

Measurement of Market Concentration Faced by Labor Pools: Theory and Evidence from Fast Food Chains in Rhode Island with No-Poaching Clauses

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Abstract

Recently, no-poaching clauses in franchise agreements, which restrict mobility of workers across establishments within franchises, have attracted widespread attention from the press, state Attorneys General and private litigations. The concern is that no-poaching clauses may increase market power of employers by increasing the share of jobs in the market that employers control. Critical empirical support for these investigations and legal challenges is based on limited empirical research.^[1] This paper challenges fundamental assumptions in that previous research, and demonstrates that the claims of the highly concentrating effects of franchise no-poaching clauses are invalid. This paper also demonstrates the need for a new concentration measure for market arrangements and contractual terms like franchise no-poaching clauses that produce differences in effective concentration across parties at the same level in market, within the same geographic and product market.

JEL No. J08,J23,J41,J42,J47,J53,J62,J63

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^[1] Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section. September 2017, available at <http://arks.princeton.edu/ark:/88435/dsp014f16c547g>.; Alan Krueger and Eric A. Posner, *A Proposal for Protecting Low Income Workers from Monopsony and Collusion*, The Hamilton Project, February 2018, available at http://www.hamiltonproject.org/assets/files/protecting_low_income_workers_from_monopsony_collusion_krueger_posner_pp.pdf

I. Introduction

There has been significant recent interest in no-poaching clauses in the press,² the courts³ and among enforcement agencies particularly in the franchised fast food industry.⁴ These no-poaching clauses restrict an owner of a franchise (“franchisee”) from hiring employees from another franchisee within the same franchise brand, without restriction against hiring across franchise brands. Franchise owners may have an incentive to hire experienced/trained employees from other franchise locations, rather than train them, because the franchise restaurants are independently owned and have an incentive to maximize their own profit.⁵ Therefore, a potential benefit of no-poaching clauses is the increased incentive they provide employers to employ unskilled/inexperienced workers whose productivity improves with experience and/or to invest in employee training and other forms of human capital, particularly if it is franchise-specific human capital. Weighing against this potential benefit are the anticompetitive effects caused by concentrating the control of jobs within the franchise brand, thereby reducing employee bargaining power.^{6,7}

²See for example, Rachel Abrams, “Why Aren’t Paychecks Growing? A Burger-Joint Clause Offers a Clue.” *The New York Times* (New York), September 27, 2017, available at <https://www.nytimes.com/2017/09/27/business/pay-growth-fast-food-hiring.html>. Also see Kellie Lerner, Meegan Hollywood and Robert Gore, “No-poachers Find Themselves in Hot Water.” *Bloomberg Law*, August 29, 2018, available at <https://www.robinskaplan.com/~media/pdfs/no%20poachers%20find%20themselves%20in%20hot%20water.pdf?la=en>.

³See, for example, *Deslandes v. McDonalds*, Memorandum Opinion and Order, U.S. District Court for the Northern District of Illinois, Eastern Division, Case No. C 4875, June 25, 2018.

⁴See, for example, Jeff Stein, “States Launch Investigation Targeting Fast-Food Hiring Practices,” *The Washington Post* (Washington D.C.), July 9, 2018, describing State Attorneys General in 10 states and the District of Columbia that were investigating no-poaching clauses.

⁵In most branded franchises, a franchisee is permitted to own more than one franchise location within the brand. For the purposes of this paper, following Krueger and Ashenfelter, we assume that each franchise location is owned by a different owner. The theoretical results in this paper do not depend on a limitation on the number of locations a franchise owner owns. The empirical concentration measures will be altered by the number of locations a single franchisee owns. A no-poaching clause will not cause further concentration among restaurants owned by the single owner.

⁶Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, available at <http://arks.princeton.edu/ark:/88435/dsp014f16c547g>; Alan Krueger and Eric A. Posner, *A Proposal for Protecting Low Income Workers from Monopsony and Collusion*, The Hamilton Project, February 2018, available at

There has been little empirical research examining the effects of no-poaching clauses on workers, or even the market concentration they cause. The only paper that focuses on the effects of no-poaching clauses within franchises agreements is the recent working/discussion paper by Krueger and Ashenfelter (2017 and 2018, hereafter “K&A”).⁸ Although the paper remains unpublished working/discussion paper, it is cited by journalists, State Attorneys General and private litigants as the empirical support that no-poaching clauses reduce workers wages by significantly concentrating control of employment positions in the hands of owners of franchises.⁹ Due to this broad citation and reliance on K&A that may have important effects on labor and employers K&A requires serious economic evaluation.

K&A does not measure the effect of no-poaching agreements directly but rather uses a standard Herfindahl-Hirshman Index¹⁰ (“HHI”) to measure the extent of concentration in labor markets for a subset of the fast food industry, known in the industry as quick service restaurants (“QSR”), in Rhode Island.

K&A claim, on theoretical grounds, that under a no-poaching clause “Franchisees are not permitted to hire from each other, which is equivalent to making the group of franchisees belonging to a chain a single employer in this labor market.”¹¹ The first part of the statement in K&A is a correct; franchisees typically

http://www.hamiltonproject.org/assets/files/protecting_low_income_workers_from_monopsony_collusion_krueger_posner_pp.pdf.

⁷ In addition some restrictions on labor mobility may be viewed as abhorrent even if voluntary and potentially beneficial to workers.

⁸ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, available at <http://arks.princeton.edu/ark:/88435/dsp014f16c547g>. Also see Evan Starr, *Are Noncompetes Holding Down Wages?*, *Unrigging the Labor Markets: Convening to Restore Competitive Labor Markets*, Harvard University, June 13, 2018.

⁹ Rachel Abrams; Kellie Lerner, Meegan Hollywood and Robert Gore ;*Deslandes v. McDonalds*; Jeff Stein.

¹⁰ The HHI is calculated as the sum of the squares of the market shares. For example, if there are three providers with shares of 50 percent, 25 percent, and 25 percent, the HHI would be $(50 \times 50) + (25 \times 25) + (25 \times 25) = 3750$. The Horizontal Merger Guidelines (“HMG”), P. 18 classifies markets with HHIs greater than 2500 as highly concentrated. When two firms merge, the HHI increases by twice the product of their market shares. For example, if the two smaller firms merged in our example, the HHI would increase by $2 \times 25 \times 25 = 1250$. The HMG (P. 18) explains that in highly concentrated markets “an increase in the HHI of more than 200 points will be presumed to be likely to enhance market power.” US Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, August 19, 2010, available at <https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf>.

¹¹ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 12. Available at

may not hire from within the brand under a no-poaching clause. However, the second part of the claim above in K&A is not; no-poaching clauses do not make all franchisees within a brand into a single employer. The error springs from the fact that the employee of a given franchise within a brand can still seek employment at every location at all other franchise brands, even if restricted within his/her current franchise brand of employ. The claim in K&A that the no-poaching clause makes all franchise employers within a brand into a single employer is *not* based on empirical findings, the theoretical models K&A cite, or the employment limitations imposed on employees of franchises with no-poaching agreements. Rather, it is an unsupported assumption in K&A, which creates the central result of K&A that no-poaching agreements significantly increase employer concentration and therefore market power in the labor market. Without this unsupported assumption, that no-poaching clauses cause all franchise owners within a brand to act as a single employer, K&A's evidence of the negative effect of no-poaching clauses in franchise agreements vanishes.

In discussions of concentration in the QSR industry, based on the evidence in K&A, some researchers claim that no-poaching clauses enhance employer market power to such an extent that they have called for no-poaching clauses to be classified as *per se* violations of antitrust law.¹² However, since that research is based on K&A, it suffers the same deficits as K&A.

