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Entry Regulations and Income Inequality at the Regional Level

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Abstract

We combine entry regulation data from the World Bank's subnational Doing Business Index with regional income inequality data from the OECD to test the relationship between entry regulation and income inequality at the subnational level. Controlling for other factors known to affect income inequality, we find that a one percentage point increase in entry costs (expressed as a percentage of national per capita income) is associated with an increase in regional inequality (measured via the 80/20 income percentile ratio) of just over three percent. These results suggest that uniform national regulations may have disparate regional effects, as compliance costs may vary by subnational region.

1 Introduction

In order to foster economic development and income mobility, public policy should encourage people to enter professions or start businesses that leverage their respective comparative advantage. Focusing more narrowly on entrepreneurship, costly and complex startup regulations, which include fees, licensing, and permits, can make it prohibitively difficult for low-income individuals to legally start a small business. To the extent that these entry costs either prevent would-be entrepreneurs from entering their preferred (and presumably more financially rewarding) industry or force them to operate illegally in the informal sector, the result is both lower income at the individual level and a more unequal distribution of income. Indeed, the literature contains a growing body of research linking regulations, entrepreneurship, and inequality.

Several studies have found a link between regulation and new firm formation. Klapper et al. (2006) find that within Europe, costly entry regulations are associated with lower limited-liability firm formation rates, and that this effect is especially pronounced in industries with high expected rates of entry. Not surprisingly, countries with more so-called red tape have slower establishment growth (Ciccone and Papaioannou, 2007). Recently, Chambers and Munemo (2017) find that within a large panel of countries, increasing the number of steps required to start a business by one step (as measured by the World Bank's Doing Business database) reduces the level of new business formation by 9.7 percent. Focusing on the United States, Bailey and Thomas (2017) find that a 10 percent increase in federal regulations (as measured by RegData[1]) within a given industry reduces the rate of business startups in the affected industry by approximately 0.5 percent.

The bulk of the research exploring the connection between entry regulation and income inequality has focused on specific occupations. Kleiner and Park (2010), for example, show that income disparities between dentists and dental hygienists are greater in states where hygienists are barred from self-employment and forced to work in a dentist's office. Looking more broadly at the impact of labor market regulations and

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[1]The Reg Data database quantifies the number US federal regulatory restrictions affecting an industry.

income inequality within a panel of countries, Caldern and Chong (2009) find that some labor regulations reduce inequality while others have no measurable effect.

The strand of the literature most directly relevant to this paper provides evidence that subnational measures of the business climate influence income inequality. State and metropolitan level business climate indexes with a focus on measuring taxation are associated with faster growth Bologna (2014) but also positive or parabolic relationship with inequality (Bennett and Vedder, 2013; Neumark and Muz, 2016). Alternatively, Bjørnskov (2017) suggests that aspects of state economic freedom moderate the relationship between growth and inequality.

Outside these aforementioned strands of the literature, the public choice school postulates that existing, politically connected producers lobby for new regulations crafted with the intent to make it more difficult for new firms to enter the market, thus reducing competition (see Stigler (1971) and Peltzman (1976)). This rent-seeking behavior shifts income from consumers and would-be entrants unable to surmount the complexities and cost of entry, toward incumbent producers (see Stigler 1970). With entry restricted, incumbents earn their marginal product plus a rent premium, whereas would-be entrants that are excluded from the market earn less than their marginal product increasing inequality. Consistent with rent-seeking theory, Shughart et al. (2003) find empirical evidence that U.S. states with more influential special interest groups also have higher rates of income inequality. The regressive effects of regulation have been studied more broadly by Bailey et al. (2019), Chambers et al. (2019a), and Mulholland (2019). To our knowledge, the only paper to investigate the relationship between entry regulations and income inequality within a panel of countries is Chambers et al. (2019b), who find that increasing the number of steps required to start a business by one step (as measured by the World Bank's Doing Business database) increases inequality (measured by the top decile income share) by 7.2 percent.

