**Fiscal transfers, local government, and entrepreneurship**

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## Abstract

Can local government spending spur entrepreneurial activity? To answer this question we study a setting where, around multiple pre-determined and non-manipulable thresholds, municipalities with lower tax revenues receive direct and different monetary grants from the national budget. Employing a fuzzy regression discontinuity design, we find a positive impact of fiscal transfers on the number of firms, especially sole proprietorships and small firms. The impact is stronger in municipalities where the opposition is more involved in the legislative process or more parties are represented in the municipal council, and in regions where historical legacies shaped a more positive attitude towards entrepreneurship. (100 words)



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# I. INTRODUCTION

Firm creation is central to the process of economic growth. Entrepreneurial activities create employment, generate technological progress and when successful spur capital formation. However, most often entrepreneurs need financial (and other) resources that they do not have when they intend to start their business (e.g., Hombert et al. (2020)). In theory, capital markets could provide the means to finance profitable business projects. However, an important area of research has shown that in many occasions entrepreneurs face financial constraints, that is, financiers are unwilling or unable to provide funding to positive net present value projects (see Kerr and Nanda (2009) for a review). Various studies have identified among the possible causes of entrepreneurs' inability to raise finance: weak national and/or local institutions (Acemoglu and Robinson, 2012), corresponding wealth inequality (Braggion et al., 2021), poor legislation, and/or adverse culture.

In this paper, we examine the role of a possible mechanism to alleviate entrepreneurial constraints: local governmental spending. But this mechanism *per se* may suffer from limitations such as weak local institutions and/or an adverse local culture, so that it can only provide partial relief. These limitations we also investigate.

Establishing a causal link between local government funding and entrepreneurial activity is difficult since the level of funding and firm creation can be jointly determined. Entrepreneurship may also correlate with unobservable factors biasing any estimates. To alleviate these concerns, we exploit a fiscal transfer program in Poland, which allows us to test the entrepreneurial effects of local government funding using a *fuzzy* regression discontinuity design. Under this program, municipalities with lower tax revenues receive direct monetary grants from the national budget which we henceforth refer to as "the subsidy". The eligibility and level of funding received by municipality vary at multiple pre-determined thresholds, based on the ratio of individual municipality per capita tax revenue to the average per capita tax revenue of all municipalities in the country. This rule makes it difficult for local politicians to precisely manipulate the threshold, and therefore the differences in tax revenues of municipalities located closely around thresholds provide us with an exogenous variation in the level of funding available to local governments.

Our analysis documents a positive effect of fiscal transfers on the number of firms. Overall, a one standard deviation increase in the per capita subsidy level results in an 8 to 13% increase in total establishments per capita. For an average municipality with approximately 1,000 operating firms, our estimates imply 80 to 130 new businesses created for every 2 million Polish zloty (PLN) or 0.5 million U.S. dollar (USD) of additional transfers, or a cost of between 15,000 to 25,000 PLN or 3,750 to 6,250 USD per firm. This effect is mainly driven by the rise in sole proprietorships and by the number of establishments with up to 9 employees. Higher transfers positively boost entrepreneurial activity in the

construction, financial, manufacturing, retail, and services industry. Conversely, the number of farming, IT, and real estate industry establishments respond negatively to a higher subsidy accruing to the local government.

The channel through which higher fiscal transfers spur firm formation is mainly through increased municipal expenditures on social assistance. These expenditures include cash and in-kind support provided to low-income families, vulnerable individuals (e.g., single parents, disabled people), and/or unemployed persons. Such expenditures may to some extent alleviate individuals' financial constraints. It may also include expenditures on the "professional upgrading" of individuals, providing them with training programs to acquire business development and operation skill. Investments in social assistance infrastructure (e.g., renovation, expansion or development of care homes, daycare centers), as well as expenditures on the provision of various care services (which also falls into this category), may provide demand for services offered by the local construction, manufacturing and services sector businesses.

Our results also suggest that new firms are likely to be established by residents living in the municipality rather than by individuals migrating to it. Consistent with this conjecture, we do not find significant discontinuities in net migration or in the number of individuals moving into or away from municipalities located around the subsidy thresholds. Consequently, these findings suggest that fiscal subsidies do not merely redistribute the number of firms across municipalities, but rather result in an overall increase in the number of establishments.

Through its positive effect on entrepreneurial activity, fiscal transfers also have important additional economic effects. We find, for example, that the fiscal transfers help alleviate unemployment, particularly among women. At the same time, new firm creation also results in higher wages in the private sector, predominantly in industries which may find it more difficult to retain existing employees (who may start a small firm themselves) and/or recruit new employees (as local unemployment decreases). Fiscal transfers also help with local innovation activity. We find a significant increase in the number of patent applications submitted by individual inventors in municipalities experiencing greater firm formation following receivership of higher transfers.

We also uncover a significant heterogeneity in our baseline results stemming from municipal councils' characteristics and historical legacies. Specifically, positive entrepreneurial effects of fiscal transfers are much stronger in municipalities where the share of the opposition parties' councilmembers involved in the legislative process is higher and where more parties are being represented in the council. This is likely due to the fact that in these municipalities, local government decisions may be under more intense scrutiny from opposition councilors and hence indirectly electorate. We also find that fiscal transfers boost entrepreneurship much more in regions where historical legacies shaped a more positive attitude towards entrepreneurship among residents, including councilmembers.

As such, our findings inform a recent political debate in Europe, where efforts are made to reduce the size of legislatures or alter the representation of political parties in the legislative process.[1] To this extent, our analysis suggests that any such policies should be carefully crafted to maintain or improve the diversity of governments and councils in terms of representation of political factions and opposition members.

We contribute to the literature that assesses the impact of supranational and/or national transfers to fund local government spending to stimulate local economic activity, e.g., per capita income growth and per capita investment. While the literature (employing similar methodological settings) overall finds a positive impact, observed is also a wide dispersion in how effectively funds are used (e.g., Becker et al. (2013)). Corbi et al. (2019), for example, study how federal transfers to municipal governments affect the local labour markets in Brazil (see also, e.g., Gadenne (2017)). They find an increase in local employment at a cost per job of about 8,000 US dollars, with the impact mainly situated in services and in less financially developed municipalities. Complementing this line of work, we focus on the channels and the impact of national-subsidy-based local government spending on local entrepreneurship and technological activity in a high-income country,[2] along the strength of local political accountability and culture.

The rest of the paper is organized as follows. In Section II, we discuss the institutional framework. In Section III, we describe our identification strategy and data. In Section IV, we provide the results of diagnostic tests and identifying assumptions. We present our baseline results, linking the number of establishments to fiscal transfers in Section V and test for potential mechanisms behind baseline results in Section VI. In Section VII, we analyze heterogeneity in baseline results stemming from the local government characteristics and historical legacies. In Section VIII, we verify the robustness of our estimates with several sensitivity tests, and Section IX concludes.

## II. INSTITUTIONAL FRAMEWORK: FISCAL TRANSFERS IN POLAND

Since 1999 local governance in Poland is executed at three levels of administrative subdivisions, which include 16 provinces (*wojewodztwa*) divided into 380 counties (*powiats*) and further split into 2,478 municipalities (*gminas*). Each subdivision generates fiscal revenues via taxes and fees paid by individuals and firms, which partly support the national budget. With the remaining part of revenues, local

1. Such debates are currently taking place in France (https://www.ft.com/content/de0e14a8-381b-11e8-8b98-2f31af407cc8), Greece (https://apnews.com/article/bda19a01212f4355c385c1439677683a), and the United Kingdom (https://www.bbc.co.uk/news/uk-politics-43111790; https://www.electoral-reform.org.uk/campaigns/local-democracy/). The results of a recent referendum in Italy show that 70% of the voters support the reduction of the parliament members by a third (https://www.wsj.com/articles/italians-vote-to-reduce-number-of-lawmakers-by-a-third-11600703306).
2. Brazil is classified by the World Bank as a middle-income country with about half the GDP (PPP) per capita than Poland (in 2017, $15,553 versus $29,924).

governments, including municipal councils, are responsible for providing services and goods to residents and businesses.[3] An important part of municipal responsibilities involves stimulating employment. To do so, local councils may, for example, finance training programs and workshops to increase residents' employability or help them set up businesses. Alternatively, municipalities may alleviate resource constraints through the provision of cash and in-kind benefits to individuals, promote firm formation or relocation of businesses through increased investments, and/or boost the demand for services and products provided by various businesses.

The central government set up several fiscal transfer schemes to financially support municipalities in completing their tasks. On November 13, 2003, the Polish government passed legislation (effective from January 1, 2004), allowing local governments to receive each year direct regional monetary transfers from the national budget in the form of subsidies. Local governments have complete autonomy with respect to the allocation of these funds. They are neither required to provide plans describing the intended use of subsidy transfers, nor are they required to report the use of these funds to the state.

Each year, the Ministry of Finance announces the total amount of funds distributed among regional governments as part of these fiscal transfers. The so-called *base subsidy* constitutes one of the most significant parts of these fiscal transfers, on average accounting for a 10% share of the municipalities' overall revenue and in some regions even reaching as high as 30% share of the overall revenue.

A municipality automatically becomes a recipient of this subsidy if its per capita tax revenue ($X_m$) is lower than 92% of the per capita tax revenue of all municipalities ($X$). In general the amount received by each municipality in a given year ($T_{m,t}$) is calculated according to the following formula:

$$T_{m,t} = p_{m,t-2}\left[\alpha\left(\beta X_{t-2} - X_{m,t-2}\right) + \gamma X_{t-2}\right] \quad (1)$$

where $p_{m,t-2}$ represents the number of residents in municipality $m$ (on December 31st, of the year preceding the subsidy announcement year), $X_{m,t-2}$ is per capita tax revenue of municipality $m$, and $X_{t-2}$ is per capita tax revenue of all municipalities in the country at the end of year $t-2$. The values of coefficients $\alpha$, $\beta$, and $\gamma$ depend on the level of per capita tax revenue ($X_m$) and significantly change at three predetermined thresholds, illustrated in Figure 1. These thresholds will play a key role in our identification strategy.

The timing of this subsidy policy is illustrated in Figure 2. Funds under this fiscal transfer program are distributed throughout year $t$ (pay-out year), in 12 equal monthly instalments. Regions' eligibility for receivership of these transfers and the amount of the transfer is announced around October 15th of a

3. Examples of municipalities' tasks include maintenance and development of infrastructure (i.e., transportation systems, communication networks, sewage, water, and electric systems); nature conservation; provision of social services (i.e., social housing, welfare support, care homes), supporting health care and public schools.

preceding pay-out year $(t-1)$. The eligibility criteria and the size of this subsidy are based on municipalities' revenues in the year preceding the announcement year and two years prior to the pay-out year $(t-2)$.[4] The revenue information is reported to the Ministry of Finance by the 30 June of the announcement year $(t-1)$.

## III. IDENTIFICATION STRATEGY AND DATA

### *3.1 Identification strategy and empirical specifications*

In addition to the base subsidy, municipalities receive a *supplementary subsidy* and a *countervailing subsidy*. The base and the supplementary subsidies combined are called the *compensatory subsidy* (henceforth, indicated with its variable name the *Subsidy*).[5] Although municipalities in Poland may receive funding in the form of other fiscal transfers, the allocation mechanism of the base subsidy makes it very appealing to study the entrepreneurial effects of fiscal transfers.

First, the level of these transfers depends on multiple thresholds. This fact mitigates the concern that the estimates may significantly differ with increasing distance from the threshold. Second, the existence of multiple thresholds also provides significant variation in the level of subsidy funding. During the sample period, 2,031 municipalities received subsidy funding for at least one year, and 993 municipalities changed their eligibility status. In 274 cases, municipalities started to receive this type of funding previously not having access to it, and in 350 cases, municipalities completely lost their access to these fiscal transfers. In 723 instances, municipalities crossed a lower threshold and began receiving a higher volume of the subsidy, while on 1,106 occasions, municipalities crossed a higher threshold, and their transfers decreased.[6]

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4. The revenue obtained through fiscal transfers is not considered in this calculation.

5. The supplementary subsidy is based on the municipalities´ population density. However, the allocation mechanism of this subsidy is very simple. Municipalities, where the population density is lower than the mean density of all municipalities in the country, receive this part of subsidy. The countervailing subsidy mainly depends on municipal social security expenses, including housing allowances, child support. The allocation mechanism of this subsidy does not provide us with any clearly defined thresholds as in case of the base subsidy. Municipalities may also obtain direct grants from the central government and since 2006 may also seek funding from the European Union. However, these funds are allocated for specific investment projects and local governments cannot divert these funds to projects other than pre-specified ones. The allocation mechanism of these grants also does not depend on any pre-defined thresholds. Due to data limitations we are not able to distinguish between the actual base and supplementary subsidies. Therefore, our analysis associates municipalities' revenues, expenses and entrepreneurial outcomes to the compensatory subsidy. However, the allocation mechanism of the base subsidy explains variation in more than 85% of the law-implied compensatory subsidy. Further, the level of the supplementary subsidy is not expected to vary at the base subsidy thresholds as it (as described above) depends purely on municipalities' population density. Once we have explained our methodology and provided the first results for the impact of the compensatory subsidy, we will provide some estimates for the law-implied supplementary subsidy that confirm a total absence of discontinuities mitigating any concerns that differences in the level of these transfers alone may be driving changes in entrepreneurial outcomes.

6. Finally, county and province governments are also eligible to receive fiscal transfers which they may invest in municipalities. However, the allocation mechanism significantly differs from municipalities' allocation with only

Third, and most importantly, the specific allocation mechanism of the subsidy makes it very difficult for municipal authorities to systematically manipulate access to or the level of received funds. Municipalities' revenue depends on a myriad of factors, and as such, it is difficult for local governments to precisely manipulate its level. However, to the extent that local governments can adjust their revenues, municipalities' eligibility to receive the subsidy partly also depends on tax revenues of all other, more than 2,400 municipalities in the country. Therefore, while reducing revenue could be a beneficial strategy for some municipalities, it is difficult to precisely estimate what reduction will be needed to grant them a level of fiscal transfer high enough to compensate the foregone own funds. As such, strategic manipulation is unlikely to exist. For this reason, differences in municipalities' revenues around thresholds are likely to provide us with exogenous variation in the level of fiscal transfers, which can be considered as good as random (Lee and Lemieux, 2010).

However, the subsidy allocation mechanism is prone to error. The actual level of funding received by municipality may differ from the law-implied level. This may occur due to simple miscalculations and/or even to misreporting of revenues or population.[7] Therefore, following Brollo et al. (2013) and Corbi et al. (2019), our identification strategy relies on a fuzzy regression discontinuity design (abbreviated as fuzzy-RDD).[8] We first provide reduced-form results estimating:

$$Y_{it} = \delta \tilde{T}_{it} + \vartheta f(X_{it-2}) + \varphi_i + \varphi_{ct} + \varphi_{rt} + \varepsilon_{it}, \quad (2)$$

where per capita revenues, expenses and the number of establishments in municipality $i$ in year $t$ ($Y_{it}$) are associated to the per capita law-implied level of the *Subsidy* transfers ($\tilde{T}_{it}$). $\varphi_i, \varphi_{ct}, \varphi_{rt}$ represent municipality, cutoff-year, and county-year fixed effects. Municipality fixed effects control for time-invariant factors affecting the level of fiscal transfers, revenues, expenses, and entrepreneurial outcomes, for instance, geographic location or availability of natural resources. Cutoff-year fixed effects control for differences between municipalities in different cutoff brackets, defined below. County-year fixed effects account for investment and social projects undertaken by county, province or national

one threshold determining counties and provinces eligibility to receive funding. This significantly reduces variability in the level of transfers. In addition, within-municipality analysis exploiting changes in the municipalities' subsidy allows us to control for differences in the level of fiscal transfers at higher administrative subdivisions, as well as many other, difficult to observe factors affecting municipal revenues and entrepreneurship.

7. Following Legislation of August 27, 2009, the Ministry of Finance can sollicit external audits that may uncover misreporting of revenues by municipal authorities.

8. Equation 1 suggests that discontinuities in per capita Subsidy transfers may be only marginal and we could only observe a change in the growth of per capita Subsidy transfers as a function of a running variable at thresholds. In such case, regression kink design (Card et al., 2016) would be a more appropriate approach to identify the effect of Subsidy transfers on entrepreneurship. However, as illustrated in Figure A.1 in an Online Appendix, we do observe discontinuities in Subsidy transfers at each threshold in our sample. Panel A illustrates these discontinuities for Subsidy transfers in levels and Panel B for per capita Subsidy transfers. To illustrate discontinuities more clearly, in Panel C and Panel D of Figure A.1 we also present the discontinuity in Base Subsidy transfers of municipalities located at close proximity to threshold/cutoff 1 (92% of the per capita tax revenue of all municipalities) in year 2018. This example shows that although, in per capita terms (Panel D) the discontinuity may appear small, it denotes significant differences in the total volume of funds received by municipalities located very close to the threshold.

agencies in municipalities. We also saturate specification 2 with $f(X_{it-2})$, first-order polynomial expressions of normalized per capita tax revenue (the assignment variable), which account for municipalities distance from the nearest cutoff in year *t-2*.

The fuzzy-RDD estimations, in the first-stage, link the actual *Subsidy* to law-implied transfers:

$$T_{it} = \delta \tilde{T}_{it} + \vartheta f(X_{it-2}) + \varphi_i + \varphi_{ct} + \varphi_{rt} + \varepsilon_{it}, \quad (3)$$

$T_{it}$ denotes actual per capita level of funds transferred to municipality *i* in year *t.* In the second-stage, the number of establishments is associated to $\hat{T}_{it}$, the component of the *Subsidy* implied by its non-linear allocation mechanism, estimated in the first-stage. The second-stage model reads:

$$Y_{it} = \delta \hat{T}_{it} + \vartheta f(X_{it-2}) + \varphi_i + \varphi_{ct} + \varphi_{rt} + \varepsilon_{it} \quad (4)$$

In all specifications, we cluster heteroscedasticity-adjusted standard errors at the municipality level to account for serial correlation. We provide estimates in levels and first-differences. In the latter case, we restrict our sample to municipalities, which in year *t* and *t-1* are located in the same cutoff and bandwidth. Specifications include cutoff-year and county-year fixed effects, first-order polynomials for both periods but exclude municipality fixed effects. First-difference estimates allow for a growth interpretation of our results.

To estimate our results, we construct three equal cutoffs brackets centered around each threshold. We assign each municipality-year observation to the nearest threshold. Next, we normalize the per capita revenue of each municipality by subtracting the ratio of municipality's per capita tax revenue to the per capita tax revenue of all municipalities from the threshold value in each cutoff bracket.[9] We estimate specifications 3-5 using three bandwidths restricting our sample to observations located within 6%, 5%, and 4% of the normalized per capita revenue on each side of the threshold. Figure 3 illustrates our sample selection process.[10]

9. The reason we follow this procedure is to make the municipal distances to the relevant threshold comparable across the three different thresholds.

10. To test the robustness of our estimates to the choice of different bandwidths, we re-estimate all specifications using the optimal bandwidth selection procedure proposed by Calonico et al. (2014) and Calonico et al. (2020). The results of this robustness test are presented in an Online Appendix, Table A.1., and imply show that our reported estimates are not affected by this alternative choice of bandwidth. We present estimates obtained using bandwidths based on a one-sided Mean Square Error (MSE) or a Coverage Error Rate (CER) optimal bandwidth selecting criterion, while adjusting for clustering of standard errors at the municipality level. In unreported tests we also find that our results are robust to employing two further MSE- and CER-optimal bandwidth selecting criteria.

*3.2 Data*

Our data set contains municipality-year level information drawn from three sources: Statistics Poland (Central Statistical Office of Poland), the Polish Ministry of Finance, the Polish Patent Office and the National Electoral Commission of Poland.

Statistics Poland provides us with the number of establishments operating in each municipality, municipal demographics, migration patterns, municipal public finances, and unemployment rates. We can differentiate between sole proprietorships/personal businesses, incorporated, and public sector firms. We can also distinguish between establishments of different sizes and industries. In terms of demographics, we obtain information on municipalities' population and a population density, which allow us to calculate per capita numbers of establishments. Migration patterns include information on net migration within each municipality, as well as separate information on the number of individuals moving into and out of each municipality. Public finances data coverage includes municipalities revenues and expenditure. The former agency provides us with the level of actual fiscal transfers, direct grants, and funding received from the European Union. Expenditures allows us distinguishing between municipalities' expenses on public administration, public debt repayment and all other expenses. Unemployment data cover the ratio of all unemployed individuals in their working age over the total workforce, and in addition measure unemployment rates separately for women and men. From Statistics Poland we procured proprietary information for each municipality on average wages in the private and public sector and by industry.

