Reply to Malgouyres Mayer Mazet-Sonilhac Comment on Suárez Serrato and Zidar (AER 2016)

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Summarized Assessment

In a recent comment, Malgouyres, Mayer, and Mazet-Sonilhac (2020, MMM-S hereafter) make a number of interrelated observations on Suárez Serrato and Zidar (AER 2016, SZ hereafter). We itemize them below and provide a summary assessment of each. We believe MMM-S contributes several useful points, especially regarding the compositional margin and the effect of the cost of capital on establishment location. Some of criticisms—identification of parameters and dependence of incidence estimates on the product demand elasticity—can be addressed via minor modifications of the approach in SZ or by relying on the non-tax shocks in SZ Section VI for identification. Overall, the bottom line conclusion that firm owners bear a substantial portion of incidence is not sensitive to any of these comments.

MMM-S Observations:

1. The SZ model does not account for **compositional margin**, which is the effect of tax changes on average idiosyncratic firm productivity. Intuitively, after a tax cut, firms with marginal productivity draws will enter/stay, so one needs to account for changing firm composition when analyzing the labor market effects of local tax changes. We agree, and believe that MMM-S's comment provides valuable work that shows how to change the derivations and the mapping from reduced-form coefficients to incidence to account for the compositional margin.

2. MMM-S highlight that SZ were inconsistent in terms of whether or not the **cost of capital** ρ varied across locations. We agree, and believe that MMM-S's treatment of the establishment location expression is correct and useful.

3. SZ model parameters are no longer **identified** by the same reduced-form effects when accounting for composition margin. However, the view that parameters can not be identified by reduced-form effects of tax cuts when accounting for the composition margin is too strong. We show below that incorporating the intensive margin effect on labor demand in MMM-S helps identify both model parameters and incidence.

4. **Parameter value for product demand elasticity** ε^{PD}. MMM-S emphasize that identifying ε^{PD} is necessary to estimate the incidence on firm owners using reduced-form effects. We disagree and provide reduced-form estimates of incidence on firm owners that account for the compositional margin and do not require identifying ε^{PD}. MMM-S also observe that the expression for ε^{PD} in terms of reduced-form parameters results in estimates of the wrong sign. However, this observation is not a new contribution—it was known and discussed in SZ in section V of the paper (see the paragraph on page 2612 starting "Panel B of Table 1 ..."). One reason for adding the other shocks in the structural section VI (see e.g., SZ Tables 6 and 7) was to bring in more data to help estimate the structural parameters. Indeed, we show below that we obtain similar estimates of incidence based on full model in section VI of SZ which includes non-tax shocks.

5. **Quantitative Importance**. MMM-S find that the share of incidence on firm owners is closer to 25% (than to the 40% initially reported). They come to this conclusion calibrating output elasticities and ε^{PD} and combining them with the reduced-form estimates on wages and rents. Their calculation is correct. However, they motivate this calculation based on identification concerns regarding ε^{PD} and argue that the share of incidence of firm owners decreases with ε^{PD}. We show below that one can estimate firm owner incidence without calibrating ε^{PD} building on the expressions in MMM-S. Taking these new firm incidence expressions to the data reveals that firm owners bear a substantial share that is closer to SZ's original estimates. We further update our structural estimation to account for the composition margin and the role of cost of capital and find similar results. For example, in Column 1 of Table 4, we find that the firm owner incidence when accounting for the MMM-S considerations is 32.5%. We also show that adding the $\dot{l}$ moments is not necessary in the full model (SZ section VI). Our incidence estimates in the structural model that account for the composition margin and the cost of capital are quite similar to our originally reported baseline results. While the 25% estimate cited by MMM-S is within the confidence interval of the original and our new estimates, we do not find that the incidence on firm owners is directly dependent on having a small estimate of ε^{PD}, as claimed by MMM-S.

1 Compositional Margin

MMM-S are right that SZ does not account for compositional margin. They derive how things change, which is a valuable contribution. Their analysis complements our original paper nicely and we welcome this useful work. Three points are worth considering.

