in brief...
Competition and pass-through on the Greek islands

A fundamental issue in economics is how firms deal with unexpected cost increases, perhaps arising from taxes, exchange rate fluctuations or rising input prices: what drives the extent to which they pass the costs through to the prices they charge? To explore the relationship between 'pass-through' and competition within a sector, **Christos Genakos** and **Mario Pagliero** take us to the Greek islands.

In his 1890 volume *Principles of Economics*, Alfred Marshall writes that 'there is scarcely any economic principle which cannot be aptly illustrated by a discussion of the shifting of the effects of some tax "forwards", i.e. towards the ultimate consumer'. Indeed, since then, the study of how firms pass cost shocks through to prices touches almost any field in economics: from taxation in public economics to exchange rates and tariffs in international trade, to input prices and merger analysis in industrial organization, to fiscal and monetary policy transmission in macroeconomics.

But while theoretical analysis shows that competition is a key determinant of pass-through (Weyl and Fabinger, 2013), the empirical evidence on this issue is scant. The main challenge is distinguishing local markets, while accounting for the endogeneity of market structure.

Greek islands are all you want…

Well, what better environment to study this problem than the many small islands for which Greece is known? Our data come from the retail market for petroleum products (gasoline, unleaded gasoline, diesel, heating oil) on the 33 smallest islands in Greece.

Greek islands naturally vary in size and population and clearly define independent markets. Some of these islands are so small that they have just a single petrol station, while others have two, three or more. The naturally occurring variability in island size provides an exogenous source of variability in the level of competition (Figure 1).

Along with this unique setting, we take advantage of significant policy changes. During the country's financial crisis in 2010, the Greek government increased the excise duty on petroleum products on three occasions. The increments were large and unannounced, and provide us with an ideal exogenous shock for estimating the pass-through to retail prices. For political reasons, heating oil was excluded from the excise hikes, as it was considered a necessity.

Using daily petrol station data, we study how the pass-through of the excise duty tax varied across markets with different numbers of competitors, while using heating oil as a control group. Thus, we can account for unobserved heterogeneity across islands and petrol stations, and control for the daily aggregate price fluctuations of petroleum products using the control group.

Competition gives you speed…

As Figure 2 shows, we find that pass-through increases significantly with the number of competitors, and the relationship between competition and

Pass-through increases significantly with the number of competitors in a market

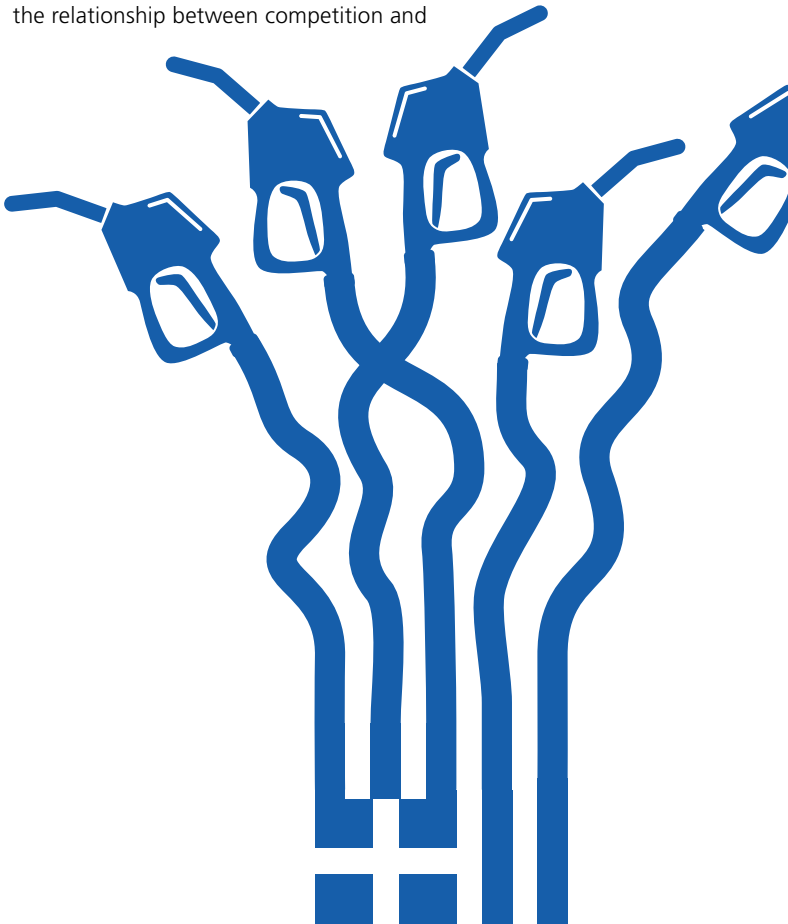
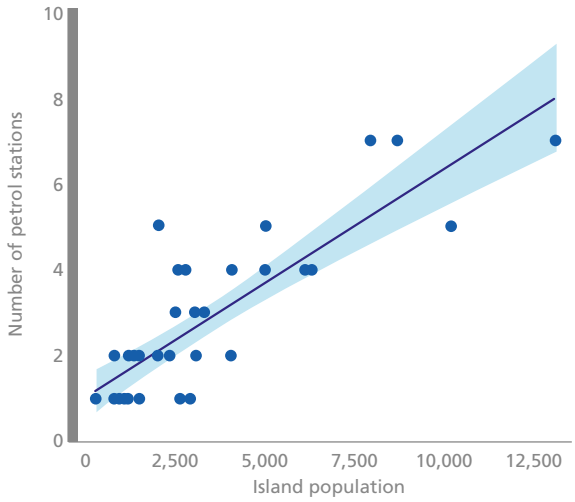
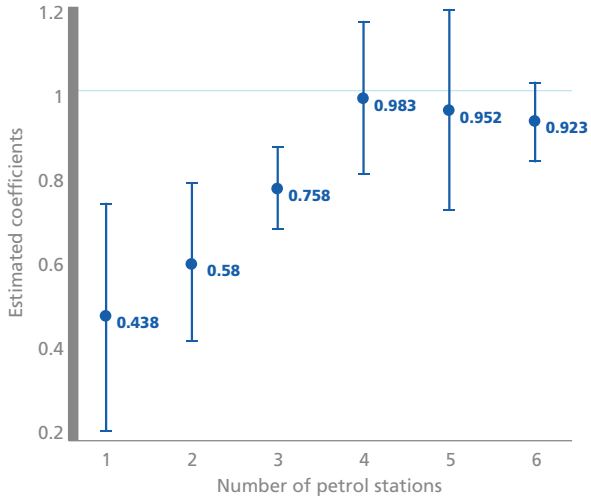