The Ministry of Finance publishes final indicators determining the eligibility for and the level of the *Subsidy*. These include per capita tax revenue of each municipality ($X_m$) and per capita tax revenue of all municipalities in the country ($X$) since 2012.[11] Together with population data, we use these indicators to estimate the law-implied level of fiscal transfers.

The Polish Patent Office provides the information on patent applications submitted in each municipality on behalf of higher education and science institutes, or individual inventors. The National Electoral Commission maintains a record of all election results taking place in Poland, including elections to municipal councils. We can identify the party affiliation of each council member, and we use this information to determine how many of these members belong to the political party with the highest support and how many political parties are represented in the council. This information allows us to test whether the composition of local governments results in heterogeneity in the effect of fiscal transfers on entrepreneurial activity.

11. The Ministry of Finance website publishes indicators used to determine *Subsidy* eligibility and level for the past three years. We retrieve information for earlier years (since 2011) from the Ministry's archives.

Overall, our sample covers 17,276 municipality-year observations for more than 2,400 municipalities and for the years 2011 to 2018. Restricting the sample to municipalities within 6%, 5% and 4% bandwidths lowers the number of observations to 3,202, 2,294, and 1,475, respectively. In Table 1, we report summary statistics on fiscal transfers and establishments for the whole sample and observations within the three bandwidths. An average municipality receives nearly 2.9 million PLN (725,000 USD) in *Subsidy* funding. However, the amount of these transfers can range up to 40 million PLN (10 million USD).[12] On average, 1,585 establishments operate in a municipality, of which 73% are sole proprietorships/personal businesses and 23% private sector establishments. Public sector firms account for the remaining 4% of total establishments. Additional descriptive statistics presented in an Online Appendix, Table A.2, reveal that establishments with up to 9 employees and operating in the construction, manufacturing, and retail industries dominate our sample.

## IV. PRELIMINARY TESTS

### *4.1 Diagnostic tests*

The validity of our identification strategy relies on the assumption that municipalities cannot systematically manipulate their treatment status (Lee and Lemieux, 2010). In Section 3.1, we outline reasons which suggest that such manipulation is unlikely to be present in our setting. To provide formal evidence for the lack of threshold manipulation, we perform McCrary (2008) density test. Figure 4 illustrates the results of this analysis for the full sample. The density of municipalities does not exhibit any significant discontinuity at the *Subsidy* thresholds, suggesting that, as predicted, municipalities do not systematically manipulate their access to or level of received transfers.[13]

Another assumption requires that factors other than *Subsidy* funding, potentially affecting entrepreneurial activity in municipalities, are continuous functions of the *Subsidy* thresholds (Imbens and Lemieux, 2008). Such potential factors are likely to include other sources of municipal revenue: direct grants from the central budget, funding from the European Union received by local governments for specific investment projects, or *Countervailing subsidy*, awarded to support local governments' social security expenses. Other sources of funding investment projects may include bank loans and an increase in own revenue, which municipalities may achieve by raising taxes and fees.[14]

12. This translation is using 2018 prices and rates. As the average nominal inflation rate in Poland for the 2011-2018 period equals only 1.4%, with rates even being negative in 2015 and 2016 (source: *Worldbank*), and in order not to unduly complicate the estimations, we run the entire analysis in nominal prices.
13. Figure A.2 in an Online Appendix reports McCrary (2008) tests for each individual year. We do not find statistically significant discontinuities in any particular year.
14. Issuing municipal bonds is not common in Poland and infrequently only the largest Polish cities supplement their budgets using municipal bonds.

Given the level of these funds is not determined by the *Subsidy* mechanism, we do not expect it to significantly differ at *Subsidy* thresholds. The results presented in Table 2 confirm this prediction. We do not find statistically significant discontinuities in the level of direct grants (Panel A), E.U. funding (Panel B), and other subsidies (Panel C). Municipal public debt expenses do not significantly differ at the threshold (Panel D), which suggests that local governments do not increase the level of public debt. Finally, we do not find evidence that municipalities increase taxes or fees since their own revenue does not exhibit discontinuity at the *Subsidy* thresholds (Panel E).

### *4.2 Subsidy transfers and municipal expenditure around thresholds*

In this section, we first document discontinuity in the level of the *Subsidy*. We begin with visual evidence in Figure 5.[15] We observe a sharp discontinuity in both the actual (Panel A) and law-implied (Panel B) transfers. Patterns in both panels are very similar. To verify if the allocation mechanism is perfect or if errors do exist, we associate the actual per capita level of the *Subsidy* to the law-implied per capita level using specification 4. Under the perfect transfer assignment mechanism, we would expect both the goodness of fit of the model and the estimate on the law-implied *Subsidy* to be equal to one.

The results are presented in Table 3. Coefficients in columns 1-6 for local estimates in levels show very high correlations ranging between 0.86 and 0.99, and the within $R^2$ ranges between 0.83 and 0.99. Regressions with variables expressed in first-differences presented in columns 7-9 report slightly lower estimates, ranging between 0.72 and 0.92 (within $R^2$ between 0.90 and 0.96). Overall, the results in Table 3 confirm that the *Subsidy* assignment mechanism is not always accurate. However, they also document a high relevance of the instrument in the first stage, a necessary condition for fuzzy-RDD estimations.[16]

Another important question relates to how municipalities utilize funds received under the *Subsidy* scheme. Given that local governments enjoy an absolute autonomy in allocating this funding, a concern arises that they may not be put to productive use. For instance, local governments may increase expenses on public administration, raising employees' salaries, distributing bonuses or monetary awards among civil servants. Alternatively, councils may also decide to save additional funds. In both cases, fiscal

15. We construct the Figure 5 plots by first regressing actual and law-implied base *Subsidy* transfers on a set of municipality, state-year and cutoff-year dummies to net out fixed effects. We plot the residuals from these regressions, averaged over 0.1 unit of the normalized revenue. In Figure A.3 in an online appendix, we present graphs documenting the discontinuity in each individual threshold. The strongest discontinuity is observed at the 92% cutoff (Panel A). This is not surprising given that municipalities on the right side of that threshold do not receive any base subsidy. At the other two thresholds municipalities on both sides of the threshold receive *Subsidy* funding. However, even at the 75% (Panel B) and 40% (Panel C) thresholds discontinuities are evident.

16. In Figure A.4 and Table A.3 in the Online Appendix we confirm a total absence of discontinuities in the estimated law-implied supplementary *Subsidy* mitigating concerns that differences in the level of these transfers alone may be driving changes in entrepreneurial outcomes.

transfers are unlikely to result in a higher rate of entrepreneurship. Therefore, in the next set of tests, we link the law-implied *Subsidy* to measures of municipal expenses and budget balance.

In Panel A of Table 4, the dependent variable is a ratio of the per capita municipal expenses on public administration to total per capita expenses. In Panel B, the dependent variable is a ratio of all other per capita expenses to per capita total expenses. Coefficients in both panels document that the *Subsidy* funding results in municipalities devoting less of their expenses to public administration. In Section 6.1, to document the mechanism behind entrepreneurial effects, we further elaborate on these findings, examining which municipal expenses exactly increase. In Panel C, we relate municipalities' budget balance to the law-implied level of *Subsidy*. Lack of statistical significance on all coefficients, in both level and first-difference specifications, suggests that, at thresholds, municipalities run balanced budgets.[17]

## V. BASELINE RESULTS

In this section, we discuss the effect of the *Subsidy* transfers on entrepreneurial activity. We first focus on the number of establishments, differentiating by the establishments' ownership sector. Next, we present results differentiating by business size and industry.

### *5.1 Fiscal transfers and entrepreneurship*

Figure 6 illustrates the impact of the drop in subsidy around the zero normalized revenue cutoff on the total (raw) number of establishments, sole proprietorships, (other) private sector establishments and public sector establishments. Recall from Figure 5 that municipalities with normalized revenues above the zero cutoff face a drop in the *Subsidy*. Hence, Figure 6 shows that this drop in the *Subsidy* results in a decline in the total number of establishments, in particular in sole proprietorships, but not so in private and public sector establishments. Therefore, the granting of subsidies to municipal governments spurs the creation of new sole proprietorships, but not of new private sector establishments (other than sole proprietorships) and public sector establishments. The latter two types are presumably too large for swift creation spurred by increases in local subsidies.

Next we turn the estimates of this impact of Subsidy transfers on entrepreneurship in Table 5. The table reports the coefficient estimates from both ordinary least squares (OLS) and as explained before the instrumented fuzzy regression discontinuity design (fuzzy-RDD (IV)) estimations. Heteroscedasticity-adjusted standard errors clustered at the municipality level are reported below the coefficient estimates (in parentheses). As dependent variables the table features the per capita total number of establishments in the municipality (Panel A), the per capita number of sole proprietorships (Panel B), the per capita number of incorporated private sector establishments (Panel C), and the per capita number of public

17. The lack of discontinuity in municipal budget balance at the threshold is consistent with the lack of discontinuity in the municipal public debt expenses presented in Panel D of Table 2.

sector establishments (Panel D). In columns 1-3, specifications include dependent and independent variables (law-implied Subsidy transfers) that are expressed in levels. In columns 4-6, variables are expressed in first differences. The specifications include Municipality, County-year, and Cutoff-year fixed effects and a first-order polynomial, as indicated, and is run for various bandwidths (i.e., 6, 5 and 4%, respectively)

The estimates are in line with prior visual inspections: both the number of total and sole proprietorships are found to increase (around the subsidy thresholds), with all coefficients estimated to be positive and statistical significant, while the number of private and public establishments seem mostly unaffected. The former set of estimated coefficients is also economically relevant. For the first row in Table 5, Panel A, columns 1-3 for example, with coefficients ranging from 0.251 to 0.400, compared to the mean of the dependent variable (which is 0.079 for total establishments per capita) implies that a one standard deviation increase in per capita *Subsidy* level results in a 8 to 13% increase in total establishments per capita (e.g., 13% = 100*((0.400/0.079)*0.025)), significantly exceeding the 2% average annual growth rate in the number of new businesses in the country. For an average municipality with approximately 1,000 operating firms and for a one standard deviation increase in *Subsidy* funding (i.e., 2 million PLN or 0.5 million USD), our estimates would suggest an increase of approximately 80 to 130 establishments or around 15,000 to 25,000 PLN (3,750 to 6,250 USD) per firm.[18, 19]

Even if all firms employ only one person, the cost per job would be discernibly lower than the cost estimated in Corbi et al. (2019) for Brazil, which equals 8,000 USD / job. We show below that no or very few firms are created by migrants (from other municipalities) or by locally unemployed persons, but by employees of locally existing companies. This would imply that the costs of training may be

18. To contextualize our estimates, consider that there are no administrative costs involved with opening a sole proprietorship in Poland. The administrative process requires submitting necessary documentation in an appropriate municipal office either in person or online. New business owners benefit from VAT tax relief if the revenue does not exceed 200,000 PLN (50,000 USD) per annum and reduced social security contributions, which for the first 24 months of business operation amount to less than 400 PLN (100 USD) per month in 2020. Specialist software available at low cost does bookkeeping or reporting easy and cost-efficient. Business owners can choose to pay a fixed 19% income tax or a progressive income tax, which charges 17% for income up to approximately 85,000 PLN (21,000 USD), and 35% for the remaining amount. Other overheads include the costs of equipment which vary depending on the character of provided services and goods. In footnote 29, we list other deductions which business owners may benefit from. In addition consider that the 2 million PLN (0.5 million USD) of additional Subsidy is a sizable amount that can allow municipalities to, for example, cover: the annual cost of a full-time public nursery for approximately 400 children (considering a monthly fee of 400 PLN or 100 USD per child); refurbish 10 to 20 education institutions buildings (estimated at 100,000-200,000 PLN or 25,000-50,000 USD each); purchase and install approximately 250 street lamps (8,000 PLN or 2,000 USD each), or about 1,600 benches (costing 1,200 PLN or 300 USD each); or build 8,000 square meters of local roads in an urban area (250 PLN or 100 USD per $m^2$).

19. Consistent with findings in Figure A.3, we document in Table A.4 a positive effect of the Subsidy transfers separately at each cutoff, although statistically this effect is significant mainly at Cutoff 1 and Cutoff 2. Lack of consistently statistically significant estimates at Cutoff 3 could result from the fact that the sample of municipalities at this threshold is comprised of only rural municipalities. In unreported tests, we find that although Subsidy transfers spur entrepreneurship in both urban and rural municipalities, the magnitude and statistical significance of this effect is stronger in urban municipalities.

lower. We also conjecture that the effective use of governmental funds may be higher in Poland than in Brazil,[20] a dimension we return to when we investigate the impact of the characteristics of municipal councils on firm creation.

In Table 6, we re-estimate the results in Table 5, differentiating by establishments' size.[21] We find that the positive effects presented in Table 5 are driven solely by increases in total establishments (Panel A) and sole proprietorships (Panel B) with up to 9 employees (columns 1 and 4).[22] The remaining coefficients in Panel A and B are statistically indistinguishable from zero. This is not surprising given that sole proprietorships in this size bracket constitute the majority of establishments in our sample. We do also find a negative effect on incorporated private sector firms with up to 9 employees and public sector establishments with 10 to 49 employees. However, these estimates are much smaller and not consistently negative, with coefficients changing signs and losing statistical significance depending on whether local estimates are in levels or first differences and at different bandwidths.

*5.2 Fiscal transfers effect by the industry of establishments*

Table 7 examines the effect of local government funding on the number of firms in different sectors.[23] We find a significant increase in the number of total establishments (columns 1-3) and sole proprietorships (columns 4-6) in the construction (Panel A), financial (Panel C), manufacturing (Panel F), and retail industry (Panel H). Our estimates also suggest that these positive effects come at the expense of a reduced number of establishments in the farming (Panel B) and somewhat surprisingly IT (Panel D) industries. We find statistically significant estimates in the remaining panels only when incorporated private sector and public sector firms are considered. These results suggest a positive effect of local government funding on services industry establishments (Panel E) and a negative impact on IT firms (Panel D). Finally, in unreported tests, we do not find any significant differences in the number of firms from the following industries: culture, education, electricity, healthcare, hospitality, mining, plumbing, science, transportation. So overall, these estimates suggest short-term local government funding may

20. For example, in the 2019 country ranking based on The Corruption Perceptions Index (CPI) published annually by the Berlin-based Transparency International, Poland is ranked 41st while Brazil is ranked only 105th, hence it is perceived to be substantially more corrupt and among other things less effective in allocating governmental funds than Poland.
21. To preserve space, we report only the results for 5% bandwidth. The results for 4% and 6% bandwidth samples in Panel A and Panel B are similar to the reported.
22. Notice in Poland a firm held by a sole proprietor can employ multiple employees. Private companies are most often held by multiple proprietors and also can employ multiple employees.
23. For brevity, in Table 7, we report only the results for local estimates in levels. In the majority of cases, estimates in differences are consistent with the ones reported.

spur entrepreneurship in certain easy-to-build sectors but may not assist much in expanding the local high-tech sector.[24]

## VI. THE MECHANISM OF IMPACT AND ADDITIONAL ECONOMIC EFFECTS

In this section, we present a set of results uncovering potential mechanisms behind the entrepreneurial effects of fiscal transfers as well as discuss other important economic effects resulting from the firm formation. We begin by examining in detail the effect of additional *Subsidy* transfers on local government expenditure. Next we test the effect of fiscal transfers on municipal migration patterns. Finally, we document the impact of fiscal transfers on unemployment rates, average wages, and patent applications.

### *6.1 Local government spending*

In Section IV, we document that an increase in the fiscal transfers received by municipalities boosts their expenditure on non-public administration items. Here, we look more closely at which municipal expenses not related to public administration expenses increase following receivership of higher *Subsidy* transfers and are likely to explain the growth in the number of businesses.

In Table 8, we associate various per capita municipal expenses to per capita Subsidy transfers.[25] Expenditure in each category includes funding devoted to obtaining products and services provided by businesses, investments in infrastructure (development and maintenance), donations and subsidies provided by municipal councils to firms or individuals. We find a consistent increase in expenses on agriculture, forestry, and fishing (Panel A), manufacturing (Panel E), real estate management (Panel F), social assistance (Panel I), development and maintenance of utility supply (Panel K). Among those, only expenses on social assistance carry statistically significant coefficients.

Adverse effects are observed among municipal expenses on health care (Panel C) and recreation, tourism, and culture (Panel G). However, none of these results are consistently statistically significant. Coefficients on remaining expenses, education (Panel B), IT infrastructure (Panel D), services (Panel H), maintenance and development of transportation infrastructure (Panel J), and all other expenses (Panel L) also lack statistical significance and often provide inconsistent results at different bandwidths.

How should we interpret these results? Can increased expenses on social assistance explain an increase in the number of sole proprietorships in the construction, manufacturing, or retail industry? One could

24. For instance, easy-to-build businesses could include, sole proprietorships providing financial advice and insurance brokerage services in the financial sector; or sole proprietorhips offering tailoring, printing, installation, repair and maintenance of machinery and electrical equipment which belong to the manufacturing sector.
25. Detailed information on exact expenses in each category are available on the website of the Online Database of Polish Legislation (Dz.U. 2010 nr 38 poz. 207).

infer that the lack of statistically significant effect on expenses in the manufacturing sector is inconsistent with the results presented in Table 7 Panel F, where we find a significant increase in the number of manufacturing sector sole proprietorships. However, expenses on social assistance programs may include various cash and in-kind benefits to vulnerable individuals and families, disabled individuals and unemployed; costs of training programs aimed at professional upgrading of individuals; expenses on social assistance infrastructure - development and maintenance of daycare centers, nursing homes, and other social care buildings; or expenses on the provision of care services.[26] As such, cash transfers may alleviate individuals' resource constraints allowing them to set up businesses, while in-kind benefits may also create demand for retail and manufacturing industry services and products. Training programs can provide individuals with the information and skills necessary to establish and operate their businesses and/or change profession. Development and maintenance of social assistance infrastructure may increase the demand for services provided by the construction and manufacturing sector firms. Municipal expenses on care services may not only boost the demand for services offered by professionals in this industry but may also alleviate time constraints for potential entrepreneurs, for example, single parents.

In sum, it is plausible that the mechanism behind the results documented in Table 5 is an increase in the expenditure on social assistance resulting from higher fiscal transfers received by municipalities.

*6.2 Migration patterns*

An increase in the number of establishments triggered by additional level of *Subsidy* funding may be driven by existing residents and/or new residents opening new businesses in the municipality. Alternatively, new residents may relocate their existing proprietorships from other municipalities. Firm formation resulting from migration and business relocation may result in a sort of "overestimation" of the salutary effect of the *Subsidy*, as subsidized municipalities attract business from elsewhere in a form of subsidy competition that has no net positive effect at the more aggregated level.[27]

In Table 9 we test whether migration is likely to explain the entrepreneurial effect of the fiscal transfers. Coefficient in Panel A suggest this is not the case. We do not find any statistically nor economically significant effect of local government spending on per capita net migration in the year when the *Subsidy* transfers are distributed (Columns 1-3) or in the following year (Columns 4-6).[28] This is consistent with

26. Unfortunately our data do not allow us to explore Subsidy effects on these subcategories of social assistance expenditures.
27. Indeed, if individuals relocate their businesses between municipalities our estimates may simultaneously capture an increase in the number of firms in municipalities to which migrants are moving in and a decrease in the number of firms in municipalities from which they are relocating. This may inflate our estimates but in essence the *Subsidy* would result in a zero net economic effect at a more aggregated level.
28. In unreported tests we verify that net migration patterns do not change in years preceding the distribution of *Subsidy* funding. Although, it is highly unlikely that individuals could predict changes in the level of fiscal transfers, they may respond to changes in municipal tax revenues.

the notion that many sole proprietors operate in close proximity to their long-term residence, as this allows them to benefit from personal connections to their potential clients, better understand local market conditions, and reduce overhead.[29]

In the remaining panels of Table 9 we investigate whether local government spending affects the outflow of existing residents (Panel B) or the inflow of new residents (Panel C) into municipalities. It is possible that new residents may be better entrepreneurs than individuals moving out of the municipality, and as such the net migration measure may not capture change in the residents' entrepreneurial abilities. Again, our estimates do not support this idea.

