Black font is information from Marco.

Red font is information from Matt.

**Portugal CES production function without energy**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unadjusted** | **Adjusted** |
| **Estimated coefficient values** | |
| γ | 1.0306\*\*\*  0.9987295\*\*\*  (0.0324)  (0.015376)  [31.7914]  [64.955] | 1.0299\*\*\*  (0.0249)  [41.2229] |
| λ | 0.0055  0.01240393\*\*\*  (0.0033)  (0.001403)  [1.6628]  [8.839] | 0.0055\*\*\*  (0.0005)  [11.5038] |
| δ1 | 0.9844\*\*\*  0.9833522\*\*\*  (0.0101)  (0.008734)  [97.7724]  [112.583] | 0.9999\*\*\*  (0.0000)  [52096.52] |
| 1- δ1 | 0.0157  0.0166478  NA | 0.0000  NA |
| ρ1 | 3.4647\*\*\*  4.759607\*\*\*  (0.5209)  (0.799690)  [6.6511]  [5.952] | 23.3779  (20.3311)  [1.1498] |
| σ1 | -0.4057  (I get sigma\_1 = 0.223979215 from Marco’s rho\_1 = 3.4647. [sigma\_1 = 1/(1+rho\_1). Not sure how sigma\_1 can be negative if rho\_1 is positive.]  0.1736229  NA | -0.0447  NA |
| sse | 0.6625  0.05786343 |  |
| Variables | <<Awaiting confirmation of variables used by Marco>>  iGDP, iKstkS.L, iL, iYear |  |

Standard errors in parentheses and t stats in brackets. \*\*\* 1% significance level

Estimate Std. Error t value Pr(>|t|)

gamma 0.998729 0.015376 64.955 < 2e-16 \*\*\*

lambda 0.012404 0.001403 8.839 < 2e-16 \*\*\*

delta 0.983352 0.008734 112.583 < 2e-16 \*\*\*

rho 4.759607 0.799690 5.952 2.65e-09 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**Portugal CES production function with energy, using (kl)e nesting**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Unadjusted** | **Adjusted** |
| **Estimated coefficient values** | |
| γ | 1.0800\*\*\*  (0.2887)  [3.7414] | 1.1219  (1.2205)  [0.9192] |
| λ | 0.0067\*\*\*  (0.0009)  [6.8164] | 0.0009  (0.0017)  [0.5564] |
| δ | 0.5074\*\*\*  (0.0646)  [7.8518] | 0.5121  (0.3051)  [1.6783] |
| 1- δ | 0.4926  NA | 0.4879  NA |
| δ1 | 0.9691\*\*\*  (0.1193)  [8.1196] | 0.9381  (0.9019)  [1.0401] |
| 1- δ1 | 0.0309  NA | 0.0619  NA |
| ρ | 1.2098  (1.0664)  [1.1345] | 1.1933  (4.1568)  [0.2870] |
| σ | -4.7665  NA | -5.1732  NA |
| ρ1 | 4.3205\*  (2.3742)  [1.8198] | 5.7077  (6.8268)  [0.8361] |
| σ1 | -0.3012  NA | -0.2124  NA |

**Portugal Solow Residual estimates using CES and (kl)e nesting**

|  |  |  |
| --- | --- | --- |
|  | **Unadjusted** | **Adjusted** |
| **Without energy** | 0.005464 | 0.005449 |
| **With energy** | 0.006743 | 0.000973 |