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The Effect of Municipal Fiscal Decentralization on Subjective Well Being: The Case of Chile

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Abstract

This research hinges upon the relationship between fiscal decentralization and life satisfaction. It contributes to the field by performing an empirical analysis focused on the case of Chile, by merging the national household survey (CASEN) with municipal level information. This analysis is based on a hierarchical empirical model, in which data from both sources are integrated. Our results show a significant positive effect of municipal level fiscal decentralization on individual subjective well-being. Nonetheless, we also show that said result is contingent upon residents' political representation, which is in line with the hypothesis that citizens' oversight of local authorities is a necessary condition for the effect of fiscal decentralization to emerge. From the viewpoint of how fiscally decentralized measures should be implemented in practice, above evidence suggests that said process should be accompanied by the strengthening of local residents' participation in community relevant matters. Further confirmation of this is presented in this research, by showing that residents' membership in organized groups further increases individual subjective well-being.

JEL Classification: H72, H77, C11.

Keywords

fiscal decentralization, political representation, well-being, common municipal fund

Introduction

This research builds upon previous empirical studies to explore the extent to which fiscal decentralization (FD) in Chile affects individual Subjective Well Being (SWB). Despite this being a fiscally centralized country, it exhibits a significant inter-municipal variation in the local leeway to take advantage of the local tax base. Despite tax rates and exemptions being centrally established by law, large tax-base municipalities do have some control over revenues, as they may contribute to updating the local cadastre, intensify pressure on local economic activities to make them pay for business licenses and some municipal services. While the potential causal effect from FD on SWB has been widely explored, two core hypotheses differentiate this present research from previous ones in the field. First, we hypothesize that FD only enhances SWB if residents' oversight of local authorities is strong enough. Second, residents' membership in organized groups (formal and informal), further improves SWB. Since our results confirm said hypotheses, we conclude that FD becomes a powerful welfare improving policy in combination with more local government accountability to its residents.

This research builds upon previous empirical studies that show a systematic positive relationship between decentralization and life satisfaction (Bjørnskov et al., 2008; Diaz-Serrano & Rodríguez-Pose, 2012; Frey & Stutzer, 2000, 2002; Hessami, 2010; Sáez-Lozano & Letelier-Saavedra, 2016; Sujarwoto & Tampubolon, 2015; Voigt & Blume, 2012). While results generally confirm the hypothesis that subnational autonomy may improve SWB, the existing empirical literature presents some gaps to be filled. Regarding the country under

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analysis, no previous studies exist in Chile that explicitly address the link between SWB and fiscal decentralization. Despite this being a unitary country, it exhibits a significant degree of inter-municipal variation in the local revenue mobilization capacity and the extent to which actual expenditure is in line with residents' demands. While poor municipalities in Chile have a very narrow or even no tax base at all, as they get most of their funding from an equalization fund, well off municipalities have an ample tax base and enjoy a significant leeway to decide on revenues. Said diversity is further deepened by several relevant differences in socio-economic characteristics—and most importantly, in the degree of political representation. While this is often recognized as the "political dimension" of decentralization, it is not formally understood as a precondition for FD to have the expected effect.

In line with the discussion above, a municipal-specific "FD measurement" is used. This is meant to capture the expenditure side of FD. In dealing with municipal-level FD indicators and individual characteristics taken from a survey, a multilevel analysis is conducted (Hox, 1995). Our empirical model is estimated on the basis of a database from 345 municipalities for 2009 and 2013 respectively, as these are the only years for which the household survey includes a question on life satisfaction. Municipal-level information is merged with a sample of 250.000 individual-level observations taken from the National Household Survey (CASEN), in which interviewees are requested to define their satisfaction with life in the range of 0 to 9. Our empirical results confirm the relevance of municipal-level factors in explaining life satisfaction, among which fiscal and political decentralization appears to be significant. At the individual-level, our estimations are generally in line with previous studies on the subject matter.

The remaining sections of this paper describe the underlying theory and hypotheses taken to test, the existing evidence research methodology, estimation, discussion of results and conclusions.

