9.2 ANNEX 2: MULTIPLE LINEAR REGRESSION ASSUMPTIONS TESTING

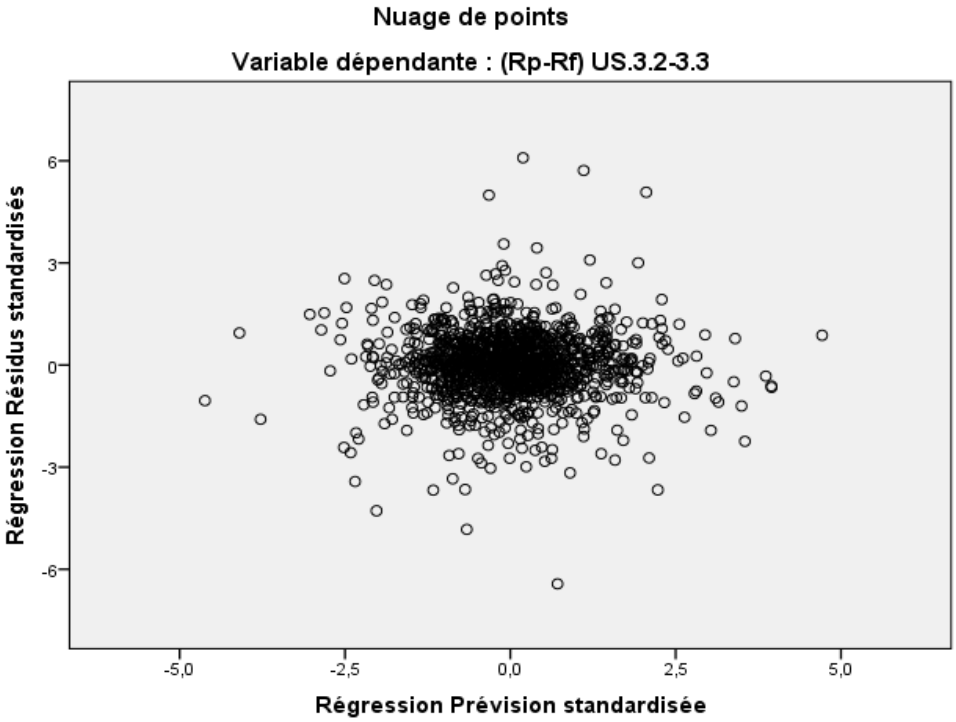
The ordinary least squares regression are based upon a set of assumptions (Section 5.3, p.23). To guarantee the validity of the results, these assumptions were tested graphically – using scatterplots and P-P plots – and based on the VIF factor. This annex encompasses these graphs.

The linearity in parameters (MLR.1) and the homoscedasticity of the error (MLR.5) were tested using the scatterplot of the regression standardized residuals as a function of the regression standardized predicted value (Lefèvre, 2016). On that graph, a linear Loess curve fitted around zero could verify the linearity of parameters assumption (MLR.1). On the same graph, equally distributed data around zero, both below and under and both at the right- and the left-hand side, indicate homoscedasticity of the error (MLR.5).

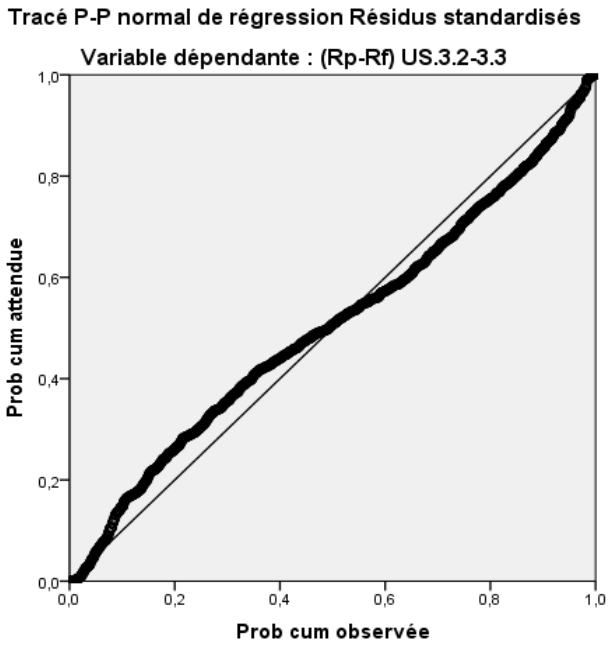
The normality of the error (MLR.6) is verified through the P-P plot of the regression standardized residuals, with the expected cumulated probability as a function of the observed cumulated probability (Lefèvre, 2016). As the data follows the normality line, the normality of the error (MLR.6) could be assumed.