First, the implied compositional effect $\dot{z}$ is quite large. Economically, accounting for compositional changes is large enough to undo the change in labor demand from substitution and scale effects, which are big effects quantitatively. An important open question is how large these compositional effects are empirically.

Second, a key goal of SZ was to use a model to inform the applied econometrician which effects of taxes to measure and how to combine them to analyze welfare. In that spirit, we use the insights of MMM-S to highlight that a key reduced-form effect is the effect on the intensive margin of labor demand ($\dot{l}$).

Third, in section 4, we propose trying to bring in a little more data on the compositional margin using $\dot{l}$, which allows the data to govern how important this margin is. When we use this new data and combine it with other model restrictions to study incidence when accounting for the compositional margin, we continue to find that firm owners bear a substantial portion of the incidence of local business taxes.

2 Cost of Capital

MMM-S highlight that SZ were inconsistent in terms of whether or not the cost of capital ρ varied across locations. MMM-S highlight that in the establishment location equation, the cost of capital in SZ is ρ for every c but in the firm owner profit expression, the local business tax affects firm owners by changing the cost of capital. MMM-S update to the establishment location equation correctly includes $\frac{\delta}{\sigma^F}$ (see MMM-S equation 4 versus equation 9'SZ). SZ did not include the cost of capital difference in the location equation based on the assumption that the renting capital cost the same amount in all locations. However, this exclusion was inconsistent with the effects on firm owners and should have included the $\frac{\delta}{\sigma^F}$ term as an additional margin through which taxes affect firm location (in addition to the direct effects of keep rates on after-tax profits, which is in both MMM-S equation 4 and 9'SZ).

3 Identification

MMM-S claim that our parameters are no longer identified when accounting for the composition margin. However, we show that one can identify parameters of interest and incidence in the updated framework using the business tax shock. We show how to do that and what the implications for the estimates for parameters and incidence are below.

- Parameters: Specifically, adding the effect of taxes on the intensive margin of labor demand ($\dot{l}$) to our four-equation system in SZ equation 16 point identifies the product demand elasticity ε^{PD} and the dispersion of firm productivity σ^F.
- Incidence: Combined with the other reduced-form effects in our model, we show how to estimate the incidence of corporate tax cuts on landowners, workers, and firm owners while accounting for the compositional margin. We update the reduced-form and structural equations and provide expressions showing how to identify incidence using reduced-form effects without having to make assumptions on ε^{PD}. Illustrating that assumptions on ε^{PD} are not needed addresses some of the concerns in MMM-S, which describes how ε^{PD} affects incidence.

In addition, in the structural model in Section VI of SZ, the model parameters are also identified by auxiliary shocks and estimating the structural model when accounting for the compositional margin and the cost of capital change delivers similar results to those originally reported in SZ.

First, in subsection 3.1, we take a direct approach for estimating firm owner effects and incidence using reduced-form effects that incorporate the intensive margin labor demand expression (MMM-S equation 19). Second, in subsection 3.2, we shows how to identify $(1+\varepsilon^{PD})$ and σ^F in terms of reduced-form effects in the MMM-S setting that accounts for the composition margin.

3.1 Direct Approach for quantifying profit impacts and incidence

We can use the profit equation in SZ (SZ equation 12) and the intensive margin labor equation (MMM-S equation 19) to derive an expression for the effect on firm owners in terms of reduced-form effects.

$$\dot{\pi} = 1 + (\gamma(1 + \varepsilon^{PD}))\dot{w} - (1 + \varepsilon^{PD})\delta \tag{1}$$

$$\dot{l} = (\gamma(1 + \varepsilon^{PD}) - 1)\dot{w} - (1 + \varepsilon^{PD})\delta \tag{2}$$

$$\dot{\pi} = 1 + \dot{w} + \dot{l} \tag{3}$$

The first equation, which is Equation 12 from SZ, relates the change in firm profits $\dot{\pi}$ to changes in wages $\dot{w}$ and other parameters, which include the output elasticities of labor (γ) and capital (δ) and the product demand elasticity ε^{PD}. The second equation, which is 19 from MMM-S, relates $\dot{l}$ to the change in wages and parameters. Inspecting both equations reveals that $\dot{\pi} = 1 + \dot{w} + \dot{l}$.

