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The economic theory of regulation and inequality

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Abstract
Stigler (Bell J Econ Manag Sci 2:3–21, 1971) proposed that regulation benefits politically influential interest groups rather than advancing the public interest. The Stiglarian perspective predicts that regulation raises barriers to entry that limit competition and creates economic rents for incumbents. Apart from the direct economic harm of such policies, regulation generates additional consequences. One hypothesized consequence ushered by anticompetitive rules is the widening of income disparities. This article therefore surveys the growing empirical literature that studies whether regulation ultimately exacerbates income inequality. Beginning with the literature on entry and start-up regulation, we find that these rules, as predicted by Stigler, limit entry and dampen entrepreneurship. Moreover, recent studies also indicate that these regulations are associated with higher income inequality. We also review the literature on occupational licensure. Consistent with Stigler (Bell J Econ Manag Sci 2:3–21, 1971), the literature chronicles widespread use of barriers to entry in labor markets, which have documented regressive effects on the distribution of income. Finally, we review research on financial regulation, in which studies have shown that some financial regulations are associated with less entrepreneurship and higher income inequality. Taken together, the recent empirical literature buttresses and extends the implications in Stigler (Bell J Econ Manag Sci 2:3–21, 1971). Regulation tends to benefit incumbents by limiting entry of economic participants, be it firms or workers, and exacerbates income inequality.

Keywords Income inequality · Regulation · Regressive effects · Entrepreneurship · Dynamism · Barrier to entry

JEL Classification D31 · J38 · K20

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1 Introduction

Until recently, the economic literature failed to acknowledge the existence of a direct relationship between government regulation and income inequality. Nonetheless, a careful reading of Stigler (1971) clearly indicates that such a relationship is likely. According to Stigler (1971, p. 3) "The central tasks of the theory of economic regulation are to explain who will receive the benefits or burdens of regulation, what form regulation will take, and the effects of regulation upon the allocation of resources." If regulation changes the allocation of resources by creating benefits and burdens, a natural hypothesis that follows is that regulation may influence real incomes and their distribution.[1] While Stigler (1971) does not flesh-out the impacts of regulation on real income and inequality, his primary focus on the use of regulations to erect barriers to entry is consistent with the conclusion that changes to the distribution of income are potentially an intended consequence of government rules. The focus of the present paper, therefore, is to review the emerging literature that tests the redistributional hypotheses that follow from Stigler's (1971) seminal contribution.

Stigler's (1971, p. 3) "central thesis … is that, as a rule, regulation is acquired by the industry and is designed an operated primarily for its benefit", and, moreover, that the primary way in which particularistic rules manifest themselves is in the form of barriers to entry. To that point, Stigler proposes the following bold hypothesis, for which he provides preliminary empirical support: "every industry or occupation that has enough political power to utilize the state will seek to control entry" (Stigler, 1971, p. 5). Indeed, prior to Stigler, others (e.g., Olson, 1965) also recognized that organized special interest groups can be quite effective in securing favorable regulations, which are inconsistent with the interests of competitors and consumers alike. Once enacted, such restrictions (which include startup regulations and occupational licensure) enable existing producers (or practitioners) to restrict supply, create rents, and maximize their profits and incomes (see Friedman, 1962). The key insight regarding *how* special interests obtain favorable regulation was not well understood until Peltzman (1976), which predicts that self-interested regulators will draft rules favorable to special interest groups, including industry lobbyists seeking to erect barriers to entry, in exchange for campaign contributions and other political payoffs. Indeed, lobbying has been linked to licensing regulations (McMichael, 2017), financial regulation and enforcement (Blau et al., 2013; Lambert, 2018) and federal regulation in the United States more generally (Mclaughlin et al., 2019).