9.2.1 OLS hypothesis testing: US market

Graph 7: Scatterplot of the Fama-French 5-factor model regression on US impact funds

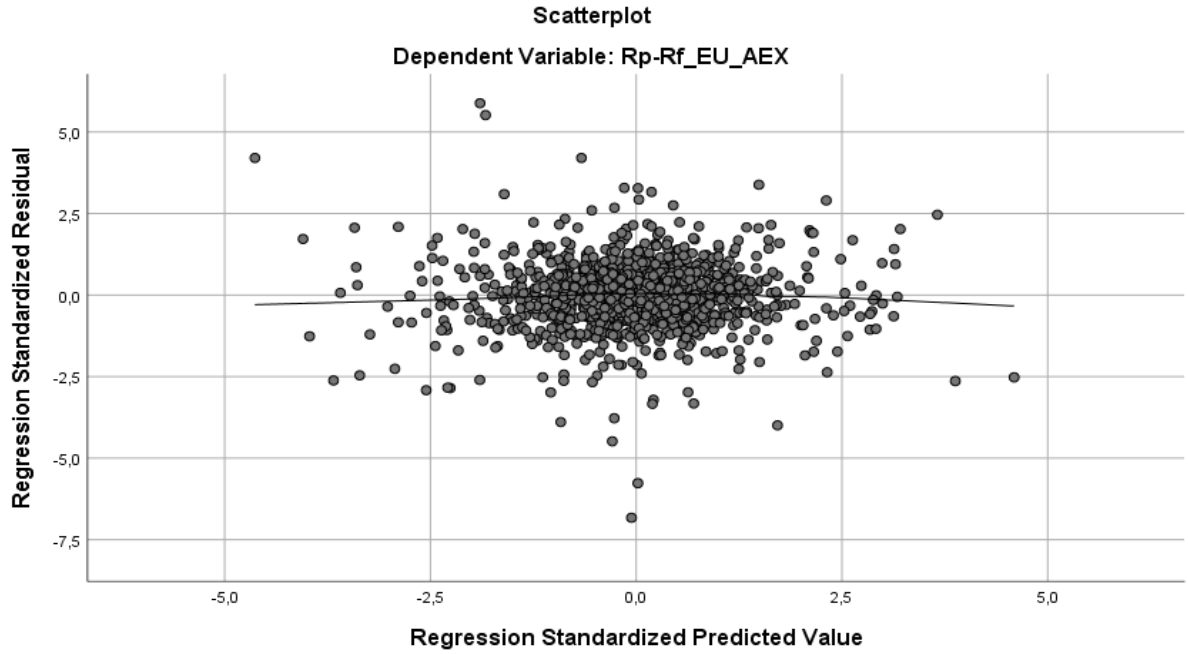


Graph 8: P-P plot of regression standardized residuals of the Fama-French 5-factor model regression on US impact funds