The analysis in this paper evaluates the effect of no-poaching agreements and whether there even is a relevant *single* measure of concentration for workers in labor markets under no-poaching clauses. This paper addresses the theoretical need for a different measure of concentration that reflects the concentration faced by various employee groups. We present a new measure of concentration that

<http://arks.princeton.edu/ark:/88435/dsp014f16c547g>. The authors posted an updated version of their paper with the same title, which is available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3217489.

¹² Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, available at <http://arks.princeton.edu/ark:/88435/dsp014f16c547g>; Alan Krueger and Eric A. Posner, *A Proposal for Protecting Low Income Workers from Monopsony and Collusion*, The Hamilton Project, February 2018, available at http://www.hamiltonproject.org/assets/files/protecting_low_income_workers_from_monopsony_collusion_krueger_posner_pp.pdf.

addresses this need. We evaluate the underlying theoretical support in K&A that leads to their claim that no-poaching agreements cause franchisees within a branded franchise to function as a single employer within the market. Finally, we compare the performance of our alternative measure of market concentration to that proposed in K&A in the same labor market it analyzed, quick service restaurant employees in Rhode Island. The results from the measure of concentration applicable to no-poaching agreements alter the empirical conclusions about market concentration in K&A.¹³

Section II of this paper discusses no-poaching clauses and their effects in more detail. It provides an example to demonstrate the important features of no-poaching clauses and how K&A's use of a standard HHI to measure concentration masks the extent and location of competition within the labor market. Section III discusses a theory that motivates the use of the HHI as a measure of concentration and describes the effect of no-poaching clauses on the implications of that theory. It discusses why a single HHI is inadequate in the context of no-poaching clauses and details our new measure of concentration for workers in markets with features such as no-poaching clauses. Section IV provides an empirical analysis of quick service restaurant workers in Rhode Island, which empirically demonstrates the effect of using the inappropriate HHI as a measure of concentration as compared to the new measure of concentration that reflects the market concentration and number of potential employers faced by various groups of workers. Section V concludes.

II. No-Poaching Clauses: How They Work and Whom They Affect

No-poaching clauses under discussion in the in the press, among regulators and in ongoing litigation restrict owners of restaurants within the same branded franchises from hiring employees from other

¹³ This paper focuses on the effect that no-poaching clauses have on market concentration. However, there is an extensive literature about the potentially beneficial effects of contracting that allows for greater investment in human capital, which may be facilitated by contracts that allow employees to commit to limitations in their own labor mobility in exchange for greater investment in their own training and skills. See for example Gary S. Becker, *Human Capital Theory*, (Columbia, New York), 1964. Gary S. Becker, "The Economic Way of Looking at Life," *Nobel Prize Lecture*, December 9, 1992, P. 44.

locations of the same franchise brand. K&A provide a number of examples of no-poaching clauses, including the following from McDonald's:

Interference With Employment Relations of Others.

During the term of this Franchise, Franchisee shall not employ or seek to employ any person who is at the time employed by McDonald's, any of its subsidiaries, or by any person who is at the time operating a McDonald's restaurant or otherwise induce, directly or indirectly, such person to leave such employment. This paragraph 14 shall not be violated if such person has left the employ of any of the foregoing parties for a period in excess of six (6) months.¹⁴

The independent franchise owner is not restricted from hiring any employee except those already employed within her/his own branded franchise. Conversely, the employee can seek employment from any employer outside the franchise brand, and from every individual location of other employers outside of the franchise of their current employ, including those of other franchise brands.¹⁵

For example, under a no-poaching clause, if there are 30 McDonald's in a geographic labor market and 20 Burger Kings, the McDonald's employee can seek employment at each of the 20 Burger Kings.

Similarly, the employee at Burger King can seek employment at each of the 30 McDonald's. But both the McDonald's and the Burger King employees would be restricted from seeking employment from other franchise restaurants of the brand where they are currently employed. The important distinction is that while a no-poaching clause limits the employment options of its current employees within the brand, it has no such limiting effect on potential employees, even those employees at other franchise brands with a no-poaching clause.

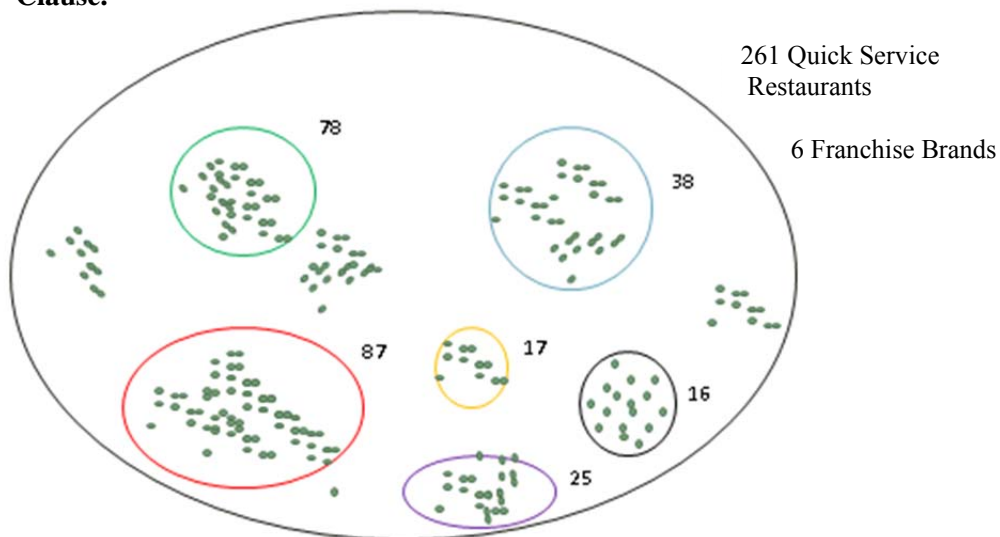
To further illustrate the difference between the effects on employees of no-poaching clauses, we present illustrative figures of concentration for restaurants *without* no-poaching clauses, *with* no-poaching

¹⁴ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 3. (K&A 2018, P. 3).

¹⁵ Although not central to the discussion below, with a 6-month hiatus in employment within the brand, many franchise agreements place no restrictions on hiring employees from within the franchise brand.

clauses, and *with* no-poaching clauses under K&A assumptions that each brand should be treated as a single employer. Figure 1 depicts a hypothetical set of restaurants *without* no-poaching clauses.

Figure 1: Concentration Faced by Employees of Franchise *Without* No-Poaching Clause.



Each colored circle represents a group of restaurants within a franchise brand.¹⁶ Each green dot is an individual restaurant. Some restaurants are not part of a branded franchise. The number proximate to each colored circle is the number of restaurants within the franchise brand. Absent no-poaching clauses, any employee within each of these restaurants could seek employment at any one of the other restaurants. Making the simplifying assumptions of K&A, that each restaurant has the same number of employees and that the relevant market is only those restaurants and employees working within branded franchises, the standard HHI measure is 38.3, if the 261 franchised restaurants, in the hypothetical example above, are a separate market.

