Applying the Hypothetical Monopsonist Test for Labor Market Definition

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In *FTC v. Kroger Co.*, the first merger challenge since the 2023 Merger Guidelines to focus on competition in labor markets in addition to product markets, the court observed that it was "not aware of any standard economic analysis" used to apply the Hypothetical Monopolist Test ("HMT") for labor market definition.[2] On this basis, the court found no fault in the FTC's decision not to subject its proposed labor market to the test.

The court's view is not surprising when product market definition is taken as the reference point. A long history of litigated cases and merger review has given rise to a set of tools (e.g., critical loss analysis) that are often used when applying the HMT to product markets. While those tools were originally derived from the principles of the HMT, product market definition in a given case often starts with the tools themselves instead of revisiting the fundamental principles.

On the labor market side, an analogous set of standard tools or shortcuts has not yet developed. There is not (yet) a commonly accepted version of, say, a critical loss formula that is specific to labor markets.

However, this does not mean the existing HMT framework cannot be applied to labor markets using standard economic evidence. When we start from the first principles of the HMT, we can see that the same framework is sufficient for labor market definition and can be used to distinguish reasonable from unreasonable labor markets.

Revisiting the basic purpose and principles of the HMT highlights key considerations when applying the test for labor market definition. In general, applying numerical SSNIP tests as part of the HMT may be useful, but only if the underlying assumptions are appropriate and the inputs can be measured with sufficient precision. Careful analysis of worker substitution, which can span industries and occupations, is critical. Job transition data and other standard economic evidence can inform such an analysis. These considerations all guided the application of the HMT in *FTC v. Kroger Co.*

HMT Framework for Labor Markets
Revisiting basic principles. On the product market side, market definition is fundamentally about substitution between products. The goal in defining markets is to separate close substitutes (products to include in the market) from more distant substitutes (products that can be left out of the market). The closeness of substitution between products is defined based on consumer

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1   Justin McCrary served as an expert witness for Kroger in *FTC v. Kroger*, with the support of Cornerstone Research. The views expressed herein are those of the authors and do not necessarily represent the views of Cornerstone Research.

2   Fed. Trade Comm'n v. Kroger Co., 2024 U.S. Dist. LEXIS 223077, at *125 (D. Or. Dec. 10, 2024) [hereinafter FTC v. Kroger Opinion].

behavior: i.e., how readily consumers would switch between the products if their relative prices changed. An appropriate market includes a set of substitutes that are close enough to provide competitive constraints on the conduct at issue.

The HMT is a commonly used framework that formalizes this exercise of identifying close substitutes. The HMT asks whether a hypothetical, profit-maximizing monopolist in the proposed product market would increase prices[3] by at least a small but significant amount over a sustained (non-transitory) period.

The profitability of a price increase for the hypothetical monopolist depends on substitution: what share of unit sales would be lost as consumers switch to alternatives outside the market. Given the loss in unit sales, the overall profitability of the price increase then depends on the relative size of (a) the resulting profit lost from the loss in sales and (b) the profit gain from charging higher prices on all remaining units. If the proposed market appropriately separates close from distant substitutes, it will pass the test; otherwise, it will fail.

In the HMT, the relevant question is how customers would respond on the margin; i.e., how many customers would change their purchase behavior in response to an incremental price change. In a proposed market, there may be many inframarginal consumers who are less price-sensitive and would not change their purchases in response to a small price increase. However, the market would still be too narrow if a large enough number of other customers would leave the market.

Application to labor markets. On the labor market side, market definition is fundamentally about substitution between employers. As a result, the same HMT framework can be applied for labor market definition. In the labor setting, we consider a hypothetical single employer, or "buyer" of labor services (monopsonist), rather than a single seller of products (monopolist).[4] The HMT then assesses the profitability of a relative decrease in compensation by the hypothetical monopsonist, rather than a price increase.[5]

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As in the product case, the profitability of a decrease in compensation hinges on substitution: how many workers would decide to quit and find a job outside the proposed market? Given the loss of workers, the overall profitability of the compensation change depends on the resulting loss of unit sales, the lost profit due to those lost unit sales, and the increase in profit from paying lower compensation to the remaining workforce.

As in the product case, a proposed labor market will only pass the test if it appropriately separates close from distant substitute jobs. And, as it does for product markets, the HMT for labor markets focuses on responses on the margin; even if some workers place a high value on jobs within the market, the market would be too narrow if enough of the workers with close alternatives would decide to leave in response to the compensation change.