We can use this expression in equation 3 to estimate the impact on profits as 1 plus the sum of the effects on wages and on the intensive margin of labor demand (i.e., the change in labor demand that does not relate to (1) firm location decisions $\dot{E}$ or (2) the composition margin $\dot{z}$). Importantly, this expression does not depend on the product demand elasticity ε^{PD}. We report the estimates for firm profits in section 4 using this approach.

3.2 Identification of Parameter Values Using Reduced-Form Effects

We can also use expressions from SZ and MMM-S to show how combinations of reduced-form effects can identify structural parameters of interest. We discuss the four equations that we use to do this exercise and then provide the resulting expressions for parameters. The derivations are in Appendix section 6.1.

We take the following four equations from SZ and MMM-S as inputs:

$$\dot{\pi} = -\dot{z} \tag{4}$$

$$\dot{\pi} = 1 + \dot{l} + \dot{w} \tag{5}$$

$$\dot{E} = \frac{\delta}{\sigma^F} - \frac{1}{(1 + \varepsilon^{PD})\sigma^F} - \frac{\gamma}{\sigma^F}\dot{w} \tag{6}$$

$$\dot{z} = (1 + \varepsilon^{PD})\sigma^F \dot{E} \tag{7}$$

The first equation comes from comparing equation 1 (from SZ 12) with MMM-S equation 20. It shows that the change in profits is one minus the change in the compositional margin. The second equation 5 was derived and discussed above in section 3.1. The third equation is MMM-S equation 18. It relates the change in establishments to parameters and changes in wages. The fourth equation is MMM-S equation 15.

Appendix section 6.1 shows how one can use these four equations to identify structural parameters of interest:

$$(1 + \varepsilon^{PD}) = -\frac{\dot{l} + \dot{w}}{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)} \tag{8}$$

$$\sigma^F = \frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{\dot{E}} \frac{1 + \dot{l} + \dot{w}}{\dot{l} + \dot{w}} \tag{9}$$

The first expression shows that the product demand elasticity ε^{PD} can be identified using changes in the intensive margin of labor demand, changes in wages, and output elasticities. The second shows that the dispersion in idiosyncratic productivity draws σ^F can be identified using the same inputs as well as the change in the number of establishments $\dot{E}$.

4 Implications for estimates accounting for compositional margin and cost of capital

This section reviews how MMM-S arrive at the estimate of 25% on firm owners. We then implement the direct reduced-form approach described in section 3.1 and then implement the structural approach. We find that both sets of estimates result in a substantial share of incidence on firm owners.

4.1 Review of MMS-S Approach to Estimation

MMM-S calibrate the incidence of state corporate tax cuts using two of the SZ reduced-form estimates (on wages and rents) as well as calibrated values of output elasticities and the product demand elasticity ε^{PD}. They then use these inputs to produce MMM-S table 1, which shows estimated impacts on workers, landowners, and firm owners and respective incidence shares. They find that the share of incidence on firm owners is closer to 25% (than to the 40% initially reported). This specific calculation is correct (though MMM-S swap the labels for workers and landowners).[1] However, they motivate this calculation based on identification concerns regarding ε^{PD}.

We show that one can estimate firm owner incidence without calibrating ε^{PD} building on the expressions in MMM-S. Taking these new firm incidence expressions to the data reveal that firm owners bear a substantial share that is closer to SZ's original estimates. We further update our structural estimation to account for the composition margin and the role of cost of capital and find similar results. While the 25% estimate is within the confidence interval of the original and our new estimates, we do not find that the incidence on firm owners is directly dependent on having a small estimate of ε^{PD}, as suggested by MMM-S.

4.2 Adding the Intensive Margin Labor Response $\dot{l}$

To implement the approach that adds $\dot{l}$, we need to measure $\dot{l}$. We use data at the CONSPUMA-year level on the number of employees per establishment from the US Census's Business Dynamics Statistics. This measure of average firm size ideally would only focus on establishments that were present prior to the tax change. However, given the relatively short turn around time for responding to comments, we use this measure since it is more readily available. Our measure is conservative in the sense that new entrants are likely to be less productive than existing establishments. Future work could improve on this measure using administrative data such as in Giroud Rauh (2019) to estimate $\dot{l}$.[2]

Table 1 shows the reduced-form effects (analogous to those in SZ Table 4) for employees per establishment. It shows that following a business tax cut, employees per establishment increase by 0.99 percentage points, though this estimate is somewhat imprecise with a standard error of 0.76. The specification that also includes Bartik shocks results in a point estimate of 0.51 and a similar standard error.

