Nº PROYECTO : 1150170  
DURACIÓN : 3 años  
AÑO ETAPA : 2017  
TÍTULO PROYECTO : THE OPTIMAL DEGREE OF FISCAL DECENTRALIZATION WITH ASYMMETRIC REGIONS  
DISCIPLINA PRINCIPAL : OTRAS ESPECIALIDADES DE LA ECONOMIA  
GRUPO DE ESTUDIO : CS. ECONOM/ADMI  
INVESTIGADOR(A) RESPONSABLE : MARTIN BESFAMILLE  
DIRECCIÓN :  
COMUNA :  
CIUDAD : SANTIAGO  
REGIÓN : METROPOLITANA
INFORME FINAL
PROYECTO FONDECYT REGULAR

MODIFICACIONES ACADÉMICAS

Nuevas Solicitudes para Evaluación

<table>
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Ver documento adjunto:

<table>
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<tr>
<th>Otros Aspectos Importantes a Considerar</th>
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PROJECT RESULTS:

Describe the results of your research in reference to its original and/or modified Project objectives.

The maximum extension of this section is 5 pages (Arial or Verdana font, size 10).

The results of the project can be summarized in three items: i) accepted and working papers, ii) dissemination through conferences and seminars, and iii) human capital formation. I will develop on these below, but let me start this report by reminding that my proposal was part of a broad research agenda whose general goal is to compare, from a normative point of view, two different institutional and fiscal regimes, under different circumstances.

Accepted and working papers

When I postulated to this project, the general framework defining this research agenda had been presented in Besfamille and Bellofatto (2013). In this working paper, we use a three period model, with a central government and \( L \geq 2 \) regions. Each of them is ruled by a regional government. Each region \( \ell \in \{1, \ldots, L\} \) has a continuum of measure one of risk-neutral residents, each of whom has an endowment \( \kappa \) of capital. In the last period, each resident derives utility from consumption of a numéraire good. This good is produced in every region from the capital input by competitive firms using a constant-returns technology. Following Persson and Tabellini (1992), capital is mobile between regions, but at a cost: specifically, a resident of one region that exports \( f \) units of capital to other region(s) incurs a mobility cost \( \mu f^2 \), where \( \mu \geq 1 \). Residents may also benefit from a discrete public good, or project, whose timing is the following.

At the beginning of the second period, each regional government decides whether to undertake a discrete, local public project. The initial cost of the project \( c \) is covered by their financial resources. If the project is initiated, it is carried out by the regional bureaucracy, which possesses a level of administrative capacity to fulfil this task. This capacity is formalized as the probability \( \pi \) that the project's undertaking ends in due time (i.e., at the end of the second period), and generates a social benefit \( B \) greater than the initial cost \( c \). With probability \( 1 - \pi \), the project remains incomplete at the end of the second period, and needs a second round of financing of \( c \) to be completed in the third period. In this last case, the project generates a social benefit \( b < B \). We assume that \( b \) is also greater than \( c \).

Across regions, governments and projects are ex ante identical. Regarding subnational governments, all share the same exogenous level of state capacity \( \pi \). Concerning projects, ex ante (i.e. when they are initiated) they are all characterized by the same initiation and (possible) refinancing cost \( c \) and the same configuration of exogenous social benefits \( b \) and \( B \). But projects can be different ex post (i.e., at the end of the second period). Indeed, when \( \pi \in (0,1) \), some regions that have initially invested end up with complete projects, while the others face incomplete ones.

The institutional regimes were defined as follows. Under partial decentralization, no regional government has resources to refinance an incomplete project. But the central government can bailout regions, via a uniform national tax on local capital. As capital mobility is costly, every resident in region \( \ell \) invests “at home”. Thus, national taxation is non distortionary.

In the fully decentralized regime, the central government commits to not bailout regions. Thus, subnational governments have to refinance incomplete projects through a tax on capital invested in their jurisdiction, in a context of tax competition.

Having this framework in mind, the goals of the project are listed below, differentiating between new and initial goals.\(^1\)

New goal

1) Analyze the impact of fiscal state capacities at the regional level on the normative comparison between partial and full decentralization, in a context of symmetric regions.