Theory and Hypotheses

Based on Bahl (2005), FD can be broadly defined as the "empowerment of people by the empowerment of their local governments." More specifically, this entails "an increase in taxing and/or spending responsibilities given to subnational jurisdictions" (Tanzi, 2001). While this definition is focused on the national dimension, a substantial within-country variation in the degree of FD often exists. Local jurisdictions vary in the extent to which they host more (less) empowered citizens and/or enjoy from more (less) tax autonomy and spending responsiveness. Even if a national law restricts the local choice on rates and exemptions, the capacity to impose fees on services or the local tax base in question may differ across municipal governments, which leads to varied degrees of fiscal autonomy across municipalities.

While some caveats on decentralization have been put forward (Letelier & Lozano, 2013; Prudhomme, 1995; Treisman, 2007), we adhere to the hypothesis that FD is generally expected to enhance people's quality of life. On the one hand, FD municipalities will bring about a closer match between residents' demands and the corresponding supply of local public goods (Oates, 1972). On the other, FD will make local authorities more accountable for the actions they take (Ahmad & Brosio, 2006; Lockwood, 2006). While the so called "first generation" of theoretical models was more inspired by the first approach (Oates, 1972), the second generation is clearly focused on the second one (Oates, 2008). Whatever the argument, more efficient delivery of public goods leads to better quality services for the same cost (tax) and/or more control of the people on the expenditure being executed by those who spend the budget.

Nevertheless, said improvement in SWB is likely to depend on a number of individual and contextual factors. Among individual ones, the role of age, income, family characteristics, labor status, and health conditions have been widely recognized (Ferrer-i-Carbonell & Frijters, 2004). As for the context in which community life occurs, we hypothesize that political institutions matter. Riker (1964) was the first to recognize the link between "federalism"—a concept that embraces fiscal decentralization, and "party-centralization," which internalizes subnational spillovers across jurisdictions. Yet another dimension of said link is the degree of citizen representation at the local level. It will be argued that, the better that representation is, the stronger the citizens' oversight over local authorities. That said, benefits from FD are contingent upon the capacity of the local constituency to enforce local political commitments.

The Municipal Law in Chile establishes six exclusive functions and 11 shared responsibilities with the national government. Exclusive responsibilities include local development, urban planning, the enforcement of the law on car traffic, construction permits and garbage collection. While these functions are reasonably clear in their meaning and scope, the so called "shared responsibilities" are rather vague and leave ample space for municipal governments to innovate in key areas of local development. Functions of this type include education, health, the promotion of culture, tourism, public transportation, urbanization, and social development among others. In as much as shared functions are mostly exercised on a voluntary basis, we should expect that they will be only exercised as long as the set of exclusive responsibilities are reasonably fulfilled. This is for example the case of school level education and primary health,

in which approximately between 10% and 15% of the funding is provided by the municipal level, albeit only more fiscally autonomous municipalities contribute (e.g., Letelier & Ormeño, 2018). Similarly, a Municipal Revenue Law regulates municipal funding. This law treats all municipalities the same, as it establishes common rates and regulations for the property tax, business, car licenses and other revenue sources. In practice though, local authorities do have some space to decide on the charging of specific services, exemption granted to specific residents. As stated above, this strongly depends on the type of municipality in question.

The Existing Evidence

Non-institutional Factors

A myriad of specific factors has been found to be responsible for SWB. A review by Dolan et al. (2008), suggests that a comprehensive list should at least include income, age, gender, ethnicity, education, health, labor status, marital status, religion and the number of sons, among others. A world level study by Diego-Rosell et al. (2018) shows evidence that the most important factor is material well-being, which stands for 16.6% of the variance in life satisfaction. Interestingly, the community context appears to be the second most important one (5.5% of the variance). As far as specific variables are concerned, absolute personal income appears to have a positive—albeit decreasing—effect (Stevenson & Wolfers, 2013). Nonetheless, the influence of local culture and other idiosyncratic features may have a significant role to play, as the effect of income and other variables are likely to be stronger in more competitive societies (e.g., Tsurumi et al., 2019). Regarding the Latin American case, this appears to be a relatively happier zone as compared to the world (Helliwell et al., 2021). A collection of related studies highlights specific drivers of SWB on the region (Rojas, 2019). Important ones are family ties, gratifying human relations, social networks, and other non-income related factors. The so-called social capital—this being defined as the access to social networks, has been also found to affect SWB (e.g., Aedo et al., 2020; Han et al., 2013).