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[3] Or worsen non-price terms, based on the updated framing in the 2023 Merger Guidelines. See U.S. Dep't of Justice & Fed. Trade Comm'n, Merger Guidelines (2023), https://www.ftc.gov/system/files/ftc_gov/pdf/2023_merger_guidelines_final_12.18.2023.pdf [hereinafter 2023 Merger Guidelines].

[4] In labor economics and antitrust commentary, economists and practitioners often use the term 'monopsony power' loosely to refer to any amount of market power, however small, that gives firms the ability to influence compensation. On the product side, antitrust practitioners have long recognized that nearly every firm has some amount of power to set prices, and that 'monopoly power' in the antitrust context is correctly understood as a *substantial amount* of market power. This important distinction has not yet filtered through to much of the discussion on labor antitrust issues. See, e.g., Jonathan Baker and Timothy Bresnahan, *Economic Evidence in Antitrust: Defining Markets and Measuring Market Power*, *in* Handbook of Antitrust Economics 1 (Paolo Buccirossi ed.,2008); Dennis Carlton and Jeffrey Perloff, Modern Industrial Organization, (Pearson, 4th ed. 2005).

[5] The compensation decrease is relative and/or hypothetical because many components of compensation (e.g., base salary or wages) do not often fall over time.

It may be instructive to contrast the approach taken to product markets and labor markets. In product markets, we are looking at consumer preferences for alternative products and sellers' supply of those alternatives. In labor markets, we are looking at worker preferences for alternative employers and employers' labor demand.

Whether in the product or labor setting, the HMT is applied in different ways depending on the facts of the case and the available evidence. The HMT is a framework; there are different types of evidence or analyses an economist can use to perform the test. However, in any application, the underlying question is the same: what does the available economic evidence say about substitution?

Use of SSNIP tests in the HMT. On the product side, the HMT is often implemented by assuming a specific numerical value for the price change (SSNIP): e.g., a 5% or 10% price increase over the course of a year.[6] Applying a particular value for the SSNIP is meant to add a degree of numerical precision to the HMT.

An economist implementing an HMT may attempt to bring further precision by applying a numerical SSNIP test. In a numerical SSNIP test, the economist applies formulas to calculate the profitability of a SSNIP based on certain economic inputs.[7] For example, in the product context, the test may quantify the profitability of a 5% SSNIP based on price elasticities for firms in the market, diversion ratios between firms, and margins between price and marginal cost. The formulas for a SSNIP test can be derived or arranged in different ways to better fit the set of inputs that may be readily estimated.

A numerical SSNIP test is one way, but not the only way, to evaluate a candidate market within the HMT framework. In some cases, such a test can provide useful precision. For a given formulation of the test, there are various ways to estimate the inputs (e.g., price elasticity or marginal cost markup), depending on the available information. However, the actual precision of the test depends on the availability and precision of the inputs that are used.

To illustrate, consider a specific type of numerical SSNIP test used in the product market context: critical loss analysis using an aggregate diversion ratio. Critical loss analysis involves comparing the actual loss, i.e., the predicted loss in unit sales due to a SSNIP, with a critical loss value, i.e., the loss of unit sales at which the hypothetical monopolist would break even given the size of the SSNIP. If the actual loss exceeds the critical loss, then the SSNIP would not be profitable, and the proposed market would fail the test. With certain assumptions on the nature of customer demand and firm behavior, the test can be formulated as a comparison between the critical loss value and the aggregate diversion ratio (the share of lost units recaptured by other firms in the market, following a price increase by one of the firms in the market). In the product market setting, a proposed market passes this test if the aggregate diversion ratio exceeds the critical loss, which in turn depends on (1) the size of the SSNIP and (2) the markup of price to marginal cost, often approximated using accounting data.[8]

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[6] Note that the 2023 Merger Guidelines changed the terminology to "SSNIPT," reflecting the agencies' updated view that the test may consider a change in non-price terms as well as a change in price. As it is not clear how to determine the magnitude of non-price terms (e.g., what change in non-price terms would be analogous to a 5% change in price), the practical implication of this addition is not clear for either product or labor market definition, other than to signal conceptual flexibility about the form a price increase may take.

[7] The numerical SSNIP test therefore typically assesses whether a SSNIP is profitable, not whether the profit-maximizing price change is at least as large as the SSNIP. Using this test to apply the HMT therefore assumes profits are not subject to significant nonlinearities.