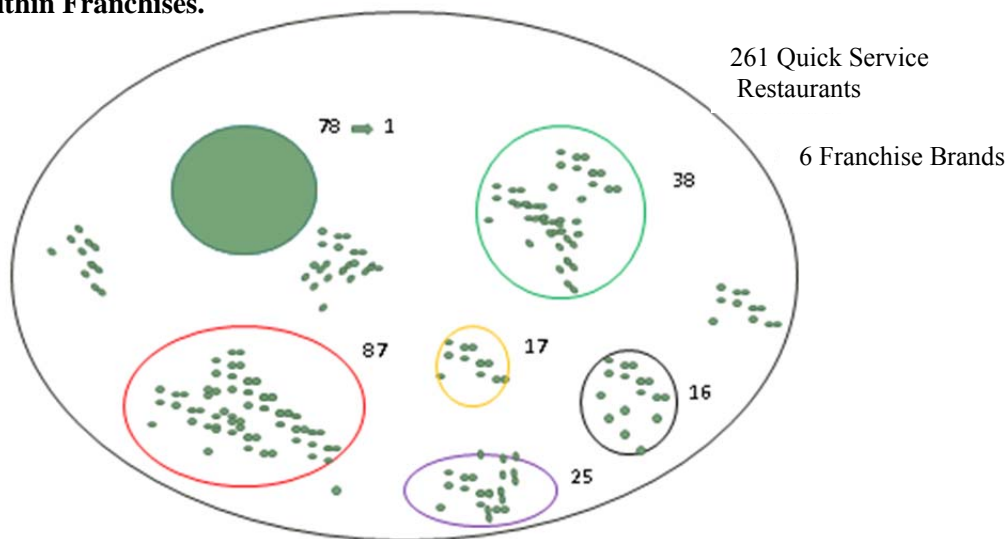
With no-poaching clauses, as viewed in K&A, the market concentration changes because employees working at a branded franchise no longer can seek work at other restaurants within the franchise brand

¹⁶ There is no intention to depict geographic placement in Figure 1.

without the permission of the franchisee where they are currently employed. In effect, the current franchisee employer controls access to all the other jobs within the franchise brand where the employee works, and according to K&A, “making the group of franchisees belonging to the chain a single employer in this labor market”.¹⁷ Although K&A make this assumption, both the independent profit maximization of each of the restaurant owners covered by a no-poaching clause and the nature of the no-poaching agreements, which restricts employee movement only among the franchisees *within* the brand, means that employees may still have extensive employment options at each of the individual restaurants at the competing restaurant brands, even though each of them may also have no-poaching clauses preventing hiring from within their franchise brand.

Figure 2 depicts the effect of the no-poaching clause on the employees of the restaurants within one of those branded franchises.

Figure 2: Concentration Faced by Employees of Franchise *With* No-Poaching Clause Within Franchises.



¹⁷ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 12. Alan B. Krueger and Orly Ashenfelter, Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, IZA DP No.11672 July 2018, P. 11. (“K&A 2018”), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3217489.

With a no-poaching clause, the employees at the franchise depicted in green no longer have the option to seek employment at the other 77 franchise restaurants in the brand. For a given employee at a green restaurant the no-poaching clause means that 78 of the 261 branded restaurants in the market are functionally controlled by the franchisees of the brand where the employee currently works because only his/her employer can release them before they are allowed to work at any of the other 77 restaurants within the franchise. However, these employees may obtain work at any of the other 183 individual restaurant franchises of the other brands where they are not currently employed. In this example, the concentration in the market based on the number of alternative employers increases from $HHI = 38.3$ to $HHI = 919.98$, for the employees of the green franchise.¹⁸

The employees at other franchised restaurants are not limited from seeking employment at any one of the 78 restaurants in the green franchise with the no-poaching clause. The no-poaching clause at the green franchise does not limit the employment options of the employees at the other franchise brands, or alter the concentration of jobs in the hands of employers, as measured by the HHI, from the view of employees outside the green franchise. The employees at other franchise restaurants may, however, be limited by the no-poaching clauses at their own franchise brand. For example, for the yellow franchise with 17 franchise restaurants, the no-poaching clause will change the HHI for their employee from 38.3 to 40.06. This is a smaller change than at the green franchise because the yellow franchise brand has a smaller number of restaurants, and therefore the no-poaching clause has less impact on the change in the concentration in the market that the employees at the restaurants in the yellow franchise face. The no-poaching clause will have a different effect on the labor market opportunities for the employees of each franchise brand. There is no overall market concentration relevant across these different groups of workers because each group has distinctly different employment opportunities within the same product and geographic market. Instead, we need a different measure of concentration for the employees of each

¹⁸ $919.98 = ((78/261)^2 + (1/261)^2 * (261-78)) \times 10,000$, which is in the range considered unconcentrated by the DoJ/FTC. See US Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, August 19, 2010, P. 15, available at <https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf>.

group of employees. The relevant index is no longer a market-wide HHI, but rather a labor group-specific (“LI”) set of indexes as shown in Table 1 for this set of employees or laborers at the 261 restaurants with no-poach clauses.

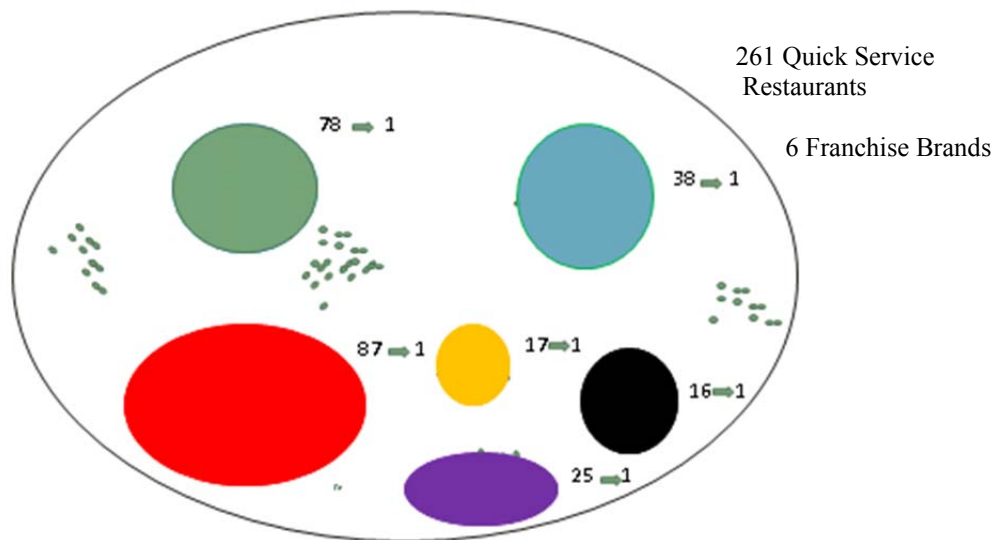
Table 1: Labor Group-Specific Indexes of Concentration.

Number of Restaurants of 261	Franchise Share of Market	HHI without No-Poaching	LI with No-Poaching
16	0.061	38.31	73.55
17	0.065	38.31	78.24
25	0.096	38.31	126.39
38	0.146	38.31	244.71
78	0.299	38.31	919.98
87	0.333	38.31	1136.65

Source: Hypothetical data based on 261 restaurants in 6 franchise brands.

However, K&A view the effect of no-poaching clauses in a different way. K&A assume that the no-poaching clauses “make a franchise brand into single employer,” not only for the employees working in the franchise brand, but also for workers at other franchise brands, preventing workers from any franchise from negotiating with all but one negotiator at each of the other franchise bands. The effect of such an assumption is depicted in Figure 3, where each of the franchise brands changes from multiple restaurant employment opportunities to a single potential employer controlling multiple jobs.

Figure 3: Concentration Faced by Employees of Franchise *With* No-Poaching Clauses for Each Franchise and Each Franchise Treated as Single Employer.



In Figure 3, no-poaching clauses at the six hypothetical branded franchises prevent all employees, not only from negotiating with multiple other restaurants within the same franchise brand, but also from negotiating with all but one representative at all other franchise brands, effectively a representative that controls all the jobs within that franchise. As Figure 3 shows, in the conception of the employment market under no-poaching agreements in K&A employees at the green franchise now face only six total possible employers. Therefore, instead of 87 restaurant in the red franchises, employees at all of the other franchise brands can only approach one potential employer in the red franchise, and similarly for each of the other branded franchises in Figure 3. Under this view of how no-poaching clauses function, the HHI moves from 38.3 without no-poaching clauses to 2388.0 for all employees in the branded franchise market with no-poaching clauses.¹⁹

¹⁹ $2388.0 = 10,000 \times [(78/261)^2 + (87/261)^2 + (38/261)^2 + (17/261)^2 + (25/261)^2 + (16/261)^2]$. This result differs from K&A's result because the numbers in Figures 1 through 3 are purely illustrative. Note that neither this result nor K&A's result account for the stand-alone restaurants available to workers currently employed at franchisees.

