxy of FD. Despite this measurement being of particular relevance for the case of Chile, our findings have important policy implications on the subject matter. Second, the potential benefits of FD are usually assumed to be distributed homogenously across individuals, regardless of the access to local public services they have. Based upon a pooled database that combines two household surveys for 2011 and 2013 and a set of municipal-level indicators for 345 municipalities, we show evidence that FD only affects subjective well-being (SWB) positively for those who exhibit a high degree of SWB. The opposite occurs with low-SWB individuals. This suggests that the benefits from municipal governments having more budget control only become apparent when some minimally accepted local public goods provision is reached. Before that occurs, having a larger share of revenues in the form of unconditional grants does not lead to lower life satisfaction, as it probably brings the community closer to that minimum.

The remainder of this paper is as follows. A review of the literature in presented in the next section. Then, stylized facts on the case of Chile are presented. The following section summarizes the existing empirical evidence, followed by the empirical analysis. The final section concludes.

Theory and Hypotheses

Existing empirical literature has shown evidence of the influence of an ample array of individual-level factors on SWB (more on this below). Nonetheless, both social and environmental conditions play a role too. This may be expressed in the access to basic services, the quality of community life and the perception that local representatives are aligned with their constituency. In this respect, the extent to which local authorities are responsive to people's

demands is likely a critical factor. It has been argued that said community orientation in local governance can be strengthened by giving more power to subnational governments to decide, which entails more political, administrative and fiscal decentralization.

As far as FD is concerned, this has been broadly defined as the *empowerment of people by the empowerment of their local governments* (Bahl 2008). The specific fiscal component of said definition entails the passing of budgetary power to elected authorities, either in the form of more power to tax or to spend. Defenders of FD can be classified into two broad groups: those who advocate its potential economic efficiency benefits, and those who highlight the enhancement of governments' accountability and better preference matching between local residents and their representatives (Lockhood 2006). While the so-called "first generation" of theoretical models was more inspired in the first approach (Oates 1972), the second generation is clearly focused on the second one (Oates 2008). Whatever the argument, a more efficient delivery of public services leads to better quality of local community services and/or more control by the public on those who spend the budget. Nonetheless, some caveats to decentralization are in order (Treisman 2007, Letelier and Saez 2013). Important ones are the likelihood of elite capture (Bardhan and Mookherjee 2006), poorly trained subnational governments' personnel (Prud'homme 1995) and wasted economies of scale (Oates 1985), among other arguments.

However sound, the aforementioned hypotheses assume that FD affects people's SWB similarly, regardless of the original life satisfaction level of the individual in question. Nonetheless, there is the chance that low-SWB individuals might be primarily concerned with their access to some minimally accepted standard of local public services. Under a very unequal inter-municipal distribution of local tax bases, those jurisdictions with scant resources and poor

chances of collecting taxes of their own are more likely to host a larger share of individuals who assign more value to the level of municipal provision than to the quality of service delivery. The lack of basic community services like garbage collection, primary health centers, access to parks, and street maintenance and the like may induce citizens to prioritize a basic delivery level regardless of its quality.

If we assume that FD may be captured by the share of all revenues over which local authorities have some (or full) control, we may hypothesis that this share becomes a relevant issue when full revenues exceed some threshold. Expectedly, individuals who reside in jurisdictions with a poor provision of basic community services will value FD less than those who live in zones where this provision is well attended. If this were the case, FD is likely to have different effects on SWB for different SWB groups of individuals.

Fiscal Decentralization in Chile

Chile has a rather simple and quite centralized public finance administration model. While an intermedium level of government does exist,[1] only the municipal government is formally recognized as "autonomous" in the Constitution. A national law defines the range of administrative functions that municipal governments may exercise and the corresponding responsibilities they confront.[2] A parallel "Organic Municipal Revenue Law" establishes the type of revenues that municipalities are entitled. A feature worth mentioning is that the law assigns all municipal governments the same set of functions and it makes no inter-municipal differences as far as sources of funding are concerned. At least potentially, all municipalities can perform the same functions and exploit their tax base under the same set of rules.

[1] Formally, Chile is divided into sixteen "regions" (intermedium level) and 345 municipal governments (local level).
[2] This is the so-called "Organic Municipal Law," in which the "organic" status implies that any change of the law requires a very high quorum in parliament.

Municipal revenues must be distributed among six exclusive functions and eleven "shared" responsibilities with the national government. Exclusive responsibilities include local development, urban planning, enforcement of the law on car traffic, construction and garbage collection. Exclusive functions can be said to define a minimum set of local services that municipalities are expected to provide. In contrast to this, shared responsibilities are vaguely defined in the law as they leave ample space for innovation in key areas of local development. Functions of this type include education, health, promotion of culture, tourism, public transportation, urbanization and social development, among others. Because shared functions are mostly exercised on a voluntary basis, we should expect this to occur as long as the set of exclusive responsibilities are reasonably fulfilled. This is for example the case of school-level education and primary health care in Chile, in which approximately 10 to 15 percent of the funding is provided by the municipal level, albeit only more fiscally autonomous municipalities contribute (e.g., Letelier and Ormeño 2018).

As for municipal revenues, the so-called "Own Permanent Revenues" (IPP) stand for all taxes or charges levied on residents and local economic activities. This includes licenses on businesses, casinos, water rights, cars, mining activities,[3] and fines on road traffic rules violations. The most important single source is the property tax, which stands for 26 percent of all revenues. Complementary to the IPP, municipal governments receive a compensation unconditional grant called the Common Municipal Fund (FCM). This originates in a fund made of contributions from all municipalities, which is then returned to them based on a formula that gives a higher share to those with a lower tax base and/or poor socioeconomic indicators.[4] On

[3] Casino and water licenses are shared with the regional governments (Letelier 2019).
[4] The FCM is based on a constitutional mandate. A formula determines the way the fund is made up and the corresponding inter-municipal distribution criteria.

average, the FCM stood for 55.2 percent of all municipal revenues in 2013. Since tax bases and local living conditions exhibit a very unequal distribution across the country, the distribution of the FCM itself is very uneven. At one end, 15 percent of the poorest municipalities get more than 80 percent of their whole revenues from the FCM. At the other end, the richest 15 percent get 28 percent or less from this same fund.[5] Despite this redistribution fund making a significant contribution to inter-municipal equity, it is far from achieving full equalization. While the inter-municipal GINI lowers from 0.50 to 0.45 (Ahmad et al. 2015), huge differences remain in the quality of local public goods. In this respect, the case of education has been widely reported, as numerous studies have been made to identify main sources of inter-municipal variation in school quality.

The Existing Evidence

Non-Institutional Factors

A myriad of specific factors have been found to be responsible for SWB. A review by Dolan et al. (2009) suggests that a comprehensive list should at least include income, age, gender, ethnicity, education, heath, labor status, marital status, religion and the number of sons, among others. A global study by Diego-Rosell et al. (2016) shows evidence that the most important factor is material well-being, which stands for 16.6 percent of the variance of life satisfaction. Interestingly, the community context appears to be the second most important one (5.5 percent of the variance). As far as specific variables are concerned, absolute personal income appears to have a positive—albeit decreasing—effect (Stevenson and Wolfers 2013). Nonetheless, the influence of local culture and other idiosyncratic features may have a significant

[5] Reported data correspond to the revenues net of FCM contribution. If gross revenues (before FCM contribution) were used, the net contribution of the FCM would be negative for rich municipalities.

role to play, as the effect of income and other variables is likely to be stronger in more competitive societies (e.g., Tsurumi, Imauji and Managi 2019). Regarding the Latin American case, this appears to be relatively happier with respect to the world (World Happiness Report 2019). A collection of studies highlight specific drivers of SWB on the region (Rojas 2016). Important ones are family ties, gratifying human relations, social network and other non-income related factors. The so-called social capital, defined as the access to social networks, has been also found to affect SWB (e.g., Han 2013). We should expect that said networks would deepen people's trust in each other, facilitate the enforcement of informal agreements and bring well-being to the community as a whole.