[8] For additional discussion, see, e.g., Serge Moresi, Steven C. Salop, John R. Woodbury, *Market Definition and Multi-Product Firms in Merger Analysis*, *in* Antitrust Economics for Lawyers (LexisNexis, 4th ed., 2023).

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One can derive a similar formula for the labor context. In this case, in place of the price markup, the critical loss depends on the wage markdown, the margin between compensation and the incremental value of the marginal worker to the firm (the "marginal revenue product of labor" in economic terminology).

If we knew each of the variables in this calculation, and if the underlying assumptions about worker and firm behavior were appropriate given the facts of the case, we could use this calculation to add precision to the HMT. However, precise measures of these variables may not be available, in which case the calculation might not add precision to the HMT framework. In particular, for this specific variation of the SSNIP test, we do not typically observe any proxies for the "wage markdown" or "marginal revenue product of labor." For example, it could be difficult to evaluate how much less customers would buy if a store had fewer cashiers.

Moreover, this specific formula assumes that the monopsonist would only adjust its labor input due to the SSNIP. In reality, it may be profitable to adjust other inputs at the same time. We could generalize the formula to account for changes to these other inputs as the firm reduces its workforce. But this leaves more variables to measure: e.g., how would the store adjust on other margins to compensate for (or accommodate) a reduction in cashiers? These questions may not have precise answers, and in such instances this numerical SSNIP test may not be appropriate.

Regardless of how the HMT is applied, the key is whether the best economic evidence is used to assess worker substitution, not whether a specific numerical SSNIP test is used. The fundamental goal is to identify substitute jobs, and an appropriate application of the HMT uses the best available evidence on worker behavior to do so.

Economic evidence on worker substitution

Economic considerations when applying the HMT. When applying the HMT for labor markets, an economist must consider the full range of options that workers may substitute toward in response to a change in employment terms.

A key insight in labor economics is that the substitutability of different jobs typically depends on the skills required for the job, and on worker preferences for different types of work. Those skills (and preferences) are not necessarily tied to a given industry or occupation. To take an example from *FTC v. Kroger Co.*, a grocery store cashier could typically find work as a cashier in another retail industry, or in a non-cashier role (e.g., retail sales) that requires similar skills.

As a result, defining a relevant labor market is often not as simple as determining the industry in which the firms operate, or employees' specific occupations in their current roles. Substitution can potentially occur within and between job titles, occupations, and industries, and an economist needs to account for all dimensions of substitution when applying the HMT.

Market definition also involves delineating the geographic scope of competition, as the HMT is applied to a prospective market defined by both geography and product dimensions at the same time. In the labor context, workers may be willing to relocate to accept other positions, or they may focus on alternative jobs near their current residence. As such, geographic competition may be local, national, or somewhere in between.

Common job transition patterns highlight need for careful analysis. Data on job transitions illustrates the breadth of options workers often choose between and the potential complexity of drawing labor market boundaries. Job transition data identifies the alternative occupations and employers that workers choose when they go on the market. Job transition patterns do not

necessarily map precisely to substitution patterns, a point that we return to below. However, they are often informative about the range of potential substitute jobs.

Figures 1 and 2 summarize data from the U.S. Census Bureau on job switching across industries.[9] The data tracks individuals as they transition between employers and identifies the industry of each employer according to the standard North American Industry Classification System (NAICS), a commonly used industry typology. Specifically, the publicly available data identifies the 'sector' (e.g., 'Manufacturing,' 'Construction') and 'three-digit industry' or 'sub-sector' (e.g., 'Chemical Manufacturing,' 'Specialty Trade Contractors') of each employer.

FIGURE 1

Share of Job Changers who Switch NAICS Sectors or Three-Digit Industries, 2010–2022

Source: Author calculations based on Job-to-Job Flows Industry Subsector Tabulations (Research Release), U.S. Census Bureau