Given that recent research finds evidence that more regulation 1) reduces the rate of new firm formation and 2) increases income inequality at the national level, it is reasonable to suspect that regulation would have a similar impact on inequality at the subnational or regional level. Moreover, while startup requirements may be established by a central government and be fairly uniform within a country, the relative cost of compliance may differ greatly across subnational regions. Therefore, the purpose of this paper is to determine if subnational differences in startup costs (as measured by the officially required procedures to start a business), exacerbate subnational income inequality. Indeed, this is exactly what we find in a set of four OECD countries for which the required subnational data are available: Italy, Spain, Poland and Mexico.[2] Controlling for other factors known to affect income inequality, we find that a 1 percentage point increase in entry costs (expressed as a percentage of national per capita income) is associated with an increase in regional inequality of just over three percent.

The remainder of this paper proceeds as follows. First, we describe our model and data and then estimate the relationship between entry regulations and income inequality. Next, we discuss policy implications, followed by the conclusion.

2 The Model

Our empirical goal, estimating the relationship between income inequality and startup regulations at the subnational level, is most similar to Chambers et al. (2019b), which estimates the same relationship within a panel of countries. Specifically, Chambers et al. (2019b) regresses income inequality (measured via top income shares) on the number of business startup steps, period fixed effects, and several control variables, including total education, access to credit, trade openness, log GDP, log GDP squared, democracy, and ethnic heterogeneity. The selected control variables are commonly used in the literature (see Chambers et al. (2019b) for a detailed discussion), and capture the impact of human capital, credit market development, international trade, economic development (via the Kuznets Curve), political openness, and ethnic heterogeneity on income inequality.

To adapt the Chambers et al. (2019b) model to suit our empirical framework, we eliminate three control variables, trade openness, democracy, and ethnic heterogeneity, because they reflect national-level charac-

[2]Section III discusses in greater detail the sample and data limitations that result in this small sample of countries.

teristics that are captured by our use of country-specific intercepts.[3] Unfortunately, access to credit, is not available at the regional level, so we are forced to exclude it from our model. Nonetheless, this does not pose a serious issue as the access to credit covariate was statistically insignificant in every version of the Chambers et al. (2019b) model. Following the regional economics literature, and specifically Neumark and Muz (2016) in their study of the business climate and inequality, we include a measure of population density to account for the degree of urbanization of each region. Finally, due to data availability and coverage issues (see Section 3 for details), our matched dataset consists of a pooled cross-section of 70 subnational regions, therefore we suppress the time subscripts throughout the remainder of the paper. Our model takes the following form:

$$Inequality_i = a_j + \beta * Regs_i + X_i B + u_i \tag{1}$$

where i is the cross-sectional region index, j is the cross-sectional country index, $Inequality_i$ is the natural log of the 80/20 disposable income quintile ratio (i.e., the ratio between the average disposable income of the top quintile to the average disposable income of the bottom quintile), a_j is a country-specific intercept, and $Regs_i$ is the cost of starting and registering a new business expressed as a percentage of gross national per capita income. We also include a matrix of control variables (X_i), including the natural log of regional per capita gross domestic product (log GDP) and log GDP squared, educational attainment (measured as the share of the labor force in the region with a secondary education), and population density (measured as the natural log of population per square kilometer in the region), and a mean zero error term (u_i).

Our measurement choices for income inequality and startup regulation warrant elaboration. We chose the 80/20 disposable income quintile ratio because it is closest in similarity to the preferred measure of inequality used in Chambers et al. (2019b), the share of income accruing to the top decile of households, which is not available at the regional level. Moreover, the only remaining measures of inequality available at the regional level are the gross income Gini coefficient and the Gini coefficient net of income transfers. Unfortunately, both Gini coefficients vary little across regions within a nation, despite very real differences in income distributions across regions. Within our sample, the average coefficient of variation (ratio of the standard deviation to the mean) for the gross income Gini across regions (within each nation) is a mere 5.9 percent, while the same average coefficient of variation for net income Gini coefficients is only 7.3 percent. By contrast, the average coefficient of variation for the 80/20 disposable income quintile ratio is a more sizable 35.8 percent. Without sufficient variation in the dependent variable, identification of the impact of regulations on inequality is problematic.[4]

To measure startup regulations, we use the official cost of starting and registering a new business expressed as a percentage of gross national per capita income because it does a better job of capturing variation in the relative difficulty of launching a business across regions within a nation. Like the Gini coefficients discussed above, the preferred measure of startup regulation in Chambers et al. (2019b), the number of distinct steps required to start a business, varies little between regions within a country. In our sample, the average coefficient of variation for the startup step measure is only 6.9 percent, while the coefficient of variation of our preferred measure of startup regulation, the startup cost variable, is over three times larger (21.6 percent), enabling more precise estimation of the marginal impact of startup regulations on inequality.

