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Ethnic Competition or Complementarity: Which Drives (Returns to) Self-employment?

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Abstract

This paper explores the relationship between ethnic competition and complementarity in returns to self-employment. We use detailed individual data from the U.S. censuses. We find that while in general business competition is detrimental to profitability, higher self-employment concentrations of co-ethnics are associated with increase in returns.

Keywords:

self-employment, ethnic entrepreneurship, competition, complementarity

JEL:

L26, D2, J3, J42

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1. Introduction

Typically high concentration is considered beneficial to the profitability of enterprises (Bain, 1956; Demsetz, 1973; Cowling and Waterson, 1976; Tirole, 1988). However, in the context of ethnic entrepreneurship shortage of ethnic businesses and/or co-ethnics may substantially limit the scope of business opportunities to be explored. Adequate response to the preferences of ethnic clients and enabling relational contracting with ethnic employees may significantly reduce the costs and boost profits. It has been long discussed that relatively high density of co-ethnics in proximate localities gives also access to labor and financing (Wilson and Portes, 1980; Wilson and Martin, 1982; Auster and Aldrich, 1984; Sanders and Nee, 1987).

From the theoretical perspective, the effect of ethnic concentration on the profitability of ethnic self-employment may thus be ambiguous. The two forces comprise potential advantages (which arise from the complementarity of business owners, their clientele and workers) and disadvantages (which arise from increased competition). On one hand, higher ethnic density potentially raises demand and lowers costs. On the other hand, the greater the number of firms which recognize this source of profitability, the greater the competition. Finally, it is possible that ethnic concentration does not differ in nature from concentration *per se*. It is also possible, that while for some ethnicities externalities are positive, others exhibit negative “neighborhood” effects.

Our objective in this paper is to quantitatively assess the scale and economic relevance of these effects. We assert how the competition and complementarity channels affect returns to self-employment. To this end, in addition to standard concentration measures, we also provide estimators for the ethnicity-specific concentration indicators and estimate an otherwise standard equation of returns to self-employment. We formulate two basic empirical questions. First, how is ethnic entrepreneurship affected by market competition on the sectoral level? Second, to what extent do ethnic entrepreneurs take advantage of the local pools of co-ethnic labor and consumers?

2. Empirical Strategy

A standard approach in the literature on the returns to self-employment (Li, 2000; Lofstrom, 2002; Portes and Shafer, 2006) consists of estimating a Mincerian-type equation

$$\text{Income from self-employment}_{i,r,k,e} = \beta_0 + \beta_X \mathbf{X} + \beta_r \mathbf{r} + \beta_k \mathbf{k} + \beta_e \mathbf{e} + \epsilon_i, \quad (1)$$

where income is measured on comparable basis (e.g. per hour or per year) across individuals i , sectors k and possibly ethnicities e across r neighborhoods. Matrix \mathbf{X} typically comprises standard explanatory variables such as age, gender, education, marital status in addition to regional, industrial and ethnic controls. Our identification strategy consists of extending the standard specification to encompass additional control variables, which could competition and complementarity across sectors and ethnicities. They comprise:

- **industrial competition** measured by the Hirshman-Herfindahl Index across sectors k ¹;
- **ethnic competition** measured by the Hirshman-Herfindahl Index across ethnicities e within each sector k ;
- **ethnic complementarity** measured by the density of co-ethnics relative to non-coethnics, as well as the relative wealth of co-ethnics relative to non-coethnics within each ethnic group e .

In addition, based on ethnic HHI values, an indicator of dominance was identified if ethnicity e had the largest share of self-employed in industry k .

Technical issues prevent the use of OLS in estimating returns to self-employment, as specified above. First, there may be systematic *selection into* self-employment. Second, there may be also systematic success factors, whereas typically large (positive and negative) incomes of the self-employed are censored. These two problems necessitate the use of the correction for usually latent components of returns to business operation (Simpson and Sproule, 1998; Lee, 1999; Åstebro and Chen, 2012).