Overall, the results presented in Table 8 suggest that entrepreneurial effects of fiscal transfers are driven by existing municipalities' pool of residents.[30]

*6.3 Unemployment*

Given that an influx of new residents is unlikely to explain positive effect of local government spending on the number of firms, it is important to determine if new businesses are likely to be established by currently employed or unemployed individuals. Consequently, such estimates will allow us to verify the additional economic benefits stemming from fiscal transfers.

In Table 10, we associate municipal unemployment rates to per capita *Subsidy* funding. The negative coefficients presented in Panel A suggest that fiscal transfers reduce unemployment, and some of the new businesses are likely to be established by unemployed individuals. The effect is stronger one year after the distribution of the *Subsidy* funds, with coefficients ranging from -3.153 to -7.072, which compared to the mean of the dependent variable of 7.64% implies that a one standard deviation increase in the per capita *Subsidy* level results in a 1 to 2.3% decrease in the unemployment rate or 6 to 14 locally unemployed individuals finding employment. Even if all of these unemployed residents establishes a new business, this effect cannot explain the entry of between 80 to130 new companies documented in Table 5. Therefore, the magnitude of the unemployment effect is consistent with many new businesses being created by employees of existing companies.

Our data also allow us to discriminate between unemployment rates among women and men. In Panel B we find that the positive effect of fiscal transfers on employment is driven by reduction in unemployed

29. Individuals may also relocate their businesses to municipalities in which they do not reside. However, in many cases sole proprietors decide to register and operate their businesses from their place of residence. This allows them to reduce various overheads (i.e., commute costs or office/warehouse space rental) or take advantage of tax incentives available to businesses by deducting VAT costs on various items and services used for both business and private purposes (i.e., furniture, IT equipment, broadband costs, utility bills).
30. In addition, the results presented in Table A.5 in the Online Appendix document the lack of a significant effect of fiscal transfers on municipalities' total population. Given that variables are expressed in per capita values, these tests refute the possibility that the number of residents in municipalities could affect our estimates.

women in the year when the municipalities receive transfers and one year after. Conversely, insignificant estimates presented in Panel C suggest that *Subsidy* funds do not help alleviating unemployment among men, particularly in the year when local government receive funding.

These results suggest that women are likely to benefit more from increased local government spending, either because they are enabled to create new establishments or find employment in newly established firms. These results are not surprising given that the unemployment rate among Polish women during the sample period is on average 2 percentage points (pp) higher compared to men. In addition, higher expenditure on social security by municipalities receiving higher Subsidy transfers is also likely to benefit women more as these funds often are allocated to reduce childcare costs. The level of this funding is likely to be much higher for unemployed women, single parents, or parents in more difficult financial situation.

Does it mean that men do not benefit from fiscal transfers? Not necessarily so. In Table 7 we find significant changes in the number of sole proprietorships in industries that are predominantly occupied by men, in particular in the construction sector. Together with the unemployment results this suggests that new businesses are also likely to be formed by men leaving their existing employment.

*6.4 Wages*

Decreased unemployment, as well as the potential relocation of workforce from incorporated businesses to sole proprietorships associated with increased entrepreneurship is likely to put pressure on the extant private sector employers. To recruit new or retain existing employees, management may be forced to increase wages. In our setting this is more likely to take place in sectors experiencing significant increases in sole proprietorships.

To test this hypothesis, we procure a proprietary dataset covering average monthly wages in incorporated private and public sector firms, as well as wages in various other industries.[31] Table 11 presents the results obtained by associating wages to the *Subsidy* funding. We find wages in the private sector firms increasing around the *Subsidy* thresholds (Panel A). The estimated coefficients range between 3.598 and 6.135 implying an increase in the average monthly wage by between 8.6% and 15.3%, or 245 and 437 in local currency PLN (approximately 60 to 110 USD). However, the estimates are statistically significant only in the year of transfers taking place. On the contrary wages in the public sector seem to fall (Panel B). Next, we explore changes in average wages by industry sectors.

In Table 11, Panel C, we find significant increase in wages offered by firms in industries which experience the most significant increases in the number of sole proprietorships (i.e., construction, manufacturing, finance and retail). In contrast, the estimated coefficients in Panel D lack statistical significance

31. Unfortunately this dataset does not include information on average wages earned by sole proprietors.

across all specifications and frequently change sign suggesting that wages in the public sector remain unaffected by the fiscal transfers. These results are consistent with our predictions suggesting increase in wages in industry sectors facing greater pressure in terms of retaining existing and attracting new workers.

*6.5 Patent applications*

The final part of this section considers whether the formation of new businesses associated with the higher volume of fiscal transfers contributes to the development of innovative products. One could infer that the lack of positive effects on IT sector firms which we document in Section V, implies little or no technological progress. However, many patent applications submitted by individuals in Poland relate to products developed by individuals operating in the manufacturing or construction sectors.[32]

To formally test whether fiscal transfers lead to product innovation, we obtain patent applications records provided by the Polish Patent Office. This information allows us to distinguish between patent applications submitted in each municipality either on behalf of higher education institutions or private and national science institutes, or by individual inventors. In Table 12, we associate fiscal transfers to per capita patent applications. Coefficients presented in Columns 1-3 suggest that fiscal transfers indeed do result in an increase in patent applications. However, this effect is mainly driven by applications submitted by individuals, as evident from coefficients in Columns 4-6, where the dependent variable does not include applications from higher education or science institutes.

Overall, the results presented in Section VI document important economic effects. By spurring entrepreneurial activity fiscal transfers improve employability, particularly among unemployed women, spur wage growth, and lead to the development of innovative products.

## VII. ENTREPRENEURIAL EFFECTS OF FISCAL TRANSFERS AND LOCAL GOVERNMENT CHARACTERISTICS

Whether and to what extent *Subsidy* transfers stimulate entrepreneurship ultimately depends on how local governments allocate funds across the real sector. As such, the characteristics of municipal councils may be a source of heterogeneity in our baseline results. The next set of tests investigates whether this heterogeneity arises from differences in municipal council accountability and council members' attitudes towards supporting entrepreneurial activities.

32. Examples of innovative products developed in the area of construction or manufacturing include heat engines (Patent application number: P.398333), solar engines (P.422588), wind turbines (P.399678), or electrostatic air filters (P.423617), assistive devices for blind or disabled (P.427886), or construction equipment, e.g., innovative drills (P.427931).

*7.1 Local government composition*

The political economy literature suggests that better informed electorate and residents' ability to hold politicians accountable for their decisions significantly improves governments' responsiveness to society's needs (Besley and Case, 1995, Besley and Burgess, 2002, Strömberg, 2004). A higher degree of political competition, through increased availability of information and a greater choice of candidates, is assumed to improve political accountability and subsequently improve politicians performance (Gagliarducci et al., 2011, Galasso and Nannicini, 2011), governments efficiency (Wittman, 1989) and economic growth (Besley et al., 2010). We hypothesize that increased political competition and accountability at the local government level are important factors improving the efficient allocation of funding and result in a higher rate of entrepreneurship.

Alternatively, a low degree of political competition may reflect the high competences of candidates representing one political party. Candidates enter elections strategically and faced with a low probability of winning the election (perhaps because competing candidates are highly competent) may refrain from running for office (Osborne and Slivinski, 1996, Besley and Coate, 1997). It is possible that particularly high-quality candidates may do so (Jacobson, 1989, Gordon et al., 2007, Maestas and Rugeley, 2008). If low political competition is a representation of council members' quality, then we could observe a stronger entrepreneurial effect of *Subsidy* funding in less politically contestable municipalities.

To test which of these two alternative hypotheses finds support in our data, we employ two measures, the share of the winning party members on municipal council and the median number of political parties represented on the council. The higher representation of political opposition (lower percentage of winning party members or higher number of political parties) indicates the availability of politicians or parties to choose from (political competition), and therefore the degree of local government accountability. In addition, a lower number of winning party members gauges stronger accountability by opposition councilmembers, who are better informed about local government decisions and may provide more accurate information to the general public. An additional benefit of using higher party representation as a measure of government accountability is that it allows mitigating concern related to interest alignment among politicians in councils with a low number of political parties.[33]

Table 13 presents the results for the sample split at the median share of winning party councilmembers. We find a considerably stronger effect of the *Subsidy* on the total number of firms (columns 1-3) and sole proprietorships (columns 4-6) in municipalities where political competition and accountability are

33. This interest alignment can result in lower accountability and could exist despite the low share of winning party representatives in the council.

stronger.[34] Panel A presents the results for the full sample. Rows 1 and 3 report OLS and fuzzy-RDD estimates for a sample of municipalities where the share of winning party councilmembers is below the median. Across all specifications, estimated coefficients range between 0.436 and 0.563 for the total number of establishments. Estimates for sole proprietorships range between 0.453 and 0.545. Corresponding economic magnitudes, calculated by comparing local estimates to the mean number of establishments of the sample, suggest that a one standard deviation increase in per capita *Subsidy* funding is associated with a 13 to 18% increase in total establishments and 19 to 22% increase in sole proprietorships.

Rows 2 and 4 provide estimates for a sample of municipalities where the share of winning party representatives is above the median value. In each specification, coefficients and corresponding economic magnitudes are substantially lower compared to specifications in row 1 and 3. Coefficients for all establishments and sole proprietorships only range from 0.204 to 0.336 and from 0.193 to 0.317. Economically, this implies an increase of 6 to 10% increase for total businesses and 8 to 13% for sole proprietorships in response to one standard deviation increase in per capita *Subsidy* transfer.

In Panel B, we present the results for a matched sample. We match municipalities on their geographical location, assigning to each municipality on the left side of the threshold at least one municipality from the same county located on the right side of the threshold.[35] This procedure mitigates the concern that entrepreneurial opportunities may significantly differ between municipalities in each subsample. Although matching increases estimates for the sample of municipalities with above-median share of winning party councilmembers (rows 2 and 4), coefficients for the sample where political competition and accountability is more intense (rows 1 and 3) are still considerably higher in most specifications.

In Table 14, we compare the effect of *Subsidy* funding on entrepreneurship across municipalities below and above the median number of political parties represented in the local government. Again, we report results for full (Panel A) and matched (Panel B) samples. The magnitude of estimates suggests that fiscal transfers provide a stronger stimulus for entrepreneurial activity in municipalities with the number of parties above the median. Coefficients for OLS and fuzzy-RDD in rows 1 and 3 are in the range of 0.354-0.521 for total establishments and 0.385-0.590 for sole proprietorships. In rows 2 and 4, coefficients vary between 0.233 and 0.322, and 0.276 and 0.380. Matching municipalities based on geographical location in Panel B yields, in most cases, results consistent with Panel A.

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34. We only report results for local estimates in levels because the number of observations for estimates in first-differences for some subsamples is insufficient to perform the analysis. This is particularly problematic for estimations using matched sample in Panel B. Estimates for specifications with incorporated private sector and public sector businesses as dependent variables for this reason lack statistical significance and therefore we choose not to present these results.

35. Municipalities on the left side of the threshold without a match on the right side exit the sample.

Overall, the results presented in Tables 11 and 12 are consistent with the notion that the ability to hold local government accountable can exert more substantial incentives for politicians to use any fiscal subsidies more effectively, which in turn boosts entrepreneurship.

*7.2 Historical legacy and attitudes towards entrepreneurship*

In this section, we discuss whether council members' attitudes towards fostering entrepreneurial activity shaped by historical legacies may be a source of heterogeneity in our baseline results. We consider one of the most significant events in the history of Poland, i.e., the partition of the country.

In 1795 the territory of the Polish-Lithuanian Commonwealth was divided into three areas (partitions) governed by the Kingdom of Prussia, the Russian Empire, and the Austrian Empire. The Congress of Vienna (1814-1815) established borders of these areas, which lasted for over a century, until the end of the First World War in 1918 when Poland regained its independence. The majority of Polish municipalities located in the north and west of the country were governed by the Kingdom of Prussia. Municipalities in the southern-east part were overseen by the Habsburgs (the Austrian Empire). Municipalities in the central-east region of modern-day Poland, which in 1815 were transformed into the Kingdom of Poland and later Duchy of Warsaw, were controlled by the Russian Empire. Panel A of Figure 7 illustrates this administrative division for present-day Polish municipalities.

Existing literature documents significant differences in the governance of each partition (Davies, 2001). Importantly, in our context, these differences also affected the rate of economic development (Wolf, 2007). For example, Prussian authorities significantly industrialized Polish territories, and Polish financial institutions operating in the largest cities of the Prussian partition supported entrepreneurs in the creation of new businesses (Morawski, 1998).[36] On the contrary, the economy in the Russian part relied primarily on major cities, Warsaw, Lodz, or Kalisz, while in rural areas, serfdom was maintained until the 1860s. Although the number of financial institutions in the Russian partition was significantly higher compared to the Prussian and Austrian parts, banking activities were heavily regulated, severely restricting banks' funding and lending activities. The Habsburgs gave its Polish territories the greatest administrative and cultural authority. Polish citizens were able to actively participate in local governance and were encouraged to open businesses (particularly sole proprietorships). Serfdom was abolished in rural areas from the 1840s. However, despite these efforts, the Austrian partition was the least economically developed of the three partitions (Davies, 2005).

36. Example includes Bank Związku Spółek Zarobkowych SA with headquarter in Poznan, and branches in Gdansk and Torun (Morawski, 1998).

Grosfeld and Zhuravskaya (2015) document significant cultural differences observed in different regions of the present-day Poland resulting from these historical events. The population in the areas governed by the Russian Empire has a more negative attitude towards democracy and religiosity compared to the people in the Prussian and Austrian regions. On the contrary, differences in wages, household incomes, unemployment, industrial production, or education did not persist until the recent years. Becker et al. (2016) show that the Habsburg Empire rule in regions of Eastern Europe, including Poland, resulted in increased modern-day trust in local public services.

We hypothesize that although differences in certain economic indicators between the three partitions fade away with time, the rate of industrialization left a more permanent imprint on individuals' attitudes towards entrepreneurship. In line with this prediction, Figure 7, Panel B illustrates that the average per capita number of firms between the years 2012-2018 is significantly higher in municipalities that belonged to the Kingdom of Prussia. Simultaneously, we observe that municipalities of the former Austrian and Russian partitions receive, on average, substantially higher *Subsidy* transfers in years 2012-2018 (Figure 7 Panel C). This preliminary graphical inspection suggests that the effect of fiscal transfers on entrepreneurial activity may significantly differ depending on which partition municipality historically belonged to.

To formally test if historical legacy could be a source of heterogeneity in the effect of fiscal transfers on entrepreneurship, we associate the number of all establishments and sole proprietorships to the *Subsidy* transfers separately for municipalities historically located in each partition. The results reported in Table 15 support our hypothesis and preliminary inspection. The entrepreneurial effect of *Subsidy* is most potent in municipalities of the former Prussian partition (rows 1 and 4). Although transfers elicit a positive impact on the total number of establishments and sole proprietorships in the remaining municipalities, estimated coefficients and corresponding economic magnitudes are significantly lower.

## VIII. ADDITIONAL TESTS

Our analysis thus far documents a positive effect of fiscal transfers on entrepreneurship. We also uncover a significant heterogeneity in the magnitude of this effect, resulting from differences in political competition and local government accountability and historical legacies shape individuals' attitudes towards entrepreneurship. In this section, conduct several sensitivity tests to verify the robustness of our baseline estimates in Table 5.

The results are presented in Table 16. First, we remove from our sample local government election years, 2014 and 2018. During the election year, politicians have stronger incentives to increase investment expenditure to gain the electorate (Nordhaus, 1975). As such, the entrepreneurial effects of fiscal transfers may be limited to these years. The results in Panel A refute this idea. Obtained estimates for

both establishments and sole proprietorships for non-election years are very similar to the baseline results.

Next, we revisit the regression discontinuity design assumption, requiring a lack of systematic manipulation of the threshold. Although, as explained in Section 4.1, such manipulation is unlikely to exist since it is difficult for municipalities to accurately estimate the reduction in revenue, which will be more than compensated by the *Subsidy* transfer, we provide a test examining whether baseline results are driven by municipalities which are more likely to manipulate the threshold. This test presented in Panel B constrains the sample to municipalities which either do not change their *Subsidy* transfer status or move to a higher cutoff. Again, we do not find support for this hypothesis.

In Panel C, we saturate specifications 2-4 with other sources of municipal revenue, which discontinuities we examine in Table 2. In Panel D, we include a lag of the dependent variable to control for inertia. Specifications which results are presented in Panel E cluster standard errors at the county level. In Panel F, we modify our specifications by including higher-order polynomials. Finally, in Panel G, we re-estimate our results using specifications with alternative sets of fixed effects. We exclude cutoff-year and county-year fixed effects in columns 1-3, and in columns 4-6, we exclude all fixed effects. In all cases, the results confirm the robustness of the estimates presented in Table 5.

## IX. CONCLUSION

Entrepreneurship has wide-ranging benefits for innovation, job creation, and development of the economy as a whole. In this paper, we investigate whether local government spending helps to stimulate entrepreneurial activity. To do so, we study Poland, where municipalities with lower tax revenues receive direct monetary grants from the national budget that vary at multiple pre-determined and non-manipulable thresholds. This institutional setting allows us to employ a *fuzzy* regression discontinuity design.

We document the following key results. First, we find a positive impact of fiscal transfers on the number of firms. This effect is primarily driven by an increase in the number of sole proprietorships and small firms. Secondly, we document positive effect of transfers on employment and wages. Finally, we show that entrepreneurial effects are stronger in municipalities where the opposition is more involved in the legislative process or more parties are represented in the municipal council, and in regions where historical legacies shaped a more positive attitude towards entrepreneurship.

The channels through which government expenditures – increased by fiscal transfers – are likely to spur entrepreneurial activity is additional spending on social assistance. Cash and in-kind benefits may alleviate individuals' resource constraints allowing them to set up businesses, while expenditure on social

assistance infrastructure may increase the demand for services provided by the construction and manufacturing sector firms. Expenses on care, including daycare or nursing homes, may not only boost the demand for services offered by professionals in this industry but may also alleviate time constraints for potential entrepreneurs, for example, single parents.

Overall, our results highlight the beneficial role of government funding as a mechanism to alleviate entrepreneurial constraints. Our findings also offer important policy implications, cautioning against reforms which may weaken government accountability. One extension of our work is to explore how local education, social, and inequality conditions shape municipal spending and entrepreneurial dynamism. We leave this extension for future research.

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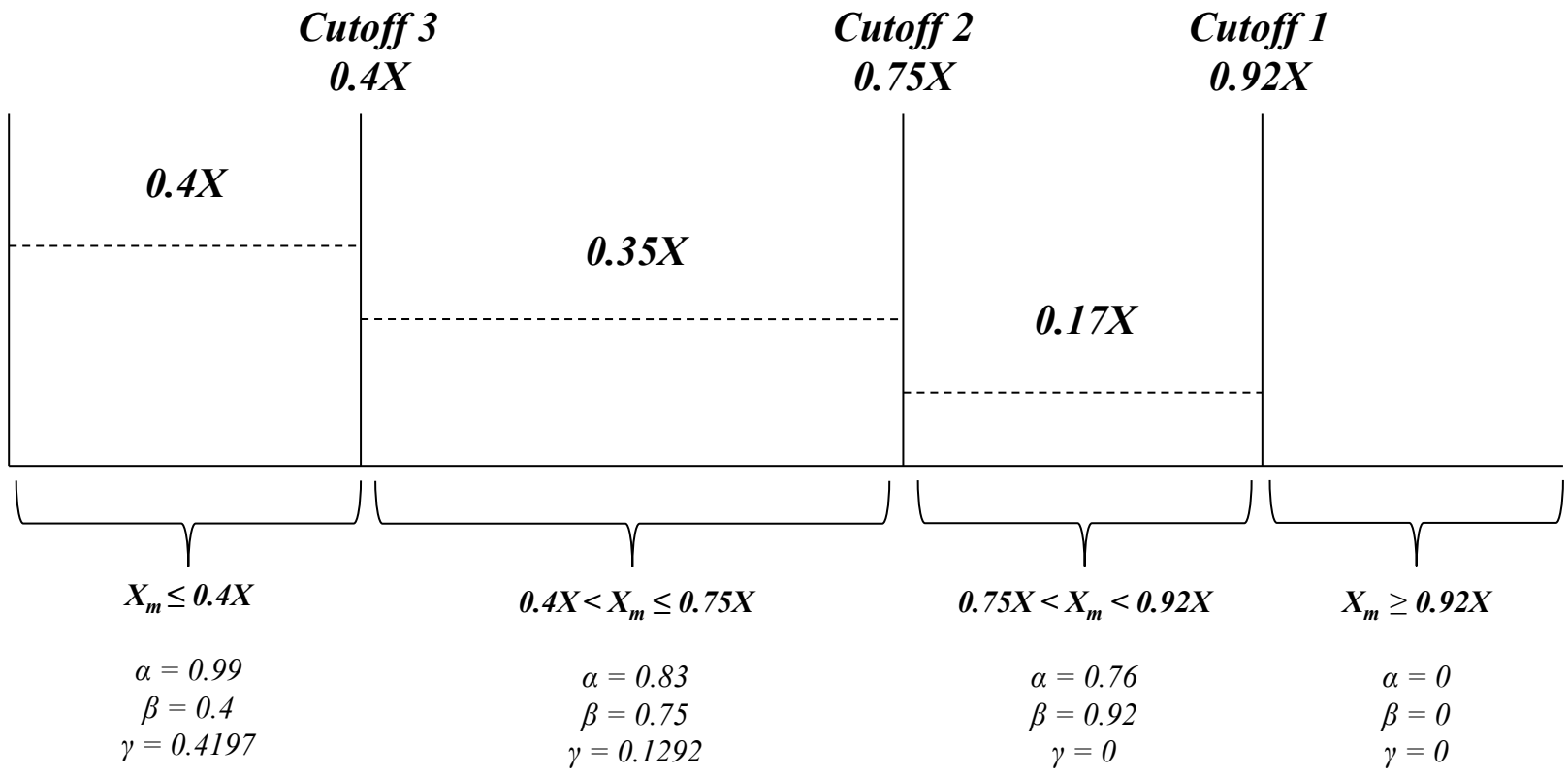
FIGURE 1
BASE SUBSIDY ELIGIBILITY CRITERIA AND CALCULATION




This figure illustrates the eligibility for and the calculation of the base subsidy.