Beginning with Stigler's contribution, we review the recent literature to evaluate the hypothesis that regulations benefit one group at the expense of another and therefore are predatory in nature. Such predatory regulation (including barriers limiting firm or occupational entry) may benefit a relatively small group at the expense of society as a whole.[2] Indeed, a large and growing literature finds strong empirical evidence that government

[1] With respect to the loss of real output and income resulting from government regulation, the literature contains two important papers. The first, Dawson and Seater (2013), finds that US federal regulations (proxied by way of page counts in the US *Code of Federal Regulations*) reduced US economic growth by two percentage points between 1949 and 2005, resulting in a $38.8 trillion loss of real output over the period. The second, Coffey et al. (2020), finds that US federal regulations (as measured by RegData) trimmed US economic growth by about 0.8 percentage points between 1997 and 2012. They estimate that if regulations had been frozen between 1980 and 2012, the US economy would have been 25% larger ($4 trillion) than it actually was by 2012.

[2] For example, Geloso and March (2021) suggest that rent seeking by mental health providers helps to explain the increase in mental health institutionalizations between 1870 and 1910.

regulations are associated with widening income inequality. The emerging literature stands in stark contrast to the contrarian view (see, for example, Stiglitz, 2012) that removing regulation eliminates beneficial rules that serve the public interest, thereby contributing to the recent increase in income inequality within developed countries. Assuming the public interest perspective, Piketty and Saez (2003, 2007, pp. 164–165) postulate that the U-shaped pattern of US income inequality[3] over the past century can be explained in part by changes in labor market institutions. Regulation need not be strictly in the private interest or the public interest. Yandle (2021) notes that coalitions of public interests and private interests often facilitate the enactment of new regulations.

The purpose of this paper is to survey the emerging literature to evaluate the hypothesis that regulation is predatory in nature and therefore influences the distribution of income, which is an intellectual extension of the ideas first articulated in Stigler (1971). That literature exists in three primary strands. The first provides empirical evidence that regulations affect entrepreneurship and business startup activity, and that the resulting loss of economic opportunities are associated with higher levels of income inequality. The second strand demonstrates empirically that occupational licensure inflates the wages of licensed practitioners without improving service quality and that licensure is associated with more income inequality. The third strand, like occupational licensure, focuses on a specific form of government rulemaking—financial regulation—and details how more stringent financial regulation can generate negative welfare impacts and increase income disparities.

The remainder of the paper is organized as follows. Section 2 summarizes the empirical literature linking regulatory intervention with less entrepreneurship and higher income inequality. Section 3 reviews the literature connecting occupational licensure and income inequality. Section 4 surveys the literature connecting financial regulation and income inequality. Finally, Sect. 5 concludes.

2 Regulations, entrepreneurship and inequality

According to Stigler (1971, p. 5) "regulatory policy will often be so fashioned as to retard the rate of growth of new firms." Slower growth in new firms, which is a consequence of barriers to entry, results in reduced startup activity and declining rates of entrepreneurship. The goal of such policy clearly is to shelter incumbent firms from competition, enabling them to extract economic rents from consumers. The effects of regulatory barriers to entry do not end there, however, as a multitude of spillover effects have been documented, including more income inequality, poverty, and mortality. With respect to such regressive effects, we limit our attention to income inequality.

One of the earliest empirical studies to estimate the negative effects of entry regulation on entrepreneurship is Djankov (2002, 2009), which examines startup procedures (time, procedural steps, and cost) in 85 countries, finding that more stringent startup regulations are associated with more corruption, larger black markets, and no improvement in the provision of public or private goods. The authors conclude that "[t]he evidence is inconsistent with public interest theories of regulation, but supports the public choice view that entry regulation benefits politicians and bureaucrats." In a similar study, Ciccone and

[3] The extent to which the pattern holds is still debated; see, for instance, Geloso and Magness (2020) and Mechling et al. (2017).