This difference in the interpretation of the limitations placed on employers/employees by no-poaching clauses is clearly critical to the interpretation of whether no-poaching clauses have an important impact on the concentration of job opportunities that workers face. Under the K&A interpretation of how no-poaching clauses work, the market-wide HHI, in this hypothetical example, moves from a concentration level that regulators such as the Department of Justice (“DoJ”) and the Federal Trade Commission (“FTC”) view as unconcentrated to the high end of moderately concentrated, and with the change in concentration over 2350, the market-wide effect of no-poaching clauses may be viewed as an important change in competition in the labor market. Under our interpretation of the effect of no-poaching clauses, the LI moves from 38.3 to between 73.55 and 1136.65 in this example, reflecting a much lower increase in concentration of employment in the hands of franchisees than reflected in the calculation of concentration used in K&A.

There is no evidence that no-poaching clauses under discussion by K&A and in the public arena have the feature of making all franchisees in a brand into functionally a single employer as K&A imparts to them. Nonetheless, as we will show in the section IV of this paper, this is how the calculations related to no-poaching clauses are analyzed in K&A.

III. Why the Standard HHI Does Not Reflect Relevant Impact of No-Poaching Clauses: Theoretical Link Between Competition and Concentration Ratios

K&A reference the Cournot model as the theoretical justification for using the HHI as an indicator of potential market power.²⁰ The Cournot model shows that as the number of employers in a market falls, causing the number of employees available to each employer to increase, employers will reduce wages.

²⁰ Robert E. Dansby and Robert D. Willig, “Industry Performance Gradient Indexes,” *American Economic Review*, Vol. 69, 1979, PP. 249-260. The authors (P. 249) caution that how a firm responds to competitors’ decisions can be an important consideration: “Since different modes of firms’ conduct lead to different indexes, the choice among concentration index formulae should be based on an assessment of the behavior of the industry’s firms. We find that the potential improvement in welfare performance is as sensitive to mode of conduct and other industry data as it is to market shares.” Krueger and Ashenfelter offered no such assessment.

K&A assert that the no-poaching clauses make the franchisees of a brand into a single employer in the labor market for all employees, regardless which franchise brand they work for.²¹ K&A then used this asserted effect of the no-poaching agreements to determine the HHI that would exist in the market.

However, K&A do not use the Cournot model to demonstrate that the no-poaching clauses would cause otherwise independent franchisees within a franchise brand to function as a single firm. They simply use the Cournot model as a justification for using the HHI as a measure of market power. The assertion that no-poaching agreements make all franchise owners within a brand into functionally a single employer is purely an assertion of K&A.

Even without a direct justification from a theoretical model, the HHI is sometimes used as a potential ancillary measure of market power. The DoJ/FTC has used the HHI as an indicator of markets that may require additional review of mergers that may create market power through concentrations of markets.

Other scholarly research investigates the relationship between the HHI and market power without explicitly determining whether the market being analyzed is consistent with a Cournot model.²²

Furthermore, authors have noted that the validity of the Cournot model in “single-period” models where the oligopolists do not learn from past decisions and have also mentioned that the Cournot model is used as a heuristic even when it does not fit the features of the market perfectly.²³ Although the Cournot model in K&A is not used to demonstrate that a no-poaching clause will convert competitors within a franchise brand into a single coordinated actor, it is still instructive to determine whether no-poaching clauses would indeed transform competitors into functionally fewer market actors in a way that increases the supply of workers to each profit maximizing employer, as K&A suggest.

²¹ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 12. Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, IZA DP No. 11672 July 2018, P. 11

²² Weiss, Leonard W (ed), *Concentration and Price*, (Cambridge, MA: The MIT Press, 1989).

²³ Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization*, Second Edition, (New York, Addison Wesley, 1994), P. 238,

To address this question, we use the fundamental equations of the Cournot model to see how the limitation on hiring employees from within the franchise brand alters the supply curve for oligopsonists in a labor market. We use the example of four restaurant franchises, two each in two franchise brands as described in the supply and demand equations below. They each have equal numbers of employees and face the same demand curve with constant price of their output.

1) Supply; $W(N) = a + bN = a + b(n_1 + n_2 + n_3 + n_4)$, which is market labor supply curve as a function of N , b is the market response of the wage $W(n)$ to the number of employees in the labor market.

N is the total number of employees in the market, including $n_1 + n_2$, which are in franchise brand I, plus $n_3 + n_4$ which are in franchise brand J. The jobs for the employees are identical. The individual employees have different reservation wages, which creates the upward sloping market supply curve, but are otherwise identical.

2) Demand: $S'(N) = D$, which is constant price of outputs.

A common version of this model used for heuristic purposes is to assume that all firms (in this case franchisee restaurants) have the same $S'(N)$, which means all firms in the market end up with the same quantity of workers.

The no-poaching clauses mean that for each wage an individual employer (e.g., employer 1 in franchise brand I (denoted as "I-1")) cannot attract $n/4n$ of the employees he/she would normally hire because the restaurant cannot hire from restaurant 2 in franchise brand I. The same limitation is symmetrically true for each of the other restaurant locations, whether in franchise brand J or I. However, the restaurants in franchise brand I can hire from the two locations in J, which also cannot hire from each other. Therefore, while restaurant I-1 loses the opportunity to hire $n/4n$ of the employees that would be available in the market from I-2 inside the franchise brand, restaurant I-1 also shares with I-2 the increased opportunity of hiring the employees from J-1 and J-2 who cannot move between the J branded franchises. There are $2n$ of these employees who are now only available to the I franchise brand coming from the J franchise brand

out of $4n$, $2n/4n$, who are additionally available to I-1 and I-2, due to the no-poaching clause. The labor supply curve to I-1 appears as follows under a Cournot model with a no-poaching clause.

$$\begin{aligned} 1') \text{ Supply: } W(N) &= a + b\left[N\left(1 - \frac{n}{4n} + \frac{1}{2} \frac{2n}{4n}\right)\right] = a + b\left[N\left(1 - \frac{1}{4} + \frac{1}{4}\right)\right] \\ &= a + b(n_1 + n_2 + n_3 + n_4)\left[\left(1 - \frac{1}{4} + \frac{1}{4}\right)\right] \\ &= a + b(n_1 + n_2 + n_3 + n_4), \text{ which is identical to Eq.1} \end{aligned}$$

absent the no-poaching clause. The loss in access to part of the labor market from within the franchise brand is cancelled out by the gain from the additional labor diverted away from the other franchise brand in the Cournot model. In this example, the no-poaching agreement has no impact on the extent of competition in the labor market, according to a Cournot model. A similar effect can be seen with more participants and franchises for this commonly used form of the Cournot model.²⁴ With a larger number of restaurants within a franchise brand the no-poaching clause can shift the residual supply curve and can have an effect on concentration. However those theoretical effects are smaller than those presented in K&A.

In general, a dynamic process like poaching/no-poaching is unlikely to be captured in an inherently non-dynamic model such as a Cournot model. In a Cournot model, where there is no friction, and where movement between companies, if any, is driven by employer demand rather than laborer decisions about work location preferences, it is not clear there is ever any poaching. Therefore any implication that no-poaching clauses cause an increase in market power through a Cournot model may be out of reach.