FIGURE 2
FISCAL TRANSFERS TIMELINE

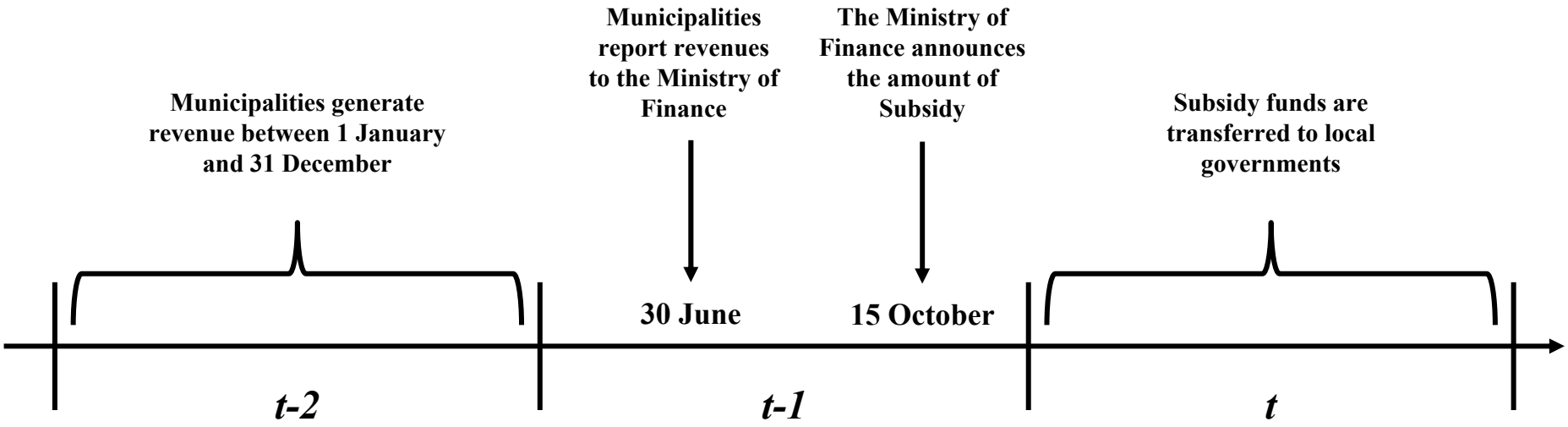
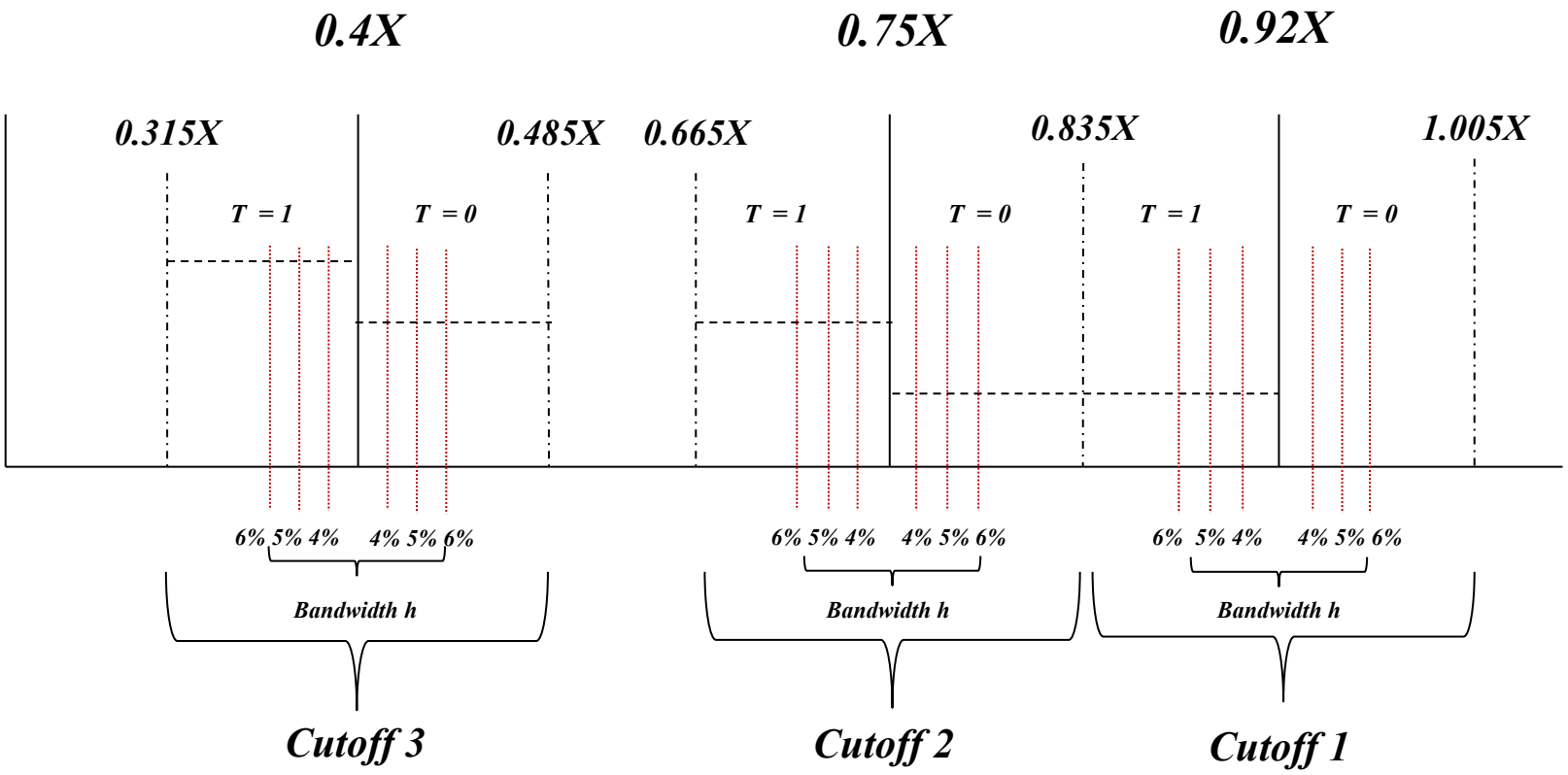
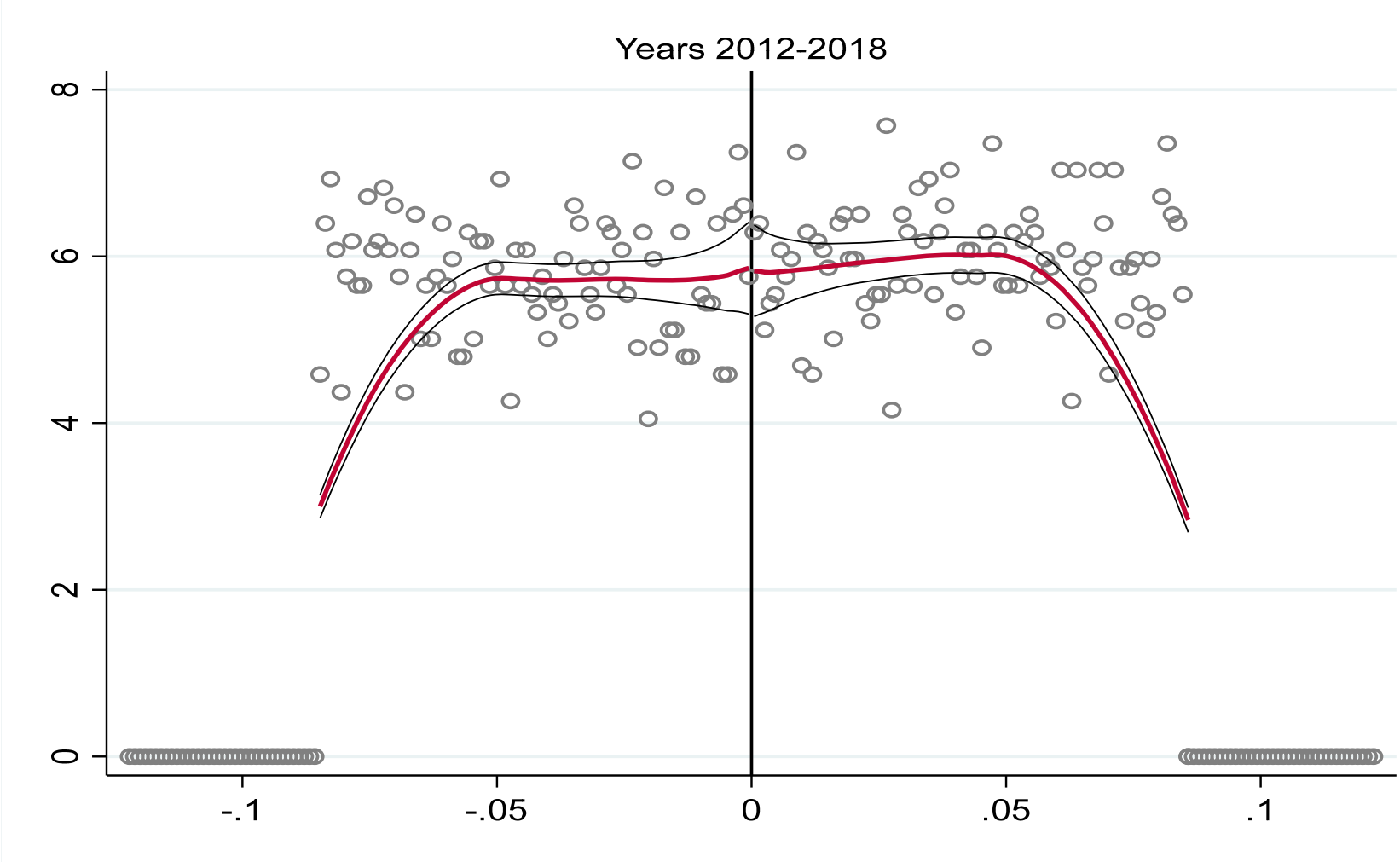


FIGURE 3
SAMPLE SELECTION




This figure illustrates the sample selection based on three bandwidths around the three cutoffs.

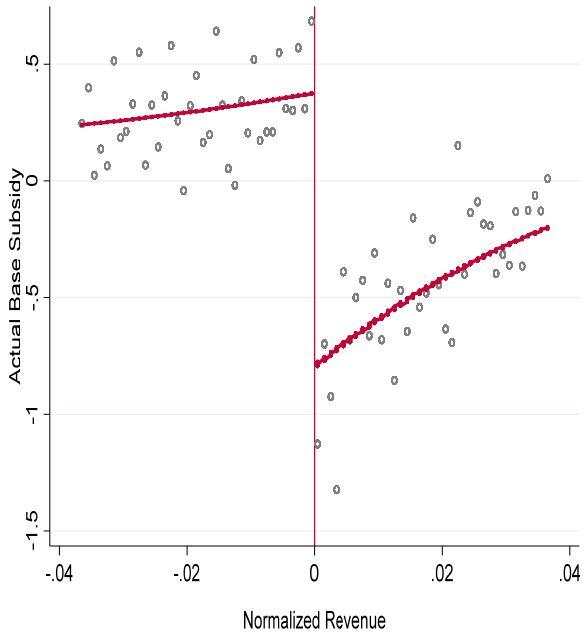
FIGURE 4
MANIPULATION TESTS - MCCRARY DENSITY TEST



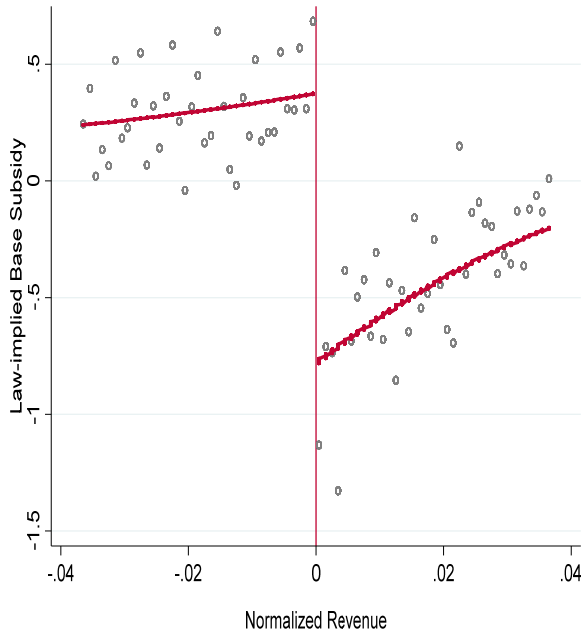

This figure illustrates the McCrary density test for the years 2012-2018.

FIGURE 5
ACTUAL AND LAW IMPLIED REGIONAL TRANSFERS AROUND THE CUTOFFS

PANEL A



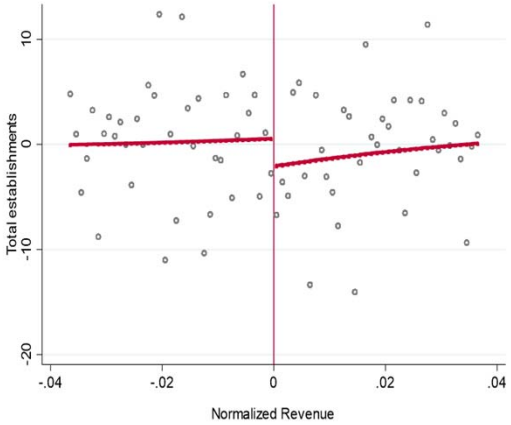

PANEL B



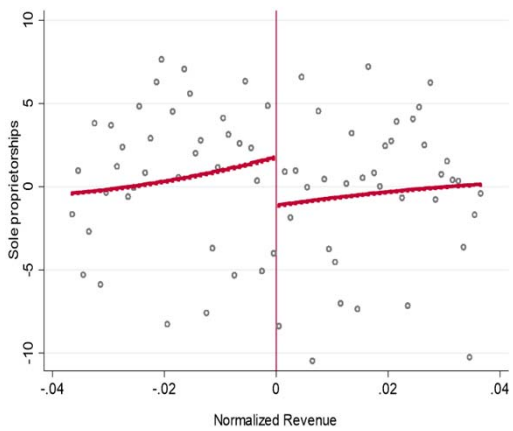

This figure illustrates the actual and law implied regional transfers around the around the normalized revenue cutoff brackets. Above zero normalized revenue the subsidy is observed to decrease.

FIGURE 6
NUMBER OF ESTABLISHMENTS AROUND THE CUTOFFS

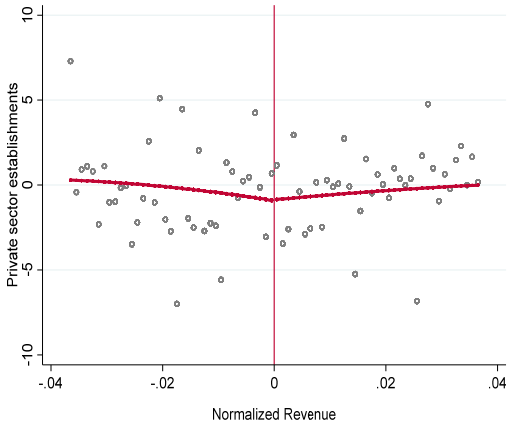
PANEL A



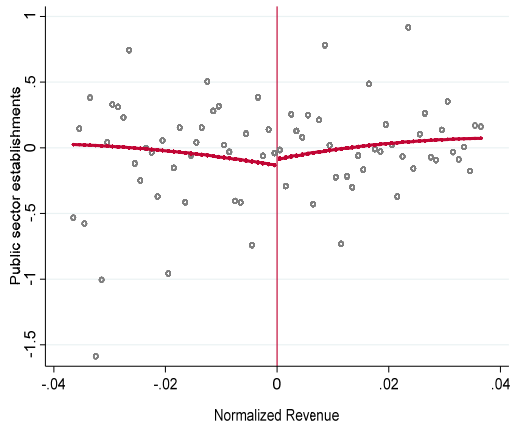

PANEL B




PANEL C




PANEL D




This figure illustrates the impact of the drop in subsidy around the zero normalized revenue cutoff on the total number of establishments, sole proprietorships, and private and public sector establishments.