Papaioannou (2007) estimate the impact of startup regulation compliance times in 45 countries on industry-level employment and firm growth during the 1980s. Controlling for global demand growth at the industry level, they find that nations with less time-consuming startup regulations also experienced more firm entry. In a recent cross-country study of 119 countries spanning the 2001–2012 period, Chambers and Munemo (2019) find that startup regulations and poor governmental institutions have a statistically significant negative impact on entrepreneurial activity. Likewise, in a firm-level study across developing countries, Ardagna and Lusardi (2010) find that entry regulation deters entrepreneurs who report having business skills. Looking specifically at European Union firms, Klapper et al. (2006) find that market entry regulations inhibit the formation of new firms (even after controlling for financing availability, intellectual property protection, and labor regulations), and that the effect is pronounced in industries that should have higher entry rates.

Within-country studies show a similar relationship. Branstetter et al. (2014) find that reforms that reduced the cost of entry in Portugal led to more active firm formation, particularly among small firms and entrepreneurs with lower levels of education. In Italy, delays in business registration are associated with lower entry rates for small firms (Bripi, 2016) and reforms of bureaucratic procedures increase entry rates (Amici et al., 2016). Other studies focus on particular industries or types of regulation. For example, Bagchi and Sivadasan (2017) study cable television franchising reforms in the United States that lowered barriers to entry and find that those lower barriers led to more entry and lower prices. Studying the effect of US environmental regulations, Helland and Matsuno (2003) find that the growth of regulation since the 1970s increased Tobin's Q (a measure of economic rent calculated as the market value of the firm divided by its replacement cost) for large firms. They interpret their results as evidence that compliance with environmental regulation is a barrier to entry that creates economic rents for incumbent firms.

Focusing on US firms, Bailey and Thomas (2017) utilize the RegData database, which quantifies federal regulatory restrictions from the Code of Federal Regulations at the industry level.[4] They find that greater federal industry regulations are associated with fewer new firm formations and less hiring in the affected industries, and that the effect is more significant for smaller firms. Utilizing a similar model, Chambers et al. (2020) replicate the findings of Bailey and Thomas (2017) and discover further that when industries experience high regulatory growth in the preceding years, the marginal negative effect of more stringent regulations on the number of small firms and employment is amplified. Using the Federal Regulation and State Enterprise (FRASE) index of regulation derived from the RegData database, Dove (2020) finds a negative relationship between the burden of federal regulations on individual US states and so-called opportunity entrepreneurship (as opposed to necessity entrepreneurship) in the same state.[5] Focusing specifically on small businesses, Chambers and Guo (2021) find that the growth of US federal regulations is associated with a reduction in small firms' collective shares of output and employment. Those findings are consistent with the theoretical model of Dhawan and Guo (2001). Using an alternative approach to measure the impact of regulations on startup activity, Gutiérrez and Philippon (2019) find that expanding federal regulations and lobbying largely explain the decline in the elasticity of entry with respect to Tobin's Q since the late 1990s. They

[4] See McLaughlin and Sherouse (2019) for methodological details related to the construction of RegData.

[5] New startups formed because of a lack of other options are considered a form of necessity entrepreneurship. In contrast, opportunity entrepreneurship is "associated with growth-oriented, procyclical activity" (Dove, 2020). See (Fairlie & Fossen, 2020) for a full exposition.

also demonstrate that such barriers to free entry have resulted in a reduction of small firms relative to larger competitors.

The only paper that fails to find a negative relationship between regulation and entrepreneurship is Goldschlag and Tabarrok (2018), which seeks to measure the impact of federal regulations (measured by RegData) on dynamism at the industry level. Although their covariates are very similar to Bailey and Thomas (2017), their dependent variables (various measures of dynamism including establishment entry rate, job creation rate, and job destruction rate) are quite different. Overall, Goldschlag and Tabarrok (2018) find no significant relationship between federal regulations at the industry level and their measures of dynamism. Chambers et al. (2020) seek to reconcile the seemingly contradictory results by pointing out that the Bailey and Thomas (2017) model implicitly assumes that "a given proportionate change in regulation in any industry … will inhibit the formation of a proportionate number of firms", while the Goldschlag and Tabarrok (2018) model implicitly assumes that "a given proportionate change in regulation in any given industry will inhibit the formation of new startups in equal proportion to the stock of existing firms within that industry", which follows directly from the assumption that a given change in regulations impacts the rate of entry equally for all industries. Therefore, "industries that are subject to less turnover, are more mature, or are closer to a stationary steady-state number of incumbents are more sensitive to changes in regulation than industries with large numbers of new entrants" (Chambers et al., 2020). When the Goldschlag and Tabarrok (2018) model is modified so that the marginal impact of more regulations is proportionate to the startup rate (which is theoretically consistent with Bailey & Thomas, 2017), Chambers et al. (2020) find that regulation does have a statistically significant negative impact on dynamism (as measured by the startup rate and job creation rate).