Following (Hamilton, 2000; Berglann et al., 2011) we formulate a two-stage procedure. We use

$$Pr(working) = \Gamma_0 + \mathbf{\Gamma X} + \varepsilon \quad (2)$$

to obtain estimates of the Inverse Mill's Ratio (IMR) in order to correct the bias in the estimates of (1), with marital status as the additional selection variable². We then move to estimating

$$\begin{aligned} \text{Income from self-employment} = & \beta_0 + \beta \mathbf{X} + \beta_r \mathbf{r} + \beta_k \mathbf{k} + \beta_e \mathbf{e} + \delta IMR + \\ & + \gamma Competition + \eta Complementarity + \\ & + \epsilon_{Income}, \end{aligned} \quad (3)$$

for all positive incomes³.

3. Data

We estimate our model on U.S. census data⁴. This is about the richest data source, where information on business income is available, paired with declarations of ancestry and detailed regional and sectoral data. In order to account for potential changes

¹ $HHI_k = \sum_{i=1}^N s_{i,k}^2 \in (0, 1]$, where s_i is the market share of firm i and N is the total number of firms in the market in sector k . HHI_k reaches highest values for most concentrated (closest to monopoly) markets.

² Cameron and Trivedi (2009) discuss in depth advantages and disadvantages of this approach.

³ We do not take into account negative values of income. The primary reason for doing so relies in how HHI is computed - negative values disable calculating income shares.

⁴ Acquired from Integrated Public Use Microdata Series project. <http://usa.ipums.org/usa>, Ruggles et al. (2010).

in competitive pressure and complementarity externalities the analysis included cross-sectional datasets from two periods: 2000 and 2010⁵. In our data we consider 113 industries⁶, controls for 533 Super Public Use Microdata Areas⁷, and 8 ethnicities. Categories for ethnicity recognize the ethnic groups clustered into approximately continental divisions⁸.

Our measure of income is self-reported earnings adjusted for the number of hours worked⁹. Incomes are inflation-adjusted to 2010 U.S. dollars. We use data for adult and economically active individuals aged 16-75, but the ratio of co-ethnics and their wealth are calculated for the whole population. Basic descriptive statistics are presented in Table 1.

4. Results

Obtained results are OLS estimates, and are corrected for non-random selection of individuals into working. To facilitate interpretation, all continuous variables have been standardized. Consequently, point estimators may be interpreted in terms of relative importance, Table 2.

In almost all specifications more concentration is associated with higher profits, which is a standard finding, expected based on theory. However, ethnic HHI in Model 5 turns the overall HHI insignificant and has a negative and statistically significant sign. A large number of co-ethnics is detrimental to profitability (Model 3), but if co-ethnics are relatively wealthy, there are sizeable positive effects on self-employed revenues. The results are robust across the specifications.

A one standard deviation increase in the Hirschman-Herfindahl Index is related to a relatively small (0.009 s.d.) increase in returns to self-employment. The effect of competition is smaller than any of the individual level determinants included in the specification. However, HHI is much less dispersed than incomes, what implies that an increase in the value of the HHI by ten standard deviations (0.06), what corresponds

⁵These are the American Community Survey for 2010 (1% sample of the population) and the 5% sample of the Census for 2000.

⁶Three-digit level of the classification yielding 196 categories - the *IND1990* variable in the USA-PUMS database. All estimations have been run without supplied weights - multiplying observations lead to possibly 'fake' concentration indices. The unweighted sample did not present significant distributional differences. We have also excluded the 'Agriculture, Forestry, Fishing and Hunting' and the 'Mining' industry, as well as the 'Public Administration' and the 'Military' as there were negligible numbers of self-employed in those sectors, what eventually biased the concentration index estimate.

⁷Geographic areas with min. 400,000 residents - the *PUMASUPR* variable in the USA-PUMS database.