FIGURE 7
REGIONS, ENTREPRENEURSHIP AND COMPENSATORY SUBSIDIES IN POLAND

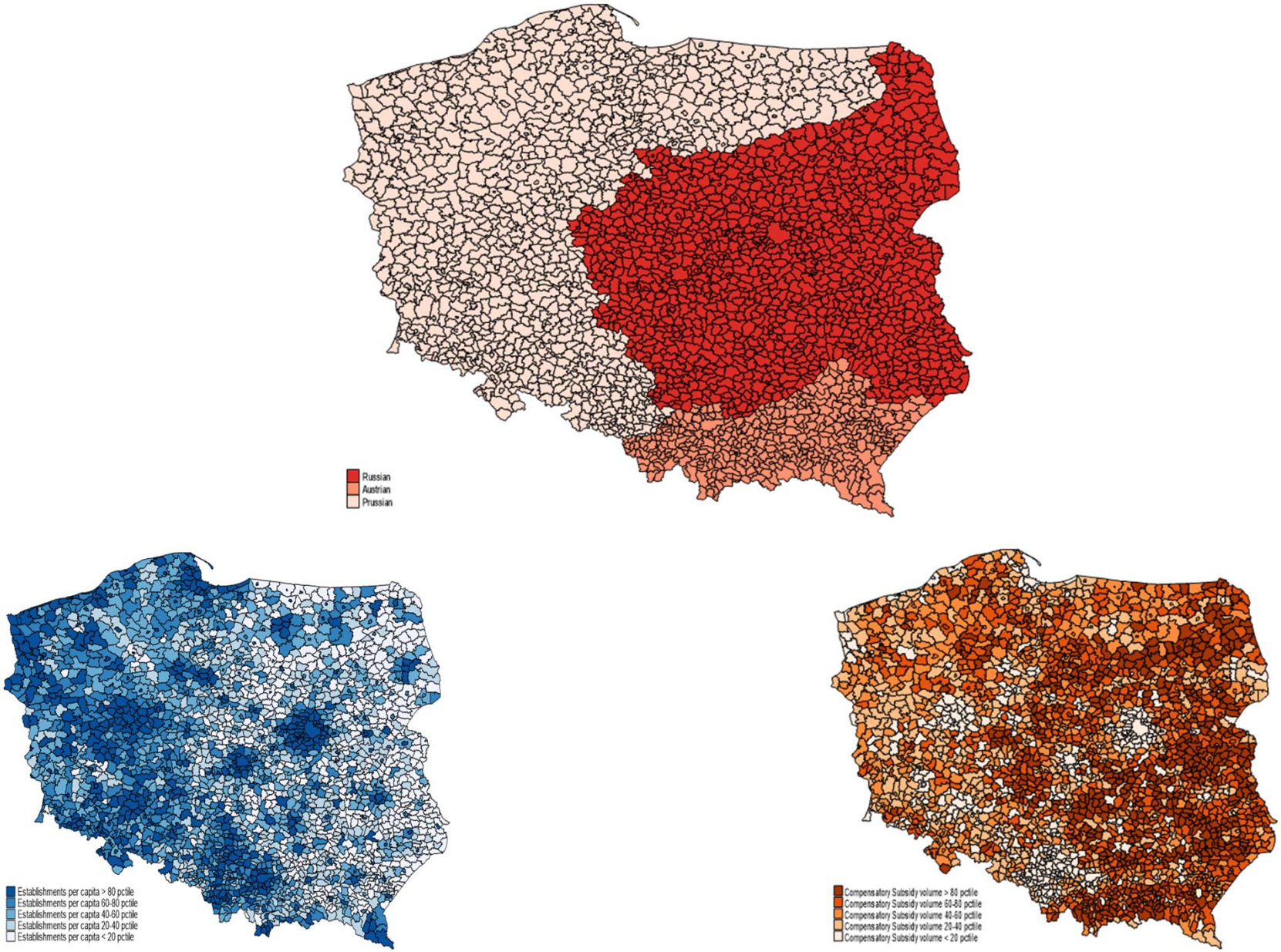


TABLE 1

*Summary Statistics*

| | Observations | Mean | SD | Min | Median | Max |
|---|---|---|---|---|---|---|
| *Variable* | | | Panel A: Total sample | | | |
| Actual fiscal transfers | 17,276 | 2,882,275 | 2,458,193 | 0 | 2,530,866 | 48,700,000 |
| Actual fiscal transfers per capita | 17,276 | 382.526 | 273.061 | 0 | 387.984 | 1,337.688 |
| Actual fiscal transfers per capita (in 10,000 PLN) | 17,276 | 0.038 | 0.027 | 0 | 0.039 | 0.134 |
| Total establishments | 17,276 | 1,524.825 | 5,692.526 | 58 | 527 | 140,500 |
| Total establishments per capita | 17,276 | 0.079 | 0.035 | 0.027 | 0.072 | 0.819 |
| Sole proprietorships | 17,276 | 1,113.234 | 3,746.315 | 32 | 415.5 | 87,852 |
| Sole proprietorships per capita | 17,276 | 0.061 | 0.024 | 0.015 | 0.056 | 0.311 |
| Private sector establishments | 17,276 | 357.531 | 1,799.344 | 5 | 89 | 50,145 |
| Private sector establishments per capita | 17,276 | 0.015 | 0.014 | 0.002 | 0.012 | 0.638 |
| Public sector establishments | 17,276 | 46.563 | 131.379 | 1 | 18 | 3,082 |
| Public sector establishments per capita | 17,276 | 0.003 | 0.002 | 0.001 | 0.003 | 0.032 |
| *Variable* | | | Panel B: Bandwidth <6% | | | |
| Actual fiscal transfers | 3,202 | 2,454,137 | 2,025,937 | 0 | 1,997,289 | 14,900,000 |
| Actual fiscal transfers per capita | 3,202 | 306.375 | 243.649 | 0 | 261.492 | 1,083.340 |
| Actual fiscal transfers per capita (in 10,000 PLN) | 3,202 | 0.031 | 0.024 | 0 | 0.026 | 0.108 |
| Total establishments | 3,202 | 1,065.059 | 1,213.094 | 74 | 621.5 | 8,944 |
| Total establishments per capita | 3,202 | 0.079 | 0.023 | 0.027 | 0.077 | 0.187 |
| Sole proprietorships | 3,202 | 809.933 | 905.114 | 42 | 479 | 6,977 |
| Sole proprietorships per capita | 3,202 | 0.061 | 0.018 | 0.015 | 0.060 | 0.124 |
| Private sector establishments | 3,202 | 213.295 | 278.286 | 13 | 107 | 1,990 |
| Private sector establishments per capita | 3,202 | 0.015 | 0.007 | 0.003 | 0.014 | 0.061 |
| Public sector establishments | 3,202 | 39.038 | 47.934 | 2 | 20 | 394 |
| Public sector establishments per capita | 3,202 | 0.003 | 0.002 | 0.001 | 0.003 | 0.022 |

TABLE 1 *(Continued)*

| *Variable* | | | | | | |
|---|---|---|---|---|---|---|
| | | | Panel C: Bandwidth <5% | | | |
| Actual fiscal transfers | 2,294 | 2,411,979 | 2,019,549 | 0 | 1,977,540 | 14,900,000 |
| Actual fiscal transfers per capita | 2,294 | 302.237 | 247.740 | 0 | 251.487 | 1,070.594 |
| Actual fiscal transfers per capita (in 10,000 PLN) | 2,294 | 0.030 | 0.025 | 0.000 | 0.025 | 0.107 |
| Total establishments | 2,294 | 1,090.299 | 1,254.088 | 74 | 633.500 | 8,944 |
| Total establishments per capita | 2,294 | 0.079 | 0.024 | 0.027 | 0.078 | 0.187 |
| Sole proprietorships | 2,294 | 828.888 | 936.103 | 42 | 495.500 | 6,977 |
| Sole proprietorships per capita | 2,294 | 0.061 | 0.018 | 0.015 | 0.060 | 0.124 |
| Private sector establishments | 2,294 | 218.835 | 287.134 | 13 | 111.500 | 1,990 |
| Private sector establishments per capita | 2,294 | 0.015 | 0.007 | 0.003 | 0.014 | 0.060 |
| Public sector establishments | 2,294 | 39.707 | 48.786 | 2 | 20 | 366 |
| Public sector establishments per capita | 2,294 | 0.003 | 0.002 | 0.001 | 0.003 | 0.022 |
| *Variable* | | | | | | |
| | | | Panel D: Bandwidth <4% | | | |
| Actual fiscal transfers | 1,475 | 2,385,624 | 2,080,121 | 0 | 1,944,658 | 14,900,000 |
| Actual fiscal transfers per capita | 1,475 | 305.270 | 253.116 | 0 | 250.193 | 1,055.489 |
| Actual fiscal transfers per capita (in 10,000 PLN) | 1,475 | 0.031 | 0.025 | 0.000 | 0.025 | 0.106 |
| Total establishments | 1,475 | 1,058.457 | 1,261.618 | 74 | 622 | 8,944 |
| Total establishments per capita | 1,475 | 0.079 | 0.024 | 0.027 | 0.076 | 0.187 |
| Sole proprietorships | 1,475 | 806.487 | 942.603 | 42 | 470 | 6,977 |
| Sole proprietorships per capita | 1,475 | 0.060 | 0.018 | 0.015 | 0.059 | 0.124 |
| Private sector establishments | 1,475 | 210.771 | 286.634 | 13 | 108 | 1,990 |
| Private sector establishments per capita | 1,475 | 0.015 | 0.007 | 0.003 | 0.014 | 0.060 |
| Public sector establishments | 1,475 | 38.469 | 48.895 | 2 | 20 | 366 |
| Public sector establishments per capita | 1,475 | 0.003 | 0.002 | 0 | 0.003 | 0.021 |
| Population | 1,475 | 11,847.040 | 10,949.450 | 2,119 | 8,102 | 75,938 |

*Notes*: The table provides the number of observations, mean, standard deviation, minimum, median, and maximum of our main explanatory and dependent variables used in the empirical analysis, for the full sample (Panel A), and observations within the 6% (Panel B), 5% (Panel C), and 4% (Panel D) bandwidth. We present descriptive statistics for variables expressed in level and per capita values. The monetary values are expressed in PLN, i.e., Polish złoty (1 PLN ≅ 0.25 USD).

TABLE 2

*Other Sources of Municipal Revenue*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A – Direct grants | | | |
| *OLS* | 0.474 | 0.620 | 0.769 | -0.564 | -0.035 | -0.293 |
| | (0.481) | (0.671) | (0.755) | (0.689) | (0.950) | (1.116) |
| | | | Panel B – European Union funds | | | |
| *OLS* | -0.979** | -0.858 | -0.836 | -0.920 | -0.476 | -0.398 |
| | (0.478) | (0.676) | (0.855) | (0.718) | (0.970) | (1.260) |
| | | | Panel C – Other subsidy | | | |
| *OLS* | -0.006 | -0.017 | -0.021 | 0.015 | 0.011 | 0.003 |
| | (0.016) | (0.019) | (0.026) | (0.018) | (0.025) | (0.035) |
| | | | Panel D – Municipality debt expenses | | | |
| *OLS* | 0.056* | 0.014 | -0.032 | 0.007 | 0.011 | 0.013 |
| | (0.030) | (0.035) | (0.038) | (0.019) | (0.028) | (0.035) |
| | | | Panel E – Municipality own revenue | | | |
| *OLS* | -0.356 | -0.085 | -0.154 | 0.185 | 1.025 | -0.054 |
| | (0.401) | (0.529) | (0.619) | (0.760) | (1.044) | (1.030) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes:* The table reports OLS coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) obtained using specification 2. Regressions associate per capita municipal revenue from sources other than *Subsidy* to per capita law-implied *Subsidy* transfers. Dependent variables include direct grants for specific investment projects (Panel A), funding received from the European Union (Panel B), other fiscal transfers (Panel C), expenses on financing municipal public debt, a proxy for municipal debt (Panel D), and funds raised through taxes and fees from individuals and businesses in the current year (Panel E). In columns 1-3, the dependent and the independent variable (law-implied *Subsidy* transfers) are expressed in levels. In columns, 4-6 variables are expressed in first differences. "Yes" indicates that the set of fixed effects or first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 3

*Actual and Law-implied Fiscal Transfers*

| Local estimates | in levels | | | | | | in first differences | | |
|---|---|---|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Law-implied transfers per capita | 0.993*** (0.003) | 0.993*** (0.003) | 0.992*** (0.004) | 0.971*** (0.043) | 0.939*** (0.066) | 0.885*** (0.103) | 0.921*** (0.082) | 0.838*** (0.155) | 0.712*** (0.223) |
| Number of Municipalities | 1,311 | 1,193 | 1,011 | 928 | 734 | 512 | 804 | 600 | 393 |
| Observations | 3,665 | 2,873 | 2,082 | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Within (adjusted) R2 | 0.993 | 0.992 | 0.990 | 0.940 | 0.906 | 0.835 | 0.964 | 0.937 | 0.908 |
| Municipality FE | NO | NO | NO | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| First-order polynomial | NO | NO | NO | YES | YES | YES | YES | YES | YES |

*Notes:* The table reports OLS coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) obtained using specification 3. Regressions associate the actual level of per capita *Subsidy* transfers to law-implied per capita *Subsidy* transfers. In columns 1-6, variables are expressed in levels. In columns 7-9, variables are expressed in first differences. "Yes" indicates that the set of fixed effects or first-order polynomial is included. "No" indicates that the set of fixed effects or first-order polynomial is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 4

*Municipal Expenditure and Budget Balance*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Panel A – Share of municipal expenses on public administration | | | | | |
| *OLS* | -0.020*** | -0.015 | -0.025** | -0.022* | -0.016 | -0.018 |
| | (0.007) | (0.009) | (0.011) | (0.012) | (0.015) | (0.019) |
| | Panel B – Share of other municipal expenses | | | | | |
| *OLS* | 0.059*** | 0.067*** | 0.075*** | 0.040*** | 0.038** | 0.045* |
| | (0.010) | (0.012) | (0.016) | (0.013) | (0.016) | (0.023) |
| | Panel C – Budget balance | | | | | |
| *OLS* | 0.021 | -0.141 | -0.285 | -0.248 | -0.770 | -0.871 |
| | (0.665) | (0.820) | (1.040) | (1.046) | (1.453) | (1.541) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) obtained using equation 2. Regressions associate per capita municipal expenses and budget balance to per capita law-implied *Subsidy* transfers. Dependent variables include the share of per capita municipal expenses on public administration (Panel A), the share of all other per capita municipal expenses (Panel B), municipal budget balance - the difference between municipal revenue and expenses (Panel C). In columns 1-3, the dependent and the independent variable (law-implied *Subsidy* transfers) are expressed in levels. In columns 4-6, variables are expressed in first differences. "Yes" indicates that the set of fixed effects or first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 5

*Number of Establishments and Fiscal Transfers*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Panel A - Total establishments per capita | | | | | | |
| *OLS* | 0.251*** | 0.292*** | 0.400*** | 0.099** | 0.152** | 0.183** |
| | (0.056) | (0.073) | (0.094) | (0.042) | (0.059) | (0.077) |
| *Fuzzy RD (IV)* | 0.259*** | 0.311*** | 0.452*** | 0.108** | 0.181** | 0.257** |
| | (0.057) | (0.075) | (0.097) | (0.047) | (0.071) | (0.102) |
| Panel B - Sole proprietorships per capita | | | | | | |
| *OLS* | 0.304*** | 0.343*** | 0.417*** | 0.102*** | 0.158*** | 0.204*** |
| | (0.052) | (0.066) | (0.091) | (0.038) | (0.054) | (0.076) |
| *Fuzzy RD (IV)* | 0.313*** | 0.365*** | 0.471*** | 0.111*** | 0.188*** | 0.286*** |
| | (0.052) | (0.067) | (0.091) | (0.042) | (0.065) | (0.095) |
| Panel C - Private sector establishments per capita | | | | | | |
| *OLS* | -0.044** | -0.039* | -0.019 | -0.007 | -0.015 | -0.032 |
| | (0.019) | (0.020) | (0.024) | (0.015) | (0.020) | (0.025) |
| *Fuzzy RD (IV)* | -0.045** | -0.042* | -0.022 | -0.007 | -0.018 | -0.045 |
| | (0.020) | (0.021) | (0.026) | (0.016) | (0.024) | (0.033) |
| Panel D - Public sector establishments per capita | | | | | | |
| *OLS* | -0.003 | -0.007 | 0.003 | 0.007 | 0.012 | 0.014 |
| | (0.006) | (0.009) | (0.012) | (0.006) | (0.009) | (0.012) |
| *Fuzzy RD (IV)* | -0.003 | -0.008 | 0.004 | 0.008 | 0.015 | 0.020 |
| | (0.007) | (0.010) | (0.013) | (0.007) | (0.011) | (0.017) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine the entrepreneurial effects of *Subsidy* transfers. Dependent variables include per capita number of all establishments in the municipality (Panel A), per capita number of sole proprietorships (Panel B), per capita number of incorporated private sector establishments (Panel C), and per capita number of public sector establishments (Panel D). In columns 1-3, specifications include dependent and independent variables (law-implied *Subsidy* transfers) that are expressed in levels. In columns 4-6, variables are expressed in first differences. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 6

*Number of Establishments and Fiscal Transfers by Size*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <5% | <5% | <5% | <5% | <5% | <5% |
| Establishment size | 1-9 | 10-49 | 49+ | 1-9 | 10-49 | 49+ |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A - Total establishments per capita | | | |
| *OLS* | 0.300*** | -0.007 | -0.001 | 0.143** | 0.008 | 0.001 |
| | (0.073) | (0.007) | (0.002) | (0.059) | (0.008) | (0.002) |
| *Fuzzy RD (IV)* | 0.319*** | -0.007 | -0.001 | 0.170** | 0.010 | 0.001 |
| | (0.074) | (0.008) | (0.002) | (0.070) | (0.010) | (0.003) |
| | | | Panel B - Sole proprietorships per capita | | | |
| *OLS* | 0.342*** | 0.002 | -0.000 | 0.156*** | 0.003 | -0.001 |
| | (0.067) | (0.004) | (0.001) | (0.053) | (0.004) | (0.001) |
| *Fuzzy RD (IV)* | 0.364*** | 0.002 | -0.000 | 0.186*** | 0.004 | -0.001 |
| | (0.067) | (0.004) | (0.001) | (0.064) | (0.005) | (0.001) |
| | | | Panel C - Private sector establishments per capita | | | |
| *OLS* | -0.041** | 0.001 | 0.001 | -0.019 | 0.001 | 0.001 |
| | (0.020) | (0.004) | (0.001) | (0.019) | (0.004) | (0.002) |
| *Fuzzy RD (IV)* | -0.044** | 0.003 | 0.001 | -0.023 | 0.003 | 0.002 |
| | (0.021) | (0.004) | (0.002) | (0.023) | (0.005) | (0.002) |
| | | | Panel D - Public sector establishments per capita | | | |
| *OLS* | 0.004 | -0.010** | -0.002 | 0.009 | 0.003 | 0.001 |
| | (0.009) | (0.004) | (0.001) | (0.010) | (0.006) | (0.002) |
| *Fuzzy RD (IV)* | 0.005 | -0.010** | -0.002 | 0.011 | 0.003 | 0.001 |
| | (0.010) | (0.004) | (0.001) | (0.011) | (0.007) | (0.002) |
| Observations | 2,292 | 2,292 | 2,292 | 1,109 | 1,109 | 1,109 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine the effect of *Subsidy* transfers on the number of establishments by the size of businesses. Dependent variables include per capita number of all establishments in the municipality (Panel A), per capita number of sole proprietorships (Panel B), per capita number of incorporated private sector establishments (Panel C), and per capita number of public sector establishments (Panel D). In columns 1-3, specifications include dependent and independent variables (law-implied *Subsidy* transfers) that are expressed in levels. In columns 4-6, variables are expressed in first differences. In columns 1 and 4 dependent variable includes businesses with up to 9 employees. In columns 2 and 5 dependent variable includes businesses with 10 to 49 employees. In columns 3 and 6 dependent variable includes businesses with 50 or more employees. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 7

*Total Number of Establishments and Fiscal Transfers by Industry*

| Dependent variable | Total establishments per capita | | | Sole proprietorships per capita | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A – Construction industry | | | |
| *OLS* | 0.093*** | 0.118*** | 0.136*** | 0.097*** | 0.123*** | 0.145*** |
| | (0.023) | (0.028) | (0.038) | (0.023) | (0.028) | (0.039) |
| *Fuzzy RD (IV)* | 0.096*** | 0.125*** | 0.153*** | 0.100*** | 0.131*** | 0.163*** |
| | (0.024) | (0.029) | (0.041) | (0.023) | (0.029) | (0.042) |
| | | | Panel B – Farming industry | | | |
| *OLS* | -0.043*** | -0.052*** | -0.035 | -0.045*** | -0.051*** | -0.039* |
| | (0.011) | (0.017) | (0.023) | (0.011) | (0.016) | (0.023) |
| *Fuzzy RD (IV)* | -0.044*** | -0.055*** | -0.039 | -0.047*** | -0.055*** | -0.044* |
| | (0.011) | (0.018) | (0.025) | (0.011) | (0.017) | (0.025) |
| | | | Panel C – Financial sector | | | |
| *OLS* | 0.017*** | 0.017** | 0.013 | 0.020*** | 0.020*** | 0.016 |
| | (0.006) | (0.008) | (0.010) | (0.006) | (0.008) | (0.010) |
| *Fuzzy RD (IV)* | 0.017*** | 0.018** | 0.015 | 0.021*** | 0.021*** | 0.018 |
| | (0.006) | (0.008) | (0.011) | (0.006) | (0.008) | (0.012) |
| | | | Panel D – IT | | | |
| *OLS* | -0.022*** | -0.023*** | -0.018* | -0.018*** | -0.018*** | -0.013 |
| | (0.005) | (0.007) | (0.009) | (0.005) | (0.007) | (0.009) |
| *Fuzzy RD (IV)* | -0.023*** | -0.024*** | -0.020* | -0.018*** | -0.019*** | -0.015 |
| | (0.005) | (0.008) | (0.011) | (0.005) | (0.007) | (0.010) |
| | | | Panel E – Services | | | |
| *OLS* | 0.032*** | 0.041*** | 0.044*** | 0.011 | 0.008 | 0.014 |
| | (0.010) | (0.013) | (0.017) | (0.008) | (0.011) | (0.014) |
| *Fuzzy RD (IV)* | 0.033*** | 0.044*** | 0.050** | 0.012 | 0.008 | 0.016 |
| | (0.011) | (0.014) | (0.020) | (0.008) | (0.012) | (0.017) |
| | | | Panel F – Manufacturing | | | |
| *OLS* | 0.076*** | 0.078*** | 0.070*** | 0.069*** | 0.071*** | 0.067*** |
| | (0.015) | (0.019) | (0.024) | (0.013) | (0.017) | (0.022) |
| *Fuzzy RD (IV)* | 0.078*** | 0.083*** | 0.080*** | 0.071*** | 0.075*** | 0.076*** |
| | (0.014) | (0.018) | (0.024) | (0.013) | (0.016) | (0.022) |
| | | | Panel G – Real Estate | | | |
| *OLS* | -0.039*** | -0.032** | -0.005 | -0.002 | 0.002 | 0.006 |
| | (0.012) | (0.013) | (0.016) | (0.003) | (0.004) | (0.005) |
| *Fuzzy RD (IV)* | -0.041*** | -0.034** | -0.006 | -0.002 | 0.002 | 0.006 |
| | (0.012) | (0.014) | (0.018) | (0.003) | (0.004) | (0.005) |
| | | | Panel H – Retail industry | | | |
| *OLS* | 0.137*** | 0.152*** | 0.174*** | 0.138*** | 0.150*** | 0.172*** |
| | (0.024) | (0.032) | (0.042) | (0.023) | (0.031) | (0.041) |
| *Fuzzy RD (IV)* | 0.141*** | 0.162*** | 0.197*** | 0.142*** | 0.160*** | 0.194*** |
| | (0.024) | (0.033) | (0.043) | (0.022) | (0.031) | (0.040) |
| Observations | 3,202 | 2,294 | 1,475 | 3,202 | 2,294 | 1,475 |
| Municipality FE | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine the effect of *Subsidy* transfers on the number of establishments by the industry of businesses. The dependent variable is the per capita number of all establishments (columns 1-3) and the number of per capita sole proprietorships (columns 4-6) in the following industries: Construction (Panel A), Farming (Panel B), Finance (Panel C), IT (Panel D), Services (Panel E), Manufacturing (Panel F), Real estate (Panel G), Retail industry (Panel H). "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 8

