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# Investigating the Effect of Financial Decentralization on the Misery Index with Spatial Measurement Approach (Iranian Provinces)

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## Abstract

The purpose of this article is to investigate the effects of financial decentralization on the misery index for the Iranian economy. For this purpose, in the form of a spatial econometric model, the data related to the Okan misery index (as a combined index of inflation and unemployment) for the provinces of the country during the period 2006-2016 have been used. The results of model evaluation show that the effect of financial decentralization of expenditures and financial decentralization of income on the misery index of Iranian provinces has been positive. A one percent increase in financial decentralization indicators of expenditures and revenues increases misery by 0.041 percent and 0.045 percent, respectively. This means that the implementation of decentralization policies in the country can be accompanied by an increase, albeit a small one, in the index of economic misery. These results could indicate that in the developing country of Iran, decentralization will lead to increased disparities between regions, which is due to the high level of corruption and the inability of provincial governments to manage the resources allocated to them. Is. Also, other findings of the article indicate the decreasing effects of capital stock and literacy rate and the increasing effects of annual population growth rate and GDP on the misery index. Capital share coefficients of GDP and population growth rate were (-0.04) and (0.47), respectively. In addition, the estimated coefficient for the literacy rate was -0.96%.

**Keyword:** Spatial Measurement, Misery Index, Financial Decentralization.

**JEL Classification:** C21, E24, G38.

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## 1. Introduction

The effect of fiscal decentralization on misery varies from region to region, and this variation partially results from the model misspecification. Given the close interconnections among regional governments by virtue of shared strategies and standards, a government's performance will provide feedback (spill-over effect) to another government. Excluding the spatial dependence and spill-over effect will yield an inconsistent, biased estimation of parameters (Lesage, 1998).Therefore, this study is aimed at exploring the effects of fiscal decentralization on misery index, using spatial econometrics and inter-province spill-over in 30 Iranian provinces in the period 2006-2016.In fact, the geographical proximity and inter-province spatial spill-overs can impact the extent to which decentralization impacts the misery index.

## 2. Method

Initially, the fiscal decentralization of revenue (FDRE) and the fiscal decentralization of expenditures were measured, using the following formula:

(1) $fd_{re} = \frac{\text{Province's Income}}{\text{Central government's income}} \times 100$

(2) $fd_{ex} = \frac{\text{Province's construction income}}{Country's\ total\ construction\ budget} \times 100$

*This study used Okun's misery index.*

(3) $\mathrm{mi} = (\mathrm{inf_{tn}} + \mathrm{unm_{tn}})$

The effect of fiscal decentralization on misery in Iranian provinces, as well as the relationship between fiscal decentralization and misery were analyzed, using the models developed by Campbell, Heaton, and Hodge (2009), Iqbal and Nawaz (2010), Makreshanska and Petrevski(2015),and Leonid Melnyk et al(2018).

(3)

$$\mathrm{mi_{it}} = \alpha_0 + \alpha_1(\mathrm{fd_{re}})_{\mathrm{it}} + \alpha_2(\mathrm{fd_{ex}})_{\mathrm{it}} + \sum_{\mathrm{m=3}}^{\mathrm{M+2}} \alpha_{\mathrm{M}}(\mathrm{control})_{\mathrm{it}} + \mathrm{u_{it}}$$

$$\mathrm{u_{it}} = \lambda \mathrm{u_{it}} + \varepsilon_{\mathrm{it}},$$

$\mathrm{M} \geq 1$

Model I: the effect of fiscal decentralization of expenditures on misery index

$$mi_{it} = \alpha_0 + \rho \sum_{j=1}^{n} wy + \alpha_1(logfd_{ex})_{it} + \alpha_2(logcap)_{it} + \alpha_3(\log \mathrm{gdp})_{\mathrm{it}} + \alpha_4(rpop)_{it} + \alpha_5(lirate)_{it} + u_{it}$$

uit = λWuit + εit

Model II: the effect of fiscal decentralization of revenue on misery index

$mi_{it} = \alpha_0 + \rho \sum_{j=1}^{n} wy + \alpha_1 (logfd_{re})_{it} + \alpha_2 (logcap)_{it} + \alpha_3 (\log \mathrm{gdp})_{it} + \alpha_4 (rpop)_{it} + \alpha_5 (lirate)_{it} + u_{it}$

uit = λWuit + εit

## 3. Results

The estimation results of models I and II showed that the effects of all variables were significant at an acceptable confidence level. Moreover, the coefficients calculated in both models meet all theoretical expectations, based on the theoretical and empirical fundamentals.