4.3 Estimates Using Direct Reduced-Form Approach in section 3.1

This subsection presents estimates of the effects on firm owners and incidence that build on the work of MMM-S using the direct approach described in section 3.1. Specifically, we can add this new estimate on $\dot{l}$ to one plus the reduced-form effects on wages to estimate the effect on firm owners.

Table 2 reports the results (which follow Table 5 in SZ but with a different approach for firm owner impacts and incidence that does not depend on ε^{PD}). These updated results show even larger impacts on firm owners, which results in incidence share estimates of around 60% and include in the confidence interval the original estimates of 40%. As in our original approach, we support the reduced-form approach by bringing in additional moments to discipline our estimates of structural parameters and incidence.

[1] Comparing SZ Table 5 and MMM-S Table 1 reveals that the impact on landowners and workers should be 1.17 and 1.1, not visa versa as in Table 1 of MMM-S. The shares should also be swapped.

[2] Giroud, Xavier, and Joshua D. Rauh. 2019. State Taxation and the Reallocation of Busi-ness Activity: Evidence from Establishment-Level Data.Journal of Political Economy, 127: 3.

4.4 Estimates Using Structural Approach

4.4.1 Simultaneous equation model

To implement our structural approach while accounting for the compositional margin and cost of capital, we need to first characterize the structural model (similar to SZ equation 16, but with the Bartik and personal tax shocks as reported in Tables 6 and 7 Panel A). The updated structural form is as follows:

$$\mathbf{A}\mathbf{Y}_{c,t} = -\mathbf{B}\mathbf{Z}_{c,t} + \epsilon_{c,t}$$

where $\mathbf{Y}_{c,t} = \begin{bmatrix} \Delta \ln N_{c,t} \\ \Delta \ln w_{c,t} \\ \Delta \ln r_{c,t} \\ \Delta \ln E_{c,t} \\ \Delta \ln l_{c,t} \end{bmatrix}$, $\mathbf{Z}_{c,t} = \begin{bmatrix} \Delta \ln(1-\tau^b_{c,t}) & \Delta \ln BARTIK_{c,t} & \Delta \ln(1-\tau^i_{c,t}) \end{bmatrix}$, $\mathbf{A}$ is 5×5, $\mathbf{B}$ 5×3, where $\mathbf{A}$ and $\mathbf{B}$ take the following form:

$$\mathbf{A} = \begin{bmatrix} 1 & -\frac{1}{\sigma^W} & +\frac{\alpha}{\sigma^W} & 0 & 0 \\ -\frac{1}{\varepsilon^{LD}} & 1 & 0 & 0 & 0 \\ -\frac{1}{1+\eta_c} & -\frac{1}{1+\eta_c} & 1 & 0 & 0 \\ 0 & \frac{\gamma}{\sigma^F} & 0 & 1 & 0 \\ 0 & -\left(\gamma(\varepsilon^{PD}+1)-1\right) & 0 & 0 & 1 \end{bmatrix},$$

$$\mathbf{B} = \begin{bmatrix} 0 & 0 & \frac{1}{\sigma^w} \\ \frac{1}{\varepsilon^{LD}\sigma^F(\varepsilon^{PD}+1)} & \frac{\left(\epsilon^{PD}+1-\frac{1}{\sigma^F}\right)\lambda-\lambda^z}{\varepsilon^{LD}} & 0 \\ 0 & \frac{-\eta_c}{1+\eta_c}\lambda^h & \left(\frac{1}{1+\eta_c}-\kappa\right) \\ \frac{\delta}{\sigma^F} - \frac{1}{\sigma^F(\varepsilon^{PD}+1)} & \frac{\lambda}{\sigma^F} & 0 \\ 0 & 0 & 0 \end{bmatrix}.$$