In other models, not just Cournot, where employees are restricted from seeking employment within their franchise brand, there is an increased opportunity for those same employees to be hired by restaurants

²⁴ With B symmetric franchise brands with r restaurants in each brand, the supply curve in the 2 franchise brand example is generalized to: Supply: $W(N) = a + b\left[N\left(1 + \frac{2-r}{B r}\right)\right]$, where B is the number of franchise brands and r is the number of restaurants per brand. For example, as described below, in Rhode Island, there are about 260 restaurants within 20 franchise brands. If these brands were equally-sized, there would be 13 restaurants per brand. This would reduce the number of opportunities represented in the supply curve by about 4 percent $\left(\frac{13 - 2}{20 \times 13}\right)$.

outside the franchise brand that may not hire from within their franchise brand. The no-poaching clause reduces the number of potential employers for each employee, but at the same time increases those same employers demand for employees from *outside* the franchise brand. The demand curve remains the same, and the supply curve is altered relatively little, if at all.

In dynamic labor models, employee termination rates may influence the market power of employers.²⁵ To the extent that the quit rates are due to the process of retirement from the industry or movement to other franchise brands, no-poaching clauses will likely have little to no impact on the exit, termination rates or hire rates at an employer, again because any restriction in hiring within the franchise is offset by the increase in the supply of workers available from restaurants at other franchise brands who may not hire their own workers. To the extent that restaurants within a brand have a preference for hiring workers from restaurants from their own branded franchise, the exit and rehire rates could decline due to no-poaching clauses. At the same time, the preference for hiring workers from restaurants within the franchise brand means that there has been some sort of franchise-specific experience, on-the-job training and/or human capital acquisition that make these employees more valuable within the franchise brand.²⁶ This franchise-specific investment in human capital is in great part the justification for implementing no-poaching clauses to promote more on-the-job training and human capital investment. Without an elevated exit rate and rehire rate associated with the desire to hire from within the franchise brand, the no-poaching clause likely has little to no effect on exit and hire rates because the employees' reduced opportunity to be hired at a restaurant within the franchise brand is counterbalanced by the increased opportunities outside the franchise brand. Concomitantly, the employers' loss of potential hires within the franchise brand is

²⁵ For a description of dynamic labor models where employee exit rates are related to employer market power see Alan Manning, *Monopsony in Motion*, Princeton, NJ: Princeton University Press, 2003. K&A also cite Manning in support of their application of dynamic labor models. Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, PP. 14-16. Alan B. Krueger and Orly Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, IZA DP No.11672 July 2018, PP. 14-16. Although K&A conclude that by reducing the rate at which employees leave their jobs, no-poaching agreements lower wages, as we discuss below, such agreements may well have no effect on quit rates.

²⁶ To the extent that training at quick service restaurants (“QSRs”) is industry-specific it will induce employers to prefer workers from within their brand.

counterbalanced by the increased opportunity to hire employees of competing franchise brands who may not be hired by employers of those brands.

This does not mean that some mechanism like no-poaching clauses can't impact competition or that the HHI may not provide a useful empirical metric to study market concentration from no-poaching clauses. It simply means that at least some common forms of the Cournot model and some dynamic models cited by K&A do not imply that no-poaching clauses make franchisees within a brand function as a single company. It also means that these models do not suggest that no-poaching clauses necessarily have large impacts on employee wages, absent firm-specific human capital acquisition.²⁷

Even if not motivated by a Cournot model, the effect of no-poaching clauses on concentration of job opportunities is still of interest even if only because regulators use such measures to identify potentially damaging reductions in competition. In addition market concentration is of interest because K&A uses the HHI as the empirical evidence of increased market power afforded employers by no-poaching clauses that is so frequently cited by press, regulators and private litigants, mentioned above. If employees, who once had hundreds of potential employers to seek work from, instead have only a few due to no-poaching clauses between franchisors and their franchisees, and if those contractual relationship has no plausible or counterbalancing benefit to employees,²⁸ the contract may harmful to employees. To investigate the potential reduction in functional employers and the concentration in jobs controlled by those employers, we next turn to some market data to measure the concentration of jobs among employers that various employees or labor groups face with and without no-poaching clauses.

²⁷ We do not suggest that franchise-specific human capital acquisition is not possible. We only note that if franchise-specific human capital is important, the incentive produced by no-poaching clauses for employers to provide human capital training also needs to be addressed.

²⁸ There is an extensive literature about the potentially beneficial effects of contracting that allow for greater investment in human capital, which may be facilitated by contracts that allow employees to commit to limitations in their own labor mobility in exchange for greater investment in their own training and skills. See for example Gary S. Becker, *Human Capital Theory*, (New York, Columbia, 1964). Gary S. Becker, "The Economic Way of Looking at Life," *Nobel Prize Lecture*, December 9, 1992, P. 44.

IV. Performance of Concentration Measures, LI compared to HHI: Empirical Example from Quick Service Restaurants in Rhode Island

K&A provide an analysis of the Rhode Island QSR market as an example of the effect of no-poaching clauses. K&A use data from a company called FRANDdata, which contains both the number of locations by franchise brand for QSRs in Rhode Island and whether each franchise brand included a no-poaching clause in their franchise clause. They found that there were 18 QSR franchise brands in Rhode Island with a total of 261 locations. According to K&A, without the no-poaching clauses any employee can go to any other QSR location to seek a competing employment offer. This produces an HHI of 38.3.²⁹ K&A make the simplifying assumption that all QSR locations employ the same number of employees.³⁰ Each of these employees has the opportunity to approach the same number of potential employers competing for their services: their own employer plus 260 others. Since each employee faces the same number of potential QSR employers competing for their services, each employee is impacted by the same concentration in the market, $HHI = 38.3$. By any standard this is an unconcentrated market that each employee faces without no-poaching clauses in the QSR market in Rhode Island.³¹

K&A turn to an assessment of what of the market concentration is with no-poaching clauses, calculating this as “ $H^* = 1,678$.”³² To obtain this H^* measure of concentration, K&A use the assumption, discussed above, that the “the restaurants affiliated within each franchise chain refrained from hiring each other’s workers...”³³ But, as described above, the H^* in K&A contains the assumption that employees of a restaurant of one franchise brand can only approach one representative of another franchise brand for

²⁹ $38.3 = 261 * (100 * (1 / 261))^2 = 10,000/261$.

³⁰ K&A make a number of simplifications to perform this calculation as we will discuss in more detail below, related to the availability of jobs for QSR restaurant employees at restaurants excluded from the analysis, jobs outside the state but within a few miles of Rhode Island QSR restaurants and jobs for QSR employees in other industries.

³¹ See U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 2010. Section 5.3., P. 19. K&A do not use the HHI cut-offs used in the Horizontal Merger Guidelines 2010, P. 19, which list an HHI of under 1500 as an unconcentrated market.

³² In K&A (2017, 2018), “ H^* ” is the same as HHI, which was defined earlier (and in the DoJ/FTC Horizontal Merger Guidelines). In this section, we use the K&A notation.

³³ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 13. (K&A 2018, P. 13).

employment at any restaurant in all other franchise brands as well. This is not a limitation imposed by the no-poaching clauses.

A. Effect of No-Poaching Clause Based on the Extent of Market Competition in QSR in Rhode Island

We can implement a correction to the HHI in K&A by accurately reflecting the number of competing employers that employees see in the market as described above. To perform this corrected calculation, we collected the number of restaurant locations for each of the franchise brands in K&A that they defined as QSRs. We obtained the restaurant counts from the Rhode Island Department of Health as “Active” QSRs.³⁴

Using FRANData’s Franchise Registry, we determined which of the restaurant chains in the Appendix Table of K&A were considered QSRs. We combined this with data from the Rhode Island Department of Health website³⁵ containing all of the active “Food Service” licenses in the state. We found 262 licenses that were 1) part of a branded franchise in the Appendix Table of K&A and 2) labeled as a Quick Service Restaurant according to FRANData. These restaurants represented 20 different branded franchises, broadly similar to the K&A findings of 261 restaurants across 18 branded franchises. Sixteen of the 20 brands, covering 151 of the 262 restaurants, had a franchise contract that contained a no-poach clause.³⁶

Table 2 lists the number of locations in Rhode Island for each branded QSR franchise from the list we generated and whether the Appendix Table in K&A listed the branded QSR franchise as bound by a no-poaching clause.

