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Einian, Majid

Graduate School of Management and Economics, Sharif University
of Technology, Monetary and Banking Research Institute, Central
Bank of the Islamic Republic of Iran

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A Separation: The Economics behind the Administrative Area Modifications in Iran

Majid Einian

Graduate School of Management and Economics, Sharif University of Technology
&
Monetary and Banking Research Institute, Central Bank of the Islamic Republic of Iran

Correspondence address: Monetary and Banking Research Institute, #10,
Africa Blvd., Argentina Sq., Tehran, Iran. Email: einian85@gmail.com

Abstract

Once in a few years, we witness a new ostan (province) being born out of older ostans in Iran. The number of shahrestans has gone from 316 in 2003 to 429 in 2013. There seems to be an everlasting desire for lower levels of administrative areas to separate and form a new higher level area. Shahrestans want to become ostans, and bakhshs want to become shahrestans. This paper studies the economic effects of becoming a new ostan by looking at the consumption of households. Results show a significant positive effect on the growth of consumption in the separation year or the following year. Becoming the central Shahrestan of the new Ostan does not show positive effects on consumption growth.

Keywords: Administrative Areas, Cohort Pseudo Panel, Household Consumption

JEL Classification: C21, C23, D72, D73, D74, R11, R23

1. Introduction

Iran is a large country with the land area of 1,648,195 km², ranking 17th in the world and second in the Middle East. With a large presence in the economic life of its more than 81 million people,

the government needs to manage its routine procedures in different administrative area levels. The current administrative division system is based on a law passed at 1937 (Rezvani, 2015, pp. 95-98) that has not been changed in levels, but the number of areas in each level has increased. The first administrative area level is called *Ostan* (province). Iran has 31 Ostans since 2010 (1389 in Persian Calendar) compared to 24 Ostans in 1979.¹ Each Ostan is comprised of a few *Shahrestans* (counties). Shahrestan is the second level of administrative areas in Iran and although there were 165 Shahrestans in Iran in 1979, in 2013 there are 429 Shahrestans. The third level is called *Bakhsh*. Each Bakhsh has one *Shahr* (city/town/urban area) or more, and a few *Dehestans* (rural areas). Each Dehestan controls several *Roostas* (villages). As the number of Ostans and Shahrestans suggests, there has always been an ongoing modification of administrative areas that was almost always in the road to separate and create more areas. Any large Roosta tries to be recognized as a Shahr, and promote its Dehestan to a new Bakhsh. Any large Dehestan wants to be a Bakhsh for itself and control surrounding Dehestans. For areas with higher levels, it gets harder to separate and form a new higher level area, but still, there are several large Bakhshs fighting for their *right* to be a Shahrestan, and more populous Shahrestans try to form new Ostans.

The ongoing process of creating new administrative areas can be explained by two main motivations. The first is the motivation of bureaucrats in the pursuit of power. Mueller (2003, p. 362) denotes that as the pursuit of profits is not the perceived legitimate goal of public bureaus, it is difficult for public bureaucrats to convert the power they have into income even more in comparison to private sector managers. A large literature in management show that managers facing this problem pursue numerous substitute goals including excess staff (Williamson, 1964).

¹ For a brief review on the history of administrative divisions in Iran prior to the 1979 revolution, refer to Ghorbani (2013, p.2).

Thus the nonmonetary goals of management especially the size of the staff and number of management levels and units under control become the logical objectives of the public bureaucrat (Mueller, 2003, p. 362). But the power-pursuing bureaucrats are not the only reason behind this process. It seems that people themselves support the idea of new administrative areas. The local visit of every president or member of the parliament is full of promises including the promise of promoting the area to a higher level. It should be a favorable promise to talk about. Rezvani (2015) mentions that the creation of Ardabil (the Ostan) was due to popular demand. There has been also a few local clashes over administrative division decisions. Rezvani (2015) attributes the administrative fragmentation in Iran to the centralized system of Iran and mentions that local elites in some localities try to elevate the administrative level of their locality in order to secure more economic means and facilities. The higher the level in the administrative-territorial hierarchy, the greater the extent of facilities and economic means. Holding the status of an Ostan is especially advantageous as it provides direct funding by Tehran (the capital). Rezvani (2015) describes the process of administrative area modifications as a process whereby an aspirant capital lobbies Tehran against the desires of the hosting Ostan's capital in order to be *liberated* from the latter's tutelage and hence receives its own budget. A third motivation of politicized ethnicity for ethnoterritorial conflicts and fragmentation is rejected by Rezvani (2015) on the basis of lack of ethnoterritorial federalism, the absence of politicized ethnicity and the civic nature of the Iranian nation.