Relative to SZ, this system adds one equation to $\mathbf{Y}_{c,t}$ which relates to $\dot{w}$ and the parameters γ and ε^{PD} as shown in the 5th row of $\mathbf{A}$. Note that the labor demand elasticity in SZ 2016 is $\varepsilon^{LD,orig}$ and in MMM-S is ε^{LD}, where

$$\varepsilon^{LD,orig} = \gamma\left(1 + \varepsilon^{PD} - \frac{1}{\sigma^F}\right) - 1 \tag{10}$$

$$\varepsilon^{LD} = -\frac{\gamma}{\sigma^F} - 1. \tag{11}$$

Pre-multiplying by the inverse of the matrix of structural coefficients gives the reduced form.

$$\mathbf{Y}_{c,t} = \underbrace{-\mathbf{A}^{-1}\mathbf{B}}_{\equiv \mathbf{C}}\mathbf{Z}_{c,t} + \underbrace{\mathbf{A}^{-1}\epsilon_{c,t}}_{\equiv \mathbf{u}_{c,t}}$$

4.4.2 Estimates of Parameters and Incidence

We follow the approach in SZ section VI (see SZ equation 22). Tables 3 and 4 provide results for parameter estimates and incidence, respectively. They update SZ Tables 6 and 7.

Table 3 shows that the updated parameter estimates are similar to those originally reported in SZ Table 6. One of the advantages of relying on the other moments is that our estimates were somewhat robust to the issues related to the composition margin and cost of capital.

Table 4 presents the impacts on land owners, workers, and firm owners and incidence shares following SZ Table 7. Strikingly, it reveals quite similar estimates to those originally reported. For example, Panel B Columns 1-3 show estimates of the incidence share on firm owners of 32.5%, 48.7%, and 34.6%, which are quite similarly to those in Table 7 and reported in our abstract, introduction, and conclusion.

Column 3 of Table 4 also shows that even in a setting in which $\varepsilon^{PD} = -4$, we observe estimates of 34.6% on firm owners. One point to consider when thinking about the role of ε^{PD} in SZ is that it shapes the effect on wages,

and the structural approach incorporates this interdependence (whereas changing ε^{PD} without changing wages as in MMM-S Table 1 does not).

To show that this result is not reliant on the addition of $\dot{l}$, Columns 5 and 6 of Table 4 show the results of the full structural model while accounting for the composition margin and cost of capital when setting the $\dot{l}$ moments to zero. This exercise essentially runs the structural analysis in Section VI of SZ with the composition and cost of capital updates alone. The results in these two columns show that in the full model we do not need to add additional moments to identify parameters and incidence, and that firm owners bear a substantial share of incidence even with large values of ε^{PD}.

5 Tables

Table 1: Effects of Business Tax Cuts on Employment per Establishment over 10 Years

	Employment per establishment	
	(1)	(2)
Δ ln net-of-business-tax rate	0.99	0.51
	(0.76)	(0.69)
Bartik		0.40***
		(0.08)
Observations	1,470	1,470
R^2	0.505	0.479

Notes: This table extends analysis in SZ 2016's table 4B. The data are decade changes from 1980-1990, 1990-2000, and 2000-2010 for 490 county-groups (CONSPUMAs). Employees per Establishment outcomes are retrieved from the Business Dynamics Statistics.