Initial goals

\(^1\) The former corresponds to the goal associated with the “Academic Change” (see Section “Modificaciones Académicas”).
2) Completely characterize the equilibrium of the two-regions model with different capital endowments $\kappa_p$ and $\kappa_r$, under the partially and the fully decentralized regime.

3) Evaluate the normative comparison between both fiscal regimes, when the difference in capital endowments increases.

4) Completely characterize the equilibrium of the two-regions model with different state capacities $\pi_l$ and $\pi_h$, under the partially and the fully decentralized regime.

5) Evaluate the normative comparison between both fiscal regimes, when the difference in state capacities increases.

Regarding the first goal of the project, A. Bellofatto and I incorporated a second dimension of regional state capacity to our (2013) framework. Hence, in Bellofatto and Besfamille (2015), we distinguish between two dimensions of local state capacity: administrative and fiscal. As I have already mentioned, administrative capacity measures the ability of subnational governments to produce and deliver public goods and services, and it is proxied by the probability $\pi$ that a project is finished at the end of the second period. On the other hand, fiscal capacity gauges the ability to raise revenues through local taxes, and it is modeled as the fraction $\theta$ of the potential tax base that is effectively collected as fiscal revenues by subnational governments. As in our (2013) working paper, all regional governments share the same pair of levels of state capacities $(\theta, \pi)$. It is important to stress the fact that this is one of the very few papers that incorporate issues of local state capacities in the theoretical literature on fiscal federalism.

Our main results indicate how the optimal degree of decentralization hinges on the relative magnitudes of each dimension of state ability. First, we show that when the level of regional fiscal capacity that prevails in the federation is sufficiently low, partial decentralization typically dominates. Basically, when fiscal ability is low, refinancing incomplete projects under full decentralization is too costly regardless of the level of regional administrative capacity. Second, and more surprisingly, we find that the presence of sufficiently low levels of administrative ability is a necessary condition for full decentralization dominance. Moreover, when expected refinancing costs are high enough, such a condition is also sufficient. The intuition for this second result is less clear cut, because both institutional regimes generate inefficiencies when local governments lack high administrative capacity. Nevertheless, we can still show that, in this case, the magnitude of the distortions under full decentralization tends to be smaller than under partial decentralization. The key mechanism is that tax competition distortions under full decentralization can only emerge if at least one region needs no refinancing (so that equilibrium capital flows are positive), but the likelihood of this event is small when the level of administrative ability prevailing in the federation is low. This finding contradicts the views of certain policy proposals suggesting that high levels of administrative capacity are necessary for successful decentralization reforms.

We close our paper by analyzing two extensions. The first extension incorporates imperfect fiscal capacity at the central level. We find that, somewhat counterintuitively, lower levels of national fiscal ability might favor partial over full decentralization. While reducing national fiscal capacity would lead costlier bailouts and underinvestment in partial decentralization, the number of inefficiently initiated projects would also decrease under this system. Hence, for a given profile of regional state abilities, the overall effect on the optimal regime choice is, in principle, ambiguous. In the second extension, we relax the assumption by which the central government can perfectly commit to not rescue regions under full decentralization, i.e., we allow for the possibility of bailouts under that system. We draw two major findings. First, perfect commitment is not a necessary condition for our main results to go through. In particular, even in the presence of uncertainty about the commitment capacity of the central government, full decentralization dominates in a parametric area for administrative and fiscal capacities which is analogous to the one in our base model. Second, we find that small deviations from perfect commitment of the center actually make full decentralization more attractive. This is because lower commitment capacity at the central level also leads to smaller refinancing inefficiencies under full decentralization.

A. Bellofatto and I submitted our (2015) working paper to Econometrica, Quarterly Journal of Economics, Journal of the European Economic Association and The Economic Journal. We received very helpful comments from many referees of the abovementioned journals, comments that enable us to improve and substantially simplify our general model. In particular, the final version now assumes i) a unique social value for the project of $b$, and ii) two different costs: the initiation cost $c_0$ and the potential continuation cost $c$. 
Despite the time length of this process, these changes to our (2015) working paper also enable us to simplify the analysis of the asymmetric case, as described below.

This paper has been recently accepted for publication in the *Journal of Public Economics*, and is currently in press.