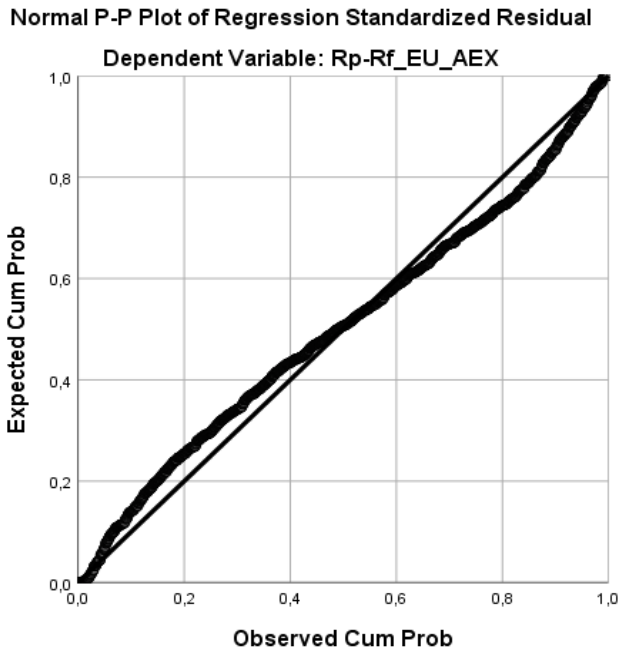


9.2.2 OLS hypothesis testing: Dutch market

Graph 9: Scatterplot of the Fama-French 5-factor model regression on Dutch impact funds

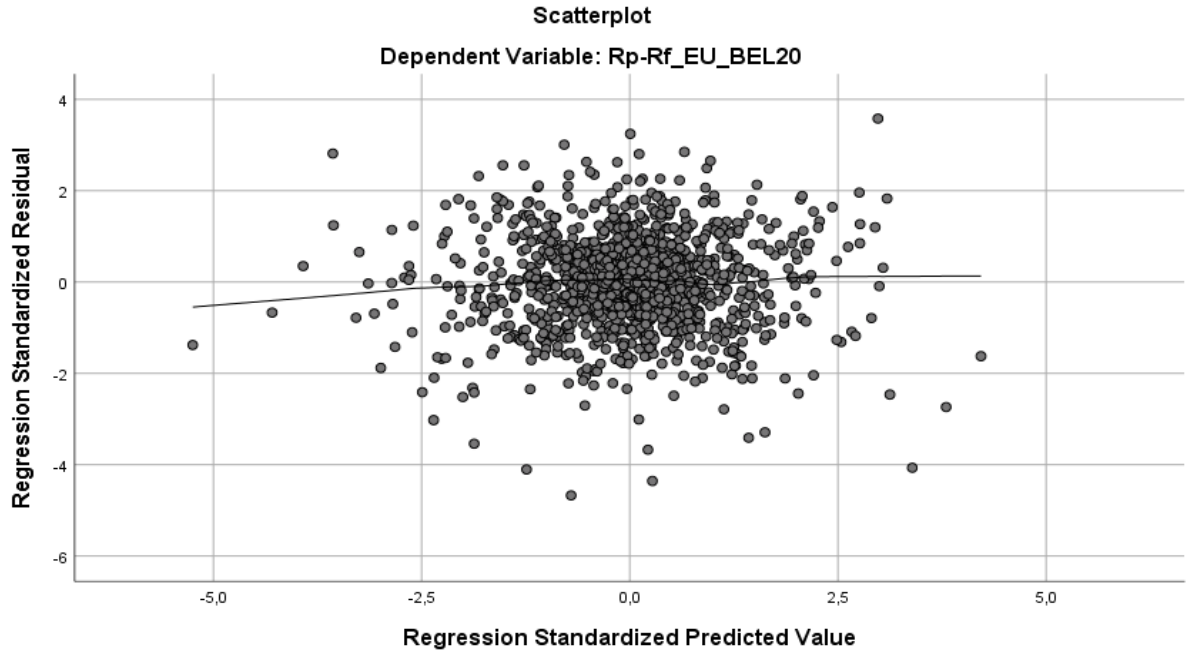


Graph 10: P-P plot of regression standardized residuals of the Fama-French 5-factor model regression on Dutch impact funds