As for as the Chilean case, a number of studies have explored the determinants of life satisfaction in specific groups, such as in the case of workers, elderly people and students. A study by Loewe et al. (2014) used a sample of 530 workers to explain seven life domains built upon 21 individual indicators usually considered relevant. Said study provides evidence showing that the financial situation is a predominant factor for workers, which conforms to the case of emerging economies in general. Interestingly, they also find that workers' family satisfaction is highly correlated with global (country-level) life satisfaction. As for the specific case of "job satisfaction," some evidence suggests that other workers' income may reduce own income satisfaction (Montero & 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 the zone where people reside is provided by Ferrada (2018), who finds that workers on the country's north zone have a higher SWB. As far as tertiary students are concerned, 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 Ponce et al. (2011), shows 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) examine the effect of individual "agency" as defined by Sen (e.g., Sen, 1997), and human dignity ("shame") on SWB. By using a Chilean based survey, they show that "freedom to decide"—in the spirit of Sen's hypothesis, appears to be as powerful to predict SWB as income itself.

Institutional Factors and Decentralization

The role of institutional factors in the government's performance has been the subject of numerous theoretical and empirical contributions (e.g., Persson & Tabellini, 2005). 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 beginning of the 90s, an extensive list of studies intended to answer the question of whether decentralization is conducive to improvements in government performance (Ahmad & Brosio, 2009). The basic hypothesis taken to test is that empowering sub-national governments makes local authorities more accountable to people (Seabright, 1996), enhances public policy innovation (Rose-Ackerman, 1980), avoids excessive taxation (Brennan & Buchanan, 1980), improves preference matching between governments and citizens (Oates, 1972), and strengthens trust in government (Kim et al., 2022), among other potential benefits. While most of the available evidence hinges upon 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.

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. A pioneering research

is the one carried out by Frey and Stutzer (2000), in which the effect of decentralization and other related institutional factors is examined for the case of Swiss regions. They conclude that government initiatives, such as referendums and the degree of 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. Albeit revenue decentralization appears to have an effect, expenditure decentralization affects SWB through the government's consumption only. Diaz-Serrano and Rodríguez-Pose (2012) extended this analysis to a broader set of life satisfaction measurements. Four out of five proxies of fiscal decentralization as well as political decentralization appear to affect SWB positively. By conducting factor analysis on 25 country specific 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, this being generally positive for countries with a low government's quality. Letelier and Sáez-Lozano (2020) provide similar results with a world level sample of 30 countries, in which the institutional proxy is the degree of country level fiscal decentralization.

As for the country level evidence, a study by Gao et al. (2014) shows 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 big share of provincial budgets, impede provinces a budget execution in line with people's preferences. A similar study for Indonesia suggests that, albeit fiscal decentralization appears to be significant in explaining SWB, this does not hold for the political decentralization (Sujarwoto & Tampubolon, 2015). Despite no studies of this type are reported for Chile, Letelier and Ormeño (2018) show that municipal fiscal decentralization on school education does improve students' performance in standardized national tests. Authors hypothesize that fiscal decentralization gives municipalities more leeway to decide on the teaching staff, which has a direct impact on education.

Research Methodology

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-level measurement of life satisfaction (more of this below). 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 Equation 1, in which Y^*_{ijk} may fall into R specific ranges bounded between k_{r-1} and k_r, where "k" represent 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".

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

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

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 variables that stay the same over time. The second one is the "municipal-year" level (Z_{jk}), which controls for those municipal level variables that change between the two surveys. Finally, level one stands for those individuals 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 et al. (2005).

Data Description

The definition and measurement of variables are provided in the Appendix. Descriptive statistics are reported in Table 1. As for the individual information, this is taken from the national household surveys of 2011 and 2013 respectively (CASEN 2011 and 2013). They provide 86,854 observations for 2011, and 87,400 for 2013, on which regional and expansion factors were applied. These are the only versions of said survey in which an explicit question about life satisfaction is included. The 10 values of the scale used by CASEN have been reduced to five (HAPPY_5), according to Likert's theory and scale (Allen & Seaman, 2007; Armstrong, 1987; Jovancic, 2020; Likert, 1932; Mogey, 1999; Norman, 2010; Spector, 1992). The five levels considered are the following: (1) very dissatisfied, (2) dissatisfied, (3) neither dissatisfied nor satisfied, (4) satisfied, and (5) very satisfied. This is the only possible scale that meets the conditions of symmetry and equilibrium. It is symmetrical, because it contains the same number of positive (3 and 4) and negative (1 and 2) positions, around the neutral value

Table 1. Descriptive Statistics.