The forgoing studies clearly demonstrate that government regulations inhibit market entry, thereby limiting competition and increasing economic rents. Furthermore, regulations tend to increase prices, particularly for low-income households (see Chambers et al., 2019a; Gorry & Thomas, 2017; Timmons, 2017). It is reasonable to assume that the consequence is both a skewing of the distribution of income and a corresponding increase in income inequality. That said, none of the studies summarized above directly estimates the impact of regulations on the distribution of income. Nonetheless, five recent studies have addressed that research question and all have found a positive and statistically significant relationship between industry/startup regulations and poverty or income inequality.[6]

In a cross-country study of 189 economies over the 2005–2013 period, Djankov et al. (2018) find that nations with pro-business regulations (specifically ease of obtaining credit and contract enforcement) have lower rates of headcount poverty. Likewise, Chambers et al. (2019b) find statistically significantly higher poverty rates in US states burdened by higher effective levels of federal regulation (vis-à-vis the FRASE index).

With respect to income inequality, Chambers et al. (2019c) find that for a panel of 115 countries from 2004 to 2016, income is distributed more unequally within nations that require more startup procedures to launch a new business. That empirical result is significant and robust to alternative measures of inequality and startup regulations, as well as

[6] Consistent with public choice theory, measures of cronyism have been shown to be related empirically to income inequality. Shughart et al. (2003) find that states with more influential special-interest groups also have higher levels of income inequality. Assuming that the volume of legislation and regulations beneficial to special interest groups increases with their influence, the finding is consistent with other papers that report a positive relationship between regulation and income inequality.

potential endogeneity. In a similar study estimating the relationship between income inequality and startup procedures at the sub-national/regional level, Chambers and O'Reilly (2019) find that red tape is positively associated with income inequality. Finally, within the context of US. states, Chambers and O'Reilly (2020) find statistically significant more income inequality in US states saddled by higher effective levels of federal regulations (as measured by the FRASE index).

3 Occupational licensure

Occupational licensing is a legal requirement to obtain approval from a government or government-sponsored licensing board to practice a particular occupation.[7] Licensing laws may serve the public interest or the interests of a narrow group of licensed practitioners. Advocates argue that in the presence of information asymmetries, consumers have difficulty determining the true quality of a service, and that the licensing requirement reduces informational asymmetries (Shapiro, 1986). Like Friedman (1962) before him, Stigler (1971, p. 13) takes a sharply critical view of licensure: "[t]he licensing of occupations is a possible use of the political process to improve the economic circumstances of a group. The license is an effective barrier to entry because occupational practice without the license is a criminal offense."[8] Because occupational licensure acts as an effective barrier to entry for would-be practitioners in many occupational fields, it has real economic consequences, including, e.g., reduced labor mobility and lower incomes for non-license holders, which in turn affects the overall distribution of income. Although Stigler lacked the data necessary to test his hypothesis thoroughly in 1971, subsequent research has evaluated the effects of occupational licensing on product quality and entry into licensed occupations, as well as real economic outcomes on earnings and income inequality.