Table 2: Estimates of Economic Incidence Using Reduced-Form Effects

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Incidence						
Landowners	1.17	1.17	1.17	0.32	1.86	0.62
	(1.43)	(1.43)	(1.43)	(1.36)	(1.56)	(0.60)
Workers	1.10*	0.69	1.10*	0.68	0.98	0.58*
	(0.59)	(0.44)	(0.59)	(0.52)	(0.84)	(0.33)
Firm owners	3.45***	3.45***	3.45***	2.29**	2.96*	2.08***
	(1.28)	(1.28)	(1.28)	(1.04)	(1.54)	(0.70)
Panel B. Share of incidence						
Landowners	0.21	0.22	0.21	0.10	0.32**	0.19*
	(0.16)	(0.18)	(0.16)	(0.35)	(0.14)	(0.11)
Workers	0.19***	0.13	0.19***	0.21*	0.17*	0.18***
	(0.05)	(0.09)	(0.05)	(0.11)	(0.09)	(0.06)
Firm owners	0.60***	0.65***	0.60***	0.70**	0.51***	0.63***
	(0.14)	(0.12)	(0.14)	(0.30)	(0.10)	(0.09)
Conventional view test						
χ^2 of $(S^W = 1, S^F = 0)$	8.12	23.45	8.12	2.97	8.08	18.35
p-value	0.00	0.00	0.00	0.08	0.00	0.00
Specification						
Net-of-business tax	Yes	Yes	Yes	Yes	Yes	No
Net-of-corporate tax	No	No	No	No	No	Yes
Housing share α	0.3	0.65	0.3	0.3	0.3	0.3
Output elasticity ratio δ/γ	0.9	0.9	0.5	0.9	0.9	0.9
Bartik	No	No	No	Yes	Yes	No
Net-of-personal tax	No	No	No	No	Yes	No

Notes: This table extends analysis in SZ 2016's table 5.

Table 3: Minimum Distance Estimates of Structural Parameters

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Calibrated parameters								
Output elasticity γ	0.150	0.150	0.150	0.200	0.250	0.150	0.250	0.150
Housing share α	0.300	0.500	0.650	0.300	0.300	0.300	0.500	0.300
Elasticity of product demand ε^{PD}	-2.500	-2.500	-2.500	-2.500	-2.500	-4.000	-4.000	-5.000
Estimated parameters								
Idiosyncratic location	0.203***	0.476***	0.320***	0.243***	0.171***	0.120***	0.072***	0.125***
productivity dispersion σ^F	(0.043)	(0.112)	(0.062)	(0.059)	(0.042)	(0.032)	(0.020)	(0.035)
Idiosyncratic location	0.983**	4.963	2.851	1.159*	0.961**	1.927	2.159	0.604*
productivity dispersion σ^W	(0.461)	(6.429)	(1.983)	(0.642)	(0.488)	(1.710)	(1.610)	(0.323)
Elasticity of housing	0.928	0.826	1.256	0.829	1.071	0.699	0.410	0.667
supply η	(1.545)	(2.966)	(3.340)	(1.760)	(1.952)	(1.952)	(1.657)	(2.115)

Notes: This table extends analysis in panel A of SZ 2016's table 6.

Table 4: Estimates of Economic Incidence Using Estimated Structural Parameters

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Incidence						
Calibrated parameters						
Output elasticity γ	0.150	0.150	0.150	0.150	0.150	0.150
Housing share α	0.300	0.650	0.300	0.300	0.300	0.650
Elasticity of product demand ε^{PD}	-2.500	-2.500	-4.000	-5.000	-2.500	-2.500
Estimated incidence						
Wages $\tilde{w}$	1.188***	0.889***	1.096***	0.640**	0.532**	0.732**
	(0.298)	(0.299)	(0.330)	(0.279)	(0.259)	(0.287)
Landowners $\tilde{r}$	1.073	0.483	0.898	0.785	0.560	0.669
	(0.905)	(0.733)	(1.079)	(1.001)	(0.669)	(0.625)
Workers $\tilde{w} - \alpha\tilde{r}$	0.866***	0.575	0.827***	0.405*	0.364*	0.297
	(0.256)	(0.395)	(0.305)	(0.208)	(0.194)	(0.235)
Firm owners $\tilde{\pi}$	0.935***	1.002***	0.912***	1.156***	1.083***	1.038***
	(0.067)	(0.067)	(0.148)	(0.168)	(0.058)	(0.065)
Elasticity of labor supply ε^{LS}	0.741**	0.227	0.391	1.045	0.876**	0.726
	(0.346)	(0.213)	(0.354)	(0.747)	(0.399)	(0.720)
Elasticity of labor demand ε^{LD}	-1.738***	-1.469***	-2.246***	-2.199***	-1.415***	-1.491***
	(0.157)	(0.091)	(0.334)	(0.337)	(0.122)	(0.127)
Panel B. Shares of incidence						
Calibrated parameters						
Output elasticity γ	0.150	0.150	0.150	0.150	0.150	0.150
Housing share α	0.300	0.650	0.300	0.300	0.300	0.650
Elasticity of product demand ε^{PD}	-2.500	-2.500	-4.000	-5.000	-2.500	-2.500
Estimated incidence						
Landowners $\tilde{r}$	0.373*	0.235	0.340	0.335	0.279	0.334
	(0.216)	(0.313)	(0.299)	(0.315)	(0.251)	(0.246)
Workers $\tilde{w} - \alpha\tilde{r}$	0.301**	0.279	0.314*	0.172	0.182*	0.148
	(0.130)	(0.223)	(0.176)	(0.122)	(0.107)	(0.135)
Firm owners $\tilde{\pi}$	0.325***	0.487***	0.346**	0.493**	0.540***	0.518***
	(0.109)	(0.131)	(0.159)	(0.227)	(0.192)	(0.140)
Test of standard view ($p-$ value)	0.000	0.000	0.000	0.000	0.000	0.000