	Mean		Std. dev.		Coefficient of variation (CV)		Min.		Max.	
	2011	2013	2011	2013	2011	2013	2011	2013	2011	2013
Individual Variables: 1-level										
HAPPY_5	1.07	1.13	1.45	1.50	1.35	1.33	0	0	4	4
GENDER	0.52	0.52	0.50	0.50	0.96	0.95	0	0	1	1
AGE	34.57	35.45	22.16	22.41	0.64	0.63	15	15	108	108
MARRIED-COUPLE	0.40	0.40	0.49	0.49	1.21	1.22	0	0	1	1
HEALTH	4.66	0.08	1.30	0.27	0.28	3.36	0	0	6	1
PRIMARY EDUCATION	0.40	0.38	0.49	0.49	1.23	1.27	0	0	1	1
SECONDARY EDUCATION	0.38	0.38	0.48	0.48	1.28	1.29	0	0	1	1
HIGHER EDUCATION	0.15	0.18	0.36	0.38	2.34	2.17	0	0	1	1
UNEMPLOYED	0.03	0.03	0.18	0.17	5.43	5.56	0	0	1	1
INDIGENE	0.12	0.13	0.33	0.33	2.66	2.63	0	0	1	1
RELIGION	0.09	0.08	0.28	0.27	3.27	3.36	0	0	1	1
NEIGHBORHOOD BOARD	0.08	0.07	0.27	0.26	3.41	3.60	0	0	1	1
PERCENTILE 1–10 OF INCOME	1.20	1.25	3.57	3.70	2.98	2.96	0	0	14.02	14.01
PERCENTILE 90–99 OF INCOME	1.45	1.44	4.37	4.34	3.00	3.01	0	0	18.07	17.60
Municipality-time variables: 2-level										
URBAN	0.88	0.89	0.16	0.15	0.18	0.17	0.26	0.26	1	1
FCM_INST	42.76	42.66	21.59	21.53	0.50	0.50	1.29	0.89	98.49	96.94
POPULATION_ COUNCILOR	15,961.48	18,163.85	15,088.97	17,549.54	0.95	0.97	165.00	154.67	91,926.88	97,498
Municipality variables: 3-level										
HOSPITAL ACCESS	0.87	0.89	0.18	0.18	0.21	0.20	0.01	0.01	1	1

(3). It is balanced, because the median of the scale corresponds to only one value which is the neutral point (3).

Among individual control variables, binary dummies were used in the cases of GENDER, MARRIED-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 other similar one. Variable HEALTH is measured in a seven-options question. As for the dispersion of said variables, CV is equal or above 2.0 for HIGHER EDUCATION, UNEMPLOYED, RELIGION, INDIGENE, NEIGBORHOOD-BOARD and the PERCENTILES OF INCOME. This same coefficient is slightly below 1 for GENDER, above 1.2 for PRIMARY EDUCATION and SECONDARY EDUCATION, and above 2 for HIGHER EDUCATION. The remaining individual variables have a CV lower than 1.0. Interestingly, our municipal and municipal-time variables exhibit a relatively low variation with a CV below 1. Among them, the political representation variable (POPULATION_ COUNCILOR) exhibits the maximum CV in the group, which reinforces its potential usefulness as a control.