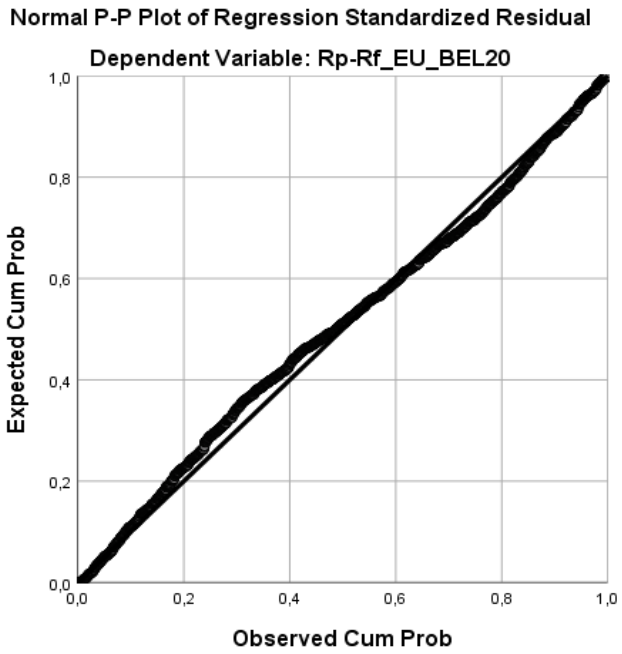


9.2.3 OLS hypothesis testing: Belgian market

Graph 11: Scatterplot of the Fama-French 5-factor model regression on Belgian impact funds

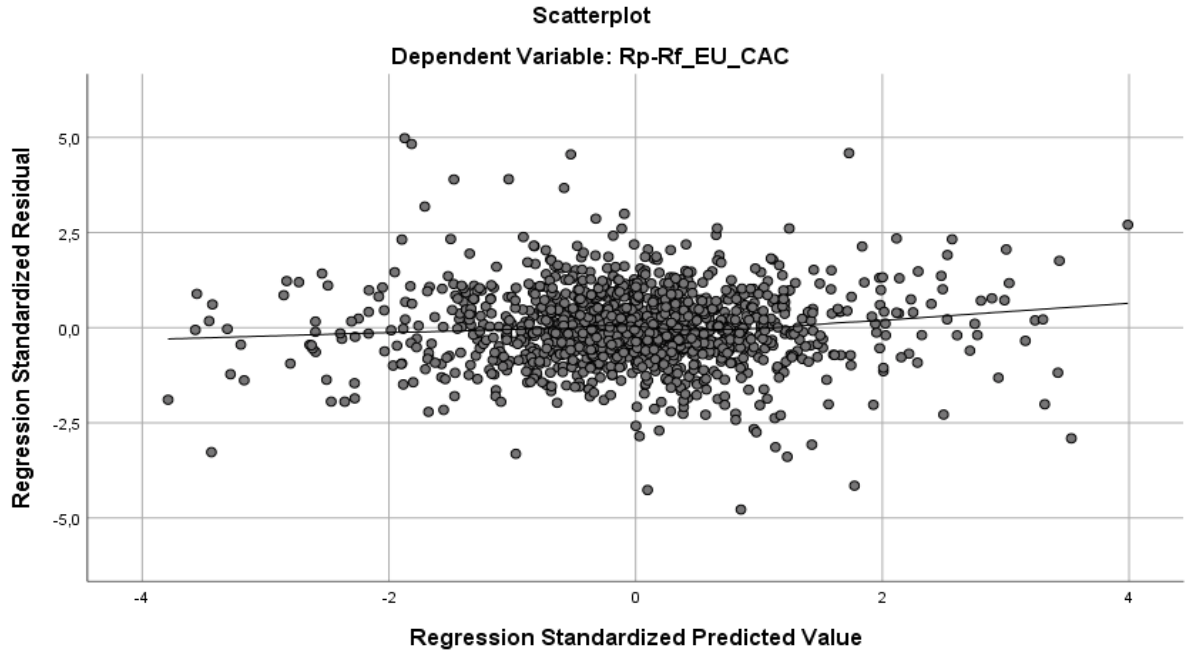


Graph 12: P-P plot of regression standardized residuals of the Fama-French 5-factor model regression on Belgian impact funds