*Entrepreneurial Effects Mechanism*

| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% | <6% | <5% | <4% |
|---|---|---|---|---|---|---|---|---|---|
| | Panel A – Agriculture, forestry, fishery | | | Panel B – Education | | | Panel C – Health care | | |
| OLS | 0.208 | 0.402 | 0.254 | -0.475* | -0.664* | 0.114 | -0.050** | -0.028 | -0.008 |
| | (0.412) | (0.431) | (0.602) | (0.279) | (0.361) | (0.476) | (0.023) | (0.021) | (0.029) |
| Fuzzy RD (IV) | 0.215 | 0.428 | 0.287 | -0.489* | -0.707* | 0.128 | -0.051** | -0.030 | -0.009 |
| | (0.424) | (0.457) | (0.679) | (0.286) | (0.381) | (0.538) | (0.023) | (0.022) | (0.033) |
| | Panel D – IT | | | Panel E – Manufacturing | | | Panel F – Real estate management | | |
| OLS | 0.017 | -0.005 | -0.039 | 0.008 | 0.029 | 0.039 | 0.020 | 0.054 | 0.603* |
| | (0.044) | (0.067) | (0.117) | (0.034) | (0.053) | (0.043) | (0.214) | (0.353) | (0.316) |
| Fuzzy RD (IV) | 0.017 | -0.005 | -0.045 | 0.008 | 0.031 | 0.045 | 0.021 | 0.057 | 0.681* |
| | (0.045) | (0.071) | (0.132) | (0.035) | (0.057) | (0.049) | (0.220) | (0.376) | (0.356) |
| | Panel G – Recreation | | | Panel H – Services | | | Panel I – Social assistance | | |
| OLS | -0.348 | -0.634 | -0.042 | -0.042 | 0.114 | -0.067 | 0.678*** | 0.543** | 0.735*** |
| | (0.303) | (0.413) | (0.465) | (0.068) | (0.141) | (0.226) | (0.163) | (0.211) | (0.266) |
| Fuzzy RD (IV) | -0.358 | -0.675 | -0.047 | -0.043 | 0.121 | -0.076 | 0.698*** | 0.578*** | 0.830*** |
| | (0.311) | (0.437) | (0.525) | (0.071) | (0.150) | (0.255) | (0.164) | (0.219) | (0.270) |
| | Panel J – Transportation | | | Panel K – Utilities | | | Panel L – Other | | |
| OLS | 0.224 | 0.165 | -0.472 | 0.111 | 0.110 | 0.120 | -0.040 | 0.202 | -0.618 |
| | (0.438) | (0.595) | (0.800) | (0.076) | (0.086) | (0.127) | (0.483) | (0.717) | (0.827) |
| Fuzzy RD (IV) | 0.231 | 0.175 | -0.533 | 0.114 | 0.117 | 0.136 | -0.041 | 0.215 | -0.698 |
| | (0.451) | (0.632) | (0.905) | (0.078) | (0.090) | (0.143) | (0.497) | (0.764) | (0.926) |
| Observations | 3,202 | 2,294 | 1,475 | 3,202 | 2,294 | 1,475 | 3,202 | 2,294 | 1,475 |
| Municipality FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine the effect of *Subsidy* transfers on municipal expenditure. Dependent variables include per capita municipal expenses on: Agriculture, forestry and fishing sectors (Panel A), Education – higher education, colleges, primary schools (Panel B), Health care (Panel C), IT infrastructure (Panel D), Manufacturing (Panel E), Property management (Panel F), Parks, recreation and culture (Panel G), Services (Panel H), Social assistance (Panel I), Transportation (Panel J), Utilities supply and utilities infrastructure maintenance (Panel K), and all other expenses (Panel L). "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 9

*Fiscal Transfers and Municipal Migration*

| Local estimates | Migration in year *t* | | | Migration in year *t+1* | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A – Net migration | | | |
| *OLS* | 0.070 | 0.148* | 0.119 | -0.035 | 0.078 | -0.028 |
| | (0.061) | (0.081) | (0.132) | (0.072) | (0.092) | (0.117) |
| | | | Panel B – Residents outflow | | | |
| *OLS* | 0.061 | 0.115* | 0.157* | -0.029 | 0.037 | 0.021 |
| | (0.046) | (0.059) | (0.088) | (0.069) | (0.091) | (0.126) |
| | | | Panel C – Residents inflow | | | |
| *OLS* | -0.028 | 0.016 | -0.127 | -0.048 | -0.183* | -0.094 |
| | (0.054) | (0.078) | (0.125) | (0.074) | (0.105) | (0.141) |
| Observations | 2,589 | 1,823 | 1,116 | 1,552 | 1,012 | 644 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) obtained using equation 2. Regressions associate per capita law-implied *Subsidy* transfers to per capita net migration (Panel A), per capita number residents moving out of municipality (Panel B), and per capita number of residents moving into municipality (Panel C). Due to measurement error information on net migration in year 2015 are unavailable. In columns 1-3, dependent variables are measured in year *t*, when the *Subsidy* funds are distributed. In columns 4-6, dependent variables are measured in year *t+1*, one year after the distribution of the *Subsidy*. "Yes" indicates that the set of fixed effects or first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 10

*Unemployment Rate and Fiscal Transfers*

| Local estimates | Unemployment in year *t* | | | Unemployment in year *t+1* | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A – Total unemployed | | | |
| *OLS* | -2.391* | -2.006 | -2.913 | -3.153** | -3.898* | -5.843** |
| | (1.390) | (1.791) | (2.568) | (1.544) | (2.091) | (2.399) |
| *Fuzzy RD (IV)* | -2.461* | -2.136 | -3.290 | -3.314** | -4.379* | -7.072** |
| | (1.439) | (1.922) | (2.948) | (1.633) | (2.411) | (2.913) |
| | | | Panel B – Unemployed women | | | |
| *OLS* | -4.613*** | -5.439** | -7.184** | -4.110** | -4.186 | -7.457** |
| | (1.752) | (2.315) | (3.202) | (2.002) | (2.756) | (3.056) |
| *Fuzzy RD (IV)* | -4.749*** | -5.790** | -8.114** | -4.321** | -4.703 | -9.026** |
| | (1.835) | (2.498) | (3.702) | (2.145) | (3.192) | (3.782) |
| | | | Panel C – Unemployed men | | | |
| *OLS* | -0.424 | 0.849 | 0.824 | -2.080 | -3.399 | -4.187 |
| | (1.550) | (2.036) | (2.861) | (1.702) | (2.278) | (2.688) |
| *Fuzzy RD (IV)* | -0.437 | 0.903 | 0.931 | -2.186 | -3.819 | -5.068 |
| | (1.596) | (2.160) | (3.213) | (1.778) | (2.562) | (3.163) |
| Observations | 3,202 | 2,294 | 1,475 | 2,666 | 1,875 | 1,208 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions associate municipal unemployment rates in year to per capita law-implied *Subsidy* transfers. Dependent variables include the total number of unemployed to the total workforce (Panel A), the total number of unemployed women to the total female workforce (Panel B), and the total number of unemployed men to the total male workforce (Panel C). In columns 1-3, the unemployment rate is measured in year *t*, when *Subsidy* funds are distributed. In columns 4-6, the unemployment rate is measured in year *t+1*, one year after the distribution of the *Subsidy*. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 11

*Wages and Fiscal Transfers*

| Local estimates | Average wage in year *t* | | | Average wage in year *t+1* | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Panel A – Private sector average wage | | | | | |
| *OLS* | 3.598* | 3.750 | 5.543** | 1.979 | 0.893 | -3.101 |
| | (1.879) | (2.802) | (2.442) | (1.744) | (2.842) | (3.478) |
| *Fuzzy RD (IV)* | 3.735* | 3.975 | 6.135** | 2.097 | 0.994 | -3.597 |
| | (1.980) | (2.997) | (2.760) | (1.885) | (3.202) | (4.051) |
| Observations | 2,772 | 1,936 | 1,220 | 2,313 | 1,603 | 1,004 |
| | Panel B – Public sector average wage | | | | | |
| *OLS* | -1.567* | -1.301 | -1.324 | -0.180 | 0.079 | 0.442 |
| | (0.900) | (1.248) | (1.688) | (0.959) | (1.269) | (1.813) |
| *Fuzzy RD (IV)* | -1.627* | -1.379 | -1.465 | -0.191 | 0.088 | 0.513 |
| | (0.950) | (1.343) | (1.869) | (1.018) | (1.413) | (2.116) |
| Observations | 2,772 | 1,936 | 1,220 | 2,313 | 1,603 | 1,004 |
| | Panel C – Average wage in industries with an increase in sole proprietorships | | | | | |
| *OLS* | 9.765** | 9.029 | 17.585* | 13.616*** | 4.771 | 10.248 |
| | (4.510) | (6.768) | (8.986) | (4.849) | (7.365) | (10.518) |
| *Fuzzy RD (IV)* | 10.137** | 9.841 | 20.907** | 14.492*** | 5.430 | 13.038 |
| | (4.675) | (7.372) | (10.518) | (5.129) | (8.150) | (12.026) |
| Observations | 1,993 | 1,350 | 824 | 1,704 | 1,147 | 684 |
| | Panel D – Average wage in industries with a decrease in sole proprietorships | | | | | |
| *OLS* | -0.053 | 15.409 | 18.228 | -0.495 | 9.487 | 10.766 |
| | (11.821) | (17.666) | (24.193) | (11.816) | (14.854) | (20.520) |
| *Fuzzy RD (IV)* | -0.053 | 15.572 | 18.331 | -0.498 | 9.554 | 10.863 |
| | (11.888) | (17.853) | (24.340) | (11.875) | (14.959) | (20.696) |
| Observations | 998 | 628 | 340 | 457 | 291 | 168 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions associate average wages to per capita law-implied *Subsidy* transfers. Dependent variables include the average wage in the private sector (Panels A), public sector (Panels B), industries experiencing positive change in sole proprietorships (Panel C), and industries experiencing negative change in sole proprietorships (Panel D). In columns 1-3, dependent variables are measured in year *t*, when *Subsidy* funds are distributed.. In columns 4-6, dependent variables are measured in year *t+1*, one year after distribution of the *Subsidy*. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 12

*Fiscal Transfers and Patent Applications*

| Dependent variable | All patent applications | | | Private sector patent applications | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *OLS* | 0.002 | 0.005* | 0.010** | 0.003* | 0.006** | 0.011*** |
| | (0.002) | (0.003) | (0.004) | (0.002) | (0.003) | (0.004) |
| *Fuzzy RD (IV)* | 0.002 | 0.005* | 0.011** | 0.003* | 0.006** | 0.013*** |
| | (0.002) | (0.003) | (0.005) | (0.002) | (0.003) | (0.005) |
| Observations | 3,202 | 2,294 | 1,475 | 3,202 | 2,294 | 1,475 |
| Municipality FE | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions associate per capita number of patent applications to per capita *Subsidy* transfers. In columns 1-3, the dependent variable is a logarithm of per capita number of all patent applications. In columns 4-6, the dependent variable excludes patent applications submitted by higher education institutions or science institutes. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 13

*Number of Establishments, Fiscal Transfers, and Winning Party Representation in the Municipal Council*

| Dependent variable | Total establishments per capita | | | Sole proprietorships per capita | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A – Full sample | | | |
| *OLS: Winner members ≤ p50* | 0.442*** | 0.502*** | 0.563*** | 0.462*** | 0.471*** | 0.545*** |
| | (0.078) | (0.115) | (0.152) | (0.081) | (0.122) | (0.156) |
| *LATE (%)* | 13.17 | 15.69 | 17.57 | 18.02 | 19.27 | 22.31 |
| *OLS: Winner members > p50* | 0.204** | 0.251* | 0.217 | 0.199** | 0.237** | 0.193** |
| | (0.099) | (0.141) | (0.132) | (0.082) | (0.112) | (0.094) |
| *LATE (%)* | 6.101 | 7.832 | 6.954 | 7.734 | 9.622 | 7.956 |
| *RD: Winner members ≤ p50* | 0.436*** | 0.483*** | 0.552*** | 0.455*** | 0.453*** | 0.535*** |
| | (0.078) | (0.111) | (0.151) | (0.081) | (0.118) | (0.155) |
| *LATE (%)* | 12.97 | 15.09 | 17.24 | 17.75 | 18.53 | 21.90 |
| *RD: Winner members > p50* | 0.233** | 0.336** | 0.328 | 0.227** | 0.317** | 0.291* |
| | (0.108) | (0.170) | (0.221) | (0.091) | (0.135) | (0.174) |
| *LATE (%)* | 6.968 | 10.48 | 10.49 | 8.833 | 12.88 | 12.00 |
| Observations: *Support ≤ p50* | 1,082 | 709 | 463 | 1,082 | 709 | 463 |
| Observations: *Support > p50* | 871 | 542 | 333 | 871 | 542 | 333 |
| Municipality FE | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |
| | | | Panel B – Matched sample | | | |
| *OLS: Winner members ≤ p50* | 0.494*** | 0.507*** | 0.616*** | 0.489*** | 0.437*** | 0.554*** |
| | (0.100) | (0.128) | (0.175) | (0.094) | (0.105) | (0.159) |
| *LATE (%)* | 14.57 | 15.58 | 19.19 | 18.84 | 17.58 | 22.68 |
| *OLS: Winner members > p50* | 0.312** | 0.405** | 0.584*** | 0.273*** | 0.333** | 0.466*** |
| | (0.126) | (0.187) | (0.186) | (0.105) | (0.159) | (0.145) |
| *LATE (%)* | 9.392 | 12.71 | 18.55 | 10.67 | 13.58 | 19.05 |
| *RD: Winner members ≤ p50* | 0.487*** | 0.486*** | 0.590*** | 0.481*** | 0.419*** | 0.530*** |
| | (0.096) | (0.121) | (0.169) | (0.091) | (0.100) | (0.153) |
| *LATE (%)* | 14.34 | 14.92 | 18.38 | 18.55 | 16.84 | 21.72 |
| *RD: Winner members > p50* | 0.346** | 0.522** | 0.587*** | 0.304*** | 0.429** | 0.468*** |
| | (0.138) | (0.222) | (0.186) | (0.114) | (0.186) | (0.145) |
| *LATE (%)* | 10.44 | 16.37 | 18.66 | 11.86 | 17.49 | 19.16 |
| Observations: *Support ≤ p50* | 767 | 559 | 406 | 767 | 559 | 406 |
| Observations: *Support > p50* | 598 | 435 | 325 | 598 | 435 | 325 |
| Municipality FE | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine heterogeneity in the effect of subsidy funding on entrepreneurship across municipalities below and above the median number of the winning party councillors sitting in the local government (*Winner member*). The dependent variable is the per capita number of all establishments (columns 1-3) and the number of per capita sole proprietorships (columns 4-6). Panel A presents the results for the full sample, and Panel B restricts the sample to municipalities on both sides of the threshold matched on geographical location (same county). "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. LATE (%) represents the percentage change in per capita number of establishments in response to one standard deviation change in per capita Subsidy level. The economic magnitude is calculated by comparing local estimates to the mean value of the dependent variable of the subsample and the mean standard deviation. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 14

*Number of Establishments, Fiscal Transfers, and Party Representation on the Municipal Council*

| Dependent variable | Total establishments per capita | | | Sole proprietorships per capita | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A – Full sample | | | |
| *OLS: # of parties > p50* | 0.354*** | 0.488*** | 0.521*** | 0.385*** | 0.506*** | 0.590*** |
| | (0.087) | (0.121) | (0.151) | (0.090) | (0.114) | (0.147) |
| *LATE (%)* | 10.04 | 14.46 | 15.29 | 14.26 | 19.64 | 22.69 |
| *OLS: # of parties ≤ p50* | 0.223*** | 0.241** | 0.251** | 0.276*** | 0.314*** | 0.279*** |
| | (0.083) | (0.117) | (0.098) | (0.086) | (0.113) | (0.096) |
| *LATE (%)* | 6.973 | 7.786 | 8.277 | 11.18 | 13.11 | 11.88 |
| *RD: # of parties > p50* | 0.355*** | 0.481*** | 0.517*** | 0.387*** | 0.498*** | 0.585*** |
| | (0.089) | (0.120) | (0.153) | (0.093) | (0.115) | (0.149) |
| *LATE (%)* | 10.08 | 14.24 | 15.17 | 14.32 | 19.34 | 22.52 |
| *RD: # of parties ≤ p50* | 0.247*** | 0.291** | 0.322** | 0.305*** | 0.380*** | 0.358*** |
| | (0.087) | (0.135) | (0.125) | (0.092) | (0.131) | (0.125) |
| *LATE (%)* | 7.707 | 9.414 | 10.60 | 12.36 | 15.86 | 15.21 |
| Observations *Parties > p50* | 764 | 478 | 306 | 764 | 478 | 306 |
| Observations *Parties ≤ p50* | 1,216 | 827 | 508 | 1,216 | 827 | 508 |
| Municipality FE | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |
| | | | Panel B – Matched sample | | | |
| *OLS: # of parties > p50* | 0.362*** | 0.698*** | 0.406*** | 0.377*** | 0.696*** | 0.448*** |
| | (0.120) | (0.136) | (0.151) | (0.114) | (0.115) | (0.153) |
| *LATE (%)* | 10.33 | 20.92 | 12.26 | 14.11 | 27.32 | 17.91 |
| *OLS: # of parties ≤ p50* | 0.354*** | 0.390*** | 0.400** | 0.374*** | 0.437*** | 0.387*** |
| | (0.095) | (0.135) | (0.173) | (0.091) | (0.125) | (0.145) |
| *LATE (%)* | 11.13 | 12.58 | 13.20 | 15.13 | 18.11 | 16.44 |
| *RD: # of parties > p50* | 0.354*** | 0.660*** | 0.378*** | 0.368*** | 0.657*** | 0.418*** |
| | (0.118) | (0.132) | (0.142) | (0.112) | (0.112) | (0.144) |
| *LATE (%)* | 10.10 | 19.77 | 11.42 | 13.79 | 25.82 | 16.69 |
| *RD: # of parties ≤ p50* | 0.381*** | 0.448*** | 0.337** | 0.403*** | 0.502*** | 0.325*** |
| | (0.101) | (0.159) | (0.143) | (0.103) | (0.157) | (0.121) |
| *LATE (%)* | 11.98 | 14.46 | 11.10 | 16.28 | 20.81 | 13.82 |
| Observations *Parties > p50* | 484 | 333 | 223 | 484 | 333 | 223 |
| Observations *Parties ≤ p50* | 851 | 651 | 464 | 851 | 651 | 464 |
| Municipality FE | YES | YES | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine heterogeneity in the effect of subsidy funding on entrepreneurship across municipalities below and above the median number of political parties represented in the local government *(# of parties*). The dependent variable is the per capita number of all establishments (columns 1-3) and the number of per capita sole proprietorships (columns 4-6). Panel A presents the results for the full sample, and Panel B restricts the sample to municipalities on both sides of the threshold matched on geographical location (same county). "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. LATE (%) represents the percentage change in per capita number of establishments in response to one standard deviation change in per capita Subsidy level. The economic magnitude is calculated by comparing local estimates to the mean value of the dependent variable of the subsample and the mean standard deviation. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 15