⁸Considered ethnic groups include: "Others", West Europeans, North Africans and Southwest Asians, Hispanics, Central Europeans, Sub-Saharan Africans, Asians, and North Americans - based on the *ANCESTRIG* variable in the USA-PUMS database.

⁹Reported values are censored. In the 2000 sample incomes at or above 126,000 USD are expressed as the state means of values above 126,000 USD. In the 2010 sample censoring is made at the 99.5th percentile within each state (higher values are the state means of all cases above these cutoff values). We impose a lower boundary on 0 USD.

Table 1: Summary statistics - means or proportions

| | (1) All | (2) Natives | (3) Immigrants | (4) Difference (2) - (3) |
|---|--------------------|--------------------|--------------------|-----------------------------|
| Income per hour | 22.86 (29.03) | 23.26 (29.38) | 17.04 (22.65) | 6.22** |
| Age (only 16+75 population) | 46.35 (12.38) | 46.71 (12.37) | 41.16 (11.24) | 5.55** |
| Gender (1-female) | 0.36 (0.48) | 0.36 (0.48) | 0.39 (.49) | 0.03** |
| Marital status (1-married) | 0.72 (0.45) | 0.72 (0.45) | 0.68 (0.47) | 0.04** |
| Education-primary | 3.14% | 2.25% | 15.88% | -13.63 pp** |
| Education-secondary | 41.22% | 41.17% | 37.73% | 3.44 pp** |
| Education-tertiary | 55.63% | 56.19% | 41.69% | 14.50 pp** |
| English-does not speak | 0.68% | 0.10% | 9.15% | -9.04 pp** |
| English-speaks only English | 83.71% | 88.35% | 15.99% | 72.36 pp** |
| HHI | 0.0013 (0.0066) | 0.0013 (0.0066) | 0.0013 (0.0073) | |
| HHI _{ethnic} | .0008 (0.0115) | .0005 (0.0065) | .0045 (0.0374) | -0.040** |
| Relative number of co-ethnics | 0.007 (0.0076) | 0.006 (0.0064) | 0.019 (0.013) | -0.012** |
| Relative wealth of co-ethnics | 1.09 (0.22) | 1.10 (0.21) | 0.99 (.24) | 0.11** |
| Dominance (0-minor group, 1-major group) | 0.14 (0.34) | 0.13 (0.34) | 0.24 (0.4) | -0.11** |
| No. of observations | 755,888 | 707,484 | 48,404 | |

Data: IPUMS database - ACS 2010, U.S. Census 2000. Standard deviations in parenthesis.

(**) implies difference in means or difference in percentage points, where applicable, significant at 5% level.

Table 2: Regression output.

| | (1) | (2) | (3) | (4) | (5) |
|---------------------------------|-----------|-----------|-----------------|-----------|-----------|
| Competition effects: | | | | | |
| HHI | 0.009*** | 0.008*** | 0.009*** | 0.008*** | -0.002 |
| HHI _{ethnic} | | | | | -0.013*** |
| Complementarity effects: | | | | | |
| relative number of co-ethnics | | | -0.011*** | 0.000 | |
| relative wealth of co-ethnics | | | | 0.027*** | |
| Standard covariates: | | | | | |
| Age | 1.349*** | 1.342*** | 1.346*** | 1.341*** | 1.356*** |
| Age ² | -1.257*** | -1.254*** | -1.255*** | -1.253*** | -1.265*** |
| Gender (1-female) | -0.118*** | -0.146*** | -0.120*** | -0.120*** | -0.121*** |
| Age x gender | -0.149*** | -0.149*** | -0.149*** | -0.148*** | -0.149*** |
| Education - primary | | | reference level | | |
| Education - secondary | 0.118*** | 0.105*** | 0.113*** | 0.108*** | 0.118*** |
| Education - tertiary | 0.465*** | 0.445*** | 0.460*** | 0.448*** | 0.466*** |
| English - does not speak | | | reference level | | |
| English - speaks not well | 0.035*** | 0.024** | 0.029*** | 0.026*** | 0.035*** |
| English - speaks well | 0.097*** | 0.079*** | 0.088*** | 0.085*** | 0.096*** |
| English - speaks very well | 0.286*** | 0.273*** | 0.274*** | 0.274*** | 0.286*** |
| English - speaks only English | 0.327*** | 0.315*** | 0.306*** | 0.311*** | 0.327*** |
| Inv. Mill's Ratio | 0.461*** | 0.462*** | 0.559*** | 0.461*** | 0.464*** |
| Constant | -0.909*** | -0.872*** | -0.887*** | -0.872*** | -0.911*** |
| Ethnic group dummies | no | yes | no | no | no |
| Super-PUMA dummies | yes | yes | yes | yes | yes |
| Year dummies | yes | yes | yes | yes | yes |
| No. of observations | 750,795 | 750,795 | 750,795 | 750,795 | 734,655 |
| R ² | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