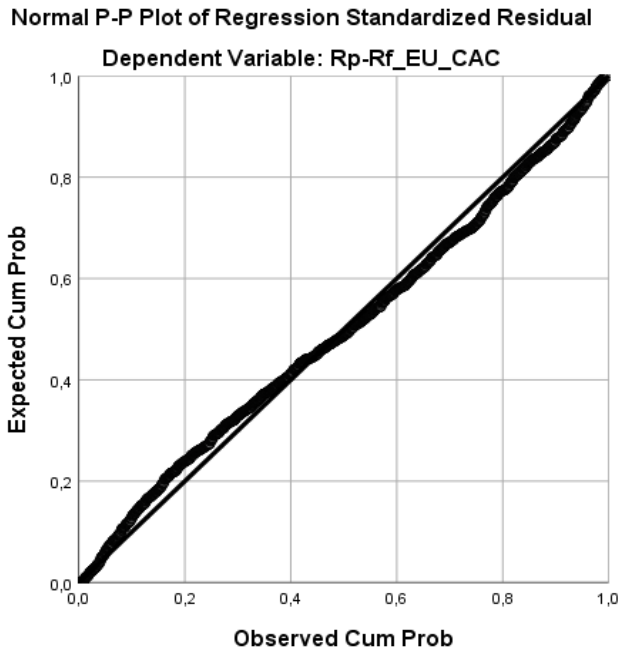


9.2.4 OLS hypothesis testing: French market

Graph 13: Scatterplot of the Fama-French 5-factor model regression on French impact funds

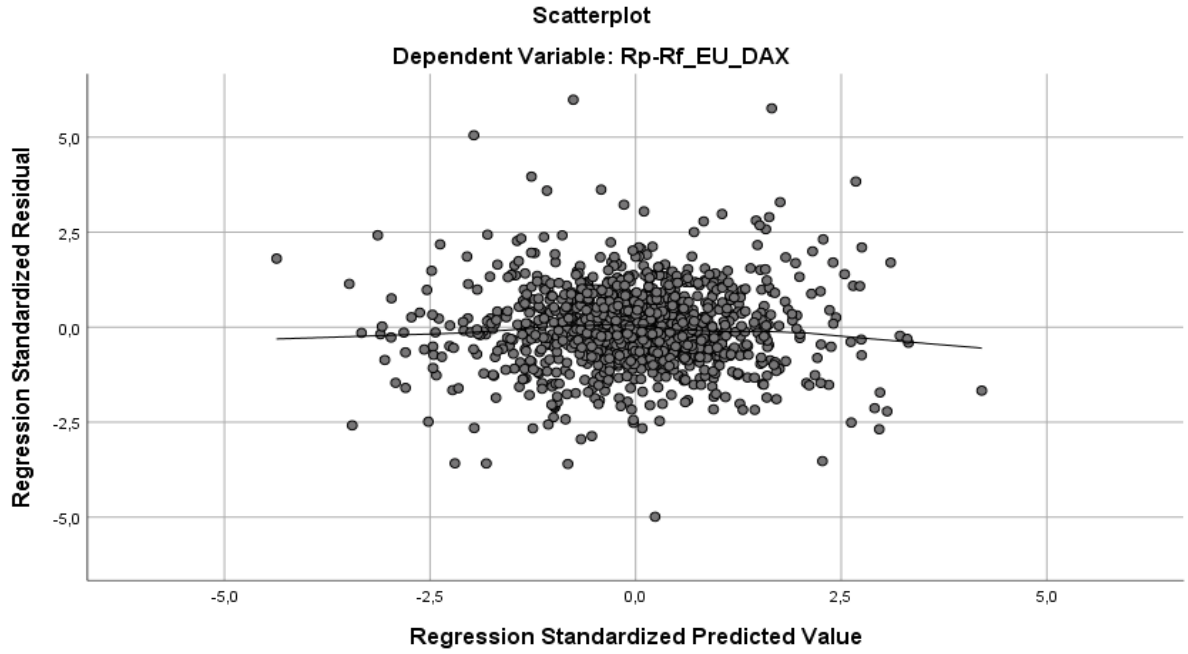


Graph 14: P-P plot of regression standardized residuals of the Fama-French 5-factor model regression on French impact funds