3 Data Description

Inequality measures from the OECD Regional Well-Being dataset include the gross income Gini coefficient, the Gini coefficient net of income transfers, and the 80/20 disposable income quintile ratio (the ratio between the average disposable income of the top quintile and the average disposable income of the bottom quintile). Again, our preferred measure is the 80/20 quintile ratio both for comparability to Chambers et al. (2019b) and to capture the maximum variability in regional inequality. Inequality measures, which are collected infrequently, correspond to 2014 for Mexico, and 2013 for Italy, Portugal, and Spain-see Table 1 for descriptive statistics.

[3] Without question, trade is a national policy and applies equally to all regions within a country (special trade and tax zones not withstanding). The quality of democratic institutions and ethnic heterogeneity could conceivably vary between regions within a nation. Unfortunately, regional measures of these variables are not currently available.

[4] It is worth noting that Chambers et al. (2019b) also conducts robustness exercises in which they substitute Gini coefficients for their measure of inequality with no change in their results.

Table 1: Descriptive Statistics

Variables	Minimum	Maximum	Mean	Standard Deviation	N
Log of 80/20 Income Share	0.60	4.31	2.11	0.78	70
Cost of Starting Business (% of income per capita)	3.40	28.80	10.13	5.50	70
Log of real GDP per capita (ppp)	8.80	11.51	9.93	0.50	68
Educational Attainment (% secondary school)	16.00	66.00	30.41	14.38	68
Log of Population Density (per sq. km)	2.27	8.70	4.60	1.12	68

Note: The cost of starting a business variable is collected from the World Bank Subnational Doing Business Reports. All other variables are collected from the OECD Regional Well-Being dataset. Descriptive statistics include subnational regions in Italy, Mexico, Poland, and Spain.

Measures of barriers to entry are from the World Bank Subnational Doing Business Reports, which are designed to measure differences in business regulations within different subnational regions of countries. The available measures of barriers to entry are the cost of starting a business as a percentage of gross national income, the number of steps to start a business, and the time in days to start a business. Our preferred measure is the cost of starting a business as a proportion of gross national income per capita which includes the cost of all legal procedures required to start a business. The costs of these procedures include official fees but not fees for professional services, unless the services are required by law. Bribes are excluded from the measure. As explained earlier, the cost of starting a business exhibits considerable variability across locations. For example, the cost of a notary varies significantly between regions in Mexico, introducing substantial subnational heterogeneity in the cost of starting a business (World Bank, 2016). The costs of industry specific procedures are excluded, the only costs included are those that pertain to procedures required for all businesses.

Table 2: Mean Values by Country

Variables	Italy	Mexico	Poland	Spain
Log of 80/20 Income Share	1.70	2.59	1.53	1.76
Cost of Starting Business (% of income per capita)	14.50	11.38	12.70	4.21
Log of real GDP per capita (ppp)	10.25	9.62	9.96	10.28
Educational Attainment (% secondary school)	45.88	21.50	64.02	23.48
Log of Population Density (per sq. km)	5.15	4.31	4.86	4.65
Total subnational regionals (N)	13	32	6	17-19*

Note: The cost of starting a business variable is collected from the World Bank Subnational Doing Business Reports. All other variables are collected from the OECD Regional Well-Being dataset. Descriptive statistics include subnational regions in Italy, Mexico, Poland, and Spain. *The Spanish regional sample includes 19 subnational regional observations for 80/20 income share and cost of starting a business, while the remaining three series (i.e., log output, educational attainment, and population density) each contain 17 subnational regional observations.