³⁴ The data we use can be found at <http://health.ri.gov/lists/licenses/>. Retrieved 17 July 2018.

³⁵ <http://health.ri.gov/lists/licenses/>. Retrieved 17 July 2018.

³⁶ The company AFC, although it is listed as a Quick Service Restaurant in the Franchise Registry, is licensed as a “Food Processor” business rather than a “Food Service” business in Rhode Island. Therefore, we used the Rhode Island Department of Health’s license data for food processors to determine the number of AFC locations, as of July 17, 2018. None of the other QSR restaurants in the Appendix Table in K&A had any locations with “Food Processor” licenses. The 80 percent (16 out of 20) of Rhode Island franchises with no-poaching clauses is identical to K&A (2017, 2018, Table 1b) percentage. Despite the fact that some franchises do not have no-poaching clauses, K&A’s calculations treated all Rhode Island franchises as having these clauses.

Table 2: Number of Restaurant Locations for QSR in Rhode Island by No-Poaching Status

QSR ¹ Chain Name	No-Poach Clause?	Number of Locations ²
A&W	Yes	1
AFC	Yes	8
AUNTIE ANNE'S	Yes	2
BURGER KING	Yes	27
CHICK-FIL-A	No	1
DOMINO'S PIZZA	Yes	24
FIVE GUYS BURGERS AND FRIES	Yes	5
JERSEY MIKE'S	Yes	5
KFC	No	16
LITTLE CAESARS	Yes	7
MCDONALD'S	Yes	31
MOE'S SOUTHWEST GRILL	Yes	3
PANERA BREAD	Yes	8
PAPA JOHN'S	Yes	2
PIZZA HUT	Yes	3
POPEYES LOUISIANA KITCHEN	Yes	6
SONIC	Yes	1
SUBWAY	No	78
TACO BELL	No	16
WENDY'S	Yes	18
Total		262

¹Restaurant types and presence of a no-poaching clause from FRANdata, <https://franchiseregistry.com/>

²Rhode Island Department of Health Licensee List. <http://health.ri.gov/lists/licensees/>. Retrieved 17 July 2018.

Our data from the Rhode Island Department of Health differs slightly from that used in K&A in part because K&A relied on data from a commercial franchise data collection company, FRANdata. In addition, our data also reflects information current on the Rhode Island Department of Health webpage as of July 17, 2018.³⁷

Based on our data, we calculate the measure of employer concentration facing employees currently at each branded QSR franchise. For those workers not employed in the QSR industry and for those

³⁷ Rhode Island Department of Health Licensee List. <http://health.ri.gov/lists/licensees/>

employees of branded QSR franchises that do not have no-poaching clauses, the no-poaching clauses have no impact on the number of employers that compete for those potential employees' services: the market concentration they face is unchanged. Based on the K&A data, the $H^* = 38.3$ for QRS workers in Rhode Island. Based on our data and calculation method the $H^* = 38.17$, absent no-poaching clauses.³⁸ Table 3 lists the branded QSR franchise, whether the brand's franchise agreement has a no-poach clause according to FRANdata, the number of locations in Rhode Island for the franchise brand (these fields also included in Table 2), and our new measure of the laborer group-specific index of concentration ("LI" defined above) with no-poaching agreements prohibited, and the LI given the current state of no-poaching clauses for each franchise brand.

³⁸ As described earlier, the K&A calculation of an H^* of 1,678 assumes (incorrectly) that all chains have no-poach agreements that reduce employment opportunities across locations of all brands. Our data produces an H^* of 1,381 with the assumptions in K&A (2017, 2018).

Table 3: Laborer Group-Specific Concentration Index (LI) by Chain for QSR in Rhode Island

QSR ¹ Chain Name	No-Poach Clause?	Number of Locations ²	LI for Worker if Poaching Allowed	LI for Worker in Reality
A&W	Yes	1	38.17	38.17
AFC	Yes	8	38.17	46.33
AUNTIE ANNE'S	Yes	2	38.17	38.46
BURGER KING	Yes	27	38.17	140.43
CHICK-FIL-A	No	1	38.17	38.17
DOMINO'S PIZZA	Yes	24	38.17	118.58
FIVE GUYS BURGERS AND FRIES	Yes	5	38.17	41.08
JERSEY MIKE'S	Yes	5	38.17	41.08
KFC	No	16	38.17	38.17
LITTLE CAESARS	Yes	7	38.17	44.29
MCDONALD'S	Yes	31	38.17	173.65
MOE'S SOUTHWEST GRILL	Yes	3	38.17	39.04
PANERA BREAD	Yes	8	38.17	46.33
PAPA JOHN'S	Yes	2	38.17	38.46
PIZZA HUT	Yes	3	38.17	39.04
POPEYES LOUISIANA KITCHEN	Yes	6	38.17	42.54
SONIC	Yes	1	38.17	38.17
SUBWAY	No	78	38.17	38.17
TACO BELL	No	16	38.17	38.17
WENDY'S	Yes	18	38.17	82.75
Total		262		
Laborer Total Average Index ("LTI")			38.17	58.05
Laborer Total Weighted Index ("LTI-Weighted")			38.17	76.06

¹ Restaurant types from FRANdata, <https://franchiseregistry.com>.

² Rhode Island Department of Health Licensee List, <http://health.ri.gov/lists/licensees>. Retrieved 17 July 2018. Shares and poaching status are of July 2018.

Table 3 lists a separate measure of market concentration for the employees of each branded QSR franchise, the LI.³⁹ As discussed above, a separate LI measure is needed for employees of each branded franchise because the employees of each branded QSR franchise face different numbers of competing employers. For example, maintaining for now the assumptions within K&A about equal numbers of

³⁹ The calculation of the Laborer Group-specific Index ("LI") is defined above.

employees at each restaurant, employees of the three Pizza Hut locations in Rhode Island, which has a no-poach clause, can seek employment at 259 other employers in addition to Pizza Hut. Therefore, the Pizza Hut employees within Rhode Island face very little reduction in employment opportunities due to the no-poaching limitations based on the market definitions used in K&A as measured by Pizza Hut's LI. With Pizza Hut's no-poaching clauses enforced, Pizza Hut employees would experience a level of market concentration of $LI = 39.04$ instead of $LI = H^* = 38.17$ if no-poaching clauses were prohibited. There is virtually no change in the number of QSR employers Pizza Hut employees can turn to. At the other end of the spectrum in Rhode Island, for McDonald's employees, the no-poaching clause changes the LI from 38.61 to 173.65. The no-poaching clauses eliminated 30 potential QSR locations from the set of potential employers that a McDonald's employee can turn to for employment within the QSR industry. 173.65 is still a low level of concentration. The DoJ/FTC considers this to be in the low range.⁴⁰ Further, economic studies of HHIs associated with increases in market power sufficient to move prices, such as wages, are significantly larger.⁴¹

In Table 3, Subway has the largest number of locations, but does not have a no-poaching clause in its franchise agreements, according to FRANData. However, if Subway did change its franchise agreement at all of its franchises, the LI for Subway employees would go up to $LI = 913.12$. Even this figure is well below DoJ/FTC's upper bound of 1500 for "Unconstrained Markets."⁴² Yet it would be a large change, and, if it did have no-poaching clauses, certainly would be the closest franchise brand to warrant any attention due to increased concentration resulting from no-poaching clauses. We also note that the 1,678,⁴³ which K&A calls highly concentrated,⁴⁴ is considered by the DoJ/FTC to be at the low end of

⁴⁰ U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, Section 5.3.

⁴¹ See for example, Leonard W. Weiss(ed), *Concentration and Price*, (Cambridge, The MIT Press, 1989).