Separate mention deserves the case of FD, which stands for our proxy of Fiscal Decentralization. Since FD is a multidimensional variable, we need to find a proxy that takes proper consideration of the two main dimensions referred to above (Boex & Simatupang, 2008). On the one hand, we need 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 in their favor. Two basic types of revenues can be distinguished. The one called "General Own-Sources Revenues" (GOR) corresponds to 40% of all revenues, which originated in local taxes and/or charges for services. While in most cases both the rate as well tax bases are determined by Law, municipalities do have some room to decide on business licenses, in which they can define the rate within a range. They can also cooperate with the National Tax

Authority in order to update the local cadaster, which is legally a national government's responsibility. Since municipal governments are also in charge of the local urban planning, they can introduce changes in the regulation in force, which may have significant long-term consequences on municipal tax revenues. The remaining 60% share of GOR is made up of transfers from the national government. Among them, an important one is the Common Municipal Fund (*FCM*). This stands as an inter-municipal fiscal equalization mechanism thereby relatively well-off municipalities give away a fixed share of their main local tax revenues, which are then reallocated to the relatively poor ones on the basis of a formula. The main revenue sources being redistributed include property taxes, business licenses, and car licenses. As opposed to other transfers that municipalities are eligible for, the *FCM* is a non-conditional and fully exogenous grant that reflects the relative financial dependency of the recipient jurisdiction. We will use the share of the Common Municipal Fund on GOR (*FCM*), as an indicator of the degree of municipal fiscal dependency. As far as the distribution of the *FCM* across municipalities, this is a very important source of funding for most communes. For the year 2013, 74% of municipalities exhibit an *FCM* dependency of more than 50% of all revenues. Those cases in which this dependency is above 70% in the same year equals 42%. Extreme values of the *FCM* for specific municipalities indicate that in 2013, the minimum value was 0.89% of all revenues and a maximum of 96.94%. Reported data correspond to "net of *FCM* contribution revenues." If gross revenues (before *FCM* contribution) were used, net financial benefits from the *FCM* would be negative for rich municipalities.

In order to further explore the robustness of our empirical model, an instrument will be used to control for possible measurement errors of *FCM*, as well as other potential endogeneity biases (Equation 2). 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-Vazquez 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 (*d*) between the municipality in question ("*i*") and all municipalities in a predetermined area (*1*/*d*), 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 Equation 1 above. Given the structure of the country's territory, municipalities are likely to share similar characteristics across large geographical areas, in which the pattern of municipal tax revenues and tax bases exhibit similar characteristics. At one end, the northern zone of the country is mainly dominated by the mining industry and it exhibits large 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 center zone is where the bulk of the national economic activity occurs, and where most of the population lives. In view of this, we chose a value of "*d*" equal to 500 km, which is expected to capture similarity across large geographical areas.

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

Results

Estimation Results

The estimation of the empirical model (Equation 1) is presented in two versions (Table 2). While version 1 includes only two levels (individual and municipal-time levels), version 2 includes a third (municipal) level, which is accounted for in a proxy of geographic isolation (Hospital Access). Given its lower AIC and BIC, version 2 is chosen for interpretation. The remaining diagnostic tests confirm the global significance of the empirical model (LR test vs. ordinal logit model), and the parallel lines regression assumption (Wald test). As for the ICC, this is small for both the municipal-time as well as municipal levels. This should be interpreted as a relatively low inter-municipal correlation of local characteristics in the analysis, as compared to level 1 (individual) variables.

As for controls among level one variables, they are correctly signed and in line with previous evidence. This includes a non-linear association between SWB and age, a positive and significant effect of partnered individuals, of those who have secondary and tertiary education, a satisfactory health condition, a religious belief, an income within the first 1–10 percentile, and belongingness to a neighbor board. While a significant negative effect is reported in the case of those who belong to an ethnic group, this result gets reversed if the ethnic status is timed by urban (level 2 variable). This last result is compatible with the larger share of poverty in rural versus urban areas (CASEN 2013), and the general pattern of rural-urban migration. Another result worth mentioning is the positive effect of individual membership in the municipal board.

Regarding the municipality-time variation (level 2), this captures the impact of a weaker economic growth in 2013 (4,0) relative to 2011 (6,11) as it reinforces level 1 evidence on the role of income as a determinant of SWB. As expected, our treatment variable (ln(*FCM*)), is correctly signed and significant on versions 1 and 2 of the estimated model. Interestingly enough, this also holds

Table 2. Models Multilevel Ordinal Logit of Happiness in Chile.