As far as the Chilean case is concerned, a number of studies intend to explore main determinants of like satisfaction on specific groups, as is the case of workers, elderly people and students. A study by Loewe et al. (2014) use a sample of 530 workers to explain seven life domains built upon 21 individual indicators usually considered relevant. This study provides evidence showing that the financial situation is a predominant factor for workers, which is in line with the case of emerging economies in general. Interestingly, they also find that workers' satisfaction with family is highly correlated with global SWB. As for the specific case of "job satisfaction," some evidence suggests that other workers' income may reduce own income satisfaction (Montero and Rau 2016), which reinforces the view that regardless of the analytical context, individual income should be measured relative to a group. Under the assumption that Chile has a "collectivistic" orientation, these authors interpret said result in support of the hypothesis that local culture matters. Further confirmation that job satisfaction partially depends on where people resides is provided by Ferrada (2017), who finds that, after controlling for a number of relevant variables, workers on the country's north zone have a higher SWB. Another

group being analyzed is university students in Chile. Berta et al. (2015) find that family support significantly affects interviewees' SWB. As expected, some local evidence confirms that age segments are sensitive to specific types of variables. A study based on a sample of elderly people in Chile by Herrera et al. (2011) shows that this group's SWB is particularly responsive to self-efficacy, good quality of social relations and a number of daily routines. As opposed to the group specific focus of previous studies, Hojman and Miranda (2018) explore the effect of individual "agency" as defined by Sen (e.g., Sen 1999), and human dignity ("shame") on SWB. They base their analysis on a special survey on "Other Dimensions of Household Quality of Life" for Chile. Their results show that both agency and shame are significant. In particular, "freedom to decide"—in the spirit of Sen´s hypothesis—appears to be as powerful to predict SWB as income itself.

One aspect of subjective well-being that deserves attention is the access to basic services such as schools, hospitals, recreational facilities and the like. This is closely related to the capacity of local authorities to provide some of these services itself and/or facilitate local conditions for other tiers of government—or even private agents to assume responsibility for the matter. An extensive literature exists about the factors that affect satisfaction in urban areas (e.g., Ibem 2013). Nonetheless, the role of basic service delivery has to be reconsidered when it comes to a countrywide analysis. Deep gaps are expected in the type of services demanded in rural versus urban areas. Needless to say, the type of geographical conditions of the commune in question may to play a major role. In this regard, the access to hospitals is expected to be a universal demand (e.g., Mohit 2018).

Institutional Factors and Decentralization

The role of institutional factors in a government's performance has been the subject of numerous theoretical and empirical contributions (e.g., Persson and Tebellini 2003). One particular dimension of a country's institutional structure is the extent to which the political, administrative and fiscal powers are distributed across tiers of government. Since the early 1990s, an extensive list of studies have intended to answer the question of whether decentralization is conducive to improvements in a government's performance. The basic hypothesis is that empowering subnational governments should make local authorities more accountable to people (Seabright 1996), enhance public policy innovation (Rose-Ackerman 1980), avoid excessive taxation (Brennan and Buchanan 1980) and improve preference matching between governments and citizens (Oates 1972), among other potential benefits. While most of the available evidence hinges on the use of objective measurements of quality in public service delivery (Letelier 2012), a more recent wave of empirical studies is focused on measurements of SWB as an endogenous variable, this being the approach of this paper.

While the analysis of the effect of institutions on SWB is still new, even newer is the concern about the effect of decentralization on said variable. Evidence can be divided between cross-country studies and country-level ones. Among the first type, a pioneering research is carried out by Frey and Stutzer (2000), in which the effect of decentralization and other related institutional factors are examined for the case of Swiss regions. They conclude that government initiatives, such as referenda and local autonomy, have a significant and positive effect on people's life satisfaction. A follow up study by Bjørnskov et al. (2008) matches 60,000 individual observations with 66 countries. Although revenue decentralization appears to have an effect, expenditure decentralization affects SWB through a government's consumption only.

Diaz-Serrano and Rodriguez-Pose (2012) extended this analysis to a broader set of life satisfaction measurements, in which the effect of decentralization on life satisfaction as a general concept is compared to a similar exercise on satisfaction with the economic situation only. Four out of five proxies of fiscal decentralization as well as political decentralization appear to affect "general" SWB positively. Nevertheless, the effect on the remaining specific satisfaction variables exhibit mixed—and in some cases negative—effects. By conducting factor analysis on 25 country variables, Voigt and Blume (2012) explore the multidimensional nature of federalism. They provide evidence that fiscal decentralization related factors contribute to life satisfaction. Along similar lines, a study by Rodríguez-Pose and Tselios (2019) based on 36 European countries finds robust evidence that the effect of "political decentralization" on personal and economic well-being is contingent on the quality of government, being generally positive for countries with a low governmental quality.

As for the country-level evidence, Gao et. al. (2014) show that "revenue decentralization" in China has a strong and robust effect on SWB. While this appears not to be the case as far as "expenditure decentralization" is concerned, they interpret said result as an indication that conditional transfers given to provinces, which are a large share of provincial budgets, impede provinces executing a budget in line with people's preferences. A similar study for Indonesia suggests that, although fiscal decentralization appears to be significant in explaining SWB, this does not hold in the case of political decentralization (Sujarwoto and Tampubolon 2015). Despite no studies of this type being reported for Chile, Letelier and Ormeño (2018) show that municipal fiscal decentralization on school education does improve students' performance in standardized national tests. Since most public schools are still under municipal administration in Chile, this

can be taken as prima facie evidence of FD having some positive effect on life quality, and presumably on SWB.

Empirical Analysis

The Empirical Model

The core of our empirical analysis hinges upon Y^*, which is a latent and continuous ordinal variable that represents individual life satisfaction. Since said variable is unobservable, we replace it by a proxy called *Y*. This is based on a five-option measurement of life satisfaction taken from the household survey (see below).[6] Y_{ijk} is a realization of Y_i within cluster "j" $(j = 1,2,3..J)$, which is hosted in cluster "k" $(k = 1,2,3..K)$. The correspondence between Y_{ijk} and Y^*_{ijk} follows *Eq. 1*, in which Y^*_{ijk} may fall into *R* specific ranges bounded between k_{r-1} and k_r , where "k" represents the cut points for each range. Formally, our empirical model can be represented by the cumulative probability of Y_{ijk} being in a category higher than "r" $(Eq.1)$.

$$\Pr\left(Y_{ijk} > r | X_{h_{ijk,}} Z_{l_{jk,}} W_{m_{k,}} U_{hjk,} V_{0k}\right) = \omega_{000} + \sum_h \omega_{h0k} X_{h_{ijk}} + \sum_l \omega_{0lq} Z_{l_{jk}} + \sum_m \omega_{0mk} W_{m_k} + U_{0jk} + V_{0k} + \sum_h U_{hjk} X_{h_{ijk}} + \varepsilon_{ijk} \quad (Eq.1)$$

where

$$Y_{ijk} = r \; if \; k_{r-1} \leq Y^*_{ijk} < k_r \; ; r = 1,2,3 \ldots, R$$

In order to capture the structure of the data, three levels are identified. The first one is the "municipal" level (W_k), which stands for the set of municipal-level variables that stay the same in the two surveys (2011 and 2013). The second one is the "municipal-year" level (Z_{jk}), which

[6] The original survey questionnaire provides a 10 alternative option scale. Nonetheless, the use of so many options in a non-linear model (ordered multilevel logit model) becomes difficult to interpret, and it does not pass the proportional odds assumption (see below). In order to take advantage from a non-linear estimation, we grouped individual answers into five categories. This sort out the above caveats, and it allows a better analysis of each category.

controls for those municipal level variables that change between the two surveys. Finally, level one stands for individuals level variables represented in the surveys (X_{ijk}). Fixed effects are accounted for in V_{0k} (level 3) and U_{0jk} (level 2). Random effects are caught in variable $U_{hjk}X_{hjk}$. We use the Newton-Rapshon algorithm to maximize the likelihood function, which is done according to the adaptive quadrature procedure proposed by Rabe-Hesketh, Skrondal and Pickles (2005).