*Number of Establishments, Fiscal Transfers, and Cultural Legacy*

| Dependent variable | | Total establishments per capita | | | Sole proprietorships per capita | | |
|---|---|---|---|---|---|---|---|
| Bandwidth | | <6% | <5% | <4% | <6% | <5% | <4% |
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| *OLS: Prussian* | | 0.289*** | 0.289*** | 0.599*** | 0.386*** | 0.396*** | 0.617*** |
| | | (0.080) | (0.108) | (0.135) | (0.075) | (0.097) | (0.129) |
| | *LATE (%)* | 8.124 | 8.417 | 17.48 | 14.50 | 15.40 | 24.11 |
| *OLS: Austrian* | | 0.211 | 0.449** | 0.306* | 0.187 | 0.343** | 0.285* |
| | | (0.157) | (0.171) | (0.175) | (0.117) | (0.138) | (0.147) |
| | *LATE (%)* | 6.444 | 14.17 | 9.529 | 7.109 | 13.51 | 10.99 |
| *OLS: Russian* | | 0.178** | 0.220** | 0.130 | 0.177*** | 0.228*** | 0.160* |
| | | (0.079) | (0.090) | (0.090) | (0.068) | (0.080) | (0.087) |
| | *LATE (%)* | 6.087 | 7.908 | 4.732 | 7.647 | 10.33 | 7.347 |
| *RD: Prussian* | | 0.282*** | 0.281*** | 0.585*** | 0.377*** | 0.385*** | 0.602*** |
| | | (0.078) | (0.104) | (0.132) | (0.073) | (0.094) | (0.128) |
| | *LATE (%)* | 7.933 | 8.195 | 17.05 | 14.16 | 15.00 | 23.52 |
| *RD: Austrian* | | 0.218 | 0.454** | 0.274* | 0.193 | 0.347** | 0.255* |
| | | (0.163) | (0.183) | (0.161) | (0.122) | (0.145) | (0.133) |
| | *LATE (%)* | 6.670 | 14.34 | 8.519 | 7.358 | 13.67 | 9.821 |
| *RD: Russian* | | 0.205** | 0.289*** | 0.194 | 0.204*** | 0.299*** | 0.237* |
| | | (0.086) | (0.111) | (0.133) | (0.074) | (0.099) | (0.125) |
| | *LATE (%)* | 7.032 | 10.38 | 7.037 | 8.833 | 13.56 | 10.93 |
| Observations *Prussian* | | 1,645 | 1,189 | 728 | 1,645 | 1,189 | 728 |
| Observations *Austrian* | | 394 | 300 | 188 | 394 | 300 | 188 |
| Observations *Russian* | | 1,163 | 805 | 556 | 1,163 | 805 | 556 |
| Municipality FE | | YES | YES | YES | YES | YES | YES |
| County-year FE | | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | | YES | YES | YES | YES | YES | YES |
| First-order polynomial | | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine heterogeneity in the effect of subsidy funding on entrepreneurship across municipalities resulting from historical legacies. Results are estimated separately for municipalities, which between years 1815-1918 belonged to the Kingdom of Prussia (row 1 and 4), the Austrian Empire (row 2 and 5), and Russian Empire (row 3 and 6). The dependent variable is the per capita number of all establishments (columns 1-3) and the number of per capita sole proprietorships (columns 4-6). "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. LATE (%) represents the percentage change in per capita number of establishments in response to one standard deviation change in per capita Subsidy level. The economic magnitude is calculated by comparing local estimates to the mean value of the dependent variable of the subsample and the mean standard deviation. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE 16

*Sensitivity Tests: Number of Establishments and Fiscal Transfers*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Panel A – Excluding election years (2014 and 2018) | | | | | |
| | Total establishments per capita | | | | | |
| *OLS* | 0.217*** | 0.206** | 0.312*** | 0.069 | 0.136** | 0.174** |
| | (0.073) | (0.085) | (0.098) | (0.051) | (0.059) | (0.079) |
| *Fuzzy RD (IV)* | 0.228*** | 0.229** | 0.376*** | 0.077 | 0.169** | 0.259** |
| | (0.075) | (0.091) | (0.098) | (0.059) | (0.082) | (0.113) |
| | Sole proprietorships per capita | | | | | |
| *OLS* | 0.316*** | 0.313*** | 0.363*** | 0.089* | 0.147** | 0.193** |
| | (0.071) | (0.083) | (0.106) | (0.047) | (0.057) | (0.079) |
| *Fuzzy RD (IV)* | 0.331*** | 0.349*** | 0.437*** | 0.099* | 0.183** | 0.288*** |
| | (0.072) | (0.084) | (0.099) | (0.055) | (0.081) | (0.106) |
| Observations | 2,143 | 1,468 | 931 | 1,150 | 761 | 464 |
| | Panel B – Excluding municipalities moving to a lower transfer bracket | | | | | |
| | Total establishments per capita | | | | | |
| *OLS* | 0.301*** | 0.299*** | 0.377*** | 0.183*** | 0.223** | 0.213* |
| | (0.071) | (0.086) | (0.130) | (0.061) | (0.096) | (0.122) |
| *Fuzzy RD (IV)* | 0.321*** | 0.336*** | 0.482*** | 0.220*** | 0.341*** | 0.471** |
| | (0.074) | (0.093) | (0.141) | (0.070) | (0.129) | (0.191) |
| | Sole proprietorships per capita | | | | | |
| *OLS* | 0.354*** | 0.344*** | 0.373*** | 0.159*** | 0.200** | 0.210* |
| | (0.066) | (0.078) | (0.123) | (0.053) | (0.080) | (0.116) |
| *Fuzzy RD (IV)* | 0.378*** | 0.387*** | 0.476*** | 0.192*** | 0.306*** | 0.466** |
| | (0.068) | (0.082) | (0.130) | (0.061) | (0.113) | (0.189) |
| Observations | 2,558 | 1,725 | 1,043 | 952 | 555 | 295 |
| | Panel C – Controlling for other sources of municipal revenue | | | | | |
| | Total establishments per capita | | | | | |
| *OLS* | 0.236*** | 0.276*** | 0.382*** | 0.079*** | 0.090** | 0.119** |
| | (0.055) | (0.072) | (0.094) | (0.030) | (0.044) | (0.059) |
| *Fuzzy RD (IV)* | 0.244*** | 0.295*** | 0.434*** | 0.105** | 0.175** | 0.258** |
| | (0.056) | (0.074) | (0.099) | (0.047) | (0.073) | (0.103) |
| | Sole proprietorships per capita | | | | | |
| *OLS* | 0.288*** | 0.328*** | 0.401*** | 0.081*** | 0.096** | 0.137** |
| | (0.051) | (0.065) | (0.090) | (0.027) | (0.041) | (0.054) |
| *Fuzzy RD (IV)* | 0.297*** | 0.350*** | 0.456*** | 0.109*** | 0.183*** | 0.288*** |
| | (0.052) | (0.067) | (0.093) | (0.042) | (0.067) | (0.096) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

TABLE 16 *(Continued)*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Panel D – Including lagged dependent variable | | | | | | |
| Total establishments per capita | | | | | | |
| *OLS* | 0.254*** | 0.220*** | 0.282*** | 0.093** | 0.146** | 0.180** |
| | (0.058) | (0.054) | (0.062) | (0.043) | (0.057) | (0.072) |
| *Fuzzy RD (IV)* | 0.261*** | 0.233*** | 0.318*** | 0.101** | 0.174** | 0.253** |
| | (0.059) | (0.057) | (0.067) | (0.049) | (0.076) | (0.099) |
| Sole proprietorships per capita | | | | | | |
| *OLS* | 0.285*** | 0.214*** | 0.254*** | 0.094** | 0.149*** | 0.200*** |
| | (0.056) | (0.043) | (0.048) | (0.038) | (0.050) | (0.069) |
| *Fuzzy RD (IV)* | 0.293*** | 0.227*** | 0.286*** | 0.102** | 0.179** | 0.281*** |
| | (0.057) | (0.046) | (0.056) | (0.043) | (0.069) | (0.093) |
| Observations | 3,188 | 2,285 | 1,472 | 1,521 | 988 | 580 |
| Panel E – Alternative clustering of standard errors | | | | | | |
| Total establishments per capita | | | | | | |
| *OLS* | 0.251*** | 0.292*** | 0.400*** | 0.099** | 0.152*** | 0.183** |
| | (0.060) | (0.073) | (0.099) | (0.043) | (0.058) | (0.074) |
| *Fuzzy RD (IV)* | 0.259*** | 0.311*** | 0.452*** | 0.108** | 0.181** | 0.257*** |
| | (0.061) | (0.076) | (0.099) | (0.048) | (0.075) | (0.098) |
| Sole proprietorships per capita | | | | | | |
| *OLS* | 0.304*** | 0.343*** | 0.417*** | 0.102*** | 0.158*** | 0.204*** |
| | (0.057) | (0.067) | (0.097) | (0.038) | (0.051) | (0.073) |
| *Fuzzy RD (IV)* | 0.313*** | 0.365*** | 0.471*** | 0.111** | 0.188*** | 0.286*** |
| | (0.057) | (0.069) | (0.096) | (0.043) | (0.069) | (0.092) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Panel F – Including higher-order polynomials | | | | | | |
| Total establishments per capita | | | | | | |
| *OLS* | 0.257*** | 0.299*** | 0.429*** | 0.107** | 0.167*** | 0.167** |
| | (0.062) | (0.076) | (0.108) | (0.046) | (0.059) | (0.072) |
| *Fuzzy RD (IV)* | 0.266*** | 0.320*** | 0.488*** | 0.117** | 0.202*** | 0.241** |
| | (0.063) | (0.078) | (0.108) | (0.053) | (0.077) | (0.105) |
| Sole proprietorships per capita | | | | | | |
| *OLS* | 0.312*** | 0.352*** | 0.438*** | 0.113*** | 0.177*** | 0.191*** |
| | (0.058) | (0.069) | (0.105) | (0.041) | (0.052) | (0.070) |
| *Fuzzy RD (IV)* | 0.323*** | 0.376*** | 0.498*** | 0.124*** | 0.215*** | 0.276*** |
| | (0.059) | (0.071) | (0.102) | (0.047) | (0.069) | (0.096) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

TABLE 16 *(Continued)*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Panel G – Alternative set of fixed effects | | | | | | |
| Total establishments per capita | | | | | | |
| *OLS* | 0.167*** | 0.162*** | 0.171*** | 0.126*** | 0.143*** | 0.151*** |
| | (0.014) | (0.016) | (0.018) | (0.020) | (0.024) | (0.029) |
| *Fuzzy RD (IV)* | 0.168*** | 0.163*** | 0.172*** | 0.125*** | 0.144*** | 0.154*** |
| | (0.014) | (0.016) | (0.018) | (0.020) | (0.024) | (0.030) |
| Sole proprietorships per capita | | | | | | |
| *OLS* | 0.130*** | 0.125*** | 0.132*** | 0.162*** | 0.185*** | 0.204*** |
| | (0.012) | (0.013) | (0.015) | (0.020) | (0.023) | (0.028) |
| *Fuzzy RD (IV)* | 0.130*** | 0.125*** | 0.133*** | 0.161*** | 0.186*** | 0.208*** |
| | (0.012) | (0.013) | (0.015) | (0.019) | (0.023) | (0.028) |
| Observations | 4,044 | 3,291 | 2,525 | 2,287 | 1,757 | 1,215 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | NO | NO | NO | NO | NO | NO |
| Cutoff-year FE | NO | NO | NO | NO | NO | NO |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) for several sensitivity tests. Regressions replicate the results presented in Table 5 for the sample excluding election years (Panel A) and municipalities moving to lower transfer bracket (Panel B). In Panel C, specifications are saturated with control variables – sources of municipal revenue other than *Subsidy*. In Panel D, specifications control for the lagged dependent variable. Panel E shows the results with alternative clustering of standard errors (clustered at the county level). The estimates in Panel F are obtained with specifications, including higher-order polynomials. In Panel G results are obtained using specifications excluding fixed effects. Dependent variables include the number of per capita all establishments and per capita sole proprietorships. In columns 1-3, specifications include dependent and independent variables (law-implied *Subsidy* transfers) expressed in levels. In columns 4-6, variables are expressed in first differences. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

# ONLINE APPENDIX

TABLE A.1

*Alternative bandwidth selection method*

| Bandwidth | MSERD | | CERRD | |
|---|---|---|---|---|
| | *OLS* | *Fuzzy RD (IV)* | *OLS* | *Fuzzy RD (IV)* |
| | *(1)* | *(2)* | *(3)* | *(4)* |
| | Panel A - Total establishments per capita | | | |
| Law-implied transfers per capita | 0.138*** | 0.138*** | 0.166*** | 0.167*** |
| | (0.026) | (0.026) | (0.033) | (0.033) |
| | Panel B - Sole proprietorships per capita | | | |
| Law-implied transfers per capita | 0.173*** | 0.173*** | 0.201*** | 0.202*** |
| | (0.025) | (0.025) | (0.031) | (0.031) |
| | Panel C - Private sector establishments per capita | | | |
| Law-implied transfers per capita | -0.021** | -0.021** | -0.022* | -0.022* |
| | (0.010) | (0.010) | (0.012) | (0.012) |
| | Panel D - Public sector establishments per capita | | | |
| Law-implied transfers per capita | -0.005 | -0.005 | -0.004 | -0.004 |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Observations | 8,473 | 8,473 | 6,493 | 6,493 |
| Municipality FE | YES | YES | YES | YES |
| County-year FE | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) for tests re-examining the entrepreneurial effects of *Subsidy* transfers presented in Table 5 with bandwidths selected using methods proposed by Calonico et al. (2014) and Calonico et al. (2020). In columns 1-2, the bandwidth is selected using the one-sided Mean Square Error (MSE) optimal bandwidth selector and in columns 3-4 using the one-sided Coverage Error Rate (CER) optimal bandwidth selector, in both cases adjusted for clustering of standard errors at the municipality level. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE A.2

*Additional Summary Statistics*

| Variable | Observations | Mean | SD | Min | Median | Max |
|---|---|---|---|---|---|---|
| Direct grants | 17,276 | 16,200,000 | 42,200,000 | 558,114.800 | 8,394,486 | 1,130,000,000 |
| Direct grants per capita | 17,276 | 1,185.537 | 578.810 | 142.159 | 1,092.372 | 14,033.05 |
| European Union funds | 17,276 | 3,451,100 | 17,900,000 | 0 | 1,024,288 | 960,000,000 |
| European Union funds per capita | 17,276 | 211.701 | 309.192 | 0 | 119.423 | 13,559.42 |
| Other subsidy | 17,276 | 501,931.3 | 2,504,769 | 0 | 85,098.93 | 88,700,000 |
| Other subsidy per capita | 17,276 | 19.991 | 31.592 | 0 | 10.917 | 1,557.868 |
| Debt expenses | 17,276 | 744,834.9 | 3,549,991 | 0 | 244,985.9 | 117,000,000 |
| Debt expenses per capita | 17,276 | 38.163 | 39.959 | 0 | 31.42 | 2,580.229 |
| Total establishments annual growth rate % | 14,790 | 2.032 | 5.294 | -81.134 | 461.088 | 14,790 |
| Sole proprietorships annual growth rate % | 14,790 | 1.952 | 4.756 | -76.901 | 353.581 | 14,790 |
| Total establishments 0-9 employees | 17,276 | 1,459.13 | 5,451.843 | 56 | 504.5 | 135,088 |
| Total establishments 0-9 employees per capita | 17,276 | 0.075 | 0.034 | 0.026 | 0.069 | 0.813 |
| Total establishments 10-49 employees | 17,276 | 53.562 | 196.081 | 1 | 20 | 4,929 |
| Total establishments 10-49 employees per capita | 17,276 | 0.003 | 0.001 | <0.001 | 0.003 | 0.016 |
| Total establishments 50+ employees | 17,276 | 12.133 | 48.208 | 0 | 3 | 1,123 |
| Total establishments 50+ employees per capita | 17,276 | <0.001 | <0.001 | 0 | <0.001 | 0.005 |
| Sole proprietorships 0-9 employees | 17,276 | 1,100.617 | 3,710.673 | 32 | 410 | 87,185 |
| Sole proprietorships 0-9 employees per capita | 17,276 | 0.060 | 0.024 | 0.015 | 0.056 | 0.309 |
| Sole proprietorships 10-49 employees | 17,276 | 12.102 | 35.361 | 0 | 5 | 783 |
| Sole proprietorships 10-49 employees per capita | 17,276 | 0.001 | <0.001 | 0 | 0.001 | 0.005 |
| Sole proprietorships 50+ employees | 17,276 | 0.516 | 1.720 | 0 | 0 | 45 |
| Sole proprietorships 50+ employees per capita | 17,276 | <0.001 | <0.001 | 0 | 0 | 0.001 |
| Private sector establishments 0-9 employees | 17,276 | 321.147 | 1,627.042 | 5 | 79 | 45,431 |
| Private sector establishments 0-9 employees per capita | 17,276 | 0.014 | 0.014 | 0.002 | 0.011 | 0.634 |
| Private sector establishments 10-49 employees | 17,276 | 29.850 | 145.722 | 0 | 7 | 3,953 |
| Private sector establishments 10-49 employees per capita | 17,276 | 0.001 | 0.001 | 0 | 0.001 | 0.009 |
| Private sector establishments 50+ employees | 17,276 | 6.534 | 29.787 | 0 | 1 | 763 |
| Private sector establishments 50+ employees per capita | 17,276 | <0.001 | <0.001 | 0 | <0.001 | 0.004 |
| Public sector establishments 0-9 employees | 17,276 | 29.881 | 101.760 | 0 | 9 | 2,557 |
| Public sector establishments 0-9 employees per capita | 17,276 | 0.002 | 0.002 | 0 | 0.001 | 0.026 |
| Public sector establishments 10-49 employees | 17,276 | 11.603 | 17.664 | 0 | 7 | 375 |
| Public sector establishments 10-49 employees per capita | 17,276 | 0.001 | <0.001 | 0 | 0.001 | 0.004 |
| Public sector establishments 50+ employees | 17,276 | 5.079 | 17.602 | 0 | 1 | 335 |
| Public sector establishments 50+ employees per capita | 17,276 | <0.001 | <0.001 | 0 | <0.001 | 0.003 |
| Construction industry establishments | 17,276 | 187.515 | 533.386 | 4 | 88 | 12,196 |
| Construction industry establishments per capita | 17,276 | 0.012 | 0.005 | 0.001 | 0.011 | 0.061 |
| Farming industry establishments | 17,276 | 31.393 | 34.272 | 0 | 23 | 539 |
| Farming industry establishments per capita | 17,276 | 0.004 | 0.003 | 0 | 0.003 | 0.065 |
| Finance industry establishments | 17,276 | 44.924 | 207.207 | 0 | 11 | 4,583 |
| Finance industry establishments per capita | 17,276 | 0.002 | 0.001 | 0 | 0.001 | 0.014 |