	Model 1[(1)] FCM_INST	Model 2[(2)] FCM_INST
A. Fixed part		
A.1. Individual variable[(3)]		
GENDER	0.887*** (0.00784)	0.890*** (0.00794)
AGE	0.101*** (0.00104)	0.101*** (0.00105)
AGE^2	−0.000774*** (0.0000106)	−0.000775*** (1.08e-05)
MARRIED-COUPLE	0.349*** (0.00846)	0.350*** (0.00857)
HEALTH	0.115*** (0.00326)	0.116*** (0.00330)
PRIMARY EDUCATION	0.136*** (0.0218)	0.136*** (0.0220)
SECONDARY EDUCATION	0.387*** (0.0225)	0.386*** (0.0227)
HIGHER EDUCATION	0.697*** (0.0242)	0.693*** (0.0245)
UNEMPLOYED	0.0140 (0.0193)	0.0167 (0.0196)
ETHNIC	−0.151* (0.0588)	−0.149** (0.0590)
URBAN	−0.0495 (0.0775)	−0.0465 (0.0784)
ETHNIC*URBAN	0.228*** (0.0684)	0.225*** (0.0686)
RELIGION	0.207*** (0.0132)	0.205*** (0.0134)
NEIGHBORHOOD BOARD	0.343*** (0.0144)	0.337*** (0.0145)
PERCENTILE 1–10 OF Ln(INCOME)	0.0274*** (0.00100)	0.0277*** (0.00101)
PERCENTILE 90–99 OF Ln(INCOME)	−0.0129*** (0.000935)	−0.0130*** (0.000947)
A.2. Municipality-Time Variables		
DUMMY_2013	0.171*** (0.0212)	0.176*** (0.0216)
Log(FCM_INST)	−0.0376* (0.0161)	−0.0373** (0.0163)
Log(POPULATION_ COUNCILOR)	−0.103*** (0.0119)	−0.114*** (0.0137)
A.3. Municipality Variables		
HOSPITAL ACCESS		0.0956 (0.0665)
A.4. Thresholds		
κ_1: cut1 constant	0.0162 (0.125)	0.00119 (0.127)
κ_2: cut2 constant	0.226 (0.125)	0.212* (0.127)
κ_3: Cut3 constant	0.931*** (0.125)	0.918*** (0.127)
κ_4: Cut4 constant	2.348*** (0.125)	2.335*** (0.127)
B. Random part: Variances, and covariances[(4)]		
Level 2 Variance (*NEIGHBORHOOD BOARD*)	0.00786 (0.00412)	0.00738* (0.00404)
Level 2 Variance (U_{0jk})	0.00752 (2.158)	0.0111 (6.792)
Level 3 Variance (V_{00k})	0.0299 (2.158)	0.0267 (6.792)
C. Other statistics and contrasts		
No. Obs.	275,669	268,613
No. of groups (municipality-time)	648	634
No. Iteration of Adaptive Quadrature	81	58
No. Integration Points	8	8
Wall Clock Time	02:23:12	06:32:19
Intraclass Correlation Coefficient (ICC): level 2	0.0145714	0.01135844
Intraclass Correlation Coefficient (ICC): level 3		0.00801812
Akaike Information Criterion (AIC)	671,761.5	654,678.4
Bayesian Information Criterion (BIC)	672,035.2	654,961.9
Log Likelihood		−327312.2
LR test vs. ordinal logit model:		
chi2(3)	2,016.76	1,947.44
Prob > chi2	0.0000	0.0000
Deviance:	25.448868	25.397339
Prob > chi2(1)	2.977e-06	3.055e-06
D. Testing Parallel Lines Assumption		
Wald test for the final model:		
chi2[(5)]	2.64	2.36
Prob > chi2	0.4500	0.5012

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

[(1)]Model 1. Multilevel ordered logistic (odd-ratio): random intercept and explanatory variable of level 1, and 2.

[(2)]Model 2. Multilevel ordered logistic (odd-ratio): random intercept and explanatory variable of level 1, 2, and 3

[(3)]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.

[(4)]The standard error is in brackets

[(5)]Degrees of freedom chi2: i) model 1: 3; and model 2: 3.

Table 3. Marginal Effects of Happiness in Chile.