⁴² U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, Section 5.3., P. 19.

⁴³ K&A P. 13 acknowledge that their HHI "omits all the other restaurants in Rhode Island, of course, but it still suggests a potentially large impact of no-poaching agreements on the competitiveness of this labor market." In fact, even if one accepts K&A's assumption that no-poaching clauses are equivalent to mergers of all franchises into single firms (including even those franchises without no-poaching clauses), then the resulting measurement of concentration is much smaller when other quick-service restaurants are included. The 2012 Economic Census

“Moderately Concentrated,” which ranges from an HHI of 1500 to an HHI of 2500.⁴⁵ Further, even under the prior DoJ/FTC Horizontal Merger Guidelines revised in 1997, 1,678 is in the “moderately concentrated” range, not the “highly concentrated” range as asserted in K&A.⁴⁶

Table 3 also provides two new summary measures of concentration for the branded QSR franchises in Rhode Island that we created to provide a measure of concentration across a geographic market. The Laborer Total Index (“LTI”)⁴⁷ lists the average LI across the QSRs in Table 3. In addition, Table 3 lists the Laborer Total Index-Weighted (“LTI-Weighted”),⁴⁸ which lists the average LI across the QSRs listed in Table 3, weighted by the number of locations.⁴⁹ The LTI-Weighted is the weighted average market concentration faced by employees in the table. While some employees may still face significant limitation as measured by their brand-specific LI and others may face very little, the LTI-Weighted provides an overall measure for the QSRs in the analysis. For the QSRs in this Rhode Island analysis the LTI = 58.05, and the LTI-Weighted = 76.06.

reports that there were 807 Limited Service Restaurants in Rhode Island (https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/72A1/0400000US44/0400000US44.05000/0400000US44.E6000). Therefore, the 265 locations in franchise chains that the authors report from the same source are only about 33 percent of the Limited Service Restaurant locations.

⁴⁴ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 13. (K&A 2018, P. 12).

⁴⁵ U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 2010, Section 5.3., P. 19. K&A do not use the HHI cut-offs used in the Horizontal Merger Guidelines 2010. Instead K&A use the out-of-date figures found in the earlier DoJ/FTC guidelines, U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 1992, Revised 1997, P. 15. At that time HHI= 1,000 was listed as the upper-bound of the unconcentrated market, and 1,800 for the upper-bound of the moderately concentrated market.

⁴⁶ DoJ/FTC guidelines U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 1992, Revised 1997, P. 15, defining the “moderately concentrated” range as HHIs between 1000 and 1800.

⁴⁷ The Laborer Total Average Index (LTI) is a simple average of the Laborer-Specific Concentration Index (LI) values for all of the chains. If there were 4 chains, with LI values of 500, 500, 1000, and 1000, the LTI would be $(500 + 500 + 1000 + 1000) / 4 = 750$.

⁴⁸ The Laborer Total Weighted Index (LTI-Weighted) is a weighted average of the Laborer-Specific Concentration Index (LI) values for all of the chains, weighted by the number of locations. Each LI value is multiplied by the number of locations for that particular chain, the results are summed, and then divided by the total number of locations. If there were 4 chains, with LI values of 500, 500, 1000, and 1000, and they had 1, 2, 3, and 4 locations respectively, the LTI-Weighted would be $((500 * 1) + (500 * 2) + (1000 * 3) + (1000 * 4) / (1 + 2 + 3 + 4) = 850$. In this case, the LTI-Weighted is larger than the LTI, because there are more locations, and therefore more workers at those locations, who experience a more concentrated market.

⁴⁹ These same measures of concentration could be performed incorporating the number of individual workers at each location.

B. With Minimal Market Concentration, there is No Evidence of Competitive Harm from No-Poaching Clauses

Having calculated market concentration to reflect the employer conditions that Rhode Island QSR employees face, based on the data we described earlier, there is no evidence that no-poaching clauses in Rhode Island significantly alter market concentration or market power as measured in K&A. The increase in market concentration that K&A say reflects “potentially large impact of no-poaching clauses on the competitiveness of this labor market”⁵⁰ is the result of a calculation that does not reflect how no-poaching clauses work. The K&A calculation does not reflect the extent of competition that exists among franchises for employees even when no-poaching clauses are enforced. Further, the K&A calculation does not reflect the extent of competition even if companies that do not have no-poaching clauses instituted them across all of their franchise locations. The H* of 1678 presented in K&A overstates actual concentration of employment opportunities faced by employees, which at most results in an index of 173.65 even for the employees of the largest QSR in RI with a no-poaching clause in July 2018. In summary, results from applying our methodology to the data we collected for Rhode Island’s QSRs contradict the K&A assertion of highly concentrated employment conditions for employees of QSR of franchises, and demonstrate that the set of labor group-specific measures of concentration are empirically important in assessing concentration in this market.

V. Conclusion

This paper demonstrates that in assessing the effect of no-poaching clauses on different labor groups composed of employees of different franchises, a new approach is needed to measure concentration. The new measure described here determines market concentration based on the employment opportunities available to employees of each branded franchise, because each of the labor groups have very different opportunities under the limitations imposed by no-poaching clauses. The new set of laborer group-

⁵⁰ Alan B. Krueger and Orley Ashenfelter, *Theory and Evidence on Employer Collusion in the Franchise Sector*, Working Paper #614, Princeton University, Industrial Relations Section, September 2017, P. 13. (K&A 2018, P. 13).

specific indexes of concentration is needed to describe a market where different groups of laborers face different effective market concentrations, which makes the market-wide HHI irrelevant because it cannot describe the extent of, or change in, concentration for the market overall, or for any individual labor group. The empirical analysis in this paper shows that the HHI can differ greatly from the relevant measure of the LI. The empirical example shows that the HHI calculated for the quick service restaurant market in Rhode Island as presented in K&A is greatly inflated because it relies on a misconception of the limitations that no-poaching clauses place on workers. The laborer group-specific index (“LI”) developed in this paper shows that based on the data we analyzed the additional job concentration and potential employer market power created by no-poaching clauses in the RI QSR industry as defined by K&A is minimal. Other markets or definitions of markets may exhibit different results.

The LI is applicable to other markets besides labor markets under no-poaching clauses. Any market where the location of the good or service restricts or enhances which companies can purchase the product will require individual group-specific concentration indexes. For example, market allocation models or market allocation models with some overlapping boundaries will require sets of group-specific indexes to describe the effect of the market allocations. In addition, any regulation that segments the allowable goods or services that can be purchased by certain companies requires a set of group-specific indexes to measure concentration accurately and to determine whether there is some competitive impact within any individual group based on the regulation. In addition, any merger that occurs within a market that has such segmentation also needs to use a set of group-specific indexes to determine effects on specific groups. In this analysis the accurate use of measures of concentration revealed that across the labor groups, the effect of no-poaching clauses, although different across labor groups, was low for all groups, reflecting little influence of no-poaching clauses on employees’ market position and ability to achieve higher wages, due to market concentration.

However, no-poaching clauses could have an important influence on labor well-being for other reasons. It may be that labor, even low-skill labor, is not very fungible across franchise brands. Employees may

learn certain skills that make them additionally valuable due to on-the-job experience that is specific to a franchise brand.⁵¹ Preventing an employee from moving to another restaurant within a franchise brand may limit the employee from taking advantage of these acquired brand-specific skills. Measurement of this type of limitation is not captured by the concentration measures proposed by K&A or in this paper. At the same time, limitations on employee movement between restaurants within a brand may provide the franchisee greater incentive to hire inexperienced workers whose productivity will rise with time on the job and/or train employees because competing franchisees of the same brand will be prohibited from expropriating that investment. The literature on Human Capital makes it clear that even low-level employees receive significant on-the-job experience/training. Furthermore, it is clear that over time at some quick service restaurants' employees receive explicit training and education.⁵² While the oft cited empirical work in K&A, actually reflects at most a minimal increase in effective concentration in the QSR industry in RI, the limitation of employees' use of their franchise-specific human capital could be significant and remains unaddressed empirically in the QSR industry. In addition, there has been no empirical analysis of the effect of no-poaching clauses on employer investment in employee human capital. Furthermore, there has been no direct effect of no-poaching clauses on employee pay.