Data Description

Definition and measurement of variables are provided in the Appendix. Data description is reported in Table 2. As for the individual-level information, this is taken from the national household surveys of 2011 and 2013 respectively (CASEN[7]), which provide 86,854 observations for 2011, and 87,400 for 2013.[8] These are the only versions of said survey in which an explicit question about life satisfaction is included. Answers to that question are given in a five-options scale that ranges from completely dissatisfied or little satisfied (1) to very satisfied or completely satisfied (5). Its coefficient of variation (CV) is 0.38 in 2011 and 0.34 in 2013.

Among individual control variables, binary dummies were used in the cases of GENDER, MARIRED-COUPLE, PRIMARY EDUCATION, SECONDARY EDUCATION, HIGHER EDUCATION, UNEMPLOYED, RELIGION, INDIGENE and NEIGHBORHOOD-BOARD. This last variable is expected to capture social capital, as it indicates whether the interviewee belongs to an organized social group, such as a community-based organization, a political party, a labor union or any other similar group. Variable HEALTH is measured in a seven-option question. As for the dispersion of said variables, CV is equal or above 2.0 for HIGHER

[7] The "Socio-Economic Characterization Survey" (CASEN) is made once every three years.
[8] Regional and municipal expansion factors were used in the estimations.

EDUCATION, UNEMPLOYED, RELIGION, INDIGENE, NEIGBORHOOD BOARD and PERCENTILES OF INCOME. This same coefficient ranges between 1.0 and 2.0 for GENDER, PRIMARY EDUCATION and HIGHER EDUCATION. Remaining individual variables have a CV lower than 1.0. Our three municipal variables (FCM, FCM_INST and HOSPITAL ACSSES) exhibit a relatively low variation with a CV below 0.5.

As far as our proxy of FD is concerned, this is expected to capture the extent to which municipalities have some leeway to decide on the revenues they need to accomplish the mandate defined by law. In the Chilean case, municipalities are very limited in their capacity to mobilize resources of their own. Two main revenue sources can be distinguished: one is the IPP (see the third section above), which correspond to 40 percent of all revenues. However small, municipalities do have some room to decide on various determinants of that revenue, including the case of business licenses and some other minor charges. They can also cooperate with the National Tax Authority (*Servicio de Impuesto Internos*) in order to update the local cadaster and redefine the local urban plan, which may have significant long-term consequences in the property tax collection. On average, the remaining 60-percent share of municipal revenues is made of transfers from the national government, of which the most important is the Fondo Comun Municipal (FCM). We will use the share of the FCM on all municipal revenues,[9] as an indicator of the degree of municipal fiscal centralization. Notably, regardless of FD, municipalities do have different levels of tax bases to attend local community needs. Nonetheless, we will assume that each municipality's random effect will control for this. Given the nature of the FCM, the inclusion of a local tax-base proxy will be highly collinear with FCM. Additionally, the inclusion of a variable that measures the full municipal revenue level is

[9] In this case, "All municipal Revenues" stand for the so-called "Own Revenues." They are the sum of the IPP plus the FCM.

unlikely to give a good account of the local potential access to better local public services, as they are subject to significant economies of scale. Thus, low-populated communities may show a high level of full revenues per head, but also show poor levels of service provision. This is for example the case of education. There are 70 public schools in Chile that only have one student who receives all benefits (Letelier and Ormeño 2018), but nonetheless, the educational output is still low.

In order to explore the robustness of our empirical model further, an instrument will be used to control for possible measurement errors of FCM, as well as other potential endogeneity biases. In particular, it might be argued that individuals and families with certain happiness profile are more likely to reside in certain communes. In dealing with that, we follow Martinez-Vasquez et al. (2011) and Sanogo (2019) in estimating an instrument for FCM. This consists of a weighted average of the FCM, in which weights equal the inverse of the distance between the municipality in question (*"i"*) and all municipalities in a predetermined area $\left({}^{1}/_{d}\right)$, over the inverse of the sum of that same ratio across all municipalities but i. By construction, FCM_{inst} should be correlated with FCM and not correlated to μ_j in *Eq.1* above. Given the structure of the country's territory, municipalities are likely to share similar characteristics across large geographic areas, in which the pattern of municipal tax revenues and tax bases exhibit similar characteristics. At one end, the northern zone is mainly dominated by the mining industry and it exhibits extended deserted zones. The opposite holds for the southern zone, in which water is abundant and the local economic activity is largely dominated by agriculture. In between, the central zone is where the bulk of the national economic activity is located and where most of the population live. In view of this, we chose a value of "d" equal to 500 kms, which is expected to capture similarity across large geographical areas.

$$FCM_{int} = \frac{1}{\sum_{j-1}^{n} \frac{1}{d_j}} \sum_{j-1}^{n} \frac{1}{d_j} FCM_{j\ i \neq j\ Eq.2}$$

Table 1: Descriptive Statistics

	Mean		Std. Dev.		Min.		Max.	
Individual Variables: 1-level	**2011**	**2013**	**2011**	**2013**	**2011**	**2013**	**20111**	**2013**
HAPPY_5	2.774	2.935	1.050	1.003	0	0	4	4
GENDER	0.354	0.345	0.478	0.475	0	0	1	1
AGE	46.799	47.759	17.805	17.712	15	15	104	108
MARRIED-COUPLE	0.590	0.575	0.492	0.494	0	0	1	1
PRIMARY EDUCATION	0.344	0.327	0.475	0.469	0	0	1	1
SECONDARY EDUCATION	0.438	0.434	0.496	0.496	0	0	1	1
HIGHER EDUCATION	0.184	0.207	0.388	0.405	0	0	1	1
UNEMPLOYED	0.040	0.037	0.195	0.190	0	0	1	1
HEALTH	2.663	4.442	1.213	1.312	0	0	6	6
RELIGION	0.096	0.093	0.295	0.290	0	0	1	1
INDIGENE	0.117	0.118	0.321	0.322	0	0	1	1
NEIGHBORHOOD BOARD	0.114	0.105	0.318	0.307	0	0	1	1
HOUSEHOLD MEMBERS	3.578	3.442	1.719	1.673	1	1	26	19
PERCENTILE 1-10 OF INCOME	1.185	1.238	3.525	3.669	0	0	13.744	13.775
PERCENTILE 90-99 OF INCOME	1.441	1.432	4.338	4.316	0	0	17.187	16.911
Municipality-Time Variables: 2-level								
FCM	43.459	43.041	21.538	21.663	1.29	0.890	98.490	96.940
FCM_INST	34.904	37.138	13.733	12.826	5.737	5.662	57.154	59.268
Municipality Variables: 3-level								
HOSPITAL ACCESS	0.870	0.882	0.184	0.181	0.011	0.011	1	1

Model Estimation

Equation 1 is estimated as a hierarchical ordinal logit model, in which the number of life satisfaction categories (R) equals 5.[10] Non-categorical variables are measured relative to the municipal median (see Appendix). Model 1 is the base line model, in which no covariate is included. In this case, we are assuming that individual SWB is only explained by the structure of

[10] The original CASEN questionnaire gives interviewees 10 life satisfactions options for them chose. Nonetheless, the use of this option in the context of an ordinal logit does not pass the proportional odds assumption and makes interpretation of results less clear. In view of this, individuals' answers were classified in only five life satisfaction groups.

the data. Individual observations (level 1) are hosted into municipal-year data (level 2) and municipal data (level 3). Model 2 adds individual-level covariates from the surveys being considered. Model 3 adds municipal-level data. This is estimated in two versions. While version "FCM" uses the original definition of FCM, version "FCM_inst" uses the instrument. A "proportional odds" test is performed over a logistic non-hierarchical random-effect version of model 3, which is reported as model 4. The corresponding χ^2 (22.7) does not lead to reject the null (no proportional odds) at 10-percent significance.