The Doing Business Reports provide data for over 400 subnational locations, mostly in developing countries. We only study locations with comparable subnational measures of inequality which are obtained from the OECD Regional Well-Being dataset. Therefore, we are constrained to studying OECD countries for

which subnational Doing Business Reports are available, namely: Italy, Mexico, Poland and Spain. Italy and Spain were original OECD members whereas Mexico was added in 1994 and Poland in 1996. Italy, Poland and Spain are all European Union members that share economic and geographic similarities. The most divergent country in terms of geography and standard of living is Mexico - see Table 2. Yet the distribution of income in Mexico has substantial overlap with that of Italy, the richest country in the sample. GDP per capita is below $25,000 in seven of the eight regions in Southern Italy; in the five wealthiest regions in Mexico per capita GDP is in excess of $25,000. Further, the country level indicator variables discussed in the previous section help account for heterogeneity across countries.

The Doing Business Reports have data corresponding to a major city within each subnational region, whereas the inequality and other control variables from the OECD are collected for each subnational region. City level data on the cost of starting a business are matched on a one-to-one basis to subnational regions in Mexico, Spain, and Italy. For Poland, the cost of starting a business is averaged over multiple cities within larger regions and then matched to the variables from the OECD. This matching yields a sample of 70 subnational locations including 32 regions in Mexico, 19 regions in Spain, 13 regions in Italy, and six regions in Poland.[5]

Control variables at the subnational regional level are also obtained from the OECD Regional Well-Being dataset for 2013. These measures include regional real, purchasing power parity adjusted gross domestic product per capita, and its square to account for the Kutznets curve, as well as educational attainment measured as the share of the labor force with a secondary education, and population density measured as the population per square kilometer. The measure of educational attainment in Mexico is not available for 2013, but is available for 2015. Since educational attainment tends to change slowly over time, we use the 2015 data for subnational regions in Mexico. Descriptive statistics for all variables are presented in Table 1.

4 Empirical Results

To ensure the robustness of our results, we estimate several variants of Equation (1), including startup costs as a covariate in every specification, and then adding each of the remaining covariates individually and re-estimating our model. The estimation results for Equation (1) are reported in Table 3 with heteroskedasticity consistent (White-Huber) robust standard errors.

Table 3: Estimates of the Effect of Startup Costs on Inequality

Variables	1	2	3	4	5
$StartupCost$	0.0605***	0.0387**	0.0313**	0.0286**	0.0336***
	(0.0201)	(0.0178)	(0.013)	(0.0135)	(0.0118)
$ln(GDPC)$		1.1159***	26.119***	25.5842***	27.5268***
		(0.2773)	(2.8428)	(2.9655)	(3.0543)
$ln(GDPC)^2$			-1.2615***	-1.237***	-1.3351***
			(0.1416)	(0.1475)	(0.1519)
$Education$				0.0162	0.0073
				(0.0136)	(0.0125)
$ln(PopulationDensity)$					0.0991***
					(0.0323)
R^2	0.420	0.658	0.818	0.821	0.836
Observations	70	68	68	68	68

Notes: 1) Dependent variable is the natural log of the ratio of the share of national income held by the top and bottom quintiles of households 2) Country-specific intercept dummies included in each model but not reported 3) Huber-White robust standard errors in parenthesis; ***, **, and * denote 1%, 5%, and 10% statistical significance respectively

Beginning with our variable of interest, the coefficient on startup costs is universally positive and statistically significant at either the five or one percent level. When startup costs are the sole covariate (apart from country intercept dummies), the coefficient equals 0.0605 and is significant at the one percent level. In

[5]Data on the cost of starting a business is obtained from the World Bank Subnational Doing Business Reports that correspond to 2016 for Mexico, 2015 for Spain and Poland, and 2013 for Italy.

columns (2) to (5), the remaining control variables are systematically added and the coefficient on startup costs remains in a narrow range between 0.0286 and 0.0387. In our preferred specification (column 5), the coefficient on startup costs equals 0.0336 and is significant at the one percent level. In words, this coefficient implies that a one percentage-point increase in startup costs (expressed as a fraction of per capita income), is associated with an increase in regional income inequality (as measured by the 80/20 income ratio) of 3.36 percent. To put this into perspective, the average startup costs equal approximately 10 percent of national per capita income. Therefore, a 10 percent reduction in the local currency unit cost of launching a firm (which on average equals one percent of national per capita income) would be associated with a 3.36 percent reduction in regional inequality.

