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Public Employment: Data Analysis with OECD Economic Outlook Quarterly Data

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To Myriam for her support during the long night of works.

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Chapter 1

Introduction

Since the start of the financial crisis of the 2008, countries and governments heavily relied on their respective central banks to boost their economies and support growth. Nevertheless, governments and their leaders also have the responsibility to provide employment to the population. They can use several channels to reach their end: low corruption, employment friendly laws and naturally employ professional directly, the so-called public servants. Public employment is main contributor to GDP through government expenditures

The share of public servants compared to total labor force varies over time, and several hypothesis exist to explain why. One of the recurring idea is that incumbent governments have incentives to increase the number of civil servant before elections to raise their chances of reelection.

The purpose of this semester paper is to gather synthesize the current opinion of the subject, and most importantly tried to replicate the results by using quarterly data from the OECD Economic Outlook.

The added value of this work is that it is probably the first time that the quarterly data set is used to study the problem. The main challenge to complete the work has been to gather the data, tidy them, merge them. Moreover, as the data set contains hundreds of variables and is observational, statistical analysis should be executed cautiously.

The work is hopefully as reproducible as possible. The github repository[1] of the project offers full transparency over the data and the code used to handle them.

The structure of the semester paper reflects the above commentary: a first part is devoted to summarize the research of recent papers, then the second part focuses on the statistical analysis of the data.

[1] https://github.com/davidpham87/public_employment_analysis

1.1 Theory

This section synthesize the four papers used as theoretical background to run our analysis. These are

i.) Alt, Lassen, and Wehner (2014) describes the effect of accounting practices of EU countries over public employment.

ii.) Aaskoven (2015) analyzes the effect fiscal transparency on civil servants.

iii.) Alesina, Baqir, and Easterly (2000) studies American states about their election and to find if any inequality measures could predict the share of public servants.

iv.) Schuster, Schmitt, and Traub (2013) studies the retreat of OECD countries from the sectors. The most notable quality of this paper is the data set they collected across the countries and the years.

1.1.1 It Isn't Just about Greece (James Alt, et al)

Analyzes the political origins of differences in adherence to the fiscal framework of the EU.

It studies the interaction of opaque budget and fiscal policy for electoral purposes falsify national statistics (`creative accounting`, `fiscal gimmickry` [2])

Election year obscures statistics. The following explain variations in outcomes

- Domestic institution (budget transparency)
- Politics (elections)
- Economic cycles (recessions)

and this enforces the saying

> Source of fiscal discipline is at the domestic level.

Gimmick is the action of manipulating, embellish facts in order to alter reality:

- Improve appearances of public finance statistics (budget balance, debt) without effect of real statistics.
- Asymmetric information in fiscal/economic unions.
- *Misreport* of fiscal data, *hidden actions* (employing gimmicks involving creative or unorthodox accounting treatments of operations to interpret rules or cheating).

Incentives are audiences (voters, bond markets, EU). Three types of trade-off actions:

1. Real adjustement to tax and expenditures, unpopular for voters;
2. Do nothing, with penalties from the EU;
3. Gimmickries, with intertemporal trade-off, future high bond yields, political unrest if discovered.

Fiscal opacity is penalized by bond markets. Strategy: rule violation and gimmickry with absence of market discipline. The fiscal transparency rarely evolve through time, and if yes, seldom in the right direction.

[2] Deviations from accepted and expected reporting practices

Stock-flow adjustments

$$SAF = D_t - D_{t-1} + B_t,$$

where D_t is the debt level at time t and B_t is the budget balance at time t. Critics about this measure: how can we correctly observe the changes? For example, a decrease of debt of two with a surplus of the budget balance of 1 has the same statistics as an increase of debt of 1 and a deficit of the budget balance of 2.

The SFA is decomposed into several components, and two of them are significant for the study

- **shares and other equity**: used for translating net cash transfer (debt) as share purchasing.
- **other account payable** (OPA): goods and services that have been delivered but not yet paid for. The SFA increases when the OPA decreases.

Explaining Gimmicks

- Transparency diminishes the appeal of gimmicks.

Other explanatory variables

1. Fiscal rules: if the conditions of the SGP are respected.
2. Electoral incentive: year left in the office for the incumbent government, the amount of gimmickry should be bigger with fewer years left.
3. Economics conditions: distinction between fast growth and below-trend growth.

1.1.2 Redistributive Public Employment

American cities public employment is used for redistributive purposes. It is a disguises way of channeling resources from middle clas svoter to disadvantaged citizens when an explicit tax-transfer scheme would not find political support.

Ethincally fragmented cities tend to have larger public employment.

