Table 1: VAT export tax and firm's quality upgrading, Effect of density

| | Dependent variable: Product quality (city/product/trade regime/year) | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ln VAT export $\text{tax}_{k,t-1}$ | $-0.367^{***}$ | $-0.572^{***}$ | | $-0.314^{***}$ | $-0.537^{***}$ | |
| | (0.100) | (0.097) | | (0.100) | (0.099) | |
| Ln VAT import $\text{tax}_{k,t-1}$ | $-0.029$ | $0.500^{***}$ | | $-0.027$ | $0.500^{***}$ | |
| | (0.079) | (0.134) | | (0.078) | (0.134) | |
| $\text{Density}_{ck} \times \text{Eligible}^R$ | $1.421^{***}$ | | | $1.589^{***}$ | | |
| | (0.445) | | | (0.461) | | |
| $\text{Comp Adv}_{ck} \times \text{Eligible}^R$ | | | | $-0.146$ | | |
| | | | | (0.126) | | |
| Ln VAT export $\text{tax}_{k,t-1} \times \text{Density}_{ck}$ | $0.635^{*}$ | $1.140^{***}$ | $1.064^{***}$ | $0.919^{***}$ | $1.340^{***}$ | $1.200^{***}$ |
| | (0.325) | (0.323) | (0.267) | (0.342) | (0.320) | (0.265) |
| Ln VAT export $\text{tax}_{k,t-1} \times \text{Eligible}^R$ | 0.044 | $0.280^{***}$ | $0.313^{***}$ | $-0.001$ | $0.258^{***}$ | $0.298^{***}$ |
| | (0.055) | (0.034) | (0.035) | (0.065) | (0.039) | (0.039) |
| Ln VAT import $\text{tax}_{k,t-1} \times \text{Density}_{ck}$ | 0.560 | $-0.674$ | $-0.444$ | 0.545 | $-0.715$ | $-0.461$ |
| | (0.349) | (0.678) | (0.643) | (0.347) | (0.680) | (0.645) |
| Ln VAT import $\text{tax}_{k,t-1} \times \text{Eligible}^R$ | $-0.040$ | $-0.678^{***}$ | $-0.604^{***}$ | $-0.042$ | $-0.676^{***}$ | $-0.603^{***}$ |
| | (0.036) | (0.117) | (0.103) | (0.035) | (0.117) | (0.103) |
| Ln VAT export $\text{tax}_{k,t-1} \times \text{Comp Adv}_{ck}$ | | | | $-0.202^{***}$ | $-0.127^{***}$ | $-0.112^{***}$ |
| | | | | (0.058) | (0.027) | (0.027) |
| Ln VAT export $\text{tax}_{k,t-1} \times \text{Density}_{ck} \times \text{Eligible}^R$ | $-0.307^{*}$ | $-0.874^{***}$ | $-0.900^{***}$ | $-0.446^{**}$ | $-0.925^{***}$ | $-0.928^{***}$ |
| | (0.161) | (0.160) | (0.154) | (0.184) | (0.159) | (0.153) |
| Ln VAT import $\text{tax}_{k,t-1} \times \text{Density}_{ck} \times \text{Eligible}^R$ | $-0.169$ | $1.412^{**}$ | 0.953 | $-0.171$ | $1.437^{**}$ | 0.966 |
| | (0.132) | (0.651) | (0.609) | (0.131) | (0.653) | (0.610) |
| Ln VAT export $\text{tax}_{k,t-1} \times \text{Eligible}^R \times \text{Comp Adv}_{ck}$ | | | | $0.136^{**}$ | $0.047^{*}$ | 0.030 |
| | | | | (0.066) | (0.028) | (0.029) |
| City-product fixed effects | Yes | Yes | No | Yes | Yes | No |
| City-product-regime fixed effects | No | Yes | Yes | No | Yes | Yes |
| City-sector-year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Product-destination fixed effect | Yes | Yes | No | Yes | Yes | No |
| product-year fixed effects | No | No | Yes | No | No | Yes |
| Observations | 4,744,218 | 4,744,218 | 4,744,218 | 4,744,218 | 4,744,218 | 4,744,218 |
| $R^2$ | 0.378 | 0.404 | 0.264 | 0.378 | 0.404 | 0.264 |

This table estimates eq(3). Note that 'Eligible' refers to the regime entitle to VAT refund, our treatment group. Our control group is processing trade with supplied input, 'Non-Eligible' to VAT refund. Sectors are defined following the Chinese 4-digit GB/T industry classification and regroup several products. Heteroskedasticity-robust standard errors clustered at the product level appear in-parentheses. * Significance at the 10%, ** Significance at the 5%, *** Significance at the 1%.