Evidence from economic history suggests that occupational licensure can improve service quality. The licensure of physicians during the Progressive Era at the Twentieth Century's turn reduced maternal mortality and mortality from appendicitis (Law & Kim, 2005). Similarly, Anderson et al. (2020) estimate that the licensure of midwives between 1900 and 1940 caused a 7–8% decline in maternal mortality. Requiring lawyers to pass a bar exam to obtain a law license is associated with a smaller proportion of lawyers receiving public malpractice sanctions (Rozema, 2021). Studies of more recent periods find that the stringency of licensure requirements is associated with higher quality childcare services (Hotz & Xiao, 2011) and better teacher quality as measured by their educational backgrounds (Larsen et al., 2020).

Most of the literature studying more recent licensure laws finds no effect on quality. In contrast to Larsen et al. (2020), Angrist and Guryan (2008) find that more stringent licensing increases teacher wages but has no effect on teacher quality. Similarly, licensing requirements are not associated with higher quality home services (for example, plumbing or painting) (Farronato et al., 2020) and lifting licensing requirements did not lower the quality of construction services (Skarbek, 2008). Increasing the independence of nurse practitioners is not associated with a reduction in the quality of health services (Kleiner et al., 2016) and may increase the quality of and access to care (Traczynski & Udalova,

[7] For a descriptive study of the extent and cost of occupational licensure in the United States, see Carpenter et al. (2018).

[8] See Vaheesan and Pasquale (2018) for a critique of the economic analysis of occupational licensure.

2018). Kugler and Sauer (2005) even suggest that licensing compromises the quality of services provided by physicians. In their review of the earlier literature, McLaughlin et al. (2013) find little evidence of a positive effect of licensure on quality. The mixed evidence on the effect of licensure on service quality may be because some licensure helps to solve informational asymmetries in the public interest, whereas other licensure is captured to serve private interests. Alternatively, occupational licensure may have elements of both public and private interest as the bootlegger and Baptist theory of regulation suggests (Yandle, 2021).

Licensing may increase the wages of producers either because of induced quality improvements or because licensure protects incumbents from competition. For example, Pizzola and Tabarrok (2017) estimate a wage premium for funeral services in the United States of 11–12%. Most evidence of a licensing wage premium is from occupations related to health and medicine. Licensing increases the wages of opticians (Timmons & Mills, 2018), radiologic technicians (Timmons & Thornton, 2008), nurses (Law & Marks, 2017), dentists (Kleiner & Kudrle, 2000) and physicians (Anderson, 2000; Kleiner et al., 2016; Kugler & Sauer, 2005). Recent economy-wide studies also have found that licensure is associated with higher wages in licensed occupations in Canada (Zhang, 2019), the European Union (Koumenta & Pagliero, 2019) and the United States (Gittleman et al., 2018; Ingram, 2019; Kleiner & Krueger, 2013; Kleiner & Vorotnikov, 2017).

If licensure improves service quality, wages will be higher because of greater demand for quality products. Instead, as hypothesized by Stigler (1971), wages are higher because entry into the occupation is restricted. Indeed, licensure tends to reduce labor supply. Zapletal (2019) finds that licensing occupations related to cosmetology in the United States slows entry and exit rates, whereas the removal of licensing for hair braiders in Virginia facilitates the entry of small beauty shops (Timmons & Konieczny, 2018). Similarly, some occupational licenses stipulate minimum language requirements that effectively reduce the supply of practitioners, as with manicurists (Federman et al., 2006). Using perhaps the most convincing identification strategy, Rostam-Afschar (2014) and a replication by Runst et al. (2019) find that the removal of entry regulation for German craftsman increases self-employment and entry into the trade. In a broad study of US occupations, Blair and Chung (2019) find that on average licensure reduces labor supply. Returning to medical services, Schaumans and Verboven (2008) find that entry restrictions reduce the number of pharmacies and physicians. A related literature finds that the barrier of licensing reduces cross-border migration (Peterson et al., 2014) and interstate migration (Shakya & Plemmons, 2020) of healthcare professionals. Johnson and Kleiner (2020) find that more restrictive relicensing requirements in 22 occupations reduced interstate migration; Mulholland and Young (2016) likewise show that states with fewer licensing requirements for low to moderate-income occupations tend to have higher in-migration rates. Licensure is also associated with less cross-occupation mobility (Kleiner & Xu, 2020). Recent research has overcome the lack of data that limited Stigler's original analysis, and generally supports the conclusion that occupational licensing restricts the flow of labor into occupations, resulting in economic rents in the form of higher wages for incumbents.

