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Firm types, price-setting strategies, and consumption-tax incidence

Jarkko Harju[a], Tuomas Kosonen[b,*], Oskar Nordström Skans[c]

[a] VATT Institute for Economic Research and CESifo, Finland
[b] Labour Institute for Economic Research, Academy of Finland and CESifo, Finland
[c] Uppsala University and IFAU, Sweden

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ABSTRACT

We analyze price responses to large restaurant VAT rate reductions in two different European countries. Our results show that responses in the short and medium run were clustered around two focal points of zero pass-through and full pass-through. Differences between independent restaurants and chains is the key explanation for this pattern. While nearly all independent restaurants effectively ignored the tax reductions and left consumer prices unchanged, a substantial fraction of restaurants belonging to chains chose a rapid and complete pass-through. In the longer run, prices converged, but primarily through a price reversion among chain restaurants. The stark difference in price responses does not appear to arise because of different market characteristics such as location, initial price levels, meal types and restaurant segment.

1. Introduction

An increasingly active literature within public finance explores the price incidence of consumption taxes (Carbonnier, 2007; Doyle and Samphantharak, 2008; Kenkel, 2005; Kosonen, 2015; Benzarti and Carloni, 2017; Benzarti et al., 2017; Rozema, 2017) finding varying rates of pass-through onto consumer prices. The typical explanation for the varying results rests on differences in elasticities of demand and supply or the degree of competition among firms (e.g. Myles, 1989; Fullerton and Metcalf, 2002).[1] For our purposes, two aspects of these explanations are particularly noteworthy; first, they tend to imply that the distribution of price adjustments relative to pre-tax prices is smoothly centered around an average pass-through, and second, they do not explore the link between internal firm-level factors and price adjustments, as is often the case within public finance (see e.g. Slemrod and Gillitzer, 2014). In this paper, we use uniquely detailed micro data on price adjustments around two VAT reforms showing that some firms react strongly and others not at all. This non-smooth bi-modal price-change distribution is intimately related to distinct types of price-setting firms, even when holding observed market conditions constant.

We analyze price responses to VAT-rate reductions for restaurants in Finland (9pp) and Sweden (13pp). To execute the analysis, we collected data on meal-level prices across time as well as firm and market characteristics that are matched to administrative tax-records on revenues and costs. The data allow us to follow the prices of the same meals over time, and to examine the full distribution of price changes for different types of firms. To assess the importance of time effects, we collected identical data from neighboring countries.

On average, we find a short-run price response of one quarter of full pass-through, defined as unchanged producer prices. This limited average response is in line with several recent studies of service-sector VAT responses (see e.g. Benzarti and Carloni, 2017; Carbonnier, 2007; Kosonen, 2015). However, the distributions of price responses reveal strikingly clean, but heterogeneous, price-change patterns. On one side, the majority of prices were completely unchanged a few months after the reduced tax rates were implemented. On the other side, we instead find a *full* short-run pass-through for the majority of prices that did adjust. This non-smooth division into two distinct spikes ("all-or-nothing") is not part of standard public finance predictions (or standard explanations for a low pass-through). Furthermore,

* Corresponding author.
E-mail addresses: jarkko.harju@vatt.fi (J. Harju), tuomas.kosonen@labour.fi (T. Kosonen), oskar.nordstrom_skans@nek.uu.se (O.N. Skans).

[1] For studies of tax evasion and generic cross-industry differences, see e.g. Kopczuk et al. (2016) and Marion and Muehlegger (2011). For rare studies of firm heterogeneity, see Kopczuk and Slemrod (2006) and Best et al. (2015).

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the all-or-nothing shape is not present in our control countries where the price-change distributions instead have a spike at zero, but otherwise display a continuous set of actual price changes.[2]

Our rich micro-level data are exceptionally well suited to analyze the underlying sources of the observed price-response heterogeneity. We collected detailed sub-market indicators which cover various aspects of meal- types and locations but we also documented if the restaurants are independent operations (referred to as Independents) or belong to a chain or franchise (Chains). This collection was inspired by recent research suggesting substantial heterogeneity across firms in management practices and strategies (see Bloom and Van Reenen, 2010; Bloom et al., 2013; Drexler et al., 2014), which we believed may expand into the price-setting domain, and the idea that the organizational form of restaurants may matter for their behavior (Bradach, 1997; Krueger, 1991). Our basic idea is that the dichotomy between independents and chains should be related to price-setting practices, since the two types of restaurants are likely to use different managerial inputs in the pricing decision process. An obvious reason is that there may be fixed costs of setting or adjusting prices that can be shared across restaurants within larger operations (we show that chains do coordinate their price adjustments across restaurants).