Concerning the relative quality of the statistical models, a cross-model comparison can be made by looking at the AIC and BIC criterion. They unambiguously show the lowest value for model 3 (FCM_inst), which enables us to focus on said model for further analysis. This pattern is consistent with the value of the log likelihood models, the corresponding LR tests and the variance of levels 2 and 3 random effects, as they are the lowest among models 1 to 3. As for the ICC, results from model 3 suggest that levels 2 and 3 contribute with 4.3 percent of all three levels' variance, which confirms that level 1 variables explain most of the variation of individual SWB. As confirmed by the lower values of the AIC and BIC in model 3 versus model 4, the use of a hierarchical model results in a better fit of the data. Interestingly, the same comparison between model 3 (version FCM) versus model 3 (version FCM_isnt) makes this last model preferred. This further supports the case for using an instrumental variable of FCM.

Regarding specific level 1 variables from model 3, our evidence shows a positive effect on SWB in the cases of MARRIED-COUPLE, SECONDARY and HIGHER EDUCATION, HEALTH, RELIGION, NEIGHBORHOOD BOARD and the PERCENTILE 90-99 OF Ln(INCOME). As for variables that affects SWB negatively, they are AGE, GENDER, UNEMPLOYED, INDIGENE, NUMBER OF HOUSHOLD MEMBERS and PERCENTILE 1-10 OF

Ln(INCOME). While these results were expected, the significant effect of NEIGHBORHOOD BOARD must be highlighted, as it sheds light on the relevance of community life and the potential role of municipalities in building social capital. Concerning municipal-time variables, the dummy for 2013 (DUMMY_2013) is significant and positive. This is consistent with the rapid changes that the country went through between 2011 and 2013. Based on data from regular household surveys, the country moved from US$13.144 to US$14.755 per head (World Bank pp data), and the poverty rate declined from 22.2 to 14.4 percent on said span. Variable HOSPITAL ACCESS (level 3) is only significant at 7.4 percent in model 3 and at 5 percent in model 4, which suggests that the distance to basic services matters.

Table 2: Hierarchical Ordinal Logit Model for SWB in Chile.

	Model 1[(1)]	**Model 2[(2)]**	**Model 3[(3)]**		**Model 4[(4)]**
			FCM	**FCM_INST**	**FCM_INST**
A. Fixed Part					
A.1. Individual Variable [(5)]					
GENDER		-0.008	-0.023*	-0.023*	-0.017
		(0.0133)	(0.0136)	(0.0136)	(0.0162)
AGE		-0.035***	-0.034***	-0.034***	-0.034***
		(0.002)	(0.002)	(0.002)	(0.003)
AGE^2		0.0004***	0.0004***	0.0004***	0.0004***
		(1.78e-05)	(1.81e-05)	(1.81e-05)	(1.95e-05)
MARRIED-COUPLE		0.343***	0.337***	0.337***	0.334***
		(0.013)	(0.013)	(0.013)	(0.026)
PRIMARY EDUCATION		-0.0374	-0.0451	-0.0428	-0.0470
		(0.033)	(0.033)	(0.033)	(0.108)
SECONDARY EDUCATION		0.170***	0.159***	0.162***	0.171
		(0.0336)	(0.0340)	(0.0340)	(0.124)
HIGHER EDUCATION		0.474***	0.460***	0.467***	0.504***
		(0.037)	(0.037)	(0.037)	(0.144)
UNEMPLOYED		-0.444***	-0.432***	-0.431***	-0.436***
		(0.031)	(0.032)	(0.032)	(0.007)
HEALTH		0.317***	0.319***	0.319***	0.315***
		(0.00495)	(0.00503)	(0.00503)	(0.101)
RELIGION		0.318***	0.321***	0.323***	0.302***
		(0.0204)	(0.0207)	(0.0207)	(0.00628)
INDIGENE		-0.0841***	-0.0802***	-0.0881***	-0.106***
		(0.0193)	(0.0194)	(0.0194)	(0.00865)
NEIGHBORHOOD BOARD		0.060***	0.052**	0.053***	0.054***
		(0.020)	(0.020)	(0.021)	(0.002)
NUMBER OF HOUSEHOLD MEMBERS		-0.039***	-0.038***	-0.038***	-0.036***
		(0.004)	(0.004)	(0.004)	(0.0003)
PERCENTILE 1-10 OF Ln(INCOME)		-0.0295***	-0.0298***	-0.0297***	-0.0287***
		(0.002)	(0.002)	(0.002)	(0.002)

PERCENTILE 90-99 OF Ln(INCOME)		0.032***	0.032***	0.032***	0.031***
		(0.0015)	(0.002)	(0.002)	(0.002)
A.2. Municipality-Time Variables					
DUMMY_2013			0.387***	0.398***	0.380***
			(0.032)	(0.031)	(0.036)
Log(FCM)			-0.257***		
			(0.052		
Log(FCM_INST)				-0.255***	-0.201***
				(0.033)	(0.011)
A.3. Municipality Variables					
HOSPITAL ACCESS			0.0045	0.113	0.062*
			(0.082)	(0.074)	(0.037)
A.4. Thresholds					
k_1: Cut1 constant	-3.602***	-3.323***	-3.517***	-3.913***	-3.723**
	(0.020	(0.042)	(0.133)	(0.141)	(0.090)
k_2: Cut2 constant	-2.300***	-2.022***	-2.219***	-2.615***	-2.4326***
	(0.017)	(0.038)	(0.132)	(0.140)	(0.092)
k_3: Cut3 constant	-0.554***	-0.168***	-0.365***	-0.761***	-0.5962***
	(0.0155)	(0.037)	(0.131)	(0.140)	(0.0323)
k_4: Cut4 constant	0.799***	1.290***	1.095***	0.699***	0.8439***
	(0.016)	(0.038)	(0.132)	(0.140)	(0.029)
B. Random Part: Variances and Covariances[6]					
Level 2 Variance (U_{0jk})	0.051	0.054	0.022	0.020	
	(50.984)	(28.940)	(0.888)	(6.493)	
Level 2 Variance (*NEIGHBORHOOD BOARD*)		0.008	0.008	0.010	
		(0.011)	(0.011)	(0.011)	
Level 3 Variance (V_{00k})	0.081	0.075	0.068	0.062	
	(50.984)	(28.94)	(0.888)	(6.493)	
Variance (ε_{ijk})					1.49e-18
					1.58e-10
C. Other Statistics and Contrasts					
No. Obs.	200,690	101,555	98,485	98,485	98,485
No. of groups (municipality-time)	648	647	633	633	2
No. Iteration of Adaptive Quadrature	29	50	45	44	111
No. Integration Points	8	8	8	8	8
Wall Clock Time	00:19:32	02:57:01	02:21:45	03:35:12	00:02:24
Intraclass Correlation Coefficient (ICC): level 2	0.038	0.038	0.029	0.025	
Intraclass Correlation Coefficient (ICC): level 3	0.024	0.022	0.022	0.019	
Akaike Information Criterion (AIC)	539,959.03	260,637.19	252,652.67	252,618.66	253,516.71
Bayesian Information Criterion (BIC)	540,020.29	260,846.81	252,890.11	252,856.10	253,526.21
Log Likelihood:	-269,973.52	-130,296.59	-126,301.34	-126.284.33	-126,757.35
LR test vs. ordinal logit model:					
chi2(3)	4,737.39	1,511.07	1,092.51	946.05	
Prob > chi2	0.000	0.000	0.000	0.000	
Cox & Snell pseudo R-squared		6.160e-07	-7.236e-13	-3.220e-14	
Deviance:	25.012	23.555	23.493	23.493	
Prob > chi2(1)	3.704e-06	7.675e-06	7.918e-06	7.919e-06	
D. Testing Parallel Lines Assumption					
Wald test for the final model:					
chi2[7]		14.00	20.08	22.70	22.70
Prob > chi2		0.122	0.169	0.091	0.091

(1) Model 1. Multilevel ordered logistic: random intercept
(2) Model 2. Multilevel ordered logistic: random intercept and explanatory variable (level 1)
(3) Model 3. Multilevel ordered logistic: random intercept and explanatory variable (level 1, 2, and 3)
(4) Model 4. Ordered logistic: Random-effects
(5) The individual variables AGE, HEALTH, NEIGHBORHOOD BOARD, NUMBER OF HOUSEHOLD MEMBERS, PERCENTILE 1-10 OF Ln(INCOME), and PERCENTILE 90-99 OF Ln(INCOME) are group mean centering: municipality-time.
(6) The standard error is in brackets.
(7)Degrees of freedom chi2: i) model 2: 9; model 3 FCM: 15; iii) model 3 Instrumental FCM: 15; and model 4: 15.