PD	Variables	(1) Happy = 0 dy/dx	(2) Happy = 1 dy/dx	(3) Happy = 2 dy/dx	(4) Happy = 3 dy/dx	(5) Happy = 4 dy/dx
HIGH	Min Log(Poblacion-concejal): 5.041272	0.00897** (0.00391)	0.000230* (0.000119)	−0.00401** (0.00179)	−0.00456** (0.00199)	−0.00401** (0.00179)
MEDIAN	Median (Poblacion-concejal): 8.264431	0.00924** (0.00405)	−0.000112** (4.88e-05)	−0.00300** (0.00132)	−0.00454** (0.00199)	−0.00300** (0.00132)
LOW	Max (Poblacion-concejal): 11.48759	0.00892** (0.00390)	−0.000426** (0.000193)	−0.00220** (0.000956)	−0.00408** (0.00178)	−0.00220** (0.000956)
	Observations	268,613	268,613	268,613	268,613	268,613

Note. Standard errors in parentheses.
***$p < .01$. **$p < .05$. *$p < .1$.

for the political decentralization variable, which suggests that a stronger oversight by local residents (low population-councilors ratio), improves SWB.

Marginal Effects

Marginal effects of log(*FCM*) are presented in Table 3. While control variables were kept at their average, our estimations stand for three different values of the political decentralization variable (PD), which is meant to be lower, the higher the value of PD (*local population / number of municipal councilors*). They correspond to its sample minimum (5.041272), sample median (8.264431), and sample maximum (11.48759). Reported coefficients should be interpreted as the change in the probability of being in the SWB category in question, resulting from an increase of one in log(*FCM*).

A number of interesting insights can be drawn by looking at the signs of the coefficients. First, all three marginal effects suggest that a rise in log(*FCM*) is associated with an increase in the probability of having a very low level of SWB (Happy = 1). This amounts to saying that more fiscal decentralization (lower *FCM*), is likely to lower the probability that an individual is in the lowest SWB level from the sample. While the opposite holds for the highest SWB category, some mixed results can be observed when the effects are examined separately for each political decentralization level. Second, while marginal effects exhibit the same signs for levels 3, 4, and 5 of SWB, the magnitude of said coefficients differ across political decentralization categories. In the highest SWB group (Happy = 5), the marginal effect is more than 1.8 higher (in absolute terms), for the highest political decentralization case (−0.00401) than it is for the lowest political decentralization case (−0.00220).

Regarding the magnitudes involved, they should be interpreted as the effect on the corresponding probability resulting from the instantaneous rate of change in log(*FCM*). In particular, the values of each marginal effect from Table 3 represent the average effect of individuals within each particular group (PD categories). If we look at the high PD case, individuals in the highest SWB level (Happy = *5*), will lower the probability of being in that category by −.00401 as a result of a marginal increase in log(*FCM*). In terms of the *FCM* itself, a rise of one in the log(*FCM*) is associated with an *FCM* being timed by 2.78. It means that a hypothetical increase of 178% in the *FCM*, may lower his/her probability of being "very" satisfied in −0.00401. While this appears to be low, its relevance must be evaluated upon the baseline probability. If this is low, as most likely be the case for individuals in Happy = 5, said effect may represent a substantial proportional reduction of the probability in question. For a probability baseline of .01, said raise in

FCM leads to a drop in that probability of 41%. This falls to only 8.2% in case the baseline was 0.05. Similarly, the same variation in *FCM* for the highest PD level but lowest SWB (Happy = 1), rises the probability of being very unsatisfied in .00897. For a baseline of 0.01, this raises that probability to 30%, and in only 6% in case the baseline was .05. At the other end of the PD spectrum (lowest PD), an increase of one in the *FCM* raises the probability of someone being in the lowest SWB in .00892. For a baseline probability of .05 that rises the chance of being in that position in 18.0%. The same estimation for the highest SBW within the lowest PD level (*ma* = 0.00220), suggests that the same increase in FCM is associated with a drop of 4.04% in the probability of being in that category.