This paper studies the economic nature of this ongoing process of administrative area modifications by looking at the consumption of the households. The household microdata is utilized in the study, and different grouping strategies have been applied. The household level data include information on the Shahrestan of residence since 1998. The final Ostan divisions are rebuilt

from the beginning using data on Shahrestans and their modifications and then different pseudo panels are created based on Ostans and cohorts. Also, the initial Shahrestan information is saved for each new Shahrestan and Shahrestan level panels are built. The econometric analysis consists of simple panel regression of real consumption growth on the dummy variable of new Ostan creation. Results confirm the economic benefit theory and show that the creation of a new Ostan has a significant positive effect on the consumption of its resident households.

The rest of the paper is organized as follows. The following section reviews the data used in the study which is essentially the household expenditures and income surveys data, consumer price index data and administrative areas modification data. The model and results section follows data and shows the regression model used in the study and the results of regressions on different synthetic panels. A brief robustness check section follows and the last section is the conclusion.

2. Data

Household Expenditures and Income Surveys

The main data source for this study are various years of Household Expenditures and Income Surveys (HEIS) microdata collected and published by the Statistical Center of Iran. The survey is nationally representative and two-stage stratified, at the urban and rural level and by province. The survey is weighted, and the sampling weights are provided by the SCI. This survey includes information on expenditures and incomes of urban and rural Iranian households (Mostafavi-Dehzoeei & Salehi-Isfahani, 2017). The surveys have been conducted since 1963², but only those

² The surveys are conducted based on Persian calendar years. So the 1998 survey (1377 survey) data relates to the time span from March 21, 1998 to March 20, 1999. Some authors denote this as 1998-99 data, but it is denoted as 1998 data in this paper for simplicity.

since 1984 are available in unit records (Salehi-Isfahani & Marku, 2011). The geographical information in Shahrestan level are only available since 1998. Therefore 20 years of data – 1998 to 2017 – is used. Nondurable consumption is calculated excluding all durables and medical expenditures. Data for Shahrestans *Abu Musa*, *Tabas*, and *Qaenat* are omitted due to missing observations for a few years.

Data on Prices

To calculate real consumption one needs price data. More detailed the price data, more precise the calculated real values. The CPI data in Ostan level is used in this study. Total CPI index is available for all years in the study for all Ostans, but the 12 COICOP groups' price indexes are available since 2004. For data since 2004, real consumption is calculated for each group then summed up.

Administrative Division System Data

The Statistical Center of Iran published some information on administrative division systems used in its surveys. The changes in Ostans and especially Shahrestans has been thoroughly studies using several sources including the *Farmandari* (local Shahrestan governer) to find the links. For each Shahrestan in each year the final Ostan code is saved. For example the Shahrestan *Karaj* which was once a member of Ostan Tehran, will end up as Ostan *Alborz*, thus the final Ostan of all data relating to Karaj in all years is set to be Alborz. On the other hand for all Shahrestans their initial Shahrestan is also saved. For example Shahrestan *Nazarabad* was once a part of Shahrestan *Savojbolagh*, so the initial Shahrestan for all Nazarabad records on all years is recorded as Savojbolagh. Therefore we can build panels based on latest Ostan divisions and olderst Shahrestan divisions. In the time span of the study 3 new Ostans have been created. South Khorasan and North Khorasan were established in 2004 and Alborz is established in 2011. Thus for these Ostans and years, the dummy variable for creation of new Ostan is set to 1. There is also another dummy

defined for the central Shahrestan of these new Ostans for the establishment years. This dummy variable is set to 1 for *Bojnourd* and *Birjand* in 2004 and for Karaj in 2011.

Building Synthetic Panels

The data used is not a genuine panel data, where specific individuals or households are followed over time. While SCI has recently started to create a rolling panel schema for HEIS, the history is not that long and also households stay in the data at most for 3 years, and thus not useful for this study. HEIS data however, are available as repeated cross-sectional surveys that suffer much less from typical panel data limitations like attrition and non-response (Verbeek, 2008) and can be used to build synthetic panel data.

The use of synthetic panels to estimate a fixed effects model from repeated cross-sectional data was first suggested by Deaton (1985). In this approach, individuals sharing common fixed characteristics (often the year of birth or region of residence) are grouped into cohorts, then averaged within these cohorts. These averages are treated as observations in a pseudo panel (Verbeek, 2008). Verbeek lists conditions on the grouping criteria. It is important to realize that the variables by which cohorts are defined should be observed for all individuals in the sample. Thus time-varying variables such as income cannot be used. Another condition is that the criteria should be an exogenous variable in the sense that it should be uncorrelated with the unobservable variables in the equation, yet appropriately correlated to the explanatory variable in the model. It means that cohorts are defined as groups whose explanatory variables change differently over time. Also large number of groups may lead to poor results as the cell size decreases (Verbeek, 2008).