Notes: ***, **, and * indicate significance level at 1%, 5%, and 10%, respectively. Z value in brackets. "Not at all happy" is the reference category.

Predicted Probablities

On further analysis, predicted probabilities for different levels of fiscal decentralization are presented in Figures 1 (lowest SWB) to 5 (highest SWB) below. Separate expected values are recorded for each SWB bracket. Said predictions were made under the assumption that all covariates but "FCM inst" are measured at its average municipal level. As showed in the figures, FCM_isnst varies between 5.7 and 55.7. If all hypotheses that advocate fiscal decentralization on different grounds were valid, we should get a negative relationship in the graphs.

Nonetheless, prima facie evidence from the figures suggests that the effect of fiscal decentralization depends on the level of individual SWB being considered. For individuals in the lower level of life satisfaction (Figure 1), our simulation shows that as FCM rises, our predicted probability also rises until it reaches a plateau for values of FCM_inst above 4 percent. The same analysis on the second level of life satisfaction (Figure 2) tells a similar story for lower levels of FCM_ inst. The curve only turns over for values of FCM_inst above 16 percent. A similar pattern is observed for the third level of SWB. Only levels 4 and 5 exhibit a behavior that is fully compatible with the hypothesis that fiscal decentralization improves SWB. In light of simulations below, a reinterpretation of the effect that FD brings about is in order. As shown above, a first step toward a more comprehensive interpretation is the acknowledgement that, on

average, FD does have a positive effect on the probability of individuals having a higher degree of life satisfaction (Table 3). The question then remains as to why this general conclusion does not necessarily holds for specific life satisfaction categories. The answer probably lies in two factors: one is the nature of our FD proxy being used; the other is the set of priorities of individuals at each SWB level.

As for the first factor, FCM equals the share of all municipal revenues coming from an unconditional compensation transfer. While various factors are considered in the existing inter-municipal distribution formula, they are all targeted to provide more resources to municipalities with a low tax base and poor socioeconomic indicators. Those are often the ones in which basic local services are precarious or even non-existent, which includes irregular or incomplete garbage collection, under-equipped primary health centers, low-quality local public education (Letelier and Ormeño 2018), badly maintained streets and deficient local infrastructure, among other shortages. As stated above, a higher grant-based contribution allows residents to access basic services that would not be available otherwise. At the other end, for individuals who rank high in the SWB scale, access to basic services is likely to be resolved. This may occur either because they reside in relatively wealthy municipalities where these needs are well attended or because they can afford privately funded community services not directly provided by the municipality they live in. One example is the case of high-standard gated communities, which very often have security of their own and maintain important privately funded commons. To this must be added the access to private health care services and private education. Public provision of these services is regularly administered by the municipal level in Chile.

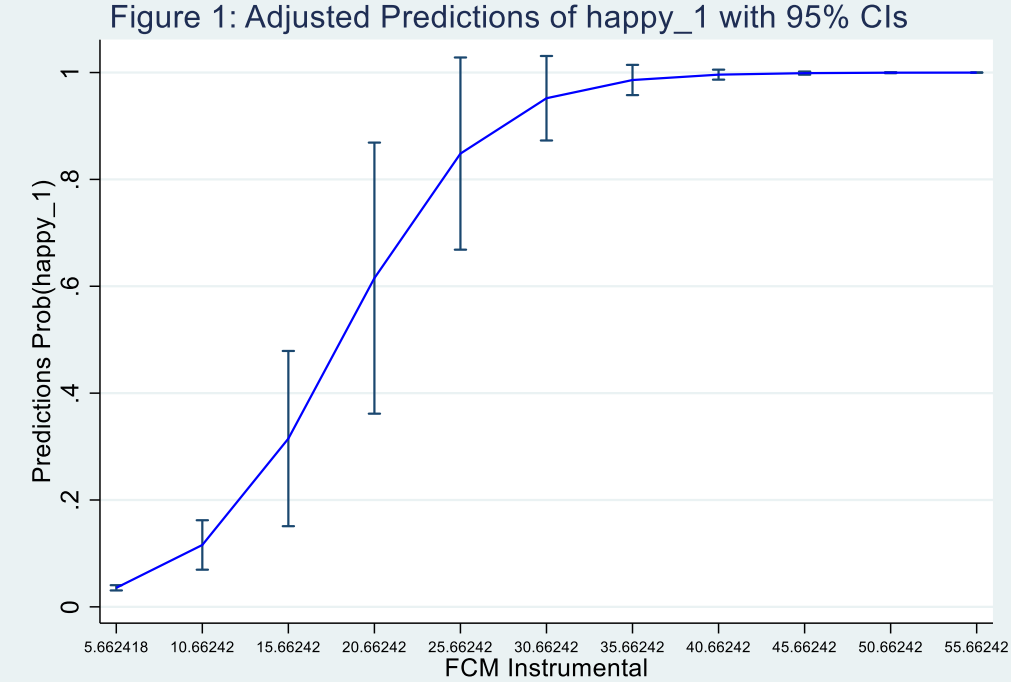
Thus, we should expect that most benefits from fiscal decentralization become apparent once a minimum of local public goods provision is reached. Once that threshold is overcome,

local authorities are more likely to be in a position to innovate, devote a more need-oriented provision of services, take proper advantage of the local tax base and be accountable for their skills to make a good match between local resources and the quality of local public goods being provided. In the case of Chile, it can be assumed that as long as municipalities are unable to secure a minimally accepted standard in the six exclusive competencies established by law, they will not make a significant effort to provide—let alone improve—high-quality local services that fall into the set of shared responsibilities referred to above.

Based on the above arguments, we may hypothesize that individuals in the lower brackets of SWB are more likely to live in high-FCM municipalities in which low-quality local public goods dominate. The opposite occurs to high-SWB individuals (Figure 5), who mostly reside in high-quality local public goods communities. Under the assumption that most high-level SWB individuals enjoy reasonably good community services, we may expect this group to be positively affected by FD. As far as municipal funding is concerned, individuals who face important shortages in their life conditions and a poor community environment will see the level of funding as a main source of concern, regardless of the source of these revenues. Benefits from FD will only become apparent once a minimally acceptable local service provision is secured and the local mayor and his/her team are able to extend their action over the ample range of complementary functions defined by law.

Since our FD proxy measures the share of unconditional grants over the whole of municipal revenues, a pending question is whether the above interpretation of results still holds for any type of grants. Two reflections are in order. First, under a full revenue equalization scenario, the revenue "level" effect referred to above is irrelevant, so that FD is expected to have a positive effect on SWB regardless of the individual in question. Given that FCM is far from

achieving such full inter-municipal equalization (Ahmad et al. 2015), the effect of FD is different for different individuals. Second, this is not expected to be the case for conditional grants, which in the Chilean case, are not officially part of the municipal budget.[11]



[11] Municipalities in Chile have to apply to capital grants intended to improve local infrastructure. Nonetheless, they only count on the FCM for their regular expenditures.