Figure 1:
Competition and market size



Notes: The chart plots the relationship between population in each island and the number of petrol stations.
Source: Authors' calculations based on data from the Greek Ministry of Development and Competitiveness and the Hellenic Statistical Authority.

Figure 2:
Pass-through and competition



Notes: The chart plots the estimated coefficients together with the 95% confidence interval of the semi-parametric relationship between number of competing petrol stations and tax increases pass-through.
Source: Authors' calculations based on data from the Greek Ministry of Development and Competitiveness.

pass-through is nonlinear. On average, the pass-through is 0.43 on monopolistic islands and grows to about 1 on islands with four or more competitors. The quick convergence to a unit pass-through is in line with the results of Bresnahan and Reiss (1991), who show that entry thresholds converge quite quickly; in other words, after three or four firms, an additional entrant does not affect competition much.

Does the speed of adjustment depend on competition? This is an important question, as it relates to understanding how quickly prices adjust to cost shocks in the economy.

We find that price adjustments are larger and occur more quickly in more competitive markets, leading to faster pass-through in more competitive markets. This is consistent with the results of Gopinath and Itskhoki (2010), who find a positive correlation between frequency of price adjustments and magnitude of exchange rate pass-through across sectors.

Greek islands also provide additional insights. When it comes to retail markets, competition authorities throughout the world routinely define markets based on geographical or driving distance between sellers. While realistic, this approach cannot guarantee the absence of substitution effects with firms outside the geographical area being considered. Using small Greek islands as a benchmark, we find that geographical market definitions based on distance across sellers result in overestimation of pass-through in highly concentrated markets.

The speed of price adjustment is about 60% higher in more competitive markets

This article summarises 'Competition and Pass-through: Evidence from Isolated Markets' by Christos Genakos and Mario Pagliero, CEP Discussion Paper No. 1638 (https://cep.lse.ac.uk/pubs/download/dp1638.pdf) and forthcoming in the *American Economic Journal: Applied Economics*.

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Further reading

Timothy Bresnahan and Peter Reiss (1991) 'Entry and Competition in Concentrated Markets', *Journal of Political Economy* 99(5): 977-1009.

Gita Gopinath and Oleg Itskhoki (2010) 'Frequency of Price Adjustment and Pass-through', *Quarterly Journal of Economics* 125(2): 675-727.

Glen Weyl and Michal Fabinger (2013) 'Pass-through as an Economic Tool: Principles of Incidence under Imperfect Competition', *Journal of Political Economy* 121(3): 528-83.