Discussion

Results above highlight three main issues. First, they vindicate the relevance of FD as a tool to enhance SWB in a very centralized, unitary country. 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 mayors and local authorities into genuine protagonists of community development. In the case under analysis, this includes some leeway to decide on the property tax rate, as this represents more than 30% of municipal revenues (net of the FCM). This would give municipalities more choice in deciding the type of local development they want, and most importantly, it would make residents more aware of the link between local taxes and potential benefits in the provision of local public goods. Needless to say, said flexibility should establish a range of feasible choices in property tax rates, in order to avoid the danger of inter-municipal fiscal war.

Second, our evidence supports the hypothesis that FD may only affect SWB if this is accompanied by a parallel process of greater accountability by local governments to the community. This is consistent with the hypothesis according to which, closer citizen oversight is expected to make FD a more effective tool to meet community preferences. From a public policy perspective, said result reinforces the view that a process of political decentralization should precede any attempt to deepen FD. This contrasts with the political-economic stance, which sees that sequence from the view point of the level of government in question (Falleti, 2005). Similar to the hypothesis that political decentralization may affect SWB positively contingent upon government quality (Rodríguez-Pose & Tselios, 2019), our results suggest that the effect of FD is contingent upon the degree of political decentralization.

A third relevant issue refers to the SWB-improving effect derived from individual membership in a neighborhood board or another similar organization. Since this is assumed to capture the role of social capital on the subject matter, it can be seen as an opportunity for municipal involvement in the financing and general promotion of such organizations. As for the Chilean case, the Municipal Revenue Law allows municipalities to grant a subsidy to local non-profit organizations with up to 7% of the municipal budget. In a more fiscally decentralized context, said restriction might be lifted or made more flexible. Our evidence gives further support to Aedo et al. (2020), who conclude that said positive effect on SWB only holds when it comes to self-help organizations.

Finally, this paper's evidence invites to further research in at least two dimensions. On the one hand, the quest for more political decentralization as a precondition to FD deserves a deeper understanding regarding the meaning of that political decentralization at the local level. As for Chile, this ranges from citizens' representation in the municipal council (the variable being used), to various forms of participatory budgets (Montecinos & Carrasco, 2022). This opens an extensive research agenda to identify which of these forms of political decentralization is more effective in pursuing SWB. As far as the local government's effort to promote social capital is concerned, an equally broad spectrum of local policies is subject to further analysis.

Conclusions

This study explores the extent to which Subjective Well Being is responsive to FD in the case of Chile. 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 residents themselves more aware of the fiscal effort involved. That said, municipal governments in Chile have little leeway to decide on their own revenues, which provides an interesting room for improvement.

In addition to the usual covariates considered in these type of studies, we control for the political representation of municipal residents. The evidence provided suggests that benefits from FD are contingent upon the degree of political decentralization, which can be further improved. The rather null municipal capacity to generate revenues of their own can be partially expanded by giving local governments some choice in deciding property tax rates within a pre-defined range. This would strengthen the link between municipal financial management, and residents' capacity to demand accountability from the authorities. Finally, the positive effect on SWB derived from individuals' membership in neighborhood boards, highlights the relevance of social capital at the local level.

Appendix

Variables individuals (Source: CASEN 2011 and 2013)

Variable	Definition	Measurement
HAPPY_10	Life satisfaction	Completely dissatisfied (0), and fully 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)

Variable	Definition	Meadurement
FCM*	FCM dependency rate	Percentage of all municipal revenues rpresented by the "Fondo Común Municipal" (FCM)
FCM_INST*	Instrumental variable for FCM	See estimation formula in seccion IV
ACCES TO HOSPITALS**	Acces to Hospital	SUBDERE

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

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Compliance With Ethical Standards

All information being used is available on-line from open access surveys. The corresponding data has been gathered and used in accordance with the highest ethical standards. This is a fully original research, which has not been published either in a book or a journal before.

Informed Consent

The authors hereby declare that this research has not used either humans or animals.

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Data Availability Statement

The data used in this research comes from the following open sources: i) Ministry of Social Development and Family. Government of Chile. Encuesta de Caracterizacicen Socioeconómica Nacional, Casen 2011: https://observatorio.ministeriodesarrollosocial.gob.cl/encuesta-casen-2011; and ii) Ministry of Social Development and Family. Government of Chile. Encuesta de Caracterización Socioeconómica Nacional, Casen 2013: https://observatorio.ministeriodesarrollosocial.gob.cl/encuesta-casen-2013

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