Different grouping strategies has been used in the literature. In a similar grouping practice to this paper, Chamon & Prasad (2010) consider cohorts based on five-year range for the year of

birth of the household head interacted with province, and five-year range for the year of birth of the household head interacted with his or her education (six categories) and province. Two methods has been used in this paper to create synthetic panels. In the first method interaction of final Ostan and 10-year or 5-year ranges for the year of birth of the household head (Cohort10 and Cohort5) is used. In the second method initial Shahrestan is used. In the first method we follow Ostans through the time. Another way to study the mentioned problem is to follow Shahrestans through the time instead of the whole Ostans. As the number of Shahrestans is higher, using another grouping criteria along with the location such as birth cohorts can lead to really small cell sizes, thus in the Shahrestan Panel, no other grouping variable is used. The log of consumption is calculated in household level then averaged over each cell.

Table 1 - Characteristics of the Synthetic Panels

Panel	Final Ostan / Cohort10	Final Ostan / Cohort 5	Initial Shahrestan
Observations	4216	7934	19833
Cross-sections	248	434	1238
Years	20	20	20
Median Cell Size	138	73	18
Mean Cell Size	150	79	32

3. Model and Results

Panels of Final Ostans

Two groups of models are estimated for each panel. The first group of models are regression of consumption growth on the lags of dummy variable of Ostan creation. The second group includes an additional lag of consumption growth.

$$\Delta c_{i,t} = \sum_{j=0}^3 \beta_j D_{i,t-j} + u_i + \varepsilon_{i,t} \quad (1)$$

$$\Delta c_{i,t} = \gamma \Delta c_{i,t-1} + \sum_{j=0}^3 \beta_j D_{i,t-j} + u_i + \varepsilon_{i,t} \quad (2)$$

Where c denotes the log of consumption and D is the dummy variable indicating the creation of new Ostan.

Table 1 shows the results of the panel fixed effect regressions on initial Ostan / cohort 10 panel. Table 2 shows the results for initial Ostan / cohort 5 panel. Results show a positive significant effect of the first lag of dummy variable on the consumption growth. This means that following the year of creation, the residents of the new Ostan experience a higher consumption growth. As there is no significant negative effect later, this means that there is a level effect on the consumption of households.

Table 2 - Effect of Creation of a New Ostan on it's Resident's Consumption Growth: Initial Ostan / Cohort 10 Panel Estimates

	1	2	3	4	5	6	7	8
$\Delta c_{i,t-1}$	-0.29*** (0.02)	-0.29*** (0.02)	-0.29*** (0.02)	-0.30*** (0.02)				
$D_{i,t}$	-0.02 (0.03)	-0.01 (0.03)	-0.01 (0.03)	-0.03 (0.04)	-0.05 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.08* (0.04)
$D_{i,t-1}$		0.14*** (0.04)	0.14*** (0.04)	0.14*** (0.04)		0.13*** (0.04)	0.13*** (0.04)	0.13*** (0.04)
$D_{i,t-2}$			0.01 (0.04)	0.01 (0.04)			-0.03 (0.04)	-0.04 (0.04)
$D_{i,t-3}$				0.02 (0.04)				0.02 (0.04)
R^2	0.09	0.09	0.09	0.10	0.00	0.00	0.00	0.01
Adj. R^2	0.02	0.03	0.03	0.03				
Num. obs.	3720	3720	3720	3472	3968	3968	3720	3472

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

There seems to be a negative significant effect on the year of the creation in some of estimations but the numerical absolute value of this effect is smaller than the positive effect on the next year, so the overall effect can be considered to be positive.

Table 3 - Effect of Creation of a New Ostan on it's Resident's Consumption Growth: Initial Ostan / Cohort 5 Panel Estimates

	1	2	3	4	5	6	7	8
$\Delta c_{i,t-1}$	-0.32*** (0.01)	-0.32*** (0.01)	-0.32*** (0.01)	-0.32*** (0.01)				
$D_{i,t}$	-0.06* (0.03)	-0.05 (0.03)	-0.05 (0.03)	-0.04 (0.03)	-0.10** (0.03)	-0.09** (0.03)	-0.08* (0.03)	-0.07* (0.03)
$D_{i,t-1}$		0.14*** (0.03)	0.14*** (0.03)	0.14*** (0.03)		0.18*** (0.03)	0.17*** (0.03)	0.16*** (0.03)
$D_{i,t-2}$			0.03 (0.03)	0.02 (0.03)			-0.03 (0.03)	-0.03 (0.03)
$D_{i,t-3}$				0.05 (0.03)				0.05 (0.03)
R^2	0.11	0.11	0.11	0.11	0.00	0.01	0.01	0.01
Adj. R2	0.05	0.06	0.06	0.05	-0.06	-0.06	-0.06	-0.06
Num. obs.	7064	7064	7064	6629	7499	7499	7064	6629