> But are the people employed by the government come from the disadvantaged groups?

Theoretical framework

- A two period timeframe, with election after the first period.
- Two classes of voters: *middle* class and the *poor*.
- Two contestants for the government.
- Each contestant need the support of the middle class.

- Define B as the benefit of a public project (employing the *poor* to complete it). Then $B \in \{B_L, B_H\}, 0 < B_L < B_H$ with

$$B = \begin{cases} B_L & \text{with probability } 1-\theta \\ B_H & \text{with probability } \theta \end{cases}$$

  with θ is random variable taking either θ_L or θ_H with $0 < \theta_L < \theta_H < 1$. When $\theta = \theta_L$, it is more efficient to make a cash transfer than implemeting the project.

- The incumbent government observe the realisation of θ before deciding to implement a public project or not.
- Two type of contestant: one for the middle class and conduct the public project only if $\theta = \theta_H$, and one supporting the poor, implemeting the public project for any value of θ if the action does not prevent them from winning the next election.
- Voters ignore which type are the politicians, however they have perception (priors) about the incumbent and the challenger.
- Depending on the priors of the voters for the incumbent, if he favors the poors, he might or not implement the public project even though it is not efficient.

Data

All US cities with more than 25 000 inhabitants using official statistics form the _City and County Databook, Censur of Governments.

Regression

The following formula has been fitted

$$Y_i = \mu + \beta_1 I_i + \beta_3 * X_i + \varepsilon_i$$

where

- Y_i is the government employment per 1000 population, or per 1000 working age population.
- I_i is a measure of inequality (gini, mean/median income, percentage of person below the poverty level, percentage of families below the poverty level).
- X_i is a data matrix containing the statistics: fraction of 25+ years old with a university degree, american state, unemployement rate, money income per thousand dollars, log of city population, or fraction of retired (65+) population and ethincity $1 - \sum_i (ethnic_i)^2$ where $ethnic_i$ is the share of population self-identified with ethnic origins i.

Robustness

- Taking out the state
- Outliers
- Total public spending per capita
- Checking the coefficient with and without inequality
- Fragmentation of type of public employment (central administration, streets and highway, housing and community developement, libraries, natural sciences, parks and recreation, sewerage, and solide waste management.

1.1.3 Fiscal Transparency and Public Employment

Framework

Incumbent government prefer to stay in the government even though they don't take the right decision. Public employment is more popular than wealth transfer and tax cut.

With windfall from gdp growth, country with low fiscal transparency will increase their public employment.

Control variable economic

- OECD countries between 1996 to 2010
- GDP per capita in constant price in order to control for the Wagner's Law
- Unemployment rate
- Government spending as percent of GDP
- Left or right party
- Election year
- Country fixed effect

The formula is given by, for country i and time t:

$$Y_{it} = \alpha + \beta_1 G_{it} + \beta_2 G_{it} T_i + \beta_3 X_{it} + \eta_i + \tau_t + \varepsilon_{it},$$

where the variables are

- Y_{it}, the public employment;
- G_{it}, GDP growth;
- T_i, fiscal transparency;
- X is the vector of control variables;
- η_i, country fixed effect;
- τ_t, year fixed effect;

Public employment also includes employee from government owned companies and is defined as the ratio of people employed in the government and these companies over the total work force.

Robustness analysis

- The demographic is used as a control variable.
- Different index of sical transparency IMF's Reports on the Observance of Standards and Codes. Average of public information, budgetaryprocess, assurance of integrity. With this robustness methods, coefficient of T_{it} and $T_{it}G_{it}$ are only significant at the 0.1 level.
- Exclusion of the beginning and ending of the period. Excluding Greece and New Zealand.

1.1.4 Retreat of the state from entrepreneurial activities

This paper describes the evolution of privatization, deregulation in network-based service, and the cutback of subsidies in 20 OECD countries. Our interest lies in the evolution of the employment index used in the privatization section.

Relevant statistics

The paper use the ratio between the the number of employed persons by the public government over total employment. The former is computed as a weighted sum of employee between the following bodies:

- **Departmental Agencies (DA)**: public administrative bodies without their legal identity;
- **Public Corporations (PC)**: firms that are totally owned by the state but have a public legal body. These have a weight $\alpha = 0.75$ in the paper;
- **State Companies (SC) and Private Firms (PF)**: *SC* are *PC* which the states do not hold 100 percent of the shares. For *SC* and *PF*, the weight of their number of employee is provided by $\beta\gamma$ where γ is the percentage of public owned shares of the entreprise, and β is set at 0.5.

Missing value are interpolated when necessary and for small firms only there is a cutoff of the 60% smallest firms.

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