Our results show that the distinction between independents and chains is a crucial determinant of the distribution of price adjustments: Only 4.8% of independent restaurants changed their prices *at all* due to the reform, whereas the same estimate is 38% for chain restaurants, and 25% of them chose an exact full pass-through. To quantify the importance of chains vs. independents relative to other aspects of the restaurants and meals, we run a set of regressions where we explain the short-run price responses by aspects of the product (the type of restaurant and meal), the initial price (level and if a round number), the location (local restaurant density, located in a mall) and other key indicators (belonging to employer organization, a dummy for changed items on the menu). Strikingly, we find that a single dummy separating independents and chains has a much larger explanatory power than the *combination* of all these other factors. We take this as strong support for the notion that the type distinction is fundamental, and quantitatively important.

We further show that most of the chain restaurants that initially chose a full pass-through abandoned this new reduced price within 6 months and instead increased their prices at a much higher rate than other restaurants. In contrast, the majority of independent restaurants kept their initial pre-reform prices intact until our final survey 15–18 months after the reform.[3] As a consequence of independents' inactivity and chains' reversions, average market pass-through was *reduced* over time even after accounting for inflation. This suggests that the adjustment process takes time, and that there is important additional information in the medium-run responses, which is not uncovered if only focusing on the short-run responses. The pattern is, however, very different from the standard text-book notion (building on Adam Smith) that price responses should increase over time due to capital adjustments and new market entrants.

On the robustness side, we show that the distinction between our two types of restaurants does not appear to capture other confounding factors. Chains and independents operate in similar market segments; both groups feature fast-food venues and finer restaurants, and the initial price distributions are surprisingly similar. Moreover, diverging price responses are substantial within each quartile of initial prices and remain if we focus on establishments located close to each other within the same restaurant-dense areas, and when we exclusively zoom in on restaurants located in malls. The main results do not appear to be due to tax evasion since our administrative tax data show that VAT payments fell by equal amounts for both types of restaurants. Similarly, our analysis of tax credited inputs and the number of traded meals suggests that differential changes in meal quality are unlikely to explain our findings.[4] The complete lack of response from almost all of the independent restaurants can only be explained by standard tax-incidence models if demand is infinitely elastic or supply inelastic, both of which seem to be *a priori* unlikely explanations. Furthermore, a joint analysis of our price data and administrative tax data suggests that the demand for restaurant services is quite inelastic for both restaurant groups.[5]

A set of further results suggests that the differences in tax responses we uncover do reflect fundamental underlying differences in pricing behavior. Most notably, chains are more likely to change their prices in times when VAT rates are fixed, independents are much more likely to use round-number prices, and chains (but not independents) had an abnormal frequency of price increases during the Estonian currency conversion, which is consistent with Cavallo et al. (2015).

Overall, we conclude that the average short- and medium-run price response to consumption taxes is unlikely to be fully understood without accounting for firm-level heterogeneity, thus supporting the Slemrod and Gillitzer (2014) argument that modeling firm-level decisions is an important area for future developments within public finance. This conclusion is supported by the fact that the distinction between independents and chains explains more of the variation in responses to the reform than extensively studied aspects such as within-market coordination or market density.[6] We also find evidence of a slow medium-run adjustment process (which is crucial for policy) that differs substantially between independents and chains. We believe that building micro-foundations of firm behavior may help to explain the diverging results regarding responses to large tax changes found in previous studies (see e.g. Cabral et al., 2017; Carbonnier, 2007; Gruber and Koszegi, 2004; Kenkel, 2005; Kosonen, 2015; Benedek et al., 2015; Benzarti and Carloni, 2017; Benzarti et al., 2017; Rozema, 2017).

The paper is structured as follows: Section 2 presents institutions, data and methods. Section 3 shows results on the short- and long-run pass-through for independents and chains. Section 4 presents supporting evidence on coordination, outputs and inputs, round-number prices and currency conversions. Section 5 concludes the study.

2. Reforms and data

2.1. The reforms

All countries within the EU use value added taxation (VAT) for consumption taxes with a restricted number of rates. Since 2009, an EU Directive has allowed member states to apply one of their reduced rates to restaurant services. France was the first to reduce restaurant VAT, from 19.6 to 5.5% in 2009. Sweden and Finland followed shortly after.

In Finland, the VAT rate for restaurant meals was cut from the standard rate of 22% to a reduced rate of 13% from July 1st, 2010.

[2] The same is true for alcohol prices (which were exempted from the VAT reductions) within the treated restaurants.

[3] Those that did change their prices displayed a smooth distribution centered around the initial price.

[4] Measurement errors are unlikely to explain the results since they also hold within the sub-sample of restaurants where some of the prices actually changed. The observed time variations in sales suggest that it is unlikely that a large set of firms chose not to reduce prices because they operated at full capacity.

[5] Although imprecisely estimated, this result suggests that the short-run gains from lowering prices was in fact modest.

[6] Benzarti et al. (2017) include a case study from Finnish hairdressers finding that pass-through for VAT reduction was significantly lower than pass-through for VAT increase. Our results are consistent with that study in the sense that we study VAT reduction in a service sector and find on average low pass-through. The hairdressing industry in Finland consists mainly of independent firms.