| | | | | | | |
|---|---|---|---|---|---|---|
| IT industry establishments | 17,276 | 41.765 | 294.191 | 0 | 6 | 10,115 |
| IT industry establishments per capita | 17,276 | 0.001 | 0.001 | 0 | 0.001 | 0.017 |
| Services industry establishments | 17,276 | 98.873 | 351.760 | 1 | 36 | 8,763 |
| Services industry establishments per capita | 17,276 | 0.005 | 0.002 | 0 | 0.005 | 0.026 |
| Manufacturing industry establishments | 17,276 | 140.591 | 454.862 | 2 | 56 | 10,356 |
| Manufacturing industry establishments per capita | 17,276 | 0.008 | 0.004 | 0.001 | 0.007 | 0.061 |
| Real estate industry establishments | 17,276 | 84.359 | 417.585 | 0 | 9 | 11,019 |
| Real estate industry establishments per capita | 17,276 | 0.003 | 0.005 | 0 | 0.001 | 0.088 |
| Retail industry establishments | 17,276 | 387.451 | 1,332.526 | 6 | 133 | 29,438 |
| Retail industry establishments per capita | 17,276 | 0.020 | 0.013 | 0.003 | 0.018 | 0.563 |
| Expenses on agriculture, forestry, fishery | 17,276 | 1,204,982 | 2,235,595 | 0 | 656,803 | 118,000,000 |
| Expenses on agriculture, forestry, fishery per capita | 17,276 | 162.777 | 241.969 | 0 | 95.414 | 6,392.497 |
| Expenses on education | 17,276 | 21,900,000 | 62,900,000 | 1,497,103 | 10,500,000 | 1,530,000,000 |
| Expenses on education per capita | 17,276 | 1,383 | 319.638 | 647.345 | 1,335.714 | 7,397.877 |
| Expenses on health care | 17,276 | 592,253 | 2,938,775 | 4,512 | 125,107 | 108,000,000 |
| Expenses on health care per capita | 17,276 | 23.105 | 34.919 | 1.122 | 16.488 | 1,651.827 |
| Expenses on IT | 17,276 | 54,548 | 478,869 | 0 | 0 | 33,100,000 |
| Expenses on IT per capita | 17,276 | 5.869 | 51.573 | 0 | 0 | 2,018.442 |
| Expenses on manufacturing | 17,276 | 18,876 | 394,153 | 0 | 0 | 27,800,000 |
| Expenses on manufacturing per capita | 17,276 | 0.677 | 13.407 | 0 | 0 | 789.889 |
| Expenses on real estate management | 17,276 | 2,326,666 | 13,100,000 | 0 | 352,836 | 375,000,000 |
| Expenses on real estate management per capita | 17,276 | 88.594 | 127.354 | 0 | 46.407 | 4,127.026 |
| Expenses on recreation | 17,276 | 4,495,939 | 17,700,000 | 45,337 | 1,424,630 | 530,000,000 |
| Expenses on recreation per capita | 17,276 | 235.506 | 224.059 | 11.481 | 180.493 | 8,268.910 |
| Expenses on services | 17,276 | 394,621 | 3,503,824 | 0 | 55,359 | 214,000,000 |
| Expenses on services per capita | 17,276 | 12.299 | 33.128 | 0 | 6.702 | 2,401.172 |
| Expenses on social assistance | 17,276 | 13,400,000 | 34,700,000 | 776,996 | 6,620,899 | 1,060,000,000 |
| Expenses on social assistance per capita | 17,276 | 945.617 | 473.568 | 180.644 | 770.992 | 4,542.419 |
| Expenses on transportation | 17,276 | 7,986,626 | 47,500,000 | 0 | 2,011,612 | 1,300,000,000 |
| Expenses on transportation per capita | 17,276 | 333.909 | 354.134 | 0 | 248.360 | 12,839.230 |
| Expenses on utilities | 17,276 | 222,099 | 963,789 | 0 | 0 | 48,200,000 |
| Expenses on utilities per capita | 17,276 | 27.362 | 86.318 | 0 | 0 | 3,511.678 |
| Other expenses | 17,276 | 8,609,292 | 35,300,000 | 211,390 | 2,956,640 | 1,160,000,000 |
| Other expenses per capita | 17,276 | 480.195 | 713.003 | 65.126 | 367.378 | 35,356 |
| Patent applications (all) | 17,276 | 1.459 | 12.666 | 0 | 0 | 380 |
| Patent applications (individual inventor) | 17,276 | 0.789 | 3.983 | 0 | 0 | 110 |
| Winning party council members/total members | 17,276 | 0.538 | 0.161 | 0.174 | 0.533 | 1 |
| Number of parties on municipality council | 17,276 | 4.356 | 1.567 | 1 | 4 | 11 |
| Net migration per capita | 14,805 | 0.005 | 0.005 | 0 | 0.004 | 0.078 |
| Residents inflow per capita | 14,805 | 0.012 | 0.003 | 0.003 | 0.011 | 0.039 |
| Residents outflow per capita | 14,805 | 0.011 | 0.006 | 0.000 | 0.010 | 0.097 |
| Unemployed total (persons) | 17,276 | 622 | 1304 | 13 | 343 | 42,180 |
| Unemployment rate – total | 17,276 | 7.64 | 3.78 | 0.70 | 7.10 | 28.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Unemployment rate – women | 17,276 | 8.71 | 4.23 | 0.90 | 8.00 | 32.20 |
| Unemployment rate – men | 17,276 | 6.74 | 3.64 | 0.50 | 6.20 | 28.20 |
| Average wage in private sector | 15,852 | 2,856.135 | 710.857 | 1,073.900 | 2,736.760 | 8,535.21 |
| Average wage in private sector (ln) | 15,852 | 7.929 | 0.234 | 6.979 | 7.915 | 9.052 |
| Average wage in public sector | 15,852 | 3,965.742 | 442.622 | 2,285.000 | 3,922.775 | 7,362.18 |
| Average wage in public sector (ln) | 15,852 | 8.279 | 0.109 | 7.734 | 8.275 | 8.904 |
| Average wage in industries with an increase in sole proprietorships | 15,295 | 1,841.929 | 1,268.979 | 0 | 1,874.927 | 8,893.517 |
| Average wage in industries with an increase in sole proprietorships (ln) | 12,540 | 7.596 | 0.522 | 5.745 | 7.702 | 9.093 |
| Average wage in industries with a decrease in sole proprietorships | 12,951 | 1,101.833 | 1,767.754 | 0 | 0 | 10,447.01 |
| Average wage in industries with a decrease in sole proprietorships (ln) | 4,685 | 7.873 | 0.557 | 6.263 | 7.913 | 9.254 |

TABLE A.3

*Law-implied Supplementary vs. Law-implied Base subsidy*

| Local estimates | In levels | | | In first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Law-implied Base subsidy per capita | 0.074** | 0.071 | 0.070 | 0.019 | -0.006 | -0.005 |
| | (0.029) | (0.046) | (0.054) | (0.014) | (0.027) | (0.047) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes:* The table reports OLS coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses) obtained using specification 3. Regressions associate the law-implied level of per capita *Supplementary subsidy* transfers to law-implied per capita *Base subsidy* transfers. In columns 1-3, variables are expressed in levels. In columns 4-6, variables are expressed in first differences. "Yes" indicates that the set of fixed effects or first-order polynomial is included. "No" indicates that the set of fixed effects or first-order polynomial is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE A.4

*Number of Establishments and Fiscal Transfers by Cutoff*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | | | Panel A - *Cutoff 1: 0.92X* | | | |
| | | | Total establishments per capita | | | |
| *OLS* | 0.532** | 0.513* | 0.698* | 0.848*** | 1.110*** | 1.210** |
| | (0.258) | (0.293) | (0.402) | (0.236) | (0.301) | (0.463) |
| *Fuzzy RD (IV)* | 0.548** | 0.531* | 0.687* | 0.888*** | 1.134*** | 1.274** |
| | (0.258) | (0.293) | (0.392) | (0.245) | (0.308) | (0.493) |
| | | | Sole proprietorships per capita | | | |
| *OLS* | 0.577** | 0.574** | 0.771** | 0.878*** | 1.179*** | 1.243*** |
| | (0.230) | (0.269) | (0.368) | (0.196) | (0.243) | (0.365) |
| *Fuzzy RD (IV)* | 0.595** | 0.594** | 0.758** | 0.919*** | 1.205*** | 1.309*** |
| | (0.230) | (0.269) | (0.360) | (0.207) | (0.249) | (0.391) |
| Observations | 656 | 468 | 310 | 360 | 218 | 138 |
| | | | Panel B - *Cutoff 2: 0.75X* | | | |
| | | | Total establishments per capita | | | |
| *OLS* | 0.326*** | 0.325** | 0.335* | 0.301** | 0.187 | 0.158* |
| | (0.117) | (0.146) | (0.196) | (0.135) | (0.114) | (0.094) |
| *Fuzzy RD (IV)* | 0.382*** | 0.448** | 0.630* | 0.675*** | 0.548 | 0.778 |
| | (0.133) | (0.176) | (0.320) | (0.225) | (0.355) | (0.587) |
| | | | Sole proprietorships per capita | | | |
| *OLS* | 0.423*** | 0.321** | 0.322* | 0.273** | 0.156 | 0.193* |
| | (0.111) | (0.141) | (0.185) | (0.120) | (0.107) | (0.099) |
| *Fuzzy RD (IV)* | 0.496*** | 0.442** | 0.605* | 0.611** | 0.455 | 0.949 |
| | (0.118) | (0.176) | (0.313) | (0.259) | (0.404) | (0.724) |
| Observations | 918 | 596 | 369 | 458 | 284 | 152 |
| | | | Panel C - *Cutoff 3: 0.40X* | | | |
| | | | Total establishments per capita | | | |
| *OLS* | 0.133 | 0.597*** | 0.577*** | 0.868 | 0.854 | 0.578 |
| | (0.249) | (0.208) | (0.177) | (0.544) | (0.513) | (0.603) |
| *Fuzzy RD (IV)* | 0.130 | 0.555*** | 0.520*** | 0.847 | 0.802 | 0.535 |
| | (0.242) | (0.188) | (0.150) | (0.525) | (0.490) | (0.572) |
| | | | Sole proprietorships per capita | | | |
| *OLS* | 0.023 | 0.319 | 0.298 | 0.736 | 0.685 | 0.387 |
| | (0.192) | (0.212) | (0.182) | (0.505) | (0.486) | (0.578) |
| *Fuzzy RD (IV)* | 0.023 | 0.296 | 0.269* | 0.719 | 0.643 | 0.358 |
| | (0.187) | (0.195) | (0.158) | (0.482) | (0.453) | (0.538) |
| Observations | 246 | 172 | 126 | 111 | 77 | 58 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

*Notes*: The table reports OLS and fuzzy-RD coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine the entrepreneurial effects of *Subsidy* transfers separately for each cutoff explained in Figure 1. Dependent variables include per capita number of all establishments in the municipality and per capita number of sole proprietorships. In columns 1-3, specifications include dependent and independent variables (law-implied *Subsidy* transfers) that are expressed in levels. In columns 4-6, variables are expressed in first differences. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

TABLE A.5

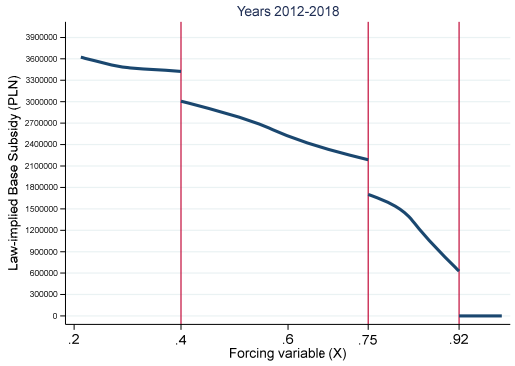
*Population and Fiscal Transfers*

| Local estimates | in levels | | | in first differences | | |
|---|---|---|---|---|---|---|
| Bandwidth | <6% | <5% | <4% | <6% | <5% | <4% |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Population (log) | | | | | |
| *OLS* | -0.00012 | -0.00016 | -0.00005 | -0.00001 | -0.00001 | 0.00006 |
| | (0.00017) | (0.00018) | (0.00026) | (0.00007) | (0.00009) | (0.00012) |
| Observations | 3,202 | 2,294 | 1,475 | 1,522 | 989 | 581 |
| Municipality FE | YES | YES | YES | NO | NO | NO |
| County-year FE | YES | YES | YES | YES | YES | YES |
| Cutoff-year FE | YES | YES | YES | YES | YES | YES |
| First-order polynomial | YES | YES | YES | YES | YES | YES |

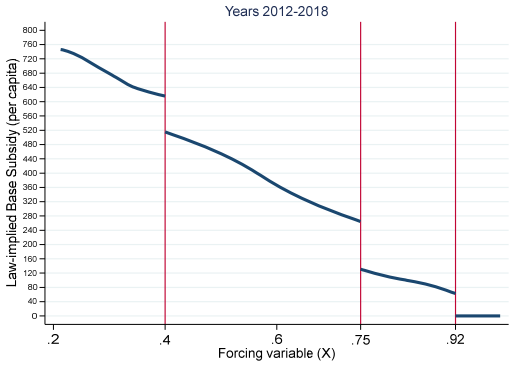
*Notes*: The table reports OLS coefficients and heteroscedasticity-adjusted standard errors clustered at the municipality level (in parentheses). Regressions examine the effect of *Subsidy* transfers on municipalities population. Dependent variable includes the logarithm of total population in the municipality and the explanatory variable is the logarithm of *Subsidy* transfers. In columns 1-3, specifications include dependent and independent variables expressed in levels. In columns 4-6, variables are expressed in first differences. "Yes" indicates that the set of fixed effects and first-order polynomial is included. "No" indicates that the set of fixed effects is not included. ***, ** and * indicate significance at the 1%, 5% and 10% level respectively.

FIGURE A.1
DISCONTINUITY IN LAW IMPLIED BASE SUBSIDY TRANSFERS AROUND EACH CUTOFF

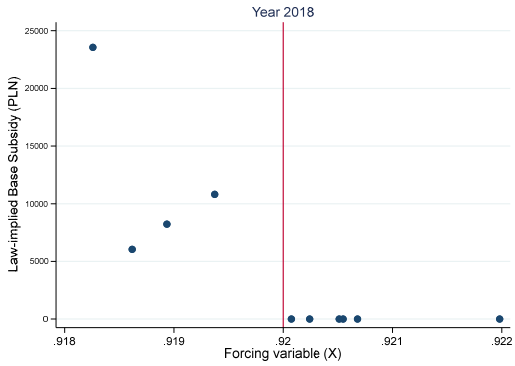
PANEL A




PANEL B




PANEL C




PANEL D

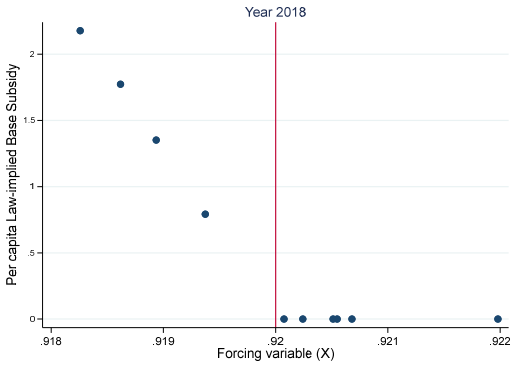


FIGURE A.2
MANIPULATION TESTS BY YEAR- MCCRARY DENSITY TEST

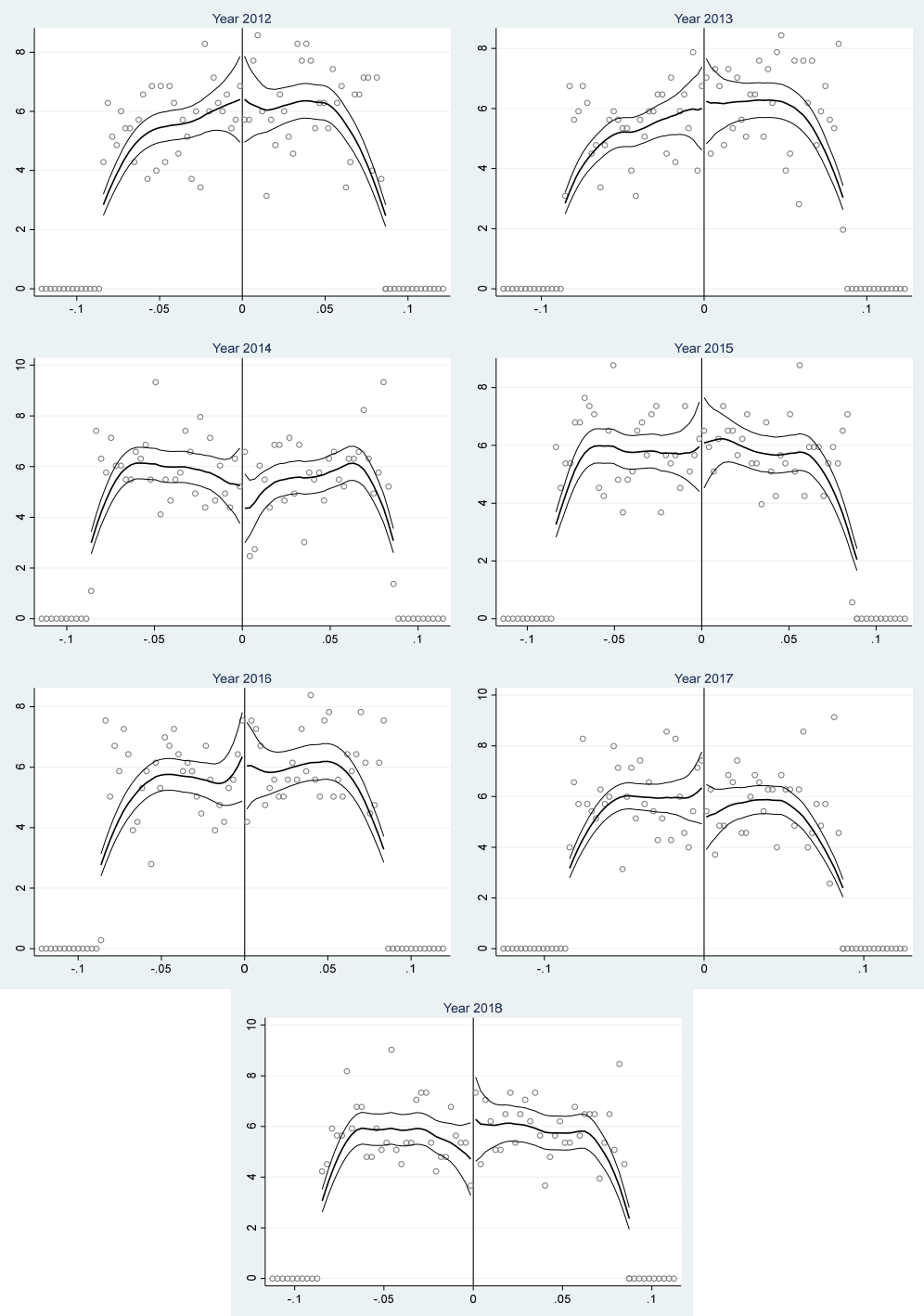
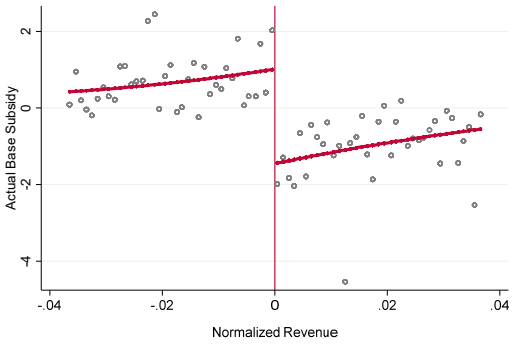
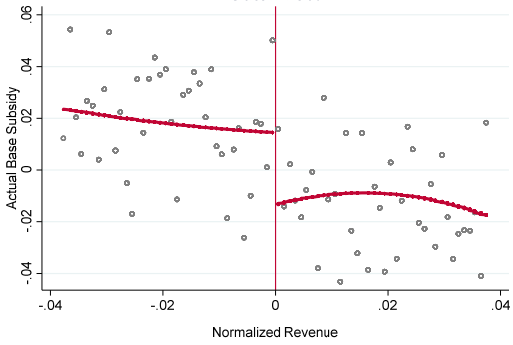



FIGURE A.3
ACTUAL AND LAW IMPLIED REGIONAL TRANSFERS AROUND EACH CUTOFF

PANEL A




PANEL B




PANEL C

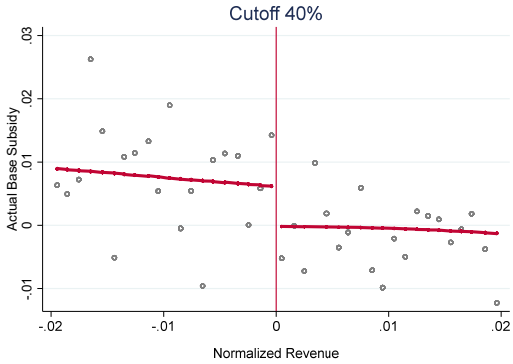


FIGURE A.4
LAW-IMPLIED SUPPLEMENTARY SUBSIDY TRANSFERS AROUND BASE SUBSIDY THRESHOLDS