*** p < 0.001, ** p < 0.01, * p < 0.05

Panels of Initial Shahrestans

The same type of regressions as the last section is used in this section. As the analysis is in the Shahrestan level the dummy of the capital Shahrestan of the created Ostan is also added. As mentioned in the data section this dummy variable is set to 1 for *Bojnourd* and *Birjand* in 2004 and for *Karaj* in 2011.

$$\Delta c_{i,t} = \sum_{j=0}^2 \beta_j D_{i,t-j} + \sum_{j=0}^2 \beta_j X_{i,t-j} + u_i + \varepsilon_{i,t} \quad (3)$$

$$\Delta c_{i,t} = \gamma \Delta c_{i,t-1} + \sum_{j=0}^2 \beta_j D_{i,t-j} + \sum_{j=0}^2 \beta_j X_{i,t-j} + u_i + \varepsilon_{i,t} \quad (4)$$

Where c denotes the log of consumption and D is the dummy variable indicating the creation of new Ostan. X is the dummy variable indicating the center Shahrestan of the newly created Ostan.

	1	2	3	4	5	6	7	8	9
$D_{i,t}$	0.09 (0.07)	0.10 (0.07)	0.10 (0.07)				0.18* (0.09)	0.18* (0.09)	0.18* (0.09)
$D_{i,t-1}$		0.09 (0.07)	0.09 (0.07)					0.07 (0.09)	0.07 (0.09)
$D_{i,t-2}$			-0.08 (0.07)						-0.14 (0.09)
$X_{i,t}$				-0.05 (0.11)	-0.04 (0.11)	-0.04 (0.11)	-0.23 (0.14)	-0.23 (0.14)	-0.22 (0.14)
$X_{i,t-1}$					0.12 (0.11)	0.13 (0.11)		0.05 (0.14)	0.06 (0.14)
$X_{i,t-2}$						0.02 (0.11)			0.16 (0.14)
R^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj. R^2									
Num. obs.	4598	4598	4356	4598	4598	4356	4598	4598	4356

*** p < 0.001, ** p < 0.01, * p < 0.05

Statistical models

	1	2	3	4	5	6	7	8	9
$\Delta c_{i,t-1}$	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)	-0.28*** (0.01)
$D_{i,t}$	0.13* (0.06)	0.14* (0.07)	0.14* (0.07)				0.24** (0.08)	0.25** (0.08)	0.24** (0.08)
$D_{i,t-1}$		0.12 (0.07)	0.12 (0.07)					0.13 (0.08)	0.12 (0.08)
$D_{i,t-2}$			-0.06 (0.07)						-0.12 (0.08)
$X_{i,t}$				-0.05 (0.11)	-0.04 (0.11)	-0.04 (0.11)	-0.29* (0.13)	-0.29* (0.13)	-0.28* (0.13)
$X_{i,t-1}$					0.11 (0.11)	0.12 (0.11)		-0.02 (0.13)	-0.01 (0.13)
$X_{i,t-2}$						0.05 (0.11)			0.18 (0.13)
R^2	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09
Adj. R^2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Num. obs.	4356	4356	4356	4356	4356	4356	4356	4356	4356

*** p < 0.001, ** p < 0.01, * p < 0.05

Results show positive effect of creation of a new Ostan in the same year. The dummy variable for the center Shahrestan of the newly established Ostan does not have significant effect when studied alone. But in interaction with new Ostan dummy and the lag of the dependent variable it shows negative effect. This means that the center Shahrestan does not benefit from the separation. Although this conclusion is just based on three observations in a 4356 observations panel.

4. Conclusion

One motivation for separation of smaller administrative areas (e.g. Shahrestans) to form newly established higher administrative areas (eg. Ostans) is the economic factor. Residents of the Shahrestans that feel that all the budget is consumed in the capital Shahrestan want to separate from their original Ostan and form a new Ostan. This paper studies this theory in household data and finds out that this is indeed a rational perspective. If residents of Shahrestans argue that it is beneficial for them to separate, they seem to be right. There are positive effects of separation on their consumption growth, without any negative one in future years. That means the consumption of the households of separating Ostans experience a permanent shift in their consumption and thus welfare. Results support the economic motivation for separation but are silent on other explanations. Policy implication of the results is that the budgets should be spend evenly on all areas in the country not just Ostan capitals.

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