Restricting entry and the labor supply for licensed occupations increases the wages of incumbents while would-be entrants must operate illegally or choose a less preferred occupation in which they likely are less productive and earn lower wages. Therefore, occupational licensure likely exacerbates income inequality. Though unionization tends to reduce the dispersion of wages, evidence indicates that occupational licensure does not (Gittleman & Kleiner, 2016; Gittleman et al., 2018; Kleiner & Krueger, 2013). Hotz and Xiao (2011) emphasize the distributional effects of licensing childcare services, finding that it

increases the quality of services in high-income areas but reduces the availability of services in low-income areas.[9] Moehling et al. (2020) find that more stringent medical school standards reduced the likelihood that graduates would move to rural areas. More generally, occupational licensing is associated with wage gains for high income workers, thereby increasing wage inequality in the European Union (Koumenta & Pagliero, 2019). Kleiner and Vorotnikov (2017) estimate the heterogeneous effects of licensure for each of the 50 US states as well as the effects on the country as a whole: they find that licensure increases wage inequality across the income distribution. A related literature studies the relationship between wage inequality and regulation more generally. In a cross-country study, Calderón and Chong (2009) find that labor market regulation reduces inequality. In contrast, federal regulations in the United States as measured by RegData are associated with both greater wage inequality between occupations (Bailey et al., 2019) and more wage inequality within occupations (Mulholland, 2019).

Taken together, these findings generally vindicate Stigler's perspective on occupational licensure. As a barrier to enterprising individuals seeking entry into new occupations or those simply wanting to migrate to meet the demand for services in other locations, licensure often protects local incumbents from competition and increases their wages at the expense of both potential entrants and consumers. Furthermore, recent research has extended these findings further, showing that occupational licensure tends to increase income inequality.

4 Financial regulation

Financial regulation may serve the public interest, for example by protecting the consumers of financial services or increasing the stability of the financial system by limiting systemic risk. That said, Stigler's economic theory of regulation also can be applied to the financial services industry. Heinemann and Schüler (2004) apply Stigler's theory to banking regulation and find that regulation likely reflects the preferences of bankers, resulting in either a lax regulatory environment to lower incumbents' costs or high barriers to entry to limit competition. Consistent with those predictions, empirical evidence indicates that the financial industry has successfully lobbied US policymakers to adopt favorable regulations (Blau et al., 2013; Lambert, 2018).[10]

Regulation of the financial industry can affect dynamism and the distribution of income through two channels. First, regulatory barriers to entry limit competition within the financial industry, thereby generating economic rents for incumbents. Second, and potentially worse, the same regulation that raises barriers to entry also can reduce the availability of credit to firms and households. Financial development and access to credit are important for economic development and are particularly important for small firms (Beck et al., 2008a). The literature suggests that credit-constrained small firms and poor households are likely to benefit the most from financial development (Demirguc-Kunt & Levine, 2009).

[9] Evidence on the effect of licensing on minority groups is mixed and disputed (Klein et al., 2012; Law & Marks, 2009). Licensing may reduce the probability that new teachers are Hispanic (Angrist & Guryan, 2008), increase the wages of minority nurses (Law & Marks, 2017) and reduce the labor supply more for white men than for black men (Blair & Chung, 2019). McLaughlin et al. (2013) review the earlier literature.

[10] See Claessens and Perotti (2007) for a review of the earlier literature.

Blau (2018) shows that in less developed countries, greater stock market liquidity is associated with faster wage growth which lowers both poverty and income inequality.