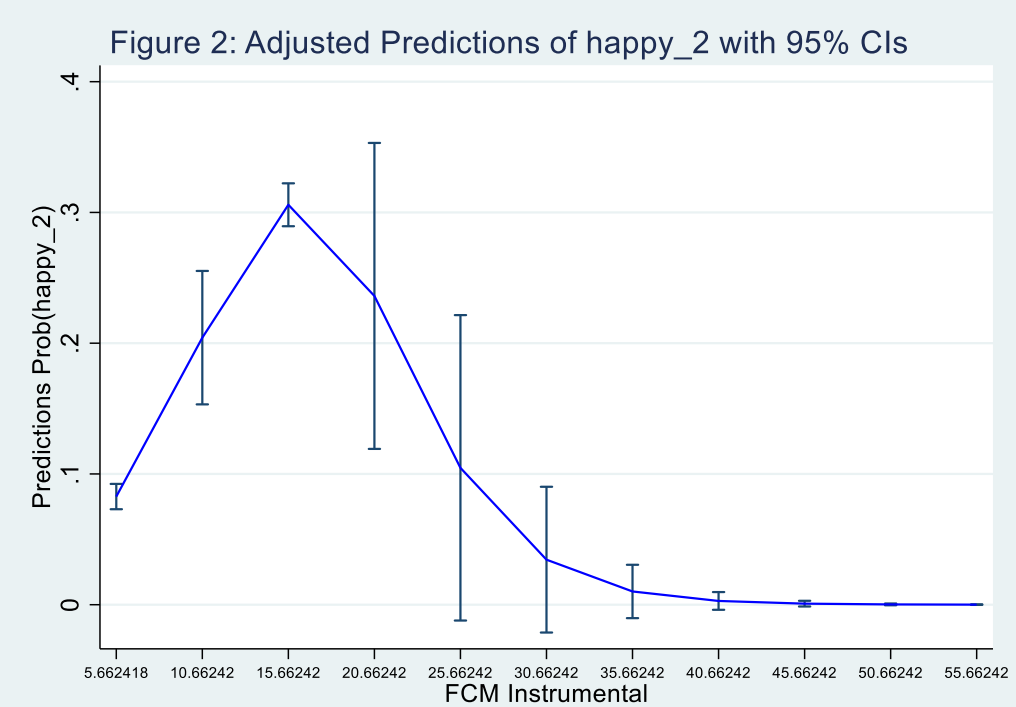


Figure 2: Adjusted Predictions of happy_2 with 95% CIs
Predictions Prob(happy_2)
0
.1
.2
.3
.4
5.662418
10.66242
15.66242
20.66242
25.66242
30.66242
35.66242
40.66242
45.66242
50.66242
55.66242
FCM Instrumental

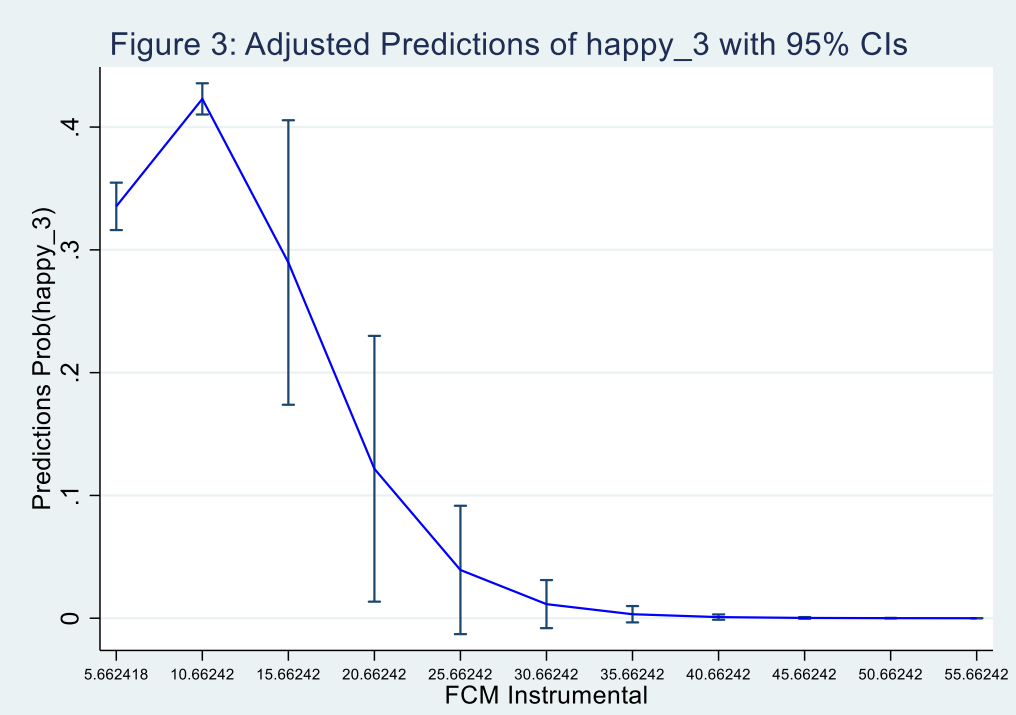


Figure 3: Adjusted Predictions of happy_3 with 95% CIs
Predictions Prob(happy_3)
0
.1
.2
.3
.4
5.662418
10.66242
15.66242
20.66242
25.66242
30.66242
35.66242
40.66242
45.66242
50.66242
55.66242
FCM Instrumental

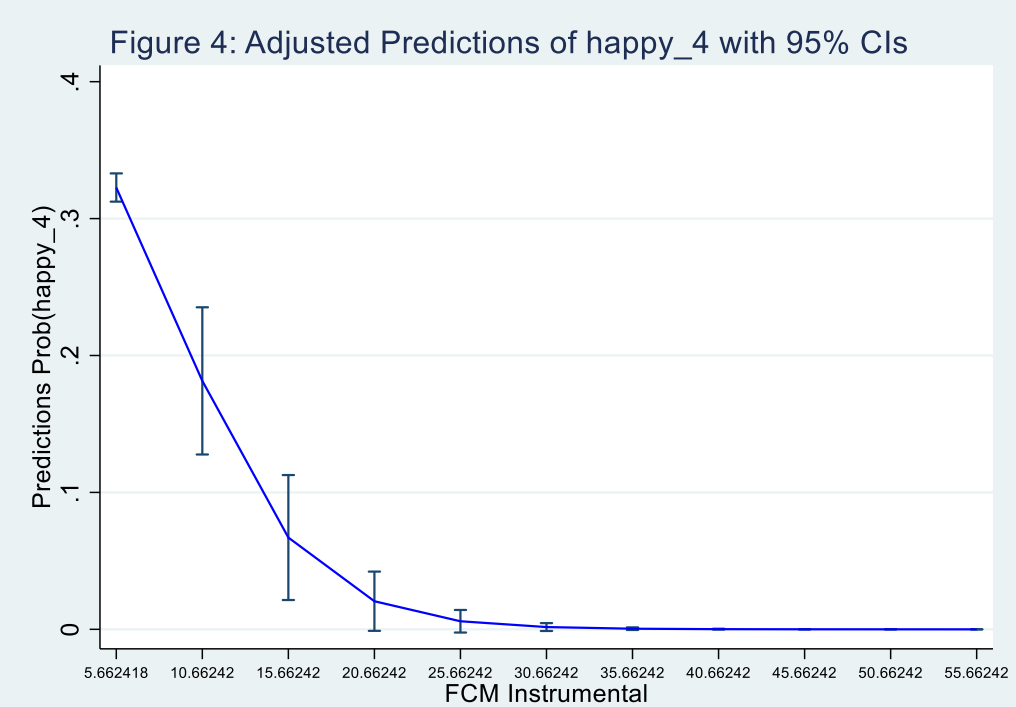


Figure 4: Adjusted Predictions of happy_4 with 95% CIs
Predictions Prob(happy_4)
0
.1
.2
.3
.4
5.662418
10.66242
15.66242
20.66242
25.66242
30.66242
35.66242
40.66242
45.66242
50.66242
55.66242
FCM Instrumental