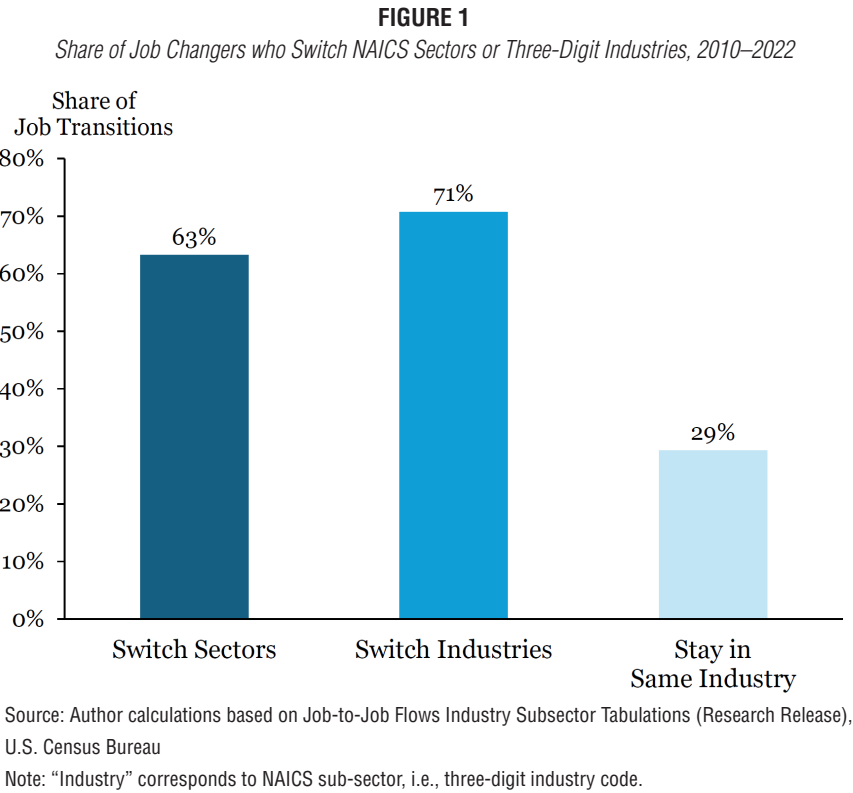Note: "Industry" corresponds to NAICS sub-sector, i.e., three-digit industry code.

Figure 1 shows that 71% of workers who switched jobs between 2010 and 2022 moved to a different three-digit industry, while only 29% stayed within the same industry. Prior research finds even higher switching rates between more narrowly defined industries.[10]

The exact transition patterns vary across sub-sectors: for example, 94% of workers leaving jobs in Data Processing, Hosting, and Related Services switched industries, compared to 58% of job leavers in Truck Transportation.

Individuals who switch industries go to many different destinations. In particular, we see this for industries where the majority of jobs require general skills, which are expected to be relatively more portable across a broad range of jobs. Figure 2 shows an example: the Food and Beverage

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[9] U.S. Census Bureau, Job-to-Job Flows (J2J) Industry Subsector Tabulations (Research Release), https://lehd.ces.census.gov/data/j2j_subsector_research.html.

[10] See, e.g., Melissa Bjelland, Bruce Fallick, John Haltiwanger, and Erika McEntarfer, *Employer-to-Employer Flows in the United States: Estimates using Linked Employer-Employee Data* 24, (U.S Census Bureau Center for Economic Studies Discussion Paper, September 2010), https://www2.census.gov/ces/wp/2010/CES-WP-10-26.pdf (finding that only 16% of job movers stay in the same 6-digit (more granular) industry).

Retailers industry. Fewer than 14% of workers leaving jobs in this industry switched to a new job in the same industry; the other 86% went to a range of industries, including food services, administrative and support services, other retail industries, and industries in the healthcare sector. The top 10 destination industries only account for 60% of job transitions.

FIGURE 2

Top 10 Destination Industries for Workers Leaving Jobs in the Food and Beverage Retailers Industry, 2019

Destination Industry	Share of Job Transitions
Food Services and Drinking Places	16.8%
Food and Beverage Retailers	13.7%
Administrative and Support Services	9.7%
General Merchandise Retailers	5.8%
Professional, Scientific, and Technical Services	2.7%
Gasoline Stations and Fuel Dealers	2.6%
Educational Services	2.3%
Nursing and Residential Care Facilities	2.2%
Ambulatory Health Care Services	2.2%
Social Assistance	2.0%
Other Industries	39.8%

Source: Top Job Flow Origins/Destinations for NAICS Subsectors, U.S. Census Bureau, May 13, 2024
Note: Table shows the ten most common industries of new employers for workers who left a job in the Food and Beverage Retailers Industry. "Industry" refers to NAICS sub-sector, or three-digit industry.

Occupation changes are also common when workers leave their jobs. For instance, recent research estimates that 23% of job switchers change occupations.[11]

These data show illustrative aggregate patterns. In a particular case, the relevant set of alternative jobs may be broader or narrower. However, as a general matter, one cannot use a shortcut of assuming the parties' industry or occupations, or the set of firms in a particular product market, constitute a relevant labor market in a given geographic region. Labor market definition requires rigorous analysis that captures actual substitution patterns, grounded in the facts.