Notes: This table extends analysis SZ 2016's table 7.

6 Appendix

6.1 Incidence Derivations

This section shows how to start from equations 4, 5, 6, and 7 to derive 8 and 9, which are the expressions for the product demand elasticity ε^{PD} and productivity dispersion σ^F.

We can combine 5 and 6:

$$\dot{\pi} = 1 + \dot{l} + \dot{w} \tag{12}$$

$$\dot{\pi} = -(1 + \varepsilon^{PD})\sigma^F \dot{E} \tag{13}$$

$$\frac{1 + \dot{l} + \dot{w}}{\dot{E}} = -(1 + \varepsilon^{PD})\sigma^F \tag{14}$$

Then plug the inverse into equation 6 and solve for σ^F.

$$\dot{E} = \frac{\delta}{\sigma^F} + \frac{\dot{E}}{1 + \dot{l} + \dot{w}} - \frac{\gamma}{\sigma^F}\dot{w} \tag{15}$$

$$\dot{E} - \frac{\dot{E}}{1 + \dot{l} + \dot{w}} = \frac{\delta}{\sigma^F} - \frac{\gamma}{\sigma^F}\dot{w} \tag{16}$$

$$\dot{E} - \frac{\dot{E}}{1 + \dot{l} + \dot{w}} = \frac{\gamma}{\sigma^F}\left(\frac{\delta}{\gamma} - \dot{w}\right) \tag{17}$$

$$\sigma^F = \frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{\left(\dot{E} - \frac{\dot{E}}{1+\dot{l}+\dot{w}}\right)} \tag{18}$$

$$\sigma^F = \frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{\left(\dot{E}\frac{\dot{l}+\dot{w}}{1+\dot{l}+\dot{w}}\right)} \tag{19}$$

$$\sigma^F = \frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{\dot{E}}\frac{1 + \dot{l} + \dot{w}}{\dot{l} + \dot{w}} \tag{20}$$

Then we can plug this expression for σ^F back into equation 14 to solve for $(1 + \varepsilon^{PD})$.

$$\frac{1 + \dot{l} + \dot{w}}{\dot{E}} = -(1 + \varepsilon^{PD})\sigma^F \tag{21}$$

$$\frac{1 + \dot{l} + \dot{w}}{\dot{E}} = -(1 + \varepsilon^{PD})\left(\frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{\dot{E}}\frac{1 + \dot{l} + \dot{w}}{\dot{l} + \dot{w}}\right) \tag{22}$$

$$1 = -(1 + \varepsilon^{PD})\left(\frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{1}\frac{1}{\dot{l} + \dot{w}}\right) \tag{23}$$

$$\dot{l} + \dot{w} = -(1 + \varepsilon^{PD})\left(\frac{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)}{1}\right) \tag{24}$$

$$\dot{l} + \dot{w} = -(1 + \varepsilon^{PD})\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right) \tag{25}$$

$$\frac{\dot{l} + \dot{w}}{\gamma\left(\frac{\delta}{\gamma} - \dot{w}\right)} = -(1 + \varepsilon^{PD}) \tag{26}$$