Every variant in which both regional log GDP and log GDP squared appear (i.e., columns 3 to 5), the estimated coefficients are statistically significant at the one percent level and are consistent with the Kuznets Hypothesis i.e. an inverted U-shaped relationship between economic development (measured using log GDP) and income inequality, with an average turning point of 10.33 (or $30,749 PPP-adjusted 2010 dollars).[6] Surprisingly, the coefficient on educational attainment is statistically insignificant throughout. Finally, the coefficient on population density (see column 5) equals 0.0991 and is significant at the 1 percent level, implying that a one percent increase in population per square kilometer increases inequality by about 10 percent.

To ensure the robustness of these results, we remove the regional observations from a single country from our sample and re-estimate Equation (1). The results, reported in Table 4, reveal that the removal of regions in either Italy, Poland or Spain have no major effect on the startup cost coefficient. In all three cases, the coefficient on startup cost is statistically significant and positive, ranging from a low value of 0.0262 (with the removal of Italy) to a high value of 0.0309 (with the removal of Spain). When the regions of Mexico are removed (see column 2), which constitutes roughly half of the overall sample observations, the startup cost coefficient loses statistical significance and magnitude, but retains its positive sign (0.0113). Moreover, the implied turning point of the Kuznets Curve in the model with Mexico removed is approximately $12,700, far less than the $30,749 for the combined dataset.

Table 4: Re-estimation of Equation 1 by Removing One of More Countries from Sample

Variables	Less Italy	Less Mexico	Less Poland	Less Spain	Only Mexico
$StartupCost$	0.0262*	0.0113	0.0299**	0.0309**	0.0212
	(0.0153)	(0.0263)	(0.0148)	(0.0149)	(0.0160)
$ln(GDPC)$	18.7993***	3.3234	21.4705***	20.6928***	15.8403***
	(2.8773)	(6.3109)	(3.248)	(3.2688)	(2.6087)
$ln(GDPC)^2$	-0.8911***	-0.1758	-1.0245***	-0.9855***	-0.7438***
	(0.14)	(0.3084)	(0.1605)	(0.1614)	(0.1252)
$Education$	0.0289*	-0.0052	-0.0043	0.0012	0.0739***
	(0.0168)	(0.0098)	(0.0136)	(0.016)	(0.0212)
$ln(PopulationDensity)$	0.0491*	0.0852***	0.0639*	0.0707*	0.0579**
	(0.0285)	(0.0302)	(0.0334)	(0.038)	(0.0266)
R^2	0.825	0.356	0.797	0.797	0.795
Observations	55	36	62	51	32

Notes: 1) Dependent variable is the natural log of the ratio of the share of national income held by the top and bottom quintiles of households 2) Country-specific intercept dummies included in each model but not reported 3) Huber-White robust standard errors in parenthesis; ***, **, and * denote 1%, 5%, and 10% statistical significance respectively

In the sample omitting the regions of Mexico, the loss of statistical significance and reduction in R-squared raises the possibility that the association between startup costs and inequality is driven by regions in Mexico. In the final column of Table 4 we estimate Equation 1 using a sample restricted to only the 32 regions in Mexico. The startup cost coefficient is still positive, but it is not statistically significant in the Mexico only sample. Equation 1 fits the limited sample quite well, with an R-squared of .80 which is comparable to the fit the model using the full sample. The regions of Mexico constitute a large proportion of our overall sample and clearly provide important variation for our estimation. However, the results of the

[6]The average coefficient on Log GDP is 26.41 and the average coefficient on Log GDP squared is -1.2779. The turning point of the parabola thus is $-26.41/(2*(-1.2779)) = 10.33$ or $\$30,749(Exp[10.33])$.

Mexico only sample suggest that regions in Mexico alone do not drive the association between startup costs and inequality.