e.g. to the market being shared equally between 12 rather than 40 identical firms, is related to an increase in the owners' weekly earnings by \$2.6 ($\beta_{HHI} \times s.d._y \times 10 = 2.6$). Comparatively, having tertiary rather than primary education relates to returns which are higher by \$13.5.

On the other hand a one standard deviation increase in co-ethnic concentration is associated with a 0.011 s.d. decrease in income from self-employment. Potentially, the relatively bigger ratio of co-ethnics to non co-ethnics could be associated with smaller purchasing power of members of ethnic groups clustered in enclaves. If combined with the wealth of the co-ethnics, the coefficient on the size of ethnic group turns insignificant. We can thus say that it is not the number of co-ethnics *per se*, what generates a complementarity effect with respect to entrepreneurial returns, but rather the purchasing power of one's own ethnic group.

A significant coefficient on ethnic HHI turns the estimator of HHI insignificant. Apparently, an increase in ethnic concentration fosters returns to self-employment. Entrepreneurs representing the same ethnic group, who operate businesses in a given industry attract clientele and may also create a support system based on ancestral linkages, e.g. enables access to informal credit lines or exchange of best business practices (e.g. Marshall-Arrow-Romer type of knowledge spillovers). Such areas as 'China Towns' or 'Little Italys', despite comprising multiple, very similar businesses enhance profitability.

The results may be susceptible to few dominant ethnicities (e.g. operating in specific industries) or some other special cases. Thus, we tried a number of robustness checks to test the vulnerability of the main estimators to the inclusion of additional controls. These include domination, knowledge of the market and separating ethnicity from immigration. Model 5a excluded those individuals who were ethnic and industrial 'monopolists' ($HHI = 1$ and $HHI_{ethnic} = 1$). In Model 5b we include a dummy variable indicating whether one's duration of stay in the U.S. is above ($duration = 1$) or below ($duration = 0$) the median (47 years)¹⁰. Model 5c controls whether one's ethnic group is dominant (largest) within an industry. Model 5d shows that the effect of ethnic competition on business profits may turn negative (just as for HHI in previous estimations). Table 3 presents the results.

In all of the specifications (Models 5-5c) the effect of ethnic competition on business income is positive (lower value of HHI_{ethnic} implies stronger competition). In general the length of stay is positively related to higher returns to self-employment. When interacted with the measure of ethnic competition, though, the duration appears to be negatively linked to profits. Among long-stayers HHI_{ethnic} has an increased negative relation to profits ($-0.009 + (-0.030) = -0.039$ compared to -0.009 among short-stayers). This leads us to hypothesize that ethnic enclaves may serve as business incubators. Members of dominant groups generally have higher profits. When we consider the way dominance interacts with ethnic competition, though, it turns out that being

¹⁰The duration of stay for non-immigrants was equal to their age, for immigrants it was the length of their stay in the U.S. as reported in the *YRSINUS* variable in the PUMS database.