In addition, it is possible that more refined analysis of geographic markets will show that in some locations no-poaching clauses could have an important effect on laborers. These studies would need to include relevant geographic markets, which would not be limited by administrative boundaries (i.e. states), but rather would be defined by relevant employment markets and forces. They would also need to include relevant alternative employment, perhaps manual labor, work in basic child-care, other food service jobs, and even almost identical work at branded franchises such as Dunkin Donuts, Starbucks and

⁵¹ See for example, D. O. Parsons, *Handbook of Labor Economics*, North-Holland, New York, 1986), P. 794.

⁵² An example of this type of more extensive training occurs at McDonald's where manager-level employees may be sent to McDonald's central training facility outside Chicago, with costs including flight, housing, food and courses for a week-long session. Further many McDonald's Managers have taken the equivalent of a full semester of college-level credits. A description of McDonald's training is available at <http://www.marketwired.com/press-release/mcdonalds-celebrates-50-years-training-developing-employees-hamburger-university-nyse-mcd-1422879.htm>.

Auntie Anne's, which are some of the largest national branded food service franchises in the United States. They were excluded from quick service restaurants used in K&A and hence in the comparative analysis of concentration metrics in this paper. Such further analysis based on the LI measure of concentration may show that the effects of no-poaching clauses are large enough to be concerning and outweigh any potential human capital accumulation effects. However, to date there is no such evidence that no-poaching clauses have a significant impact on market concentration or that they outweigh potential human capital related benefits to workers.

References:

- Abrams, Rachel. 27 September 2017. "Why Aren't Paychecks Growing? A Burger-Joint Clause Offers a Clue." *The New York Times*. Retrieved from <https://www.nytimes.com/2017/09/27/business/pay-growth-fast-food-hiring.html>.
- Abrams, Rachel. 12 July 2018. "7 Fast-Food Chains to End 'No Poach' Deals That Lock Down Low-Wage Workers." *The New York Times*. Retrieved from <https://www.nytimes.com/2018/07/12/business/fast-food-wages-no-poach-deal.html>.
- Acemoglu, Daron and Pischke, Jorn-Steffen. 1999. "The Structure of Wages and Investments in General Training." *Journal of Political Economy* 107 (3): 539-572.
- Becker, Gary S. 1964. *Human Capital*. Chicago: University of Chicago Press.
- Becker, Gary S. 1964. *Human Capital Theory*. New York: Columbia.
- Becker, Gary S. 9 December 1992. "The Economic Way of Looking at Life." *Nobel Prize Lecture*.
- Dansby, Robert E. and Willig, Robert D. 1979. "Industry Performance Gradient Indexes." *American Economic Review* 69 (3): 249-260.
- FRANdata. 2018. "Franchise Registry." Retrieved 17 July 2018, from <https://franchiseregistry.com/>
- Galenson, David. 1981. *White Servitude in Colonial America*. Cambridge, UK: Cambridge University Press.
- Krueger, Alan B. and Ashenfelter, Orley. 28 September 2017. *Theory and Evidence on Employer Collusion in the Franchise Sector*. (Working Paper No. 16). Princeton University, Industrial Relations Section. Retrieved from <http://arks.princeton.edu/ark:/88435/dsp014f16c547g>.
- Krueger, Alan B. and Ashenfelter, Orley. July 2018. *Theory and Evidence on Employer Collusion in the Franchise Sector*. (NBER Working Paper No. 24831). National Bureau of Economic Research, Programs in Labor Studies and Public Economics. Retrieved from <http://www.nber.org/papers/w24831>.
- Krueger, Alan B. and Posner, Eric. 2018. *A Proposal for Protecting Low Income Workers from Monopsony and Collusion*. Washington, D.C.: The Hamilton Project.
- Manning, Alan. 2003. *Monopsony in Motion*. Princeton, NJ: Princeton University Press.
- McDonald's Corporation. 5 April 2011. "McDonald's Celebrates 50 Years of Training and Developing Employees at Hamburger University." *Marketwired*. Retrieved 22 July 2018, from <http://www.marketwired.com/press-release/mcdonalds-celebrates-50-years-training-developing-employees-hamburger-university-nyse-mcd-1422879.htm>.
- Noguchi, Yuki. 12 July 2018. "Fast-Food Chains Back Away From Limits on Whom They Can Hire." *National Public Radio*.
- Parsons, Donald O., "The Employment Relationship," in *Handbook of Labor Economics*, vol. 2, ed. Orley C. Ashenfelter and Richard Layard (Amsterdam: North-Holland, 1986), PP. 790-848.

- Rhode Island Department of Health. 2018. "Licensee Lists." Retrieved 17 July 2018, from <http://health.ri.gov/lists/licensees/>.
- Starr, Evan. 2018. "Are Noncompetes Holding Down Wages?" *Unrigging the Labor Market: Convening to Restore Competitive Labor Markets*. Cambridge, MA: Harvard Law School.
- Starr, Evan, Prescott, J.J., and Bishara, Norman. 2018. "Noncompetes in the U.S. Labor force." (Univ. of Michigan Law & Economics Research Paper No. 18-013). Ann Arbor, MI: University of Michigan: Abstract. Retrieved from https://papers.ssrn.com/sol3/Data_Integrity_Notice.cfm?abid=2625714.
- Stein, Jeff. 9 July 2018. "States Launch Investigation Targeting Fast Food Hiring Practices." *Washington Post*. Retrieved from <https://www.washingtonpost.com/news/work/wp/2018/07/09/11-states-launch-investigation-targeting-fast-food-hiring-practices>.
- United States Department of Justice and Federal Trade Commission. 1992. *Horizontal Merger Guidelines*. (Revised 1997).
- United States Department of Justice and Federal Trade Commission. 2010. *Horizontal Merger Guidelines*. Retrieved from <https://www.justice.gov/sites/default/files/atr/legacy/2010/08/19/hmg-2010.pdf>.
- Weiss, Leonard W (ed). 1989. *Concentration and Price*. Cambridge, MA: The MIT Press.

Alternative cites for various versions of paper by Krueger and Ashenfelter

Krueger, Alan B, Orley Ashenfelter et al., "Theory and Evidence on Employer Collusion in the Franchise Sector," Technical Report 2017

Krueger, A. B. and Ashenfelter, O. (2018). Theory and evidence on employer collusion in the franchise sector. IZA Discussion Paper No. 11672.

Krueger, Alan, and Orley Ashenfelter, "Theory and Evidence on Employer Collusion in the Franchise Sector," Working Paper, 2017.

Krueger, Alan B and Orley Ashenfelter. 2018. "Theory and Evidence on Employer Collusion in the Franchise Sector." Working Paper 24831, National Bureau of Economic Research.

Krueger, A. B. & Ashenfelter, O. (2018), Theory and evidence on employer collusion in the franchise sector, NBER Working Paper 24831.

Krueger and Ashenfelter 2018, "Theory and Evidence on Employer Collusion in the Franchise Sector." NBER Working Paper No. 24831.

Krueger, Alan B and Orley Ashenfelter (2017). Theory and Evidence on Employer Collusion in the Franchise Sector. Tech. rep. 614. Industrial Relations Section, Princeton University.

Krueger, Alan B. and Orley Ashenfelter. 2018. "Theory and Evidence on Employer Collusion in the Franchise Sector", IZA Discussion Paper, working paper #11672