Table 5: Re-estimation with Idiosyncratic Kuznets Curves

Variables	
$StartupCost$	0.0307**
	(0.0145)
$ln(GDPC)$	1.9993
	(10.3623)
$Mexico * ln(GDPC)$	16.4208
	(10.7109)
$ln(GDPC)^2$	-0.1228
	(0.5013)
$Mexico * ln(GDPC)^2$	-0.7446
	(0.5182)
$Education$	0.0200*
	(0.0119)
$ln(PopulationDensity)$	0.0835***
	(0.0262)
R^2	0.841
Observations	68

Notes: 1) Dependent variable is the natural log of the ratio of the share of national income held by the top and bottom quintiles of households 2) Country-specific intercept dummies included in each model but not reported 3) Huber-White robust standard errors in parenthesis; ***, **, and * denote 1%, 5%, and 10% statistical significance respectively.

To allow for further heterogeneity, we re-estimate Equation (1) but allow Mexico and the group of remaining countries (i.e., Italy, Poland, and Spain) to have different Kuznets Curves. The model in Table 5 reflects that the European regions in our sample appear to be beyond the threshold level of development wherein additional development is associated with declining income inequality, whereas Mexico has yet to surpass this threshold level of development. Focusing on the startup cost coefficient, reported in Table 5, the results are very similar to the preferred model in Table 3. Specifically, the coefficient estimate equals 0.0307 and is statistically significant at the 5 percent level, implying that a one percentage-point increase in startup costs is associated with an increase in regional income inequality of nearly 3.1 percent. To verify that this flexible Kuznets Curve specification resolves any sample heterogeneity between Mexico and the European nations in the sample, we perform a Chow Test wherein we split our sample into two sub-samples: Mexico and all nations except Mexico, and then re-estimate Equation (1) for each subsample, collectively constituting the unrestricted model (in the sense that all model coefficients are allowed to vary across the subsamples). The unrestricted model is compared to the restricted model reported in Table 5, with the flexible Kuznets Curve specification. The resulting F-statistic is not significant at any standard level (i.e., $Pr(F_{3.54} \geq 1.39) = 0.26$), and therefore we cannot reject the null hypothesis that the coefficients on startup costs, educational attainment, and population density are equal across the two subsamples, which justifies the use of the combined dataset.

5 Policy Implications

Cross-country studies indicate that business regulation that raises the cost of entry increases both poverty (Djankov et al. 2018) and inequality (Chambers et al. 2019b). Our study bolsters the empirical literature by adding evidence from subnational regions. Taken together with the extensive literature linking entry barriers to entrepreneurship (see Djankov (2009) for a survey), the policy implications are clear: remove unnecessary barriers to entry.

Though, as Chambers et al. (2019b) notes, public choice theory implies that the policy implications are not so clear. The entry barriers are a product of the political process and the interest groups therein.

McCormick and Tollison (1981) describe the equilibrium policy as the product of a market in which incumbent firms demand regulation and the political actors supply regulation. Reform-minded policy makers would be prudent to acknowledge that entrenched interests will actively resist any effort to alter the status quo. Faced with external pressure to liberalize, incumbent firms have an incentive to preserve the status quo or to seek alternative regulatory protection from competition (Manish and O'Reilly, 2019). The policy implication in an ideal case may be to remove barriers to entry, however in a second-best world we should instead ask: which political equilibrium is producing the barriers to entry?

Perhaps the most novel insight from our study is that subnational regional policy and political economy should not be ignored. Many of the steps to start a business are codified at the national level, which gives the impression of little subnational variation. The existing studies of barriers to entry tend to focus on national development outcomes and therefore focus policy recommendations at the national level. However, the national level focus masks the subnational heterogeneity in the cost of starting a business. Our results are a reminder that regional policy and political economy shape economic development outcomes.

6 Conclusion

We find robust evidence that entry regulations increase income inequality. Controlling for other factors known to affect income inequality, we find that a 1 percentage point increase in entry costs (expressed as a percentage of national per capita income) is associated with an increase in regional inequality (measured via the 80/20 income percentile ratio) of just over three percent. The conclusions from the present cross-sectional study are clearer once placed within the context of the growing literature on the impact of entry barriers on development outcomes.