Table 3: Robustness checks.

| | Model 5 | Model 5a | Model 5b | Model 5c | Model 5d |
|---------------------------------------|-----------|-----------|-----------------|-----------|-----------|
| Competition effects: | | | | | |
| HHI | -0.002 | -0.004 | -0.003 | -0.005 | 0.006 |
| HHI ^{ethnic} | -0.017*** | -0.017*** | -0.009*** | -0.016*** | -0.050*** |
| Robustness check variables: | | | | | |
| HHI < 1 and HHI ^{ethnic} < 1 | no | yes | no | no | no |
| Duration above median | | | 0.025*** | | |
| Duration x HHI ^{ethnic} | | | -0.030*** | | |
| Dominant (0-no, 1-yes) | | | | 0.024*** | |
| Dominant x HHI ^{ethnic} | | | | 0.013** | |
| Immigrant (0-no, 1-yes) | | | | | -0.091*** |
| Immigrant x HHI ^{ethnic} | | | | | 0.057*** |
| Standard Covariates: | | | | | |
| Age | 1.350*** | 1.356*** | 1.371*** | 1.355*** | 1.347*** |
| Age ² | -1.265*** | -1.265*** | -1.298*** | -1.264*** | -1.258*** |
| Gender (0-male, 1-female) | -0.121*** | -0.121*** | -0.118*** | -0.122*** | -0.122*** |
| Age x gender | -0.149*** | -0.149*** | -0.153*** | -0.149*** | -0.148*** |
| Education - primary | | | reference level | | |
| Education - secondary | 0.118*** | 0.118*** | 0.123*** | 0.118*** | 0.112*** |
| Education - tertiary | 0.466*** | 0.466*** | 0.475*** | 0.466*** | 0.459*** |
| English - does not speak | | | reference level | | |
| English - speaks not well | 0.035*** | .035*** | 0.038*** | 0.037*** | 0.011 |
| English - speaks well | 0.096*** | 0.095*** | 0.099*** | 0.100*** | 0.054*** |
| English - speaks very well | 0.286*** | 0.285*** | 0.286*** | 0.291*** | 0.228*** |
| English - speaks only English | 0.327*** | 0.326*** | 0.321*** | 0.332*** | 0.253*** |
| Inv. Mill's Ratio | 0.464*** | 0.464*** | 0.499*** | 0.463*** | 0.458*** |
| Constant | -0.911*** | -0.911*** | -0.939*** | -0.922*** | -0.831*** |
| Ethnic group dummies | no | no | no | no | no |
| Super-PUMA dummies | yes | yes | yes | yes | yes |
| Year dummies | yes | yes | yes | yes | yes |
| No of observations | 734,655 | 734,618 | 734,655 | 734,655 | 734,655 |
| R ² | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |

*** significant at 1% level, ** significant at 5% level, * significant at 10% level

a member of a dominant ethnic group within an industry reduces the detrimental effect of ethnic competition on one's profits, but nevertheless the value of the estimator remains negative ($0.013 + (-0.016) = -0.003$). For immigrants (non-citizens) ethnic competition decreases profits ($-0.050 + 0.057 = 0.007$).

5. Summary

The objective of this paper was to test if ethnic concentration and competition have an effect on the returns to self-employment which is discernibly different from a regular theoretical prediction stating that competition is bad for profits. We have used the U.S. data and augmented the standard Mincerian regression of returns to self-employment by additional measures of market concentration, ethnic concentration and ethnic wealth in an entrepreneur's locality. It seems that ethnic concentration is actually conducive to profits and that this effect is robust to a number of potential controls. The popularity of 'China Towns' and 'Little Italys' across a number of hosting economies suggests not only altruistic or psychological motivations, but seems to be also quite robustly related to the profitability of these businesses.

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