Since the beginning of this project, A. Bellofatto and I have been working on the second and third goal, to deal with *asymmetries* among regions. The result of our work is a working paper, whose initial title was “Asymmetric Regions and the Optimal Degree of Fiscal Decentralization”; but it has been modified to reflect the change in its focus. In “Tax Decentralization Notwithstanding Regional Disparities” (2018), we analyze the following issues.

There is a common argument against tax decentralization: in a context of tax competition for mobile tax bases, regional inequalities become larger. Therefore, many authors call for mechanisms that attenuate this divergence between regions, like the ones that we formalize in the partially decentralized regime. But this regime is not without any problem either, as a result of the soft-budget constraint syndrome. Thus, a normative comparison between this regimes deserves to be done, and to evaluate how regional disparities affect the choice of one regime or the other.

In a model where two regions differ in their initial stock of capital, we first compute the equilibrium outcomes under each of the abovementioned regimes, and compare to the first best. Under partial decentralization, when the differential in capital endowments is not too large, both regions initiate their local project, which is an inefficient result. But when this differential increases, region $r$ (which has the largest initial stock $k_r$) does not initiate its project. Intuitively, due to the common-pool generated by uniform national taxation, when $k_r$ increases, region $r$ ends up contributing (from its resources) a higher fraction of any incomplete project (i.e., of any bailout). Thus, to avoid at least part of such payments, this region decides to not initiate its local project. Therefore, when the capital stock $k_r$ increases, distortions in region $r$ decrease.

On the other hand, under full decentralization, initiation and refinancing decisions are downwardly distorted. The intuition is based on the fact that when regions decide to refinance their incomplete project, they have to pay its continuation by taxing capital invested therein, in a context of imperfect capital mobility. Therefore, taxation ends up being distortionary in this regime. Thus, refinancing and initiation decisions are not always efficient. But, contrary to the partially decentralized case, now it is the region with the lowest initial stock of capital $k_p$ that initiates and refinances less than optimally. This result is straightforward: as this region has a smaller tax base, it needs to tax more heavily than the other region in case of refinancing, triggering thus a flow of capital to region $r$. As capital is imperfectly mobile, these flows generate some mobility costs, implying that region $p$ refinances less, and thus also initiates less projects. And, when $k_r$ increases the region $r$ ($p$) initiates more (less) often its own project.

Then, we compare both regimes, using a flexible normative criterion to incorporate both efficiency and equity considerations. The main results are the following. When regional disparities are *small*, an increase in regional asymmetries actually favors tax decentralization, provided the welfare criterion is not too averse to inequality. On the other hand, when regional disparities are *large enough*, the degree of regional asymmetry is irrelevant for the regime comparison. Finally, tax decentralization can be optimal *even* under a Rawlsian welfare criterion (i.e., with extreme inequality aversion). This result is surprising, and clearly goes against the common argument against decentralization. Even if full decentralization is detrimental to region $p$, a Rawlsian constitution would set for this regime. The intuition of this result is based upon the fact that, by imposing full decentralization, the constitution protects the poor region against its very inefficient behavior under partial decentralization.

Finally, using parameters from the US states and the empirical literature on local projects, we simulate the model and performed some comparative statics.

A. Bellofatto and I have finished the core of this paper. We are in the process of editing it, to submit it very soon to a journal. In order of preference, we plan to submit it to the *American Economic Journal: Economic Policy*, *Journal of Public Economics* and *Journal of Urban Economics*.

Finally, N. Pastrián and I started to deal with the last goal of this project. Again, in a two-regions model $\ell \in \{l, h\}$, we compare partial and full decentralization, when regions differ only in their administrative state capacity. In other words, regions share the same initial stock of capital, but their respective administrative capacities satisfy $\pi_l \leq \pi_h$. 
We have completely characterized the equilibrium outcomes under partial and full decentralization. The results are intuitive, in the sense that the most capable region subsidizes the initiation decision in the other region. One unexpected result that has emerged concerns the most capable region: when its administrative capacity $\pi_y$ increases, eventually less projects are refinanced and ultimately initiated in this region under full decentralization. We still have to analyze these results and to compare both regimes.