**Table (4) the estimation results of spatial model (spatial panel method)**

| **Model II** | | | **Model I** | |
|---|---|---|---|---|
| variable | Coefficients | (p-value) | coefficients | (p-value) |
| $logfd_{ex}$ | 0.041 | 0.025 | - | - |
| $logfd_{re}$ | - | - | 0.045 | 0.047 |
| $rpop$ | 0.503 | 0.008 | 0.438 | 0.022 |
| $loginv$ | -0.051 | 0.002 | -0.03 | 0.054 |
| $li - rate$ | -1.104 | 0.000 | -0.82 | 0.034 |
| | | Spatial Lag Coefficient | | |
| ρ | 1.001 | 0.000 | 0.86 | 0.000 |
| ƛ | 1.16 | 0.000 | 1.055 | 0.000 |

The results of this study show that both FDEX and FDRE have a significant positive effect on misery indexes in Iranian provinces at the 90% confidence level; that is, a 1% increase in FDEX and FDRE indexes will yield an increase in misery index by 0/045% and 0/045%, respectively. This means that the implementation of fiscal decentralization polices can lead to a slight increase in economic misery.

Even though the implementation of fiscal decentralization policies in theory is expected to reduce misery, given the delegation of the responsibility for how to produce and spend revenue to provincial authorities who have a leeway to spend money for reducing unemployment, the model used in this study shows

that fiscal decentralization in Iran, as a developing country, is likely to widen the gaps between the provinces. This gap emanates from the mismanagement of resources and public services on the part of provincial authorities.

Spatial lag coefficients of dependent variable were positive in both models, and they were significant (except for disturbance) in both models as well. As the Spatial lag coefficient of dependent variable turned out to be % 0/93 based on estimations results, the geographical proximity of the provinces has a positive and significant effect on misery. In other words, an increase in misery in a province will spill over to other neighboring provinces, which are in proximity to the province with misery.

## 4. Conclusion

The results of this study show that fiscal decentralization of revenue (FRRE) and fiscal decentralization of expenditures (FDEX) have effects on the misery index of Iranian provinces; that is, a 1% increase in FDEX and FDRE will increase misery by 0/041% and /045%, respectively. Therefore, these results signal that the implementation of decentralization policies in Iran will lead to a slight increase in misery index, which in turn, will result in negative consequences including a reduction in economic welfare. In this regard, it should be noted that Iran's budgeting and revenue system is based on oil sale, issuance of bonds, and the sale of capital assets. Tax accounted for 30 to 40 percent of the budget and 6 to 8 percent of GDP in the previous years. As a result, the implementation of FDEX and FDRE in the provinces will pose multiple revenue-related problems for these provinces, particularly, the deprived ones in short term. It will take a long time for the provinces to gain financial independence through the mechanism of tax revenue. Meanwhile, they will face even more reduction in revenue, which will squeeze the province's budget. Therefore, should the central government aim to implement decentralization policies successfully, we suggest that it establish a stabilization fund before the financial independence of the provinces. Moreover, it needs to continue supporting the provinces, especially the deprived provinces, in the transition phase using an effective plan, so that the negative effects of decentralization on misery are kept at a minimum in the transition phase.

The results also indicate that capital share in GDP in both estimated models is negative and significant, so that a 1% increase in this variable (assuming that other conditions are stable) will reduce the misery by an average of 0.04%. The estimation results are consistent with the theoretical expectations, so that an increase in investment growth and capital accumulation in the country, hopefully, can lead to the improvement of productive economic sectors and economic growth, which will yield a reduction in unemployment. At the same time, a shift away from non-productive sectors to productive sectors of the

economy will contribute to a reduction in inflation as well. Therefore, overall, an increase in the share of capital in GDP can lead to a decrease in misery .The variable of population growth (a coefficient of 0/47) was found to be significant and positive. The population growth (assuming other conditions are stable) will lead to increased demands for job, exacerbating the unemployment in provinces, particularly, and deprived provinces. This, it turn, will increase misery.

Furthermore, the coefficient estimated for the literacy rate was -0.96%. It should be noted that increasing the literacy rate in the provinces will lead to increased professionalism and skills. This will increase the income level and employees' wages, which reduces the misery index.

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