Job transition data can inform an HMT. Data on job transitions can also be a useful source of economic evidence when applying the HMT. Job transition data is often available from the parties in a case, or from third-party data vendors. This type of data is informative on substitution; it shows the types of alternative jobs that workers are likely to consider in response to a change in compensation, the core question in market definition.

Job switching data is helpful because it can be challenging (or even infeasible) to directly estimate workers' responses to compensation changes. Any analysis of worker responses to wage or salary changes needs to consider potentially confounding changes in other components of compensation. Such components may include non-wage benefits, or the long-term value of the employment relationship, beyond annual compensation, which workers often consider when deciding between alternative jobs.

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[11] Gregor Schubert, Anna Stansbury, Bledi Taska, *Employer Concentration and Outside Options*, (Working Paper, January 25, 2024).

Switching data is often used to inform market definition in traditional product market cases.[12] Switching often occurs due to relative price changes, but it can also occur due to idiosyncratic reasons that are unrelated to price. Whether an economist needs to account for any differences between switching and diversion will depend on the case. If economically plausible differences between switching and diversion would lead to the same conclusion, then switching data on its own may be sufficient. Otherwise, more evidence may be necessary to bridge the gap. For instance, in a product market case, an economist may be able to supplement switching data with diversion estimates for one or more products based on natural experiments, such as supply-driven changes in product availability (to give one example).

In a case involving labor markets, an economist might analyze data on switching between employers, but also might consider the feasibility of supplemental analyses if necessary. For example, the economist may be able to restrict the analysis to job transitions that are more likely to be driven by relative compensation. Or the economist may be able to estimate supplemental measures of diversion using evidence from store openings or closings, or from other such natural experiments, analogous to those used in product market contexts.

A Practical Example: Applying the HMT in *FTC v. Kroger Co.*

In *FTC v. Kroger Co.*, one of the authors, who served as Kroger's expert on labor antitrust economics, applied the HMT to evaluate the FTC's proposed labor market. The FTC argued that the relevant market consisted of "union grocery" jobs within local areas defined by collective bargaining agreement (CBA) coverage.[13] The FTC relied on union testimony and other qualitative sources to support their market definition; neither of the FTC's economic experts applied the HMT or evaluated economic data on substitution.[14]

In this case, a range of evidence on substitution, starting with job transition data, could be used to apply the HMT to the proposed market. High turnover at each of the parties generated frequent job transitions, which could be quantified using data on individual workers' employment histories.[15] The data showed that fewer than two percent of job transitions were between firms inside the alleged labor market.[16] The remainder were moves to and from a large number of employers, both unionized and non-unionized, across diverse industries and occupations.[17] On its face, this was compelling evidence that the product dimension of the alleged labor market was too narrow.

The switching data were consistent with other evidence on substitution, based on the skills and experiences typically required for the parties' jobs. Close to 70% of newly hired workers had no prior employment, and most worked in jobs with no education requirements.[18] In other words, workers typically had general skills, which tend to be transferrable across a wide range of industries and occupations.[19] Returning to the cashier example, economists would expect that grocery

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[12] For example, in *H&R Block*, while the court did not view switching as synonymous with diversion, the court "credit[ed] [DOJ expert] Dr. Warren-Boulton's conclusion that switching data can provide a 'reasonable second estimate' of diversion ratios here [even though] the Court would not rely on his analysis exclusively." *United States v. H&R Block, Inc.,* 833 F. Supp. 2d 36, 34 (D.D.C. 2011).

[13] FTC v. Kroger Co. Opinion at *116–18, 123–24.

[14] FTC v. Kroger Co. Opinion at *116–125.

[15] *FTC v. Kroger Co.*, Prelim, Inj. Hr'g Test., at 3081–85.

[16] *Id.* at 3083–84.

[17] *Id.* at 3082.

[18] *Id.* at 3081; 3067.

[19] *Id.* at 3066.

store cashiers could readily transition to work as cashiers in a variety of industries, or switch to a non-cashier occupation with similar skill requirements.