More regulated banking systems tend to have higher barriers to accessing banking services (Beck et al., 2008b). If access to finance is restricted or allocated by political influence rather than economic incentives, low-income households and new firms may be harmed disproportionately (Claessens & Perotti, 2007). Individuals may not be able to borrow to invest in human capital and entrepreneurs may not have access to credit that is needed to start a new business. Reforming banking regulations in the United States between the 1970s and 1990s spurred more business churn, particularly among small firms, with more closures and more start-ups (Kerr & Nanda, 2009). To the extent that regulation protects incumbents in the financial services industry by restricting entry and constraining credit to low-income households, financial regulation likely generates greater income inequality.

Evidence of a relationship between financial liberalization (or deregulation) and income inequality is mixed. Beck et al. (2010) find that banking deregulation in the United States between 1970 and 1990s reduced income inequality by increasing incomes at the low end of the income distribution. Oyèkólá (2021) confirms that within-state deregulation reduced income inequality over a similar period, but finds that deregulation of interstate banking increased income inequality. Anti-money laundering regulations related to the USA Patriot Act increased compliance costs which fell disproportionately on smaller firms leading to redistribution within the financial industry (Dolar & Shughart, 2007, 2012). Consistent with the logic that regulation can limit competition and access to credit, Delis et al. (2014) and Li and Yu (2014) find that financial liberalization is associated with less income inequality in short cross-country panels. Interestingly, some studies over longer time horizons have found that liberalization exacerbates income inequality (de Haan & Sturm, 2017; Jaumotte & Osorio, 2015) whereas other studies reach the opposite conclusion—that regulation reduces income inequality (Agnello et al., 2012).[11] De Haan and Strum (2017) provide a review of the literature. Manish and O'Reilly (2019, 2020) attempt to reconcile the competing findings by accounting for Stigler's economic theory of regulation. They find that deregulation that lowers barriers to entry can reduce income inequality, but that deregulation often is accompanied by re-regulation at the behest of industry incumbents, which can raise barriers to entry and increase income inequality. Therefore, some (but not all) financial regulations seem to fit the predatory regulation framework, leading to higher income inequality.

5 Inequality and growth

Stigler (1971) also yields interesting insights within the context of the economic growth and income inequality literature. The preponderance of evidence from that literature suggests that the impact of income inequality on economic growth is moderated by the quality of institutions. Absent corruption, political instability, redistributive policies, or borrowing constraints, inequality neither will impede the accumulation of factors of production nor pose an existential threat to a nation's political and economic institutions. However, a key insight readily derived from Stigler is that the political process that yields industry-friendly

[11] Christopoulos and McAdam (2017) find that financial regulation does not stabilize income inequality.

regulation simultaneously increases income inequality and reduces overall economic growth.

Beginning in the 1990s, a large number of studies found a negative empirical relationship between initial income inequality and subsequent economic growth in the context of cross-country growth models (see Persson & Tabellini, 1994; Alesina & Rodrik, 1994; Alesina & Perotti, 1996, among others). Theories offered to explain that empirical finding included (1) a lack of access to financial intermediation (Greenwood & Jovanavic, 1990), (2) redistributive policies and distortionary taxation (Alesina & Rodrik, 1994; Bertola, 1993; Persson & Tabellini, 1994), (3) lesser human capital formation owing to credit market imperfections (Galor & Zeira, 1993; Perotti, 1993), (4) economic segregation and stratification (Benabou, 1996), and (5) political instability which promotes capital flight (Alesina & Perotti, 1996).