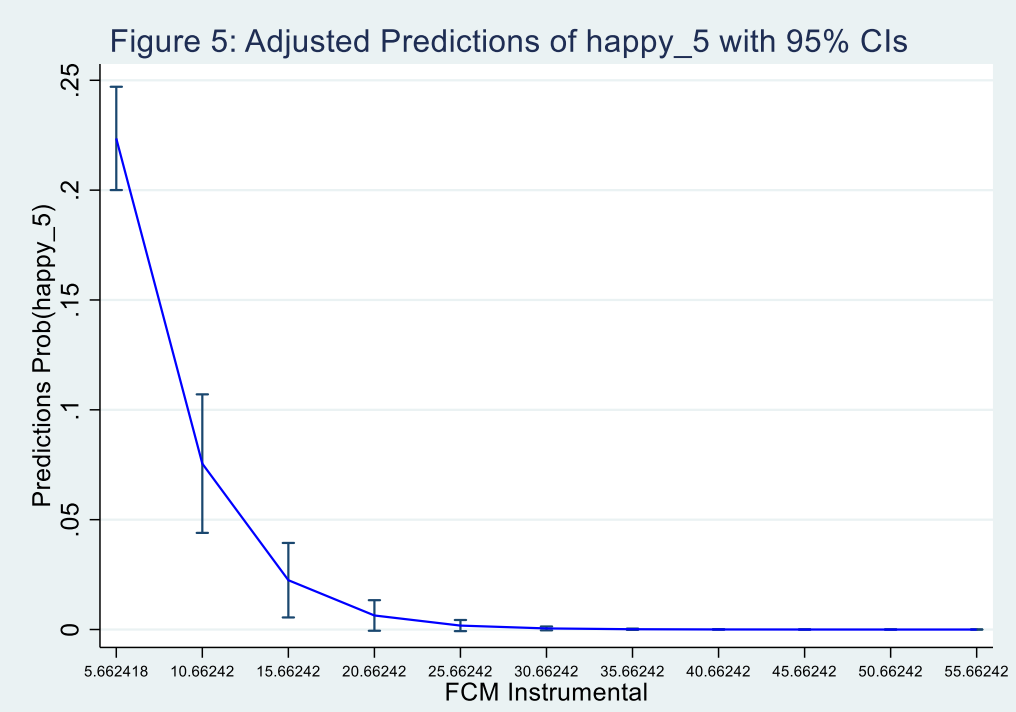


Figure 5: Adjusted Predictions of happy_5 with 95% CIs
Predictions Prob(happy_5)
0
.05
.1
.15
.2
.25
5.662418
10.66242
15.66242
20.66242
25.66242
30.66242
35.66242
40.66242
45.66242
50.66242
55.66242
FCM Instrumental

Conclusions

This research provides evidence in support of the hypothesis that FD raises individual SWB. Our results suggest that local own revenues, as opposed to transfers, are more likely to make local authorities more accountable to residents as well as make residents themselves more aware of the fiscal effort made by representatives. While this should not be interpreted as evidence against the use of equalizing grants, it calls our attention about the potential negative effects of imposing restrictions on the local leeway to charge taxes of their own or decide on their tax rate, tax bases and potential tax rebates. The remaining covariates used in our empirical analysis exhibit effects in line with theoretical predictions, most of which have been taken to test in previous empirical research.

However clear on average, the benefits from FD appear to differ across specific SWB levels. Expectedly, individuals in the lower levels of SWB are more likely to reside in municipalities with lower levels of public services, in which access to basic services is limited and of a lower quality. In such a case, the level of funding is at least as—or even more—important than the composition of revenues. Despite that more funding through unconditional grants leads to increasing degrees of fiscal "centralization," it allows individuals to gain enjoyment from a minimally accepted provision of basic community services. Benefits of FD are likely to show up once a local funding threshold is exceeded, after which local authorities get wider power to innovate and control their own revenues. Reported simulations based on our empirical model offer supportive evidence of this, as FD appears to have a non-ambiguous positive effect for the two highest brackets of SWB only.

Some policy recommendations can be drawn from our reported results. First, the way in which local governments get their funding matters. In the case of Chile, municipal governments

exhibit important differences in this respect, as some of them get most of their funding from the FCM. Since the existing law on municipal revenues gives very little if any leeway for municipalities to determine local taxes, it seems recommendable to strengthen local autonomy in this respect. This is likely to make residents feel closer to local decisions and turn majors and local authorities into genuine protagonists of their community development. Second, the very uneven inter-municipal distribution of tax bases in Chile calls for a redesign of the FCM formula. On the one hand, a more generous contribution from the national government to this redistribution fund is highly desirable so that municipal fiscal autonomy could be strengthened. On the other, the assignment of this fund across municipal governments must consider (among other factors) fiscal capacity instead of actual revenues, as it is the case now. This would preserve the link between municipal financial management on the one hand, and residents' capacity to demand accountability from the authorities on the other.

References

Ahmad, E. and Brosio, G. (2009). “Does decentralization enhance service delivery and poverty reduction?”, Ahmad E. and Crosio G. (Eds.), Edward Elgar.

Ahmad, E., L. Letelier y H. Romano. (2015). “Design of transfers in Chile: achieving effective service delivery and convergence of opportunities”, document presented at the IV JornadasIberoamericanas de Financiación Local, Santiago, Chile.

Barankay I. and Lockwood B. (2007). “Decentralization and the productive efficiency of government: Evidence from the Swiss cantons”, *Journal of Public Economics*, 91, pp. 1197-1218.

Bahl, R. W. (2005). Fiscal Decentralization 101, Atlanta, GA: Andrew Young School of Policy Studies, Georgia State University. Barankay and Lockwood B. (2007) “Decentralization and the productive efficiency of government: Evidence from the Swiss cantons”, Journal of Public Economics, 91, pp. 1197-1218.

Bahl, R. W. (2005). "The Pillars of Fiscal Decentralization", CAF Working Papers, N. 2008/2007.

Bardhan P. and Mookherjee D. (2006). “Pro – targeting and accountability of local governments in West Bengal”, *Journal of Development Economics*, 79, pp. 303-327.

Bjornskov, C., Drehe, A., and Fischer, J. A. (2008). “On decentralization and life satisfaction”, *Economics Letters*, 99(1), pp 147-151.

Boex J. and Simatupang R. (2008). “Fiscal Decentralization and Empowerment: Evolving Concepts and Alternative Measures”, *Fiscal Studies*, vol. 29, n. 4, pp. 435-465.

Boffa F., Amadeo P. and Ponzeto G. (2016). “Political Decentralization and Government Accountability”, *Quarterly Journal of Economics* Vol. 131 Issue 1, pp. 381-422.

Brennan, G. y Buchanan, J. (1980). The Power to Tax. Analytic Foundations of a Fiscal Constitution, New York, Cambridge University Press.

Diaz-Serrano L. and Rodriguez Posé A. (2012). "Decentralization, Subjective Well-Being, and the Perception of Institutions", *Kyklos*, Vol 65 (2), pp.179–193.

Diego-Rosell P., Tortora R. and Bird J. (2016). "International Determinants of Subjective Well-Being: Living in a Subjectively Material World", *Journal of Happiness Studies* 19, pp.123–143.

Dolan, P., Peasgood, T. and White, M. (2009). "Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective wellbeing", *Journal of Economic Psychology* (29), pp.94-122.

Escobar-Lemmon M. y Ross Ashley. (2014). "Does Decentralization Improve Perceptions of Accountability? Attitudinal Evidence from Colombia", *American Journal of Political Science*, pp. 175–188.

Frey, B. S., and Stutzer, A. (2000). "Happiness, economy and institutions", *Economic Journal*, 110(466), pp.918-938.

Frey, B. S., and Stutzer, A. (2002). "What can economists learn from happiness research?", *Journal of Economic literature*, 40(2), pp. 402-435.

Gao S., Meng X. and Zhang L. (2014). "Fiscal Decentralization and Life Satisfaction: Evidence from Urban China", *Social Indicators Research*, 119: pp. 1177-1194.

Ferrada L. M. (2017). "Job Satisfaction in Chile: geographic determinants and differences", *CEPAL Review* N. 123, pp. 126-145.

Han S., kim H. and Lee H-S. (2013). "A Multilevel Analysis of the Compositional and Contextual Association of Social Capital and Subjective Well-Being in Seoul, Sout", *Social Indicators Research*, 111(1), pp. 185-202.

Hayek V. F. (1945). "The use of Knowledge in Society", American Economic Review", V. 35, N. 4, pp. 519-530.