The empirical literature has established a link between entry regulation and business entry (Klapper et al., 2006; Ciccone and Papaioannou, 2007). Moreover, barriers to entry limit new business formation and business regulation is associated with greater poverty (see Djankov et al. 2018). Our study provides the additional insight that barriers to entry that raise the cost of starting a business are present not only at the national level, but also at the subnational level. Therefore, efforts to reform or to limit the growth of burdensome regulations should not focus exclusively on national policy. Local interests and governance matter for development. If the literature on rent seeking is taken seriously, incumbent interests may influence local policy and the subnational distribution of income.

References

Bailey, J. B. and Thomas, D. W. (2017). Regulating away competition: the effect of regulation on entrepreneurship and employment. *Journal of Regulatory Economics*, 52(3):237–254.

Bailey, J. B., Thomas, D. W., and Anderson, J. R. (2019). Regressive effects of regulation on wages. *Public Choice*, 180(1):91–103.

Bennett, D. L. and Vedder, R. K. (2013). A dynamic analysis of economic freedom and income inequality in the 50 u.s. states: Empirical evidence of a parabolic relationship. *Journal of Regional Analysis & Policy*, 43(1):42–55.

Bjørnskov, C. (2017). Growth, inequality, and economic freedom: Evidence from the u.s. states. *Contemporary Economic Policy*, 35(3):518–531.

Bologna, J. (2014). A spatial analysis of entrepreneurship and institutional quality: Evidence from u.s. metropolitan areas. *Journal of Regional Analysis & Policy*, 44(2):109–131.

Caldern, C. and Chong, A. (2009). Labor market institutions and income inequality: an empirical exploration. *Public Choice*, 138(12):65–81.

Chambers, D., Collins, C. A., and Krause, A. (2019a). How do federal regulations affect consumer prices? an analysis of the regressive effects of regulation. *Public Choice*, 180(1):57–90.

Chambers, D., McLaughlin, P. A., and Stanley, L. (2019b). Barriers to prosperity: the harmful impact of entry regulations on income inequality. *Public Choice*, 180(1):165–190.

Chambers, D. and Munemo, J. (2017). *The Impact of Regulations and Institutional Quality on Entrepreneurship*. Mercatus Center, Working Paper.

Ciccone, A. and Papaioannou, E. (2007). Red tape and delayed entry. *Journal of the European Economic Association*, 5(23):444–458.

Djankov, S. (2009). The regulation of entry: A survey. *The World Bank Research Observer*, 24(2):183–203.

Djankov, S., Georgieva, D., and Ramalho, R. (2018). Business regulations and poverty. *Economics Letters*, 165:82–87.

Klapper, L., Laeven, L., and Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, 82(3):591–629.

Kleiner, M. M. and Park, K. W. (2010). *Battles Among Licensed Occupations: Analyzing Government Regulations on Labor Market Outcomes for Dentists and Hygienists*. National Bureau of Economic Research, Working Paper No. 16560.

Manish, G. P. and O'Reilly, C. (2019). Banking regulation, regulatory capture and inequality. *Public Choice*, 180(1):145–164.

McCormick, R. E. and Tollison, R. D. (1981). *The Demand and Supply of Wealth Transfers*, pages 29–60. Rochester Studies in Economics and Policy Issues. Springer, Dordrecht.

Mulholland, S. E. (2019). Stratification by regulation: Are bootleggers and baptists biased? *Public Choice*, 180(1):105–130.

Neumark, D. and Muz, J. (2016). The business climate and economic inequality. *Review of Income and Wealth*, 62(1):161–180.

Peltzman, S. (1976). Toward a more general theory of regulation. *Journal of Law & Economics*, 19(2):211–240.

Shughart, W. F., Tollison, R. D., and Yan, Z. (2003). Rent seeking into the income distribution. *Kyklos*, 56(4):441–456.

Stigler, G. J. (1970). Director's law of public income redistribution. *Journal of Law & Economics*, 13(1):1–10.

Stigler, G. J. (1971). The theory of economic regulation. *Bell Journal of Economics and Management Science*, 2(1):3–21.

World Bank (2016). *Doing Business in Mexico 2016*. World Bank, Washington DC.

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