With the introduction of improved panel datasets on inequality in the late 1990s, several studies found a positive relationship between inequality and subsequent growth within cross-country panel growth models (see Li & Zou, 1998; Forbes, 2000). However, subsequent studies found that the relationship between inequality and growth was more complicated. Barro (2000) concluded that inequality was detrimental to growth in developing nations but promoted growth in developed nations. Using semiparametric methods, Banerjee and Duflo (2003) estimate a nonlinear relationship between inequality and growth, concluding that more inequality slowed economic growth only in nations with low levels of inequality. Seeking to reconcile the conflicting results, Galor and Moav (2004) develop a "unified" growth and inequality theory, that can be characterized by three stages of development. During the early phases of development (when physical capital is especially critical) inequality promotes growth by channeling income and savings to wealthier households who are more likely to save. In the middle phase of development, when the relative importance of labor force skills rises, inequality becomes an obstacle to human capital accumulation, and inequality therefore reduces economic growth. Finally, in the last phase of development, credit market imperfections are no longer binding and inequality has no impact on economic growth. Chambers and Krause (2010) find strong empirical support in favor of this hypothesis.

What the above theories lack is a recognition of the importance of political and economic institutions in moderating the impact of income inequality on economic growth (or any other measure of real output or individual welfare). Using various measures of economic freedom (which are typically indexes of property rights, the legal system, freedom to trade, the relative size of government, sound money, and the extent and scope of regulation) a growing literature has demonstrated an empirical relationship between economic freedom and income inequality. In their survey of the literature, Hall and Lawson (2014) conclude that "the balance of evidence is overwhelming that economic freedom corresponds with a wide variety of positive outcomes with almost no negative tradeoffs." Looking specifically at economic freedom and income inequality, both Ashby and Sobel (2008) and Aspergis et al. (2014) find that more economic freedom is associated with less income inequality, while Bennett and Vedder (2013) find that the foregoing conclusion holds only in nations that have surpassed a threshold level of economic freedom. However, Sturm and de Haan (2015) find no relationship between a narrow measure of economic freedom and gross income inequality. Likewise, Holcombe and Boudreaux (2016) find no robust evidence that market institutions generate income inequality. Seeking to explain the conflicting empirical conclusions, Bennett and Nikolaev (2017) demonstrate that differences in methodology, data sources, and sample-selection help to explain prior conflicting evidence. Finally, in an interesting natural experiment, Kufenko and Geloso (2020) report that

income inequality has no impact on a nation's Olympic medal count if that nation has a high level of institutional quality (as measured by the Economic Freedom of the World Index), while inequality hinders the performances of nations lacking economic freedom. This finding suggests that inequality does not matter so long as institutional quality is high.

6 Conclusion

Stigler (1971) posits that economic (price and entry) regulation is enacted to benefit incumbent firms and licensed workers rather than to serve the public interest. Under that predatory view of regulations, entry into industries and occupations is restricted, which creates economic rents, reduces entrepreneurship and, in turn, exacerbates income inequality. This paper reviews the growing empirical literature that evaluates these hypotheses.

Most studies find that business regulation reduces entry into an industry and that entry especially is restricted for smaller firms. Similarly, the literature finds that occupational licensing tends to limit entry into occupations and increase compensation for license holders. In the financial services industry, evidence has been reported that regulation reduces both competition and access to credit. Consistent with the predatory view of regulation, in each area studied, regulation is associated with less entry and reduced dynamism.

Given the evidence that regulation protects incumbents and increases prices, it follows that regulation also influences the distribution of income. Indeed, studies show that business regulation is associated with higher poverty rates. Business regulation and occupational licensure also are associated with more income inequality in both cross-country and within-country studies. The literature on financial regulation is more mixed, but provides empirical support for the conclusion that at least some types of financial regulation exacerbate income inequality. Taken together, this emerging literature overwhelmingly affirms that regulations affect the distribution of income by increasing both poverty rates and income inequality. The evidence that regulation, in particular labor market regulation, increases income inequality, undermines one of the channels proposed by Piketty and Saez (2003, 2007) to explain the observed pattern of income inequality.

Stigler's original contribution challenged the public interest view of regulation. The empirical literature that has emerged over the past half-century similarly has important policy implications. As concerns of slowing dynamism and increasing income inequality grow, more attention should be paid to the potentially regressive effects of regulation. To the extent that economic mobility or the distribution of income are valued by the public and policymakers, the effect of regulation on these outcomes should be considered when assessing the costs and benefits of regulation.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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