Herrera P. M. S., Barros L. C. and Fernández l. M. B. (2011). "Predictors of Quality of Life in Old Age: A Multivariate Study in Chile", *Journal of Population Ageing*, Vol. 4, Issue 3, pp. 121-139.

Hessami, Z. (2010). “The size and composition of government spending in Europe and its impact on wellbeing”, *Kyklos*, 63(3), pp. 346–382.

Hojman D. A. and Miranda A. (2018). “Agency, Human Dignity, and Subjective Well-being”, *World Development*, 101: pp 1-15.

HoxJ. J. (1995). Applied Multilevel Analysis. Amsterdam: TT-Publikaties.

Ibem E. and Amole D. (2013). “Residential Satisfaction in Public Core Housing in Abeokuta, Ogun State, Nigeria”, *Social Indicators Research*, Vol. 113, No. 1, pp.563-581.

Kotsogiannis, Ch., Schwager, R. (2006). “On the incentives to experiment in federations”, *Journal of Urban Economics* 60, pp. 484–497.

Letelier S. L. (2011). “Theory and Evidence of Municipal Borrowing in Chile”, *Public Choice*, N. 146, pp 395-411.

Letelier S. L. and Saez Lozano J. M. (2013). “Fiscal Decentralization in Specific Areas of Government. A Technical Note”. *Economía Mexicana NUEVA EPOCA*, 2013, vol. XXII, issue 2, pp. 357-373.

Leteier L. S. and Ormeño C. H. (2018). “Education and fiscal decentralization. The case of municipal education in Chile”, *Environment and Planning C: Politics and Space*, doi.org/10.1177/2399654418761888.

Leteier L. S. (2019). “Equidad Territorial y Desarrollo: el caso de Chile.”, en *Desarrollo Territorial Colaborativo. Descentralizando poder y Competencias*, Heinrich von Baer v- L. y Nicolás Bravo R. (Eds.) , UFRO University Press.

Loewe N., Bagherzadeh M., Araya-Castillo L., Thieme C. and Batista-Foguet J. (2014). “Life Domain Satisfactions as Predictors of Overall Life Satisfaction Among Workers: Evidence from”, *Social Indicators Research*, 118: pp. 71-86.

Lockhood B. (2006). “The Political Economy of decentralization”, in Handbook of Fiscal Federalism”, Ahmad E. and Brosio G. (Eds.), Edward Elgar.

Martinez-Vasquez, J., Vulovic, V., and Liu, Y. (2011). "Direct versus Indirect Taxation: Trends, Theory, and Economic Significance", Georgia State University. International Studies Program, 09–11, 37–92.

Mohit M. A., Ibrahim M. and Rashid Y. R. (2010). "Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia", Habitat International, 34, pp. 18-27.

Montero R. and Rau T. (2016). "Relative Income and Job Satisfaction in Chile", Handbook of Happiness Research in Latin America" pp. 205-217.

Oates W. (1972). Fiscal Federalism, Harcourt, Brace Jovanovich, New York.

Oates, W. (1985). "Searching for Leviathan: An Empirical Study", *American Economic Review*; Vol. 75, N. 4, pp.. 748-757.

Oates, W. (2008). "On the evolution of Fiscal Federalism. Theory and Institutions", *National Tax Journal*, Vol. LXI, N. 2, pp. 313-334.

Pagliai C. and Montecinos E. (2006). "Presupuestos Participativos en Chile. Experiencias y Aprendizajes", Ebert Fundation and Foro Chileno de Prespuesto Participativo.

Persson G. and Tebellini G. (2003). "The Economic Effects of Constitutions", Cambridge: MIT Press.

Porto A. and Sanguinetti P. (2001). "Political Determinants of Intergovernmental Grants: Evidence from Argentina", *Economics and Politics*, Vol. 13, Issue 3, pp. 237–256.

Prud'homme, R. (1995). 'The dangers of decentralization', World Bank Research Observer, 10(2) pp. 201-220.

Rabe-Hesketh, S., Skrondal, A., & Pickles, A. (2005). Maximum likelihood estimation of limited and discrete dependent variable models with nested random effects. *Journal of Econometrics*, 128(2), pp. 301-323.

Rodríguez-Pose A. and Tselios V. (2019). "Well-being, Political Decentralisation and Governance Quality in Europe", *Journal of Human Development and Capabilities*, Volume 20, 2019 - Issue 1, pp 69-93.

Rojas M. (2016). “Happiness, Research and Latin America”, Handbook of Happiness Research in Latin America” pp.1-16.

Rose-Ackerman. (1980). “Risktaking and Reelection: Does Federalism Promote Innovation?” *Journal of Legal Studies* 9, pp. 593-616.

Saez J. L. and Letelier S. L. (2016). “Expenditure decentralization: Does it make us happier? An empirical analysis using a panel of countries”, unpublished manuscript.

Sanogo, T. (2019). "Does fiscal decentralization enhance citizens’ access to public services and reduce poverty? Evidence from Côte d’Ivoire municipalities in a conflict setting", World Development 113, pp. 204-221.

Seabright, P. (1996). “Accountability and decentralization in government: An incomplete contracts model”, *European Economic Review*; Vol. 40, Issue 1, pp. 61-89.

Stevenson B. and Wolfers J. (2013). “Subjective Well-Being and Income: Is There Any Evidence of Satiation?”, NBER Working Paper No. 18992.

Sujarwoto S. y Tampubolon G. (2015). “Decentralisation and Citizen Happiness: A Multilevel Analysis of Self-rated Happiness in Indonesia”, J Happiness Stud 16, pp. 455–475, DOI 10.1007/s10902-014-9518

Treisman D. (2007). *The Architecture of Government*, Cambridge Studies in Comparative Politics.

Tsurumi T., Imauji A. and Managi S. (2019). “Relative Income, Community Attachment and Subjective Well–Being: Evidence from Japan”, Kyklos, Vol. 72, No. 1, pp.152–182.

Voigt, S. and Blume, L. (2012). “The economic effects of federalism and decentralization—a cross-country assessment”, *Public Choice* 151, N. 1-2, pp. 229-254.

Appendix

Definition and Measurement of Variables

Variable	Definition	Measurement
Individual Variables (Source: CASEN 2011 and 2013)		
HAPPY_5	Life satisfaction	Completely dissatisfied or little satisfied (1) to very satisfied or completely satisfied (5).
GENDER	Gender	Men (1), and others (0)
AGE	Age	Since 15 years old
MARRIED-COUPLE	Marital status: married or lives in couple	Married or they live in couple (1), and other states (0)
PRIMARY EDUCATION	Level of studies: primary education	Primary studies (1), and other levels studies (0)
SECONDARY EDUCATION	Level of studies: secondary education	Secondary studies (1), and other levels studies (0)
HIGHER EDUCATION	Level of studies: higher education	Higher education (1), and other levels studies (0)
UNEMPLOYED	Labor status	Unemployed (1), and others (0)
HEALTH	Health level	Very bad (0), and very good (6)
RELIGION	Participation in religious organizations or the church	Participate in a religious organization or church (1), and other (0)
INDIGENE	Membership to an indigenous people	Indigene (1), and other (0)
NEIGHBORHOOD BOARD	Participation in neighborhood board or another organization territorial	Participate in neighborhood board (1), and other (0)
HOUSEHOLD MEMBERS	Number of household members	
PERCENTILE 1-10 OF INCOME	Percentile 1-10 of income	Percentile 1-10 of neperian logarithm income
PERCENTILE 90-99 OF INCOME	Percentile 90-99 income	Percentile 90-99 of neperian logarithm income
Municipal-level Variables (Source: SUBDERE 2011 and 2013)		
FCM*	FCM dependency rate	Percentage of all municipal revenues represented by the "Fondo Común Municipal" (FCM)
FCM_INST*	Instrumental variable for FCM	See estimation formula in the fourth section above
ACCES TO HOSPITALS**	Access to Hospital	SUBDERE

**SINIM, **Estudio Caracterización de Territorios Aislados 2011 (SUBDERE)*