

# ECON2206: Introductory Econometrics

## Assignment 1

Semester 2 - 2017

### Problem Set

The file `NBASAL.dta` contains salary information and statistics for 269 players in the *National Basketball Association* (NBA). We are interested in the determinants of players' salary and we consider the following econometric models:

$$\text{lwage} = \alpha_0 + \alpha_1 \text{exper} + \alpha_2 \text{assists} + \alpha_3 \text{black} + u, \quad (1)$$

$$\text{lwage} = \beta_0 + \beta_1 \text{exper} + \beta_2 \text{assists} + \beta_3 \text{black} + \beta_4 \text{points} + v, \quad (2)$$

where `lwage` is the logarithm of annual salary (in thousands of dollars), `exper` is the number of years since becoming a professional player, `assists` is the number of assists per game, `black` is a dummy variable equal to one if black and zero otherwise, and `points` is the number of points per game.

- Q1.** Discuss how you would interpret the coefficient  $\alpha_2$  and how this differs from the interpretation of  $\beta_2$ . What are your expectations towards the sign of both  $\alpha_2$  and  $\beta_2$ ? Why?
- Q2.** Use STATA to estimate parameters of both models. Specify under which assumptions you can conduct inference on the model parameters. Is  $\beta_2$  statistically significant?
- Q3.** Provide a 90% confidence interval for the effect of one more point per game on player's salary.
- Q4.** Compare the fit of both models and discuss which one you prefer and why.
- Q5.** Using your preferred model, provide an estimate for the wage of a black player, with 5 years of experience, scoring 20 points and 3 assists per game.
- Q6.** We are interested in understanding whether an additional year of experience has the same effect on players' salary as one more point per game. Specify appropriate null and alternative hypotheses and conduct the test at the 5% significance level.
- Q7.** With reference to the second model, could we state that `assists` and `black` are not useful in explaining players' salary? Specify the amount of evidence in favor of such an hypothesis by reporting the p-value of the appropriate test.
- Q8.** Use STATA to estimate the following model:

$$\text{lwage} = \beta_0 + \beta_1 \text{exper} + \beta_2 \text{exper}^2 + \beta_3 \text{assists} + \beta_4 \text{black} + \beta_5 \text{points} + v, \quad (3)$$

and discuss the marginal effect of experience on wages according to this model. Do we have reasons to believe that such marginal effect is constant in the population?

## Submission instructions

- Submission of one hard copy of the assignment is required and it must be handed in to your tutor before the end of your Week 7 tutorial class.
- Name, student number, course title, tutorial group number and tutor's name should be clearly included in the submission.
- The submission should be no longer than 4 pages. Penalties will otherwise apply.
- Do not use plastic sheets or binders, simply staple the pages together.
- The assignment is INDIVIDUAL work. You may discuss the assignment with your peers, but you must submit YOUR OWN answers.
- Answers should include a **brief** explanation of the commands used to obtain the desired STATA output.
- No STATA output is required in the submission as long as commands used are clearly stated.