We plan to finish this third paper as soon as the second paper is submitted. After presenting it in some seminars and conferences, we will submit it to a journal, like *International Tax and Public Finance*.

**Diffusion**

The results of this project have been presented in conferences and academic seminars, as follows.

The paper “Regional State Capacity and the Optimal Degree of Fiscal Decentralization” was presented in the ZEW Public Finance Conference 2015 (Mannheim, 2015) and in a seminar at Universidad de Chile (Santiago, 2015).

The second paper of the project has been presented in:

- **Conferences**
  - 72nd Annual Congress of the International Institute of Public Finance (Lake Tahoe, 2016), 49th Jornadas Internacionales de Finanzas Públicas (Córdoba, 2016) and Encuentro Anual SECHI (Santa Cruz, 2017).

- **Workshop**
  - MINI TOI 2016 (Reñaca, 2016)

- **Academic seminars**
  - Institut d’Economia de Barcelona (Barcelona, 2017), Ludwig-Maximilians Universitität (Munich, 2017), KOF-ETH (Zürich, 2017), University of Queensland (Brisbane, 2017), University of York (Toronto, 2017), University of Michigan (Ann Arbor, 2017), IMF Fiscal Affairs Department (Washington DC, 2017), University of Tokyo (Tokyo, 2018) and Australian National University (Canberra, 2018).

I have scheduled three other presentations of this project: “Joint Workshop of Fiscal Federalism, Public, Regional and Urban Economics” to be held in Brasilia (May 10-11, 2018), and in seminars at Banco Central de Chile (May 25th, 2018) and Pontificia Universidad Católica de Chile (April 24th, 2018).

As it can be seen, there were many instances to spread out the results of the project and to receive invaluable feedback to improve them in many ways.

**Human capital formation**

Last, regarding human capital formation, two students were associated with this project.

Caroline Laplace, a former Ph.D. student at Instituto de Economía (Pontificia Universidad Católica de Chile), helped me during the initial stages of the project, assembling, from different statistical sources (like Eurostat, official statistical offices, and empirical literature), a data base with private capital stocks at the regional level, for near 35 countries.

Nicolás Pastrián, a former Master’s student at Instituto de Economía (Pontificia Universidad Católica de Chile) and currently applying to a Ph.D. program in the US, helped me during the second and third stage of the Project. His main contributions were:

i) to simulate numerically the second paper of this project, with parameters taken from the database constructed by Caroline Laplace and from the empirical literature on US local projects,

ii) to prove some theoretical results therein,

iii) to read the empirical literature that analyzes the relationship between tax decentralization and regional disparities,

iv) to study the case of regional asymmetries in state capacity (see above).
In January 2017, Prof. Kothenburger invited me to present the second paper of this project in the "Research Seminar", at KOF-ETH (Zurich) (see "Congresos"). During my visit there, I received very useful comments by most seminar attendants. In particular, as this paper features regional asymmetries, Prof. Kothenburger suggested me to analyze the redistributive consequences of choosing either partial or full decentralization.

This suggestion substantially modified the approach of the paper. Indeed, redistribution is now at the core of the paper. In particular, one of the main results that A. Bellofatto and I highlighted is that even if the Constitution is Rawlsian, full decentralization (a regime that is fundamentally detrimental to region p, the least endowed region) should be preferred to partial decentralization (a regime that a priori favors region p).

In October 2017, Prof. Kothenburger visited Instituto de Economía (Pontificia Universidad Católica de Chile), to present a paper in our seminar. We talked again about the second paper of this project, and how A. Bellofatto and I addressed the issue of redistribution. In particular, our discussions concerned the intuition of the abovementioned counter-intuitive result.

During his visit, Prof. Kothenburger, Prof. Figueroa (Instituto de Economía, Pontificia Universidad Católica de Chile) and I started to discuss an issue, not directly associated with the goals of this project, but that combines features of international tax competition, product innovation and experimentation. Specifically, we plan to analyze how two countries A and B choose their tax policy when their goal is to foster product innovation, in a context of national firms that innovate and compete in the same market, facing consumers' experimentation. In particular, we want to verify if country i's tax policy depends on whether its representative firm is a ?champion? or a ?follower? with respect to the technology in the product market. This is a promising venue for future research.