Government data corroborated the breadth of opportunities available for the parties' workers. For instance, the Bureau of Labor Statistics reports that 75% of cashiers are employed outside the grocery industry, and the Occupational Information Network (O*Net) identifies a number of closely related occupations with similar job tasks and skill requirements.[20] The data showed similar opportunities across the parties' most common jobs, which aligned with the patterns in the job transition data.[21]

The geographic dimensions of the labor market could be assessed by evaluating travel times between stores within and across CBA areas. These areas were inconsistent with typical substitution patterns of workers with general skills. Some CBA areas were implausibly large (e.g., San Diego-LA-Bakersfield was a single area), while others were too small (e.g., two Colorado suburbs within a 20-minute drive were in two separate areas).[22] Other CBA areas excluded stores within the same municipality. For example, one store in Boulder, CO, was part of a separate CBA centered in Denver.[23]

Given the range of substitute jobs outside the proposed market, the next question is whether a SSNIP within the market would be profitable for a hypothetical monopsonist. In this case, the record evidence was sufficient to reach a conclusion: a SSNIP would not be profitable. Data on tenure showed persistently high turnover; over 70% of new hires leave within their first year.[24] Given the overwhelming range of options outside the alleged market, any SSNIP would exacerbate this turnover and impede the hypothetical monopsonist's ability to maintain staffing levels.[25] As a result, the SSNIP would not be profitable.[26] In this case, a numerical profit estimate was not necessary to support the conclusion, and would not have added precision to the test.

The FTC criticized the parties' switching evidence, arguing that switching is not a precise measure of diversion in response to a price change (a point we discussed above).[27] However, in this case, the difference between switching and diversion would need to be implausibly large for the proposed market to pass the HMT. If the difference had been large, we would have expected to see evidence or economic arguments to that effect, and no such evidence was presented in the case. Moreover, the job transition data must be analyzed in the context of the case. In this case, the switching data were consistent with a broad range of other evidence on substitution. Direct evidence on competitive effects further supported the results of the HMT. Compensation (whether wages or other union benefits) was no higher in geographic areas where both parties operated, compared to areas with only one party's stores.[28]

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20 *Id.* at 3079; 3059.

21 *Id.* at 3079.

22 *Id.* at 3087–88.

23 *Id.* at 3088–89.

24 *Id.* at 3073.

25 *Id.* at 3074.

26 *Id.* at 3085.

27 *Id.* at 3114.

28 *Id.* at 3094–95.

In its preliminary injunction ruling, the district court found insufficient evidence for the FTC's claim that the merger would substantially lessen competition in the labor market.[29] However, the court "tentatively" found that the FTC's proposed labor market was "plausible," based largely on testimony about long-tenured and specialty workers.[30] These workers, such as experienced meat-cutters, may have fewer comparable job options and may prefer to stay at a unionized grocer to maintain their vested union benefits. Those considerations, however, are also why these workers are not central to competition's effect on wages. They are not the workers that a firm would lose to a competitor if it tried to lower wages by a small but significant amount. In other words, the court's analysis focused on a group of inframarginal workers and incorrectly assumed that their unique preferences alone could plausibly support defining a competitive market.[31]

As discussed above, the HMT framework instead focuses on how marginal workers would respond, which determines the profitability of a SSNIP. The specialty workers identified by the court no doubt add incrementally more value to the companies, and they receive a higher wage. However, we would expect that the higher wage is determined in part by labor negotiations, rather than competition between employers, since the characteristics that set these workers apart also makes them the least likely to turn to a competing employer. Unsurprisingly, then, there was no evidence that competition between the two parties determined the particular employment terms (e.g., union benefits) that tend to be higher for these more seasoned or specialized workers. This is not to say these are not important employees, despite being a very small percentage of the parties' workforce, but it does show that using their peculiar characteristics to qualitatively define a market for competition analysis would be an incorrect application of economics.

While the existing HMT framework has a shorter history in the labor setting than in the traditional product-market setting, it can be applied to define labor markets following the same principles.

Conclusion

Defining a relevant labor market requires careful analysis, grounded in the facts of a given case. While the existing HMT framework has a shorter history in the labor setting than in the traditional product-market setting, it can be applied to define labor markets following the same principles. As in the product setting, the appropriate evidence for a labor market HMT will vary by case and will not necessarily conform to a specific formula (e.g., a particular numerical SSNIP test). In all cases, the fundamental question is about substitution, and the best evidence on substitution should be used to apply the test in any given case. ●

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[29] FTC v. Kroger Co. Opinion at *134.

[30] FTC v. Kroger Co. Opinion at *120–26.

[31] The opinion does not clarify whether this analysis was considering this group of workers as a distinct submarket. There was no discussion or argument from the FTC about why that would have been appropriate. Whatever one thinks of the concept of defining submarkets, the general principles of defining any market would still be relevant, and these require considering the choices of those most likely to be considering competitive alternatives, not defining them out of the analysis ex ante.