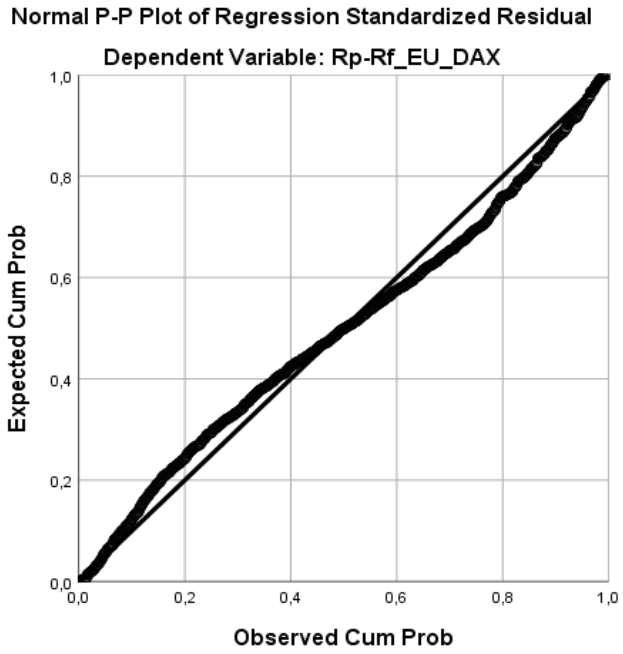


9.2.5 OLS hypothesis testing: German market

Graph 15: Scatterplot of the Fama-French 5-factor model regression on German impact funds

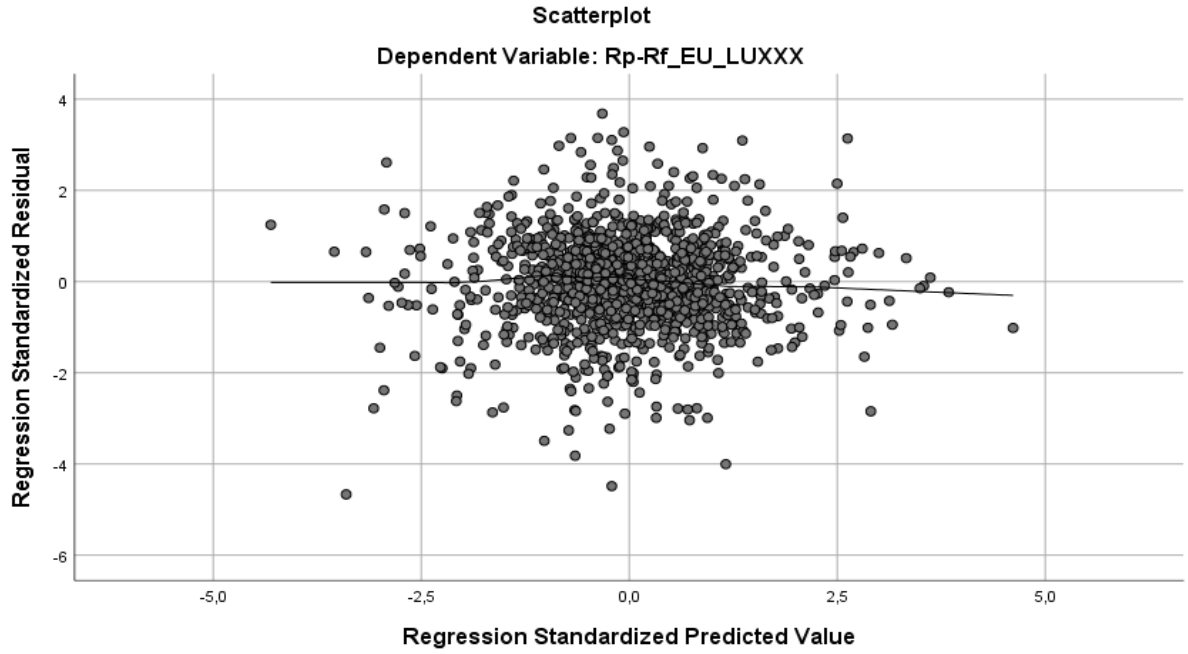


Graph 16: P-P plot of regression standardized residuals of the Fama-French 5-factor model regression on German impact funds



9.2.6 OLS hypothesis testing: Luxembourg market

Graph 17: Scatterplot of the Fama-French 5-factor model regression on Luxembourg impact funds



Graph 18: P-P plot of regression standardized residuals of the Fama-French 5-factor model regression on Luxembourg impact funds