PRODUCTOS

ARTÍCULOS
Para trabajos en Prensa/Aceptados/Enviados adjunte copia de carta de aceptación o de recepción.

| N° | 1 |
| Autor (a)(es/ás) | Bellofatto, A.; Besfamille, M. |
| Nombre Completo de la Revista | Journal of Public Economics |
| Título (Idioma original) | Regional state capacity and the optimal degree of fiscal decentralization |
| Indexación | WoS |
| ISSN | 0047-2727 |
| Año | |
| Vol. | |
| N° | |
| Páginas | |
| Estado de la publicación a la fecha | En Prensa |
| Otras Fuentes de financiamiento, si las hay | |
OTRAS PUBLICACIONES / PRODUCTOS

Sin información ingresada.

CONGRESOS

Nº : 1
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Regional State Capacity and the Optimal Degree of Fiscal Decentralization
Nombre del Congreso : 2015 ZEW Public Finance Conference
País : ALEMANIA
Ciudad : Mannheim
Fecha Inicio : 27/04/2015
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ZEW_2015.pdf
Slides_ZEW_2015.pdf

Nº : 2
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Optimal Fiscal Decentralization with Asymmetric Regions
Nombre del Congreso : 72nd Annual Congress of the International Institute of Public Finance
País : ESTADOS UNIDOS DE AMERICA
Ciudad : Lake Tahoe, Nevada
Nº : 3
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Asymmetric Regions and the Optimal Degree of Fiscal Decentralization
Nombre del Congreso : 49as Jornadas Internacionales de Finanzas Publicas
País : ARGENTINA
Ciudad : Cordoba
Fecha Inicio : 21/09/2016
Fecha Término : 23/09/2016
Nombre Publicación :

Nº : 4
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Asymmetric Regions and the Optimal Degree of Fiscal Decentralization
Nombre del Congreso : Encuentro Anual SECHI
País : CHILE
Ciudad : Santa Cruz
Fecha Inicio : 07/09/2017
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Número: 5
Autor (a)(es/ as): Bellofatto, A.; Besfamille, M.
Título (Idioma original): Regional State Capacity and the Optimal Degree of Fiscal Decentralization
Nombre del Congreso: Seminario del Departamento de Economía, FEN, Universidad de Chile
País: CHILE
Ciudad: Santiago
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FEN_2015.pdf
Slides_seminario_FEN.pdf

Número: 6
Autor (a)(es/ as): Bellofatto, A.; Besfamille, M.
Título (Idioma original): Optimal Fiscal Decentralization with Asymmetric Regions
Nombre del Congreso: Seminar, Institut d'Economia de Barcelona
País: ESPANA
Ciudad: Barcelona
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Nº : 7
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Optimal Fiscal Decentralization with Asymmetric Regions
Nombre del Congreso : Public Economics Seminar, Ludwig Maximilians Universitat
País : ALEMANIA
Ciudad : Munich
Fecha Inicio : 19/01/2017
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LMU_2017.pdf
Slides_LMU_2017.pdf

Nº : 8
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Optimal Fiscal Decentralization with Asymmetric Regions
Nombre del Congreso : KOF REsearch Seminar, KOF-ETH
País : SUIZA
Ciudad : Zurich
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N° : 9
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Asymmetric Regions and the Optimal Degree of Fiscal Decentralization
Nombre del Congreso : Macroeconomics Seminar Series, University of Queensland
País : AUSTRALIA
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Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Asymmetric Regions and the Optimal Degree of Fiscal Decentralization
Nombre del Congreso : Department Seminar, University of York
País : CANADA
Ciudad : Toronto
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Nº : 13
Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : The Optimal Degree of Fiscal Decentralization with Asymmetric Regions
Nombre del Congreso : Public Economics Workshop, CIRJE, University of Tokyo
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Ciudad : Tokyo
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Autor (a)(es/as) : Bellofatto, A.; Besfamille, M.
Título (Idioma original) : Tax Decentralization Notwithstanding Segregation
Nombre del Congreso : Seminar, Economic Theory Series, Australian National University
País : AUSTRALIA
Ciudad : Canberra
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TESIS/MEMORIAS
A continuación se detallan los anexos físicos/papel que no se incluyen en el informe en formato PDF.