

Uputa: Panel Data Analysis - SPSS Setting Up Mixed Model with No Predictors using Singer Data.pdf

Crveni tekst su komentari i informacije / Crni tekst ide u rad

Boju skinite, to Vam je samo za orijentaciju odakle je što.

za Rejting i Beta

No Predictors in the Model iz fajla:xxxxxxxx-PDA-Moodys_Beta-2kG1107-No_Predictors.xlsx

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Centered Beta as a Fixed and Random Effect in the Model

iz fajla Jelena-PDA-Moodys_Beta-2kG1107--Fixed-Random.xlsx

Model Dimension^a

	Number of Levels	Covariance Structure	Number of Parameters	Subject Variables
Fixed Effects Intercept	1	Variance Components	1	Company
Beta	1		2	
Random Effects Intercept + Beta ^b	2		1	
Residual			1	
Total	4		5	

a. Dependent Variable: Moodys - Credit Ratings.

b. As of version 11.5, the syntax rules for the RANDOM subcommand have changed. Your command syntax may yield results that differ from those produced by prior versions. If you are using version 11 syntax, please consult the current syntax reference guide for more information.

Information Criteria^a

-2 Restricted Log Likelihood	51551,701
Akaike's Information Criterion (AIC)	51557,701
Hurvich and Tsai's Criterion (AICC)	51557,702
Bozdogan's Criterion (CAIC)	51583,400
Schwarz's Bayesian Criterion (BIC)	51580,400

The information criteria are displayed in smaller-is-better forms.

a. Dependent Variable: Moodys - Credit Ratings.

Estimates of Fixed Effects^a

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	,690738	,126857	84,003	5,445	,000	,438470	,943006
Beta	,002767	,001623	220,783	1,705	,090	-,000432	,005965

a. Dependent Variable: Moodys - Credit Ratings.

Znači imamo statističku značajnost (Sig)

The intercept estimate of 0,690738 is the mean of the Moodys - Credit Ratings at the Company level. The Centered Beta estimate of 0,002767 is the slope (rate of change) of the line. It states that for every one point increase in Centered Beta an increase of 0,002767 in Moodys - Credit Ratings will be attained for that student. This is statistically identical to the Centered Beta estimate in the model with Centered Beta as only a fixed effect.

A formula for all this states simply:

$$S = 0,690738 + 0,002767 y$$

Where S = Moodys - Credit Ratings Score
y = Company's Centered Beta Score

Estimates of Covariance Parameters^a

Parameter	Estimate	Std. Error
Residual	2,099164	,024937
Intercept [subject = Company] Variance	1,355303	,211064
Beta [subject = Company] Variance	,000058	,000017

a. Dependent Variable: Moodys - Credit Ratings.

The residual estimate of 2,099164 is the variability within Companies. The intercept estimate of 1,355303 is the variability of the intercept between Companies and the Beta estimate of 0,000058 is the variability of the Beta between Companies. Thus, the total variability between Companies is 1,355361 (1,355303 + 0,000058).

The residual estimate of 2,099164 is the information that cannot be explained within Companies. It also can be added or subtracted to the equation above to indicate the variability in that equation. The intercept estimate of 1,355303 indicates the variability in the intercept estimate and can be added or subtracted to the intercept estimate above to show the variability. The Beta estimate of 0,000058 indicates the variability in the Beta estimate and can be added or subtracted to the Beta estimate (slope) above to show the variability. (When Centered Beta is a random effect and because it is continuous variable, it gives variability to the slope of the equation, not the intercept.)

Thus:

$$S = (0,690738 \pm 1,355303) + (0,002767 \pm 0,000058) y \pm 2,099164$$

Where S = **Moodys - Credit Ratings** Score

y = **Company's** Centered **Beta** Score

Calculating the Intra Class Correlation (ICC):

$$ICC = \frac{\text{Variability Between Groups}}{\text{Variability Between Groups} + \text{Variability Within Groups}} \times 100$$

$$ICC_{\text{Centered Beta, Fixed\&Random}} = 1,355303 / (1,355303 + 2,099164) \times 100 = 39,23\%$$

There is important clustering in the model. The ICC indicates that **39,23%** of the total variability comes from the variability between the **Company** and the variability of the **Beta** between the **Company** with Centered **Beta** in the model as a random effect - or that **39,23%** of the variability can be explained by the **Company's** attended and the **Beta** of the **Company**. This explains less of the clustering as compared to when Centered **Beta** was treated as a fixed factor: **38,96%**