Dispersion of company markups internationally

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The strong globalization of economies has increased interest in the importance of markups for companies with an international orientation. A markup is defined as the difference between the marginal cost of production and the selling price. Empirical evidence is accumulating to show that these markups have increased significantly in recent years (Autor, Dorn, Katz, Patterson, and Reenen, 2017; Loecker, Eeckhout, and Unger, 2020) and that large corporations account for a growing share of the aggregate fluctuations (Gabaix, 2011). Moreover, the dispersion of markups is considered in the literature as a potential source of a misallocation of resources – capital and labour – in both economies considered to be closed to international trade (see Restuccia and Rogerson, 2008, or Baqaee and Farhi, 2020) and economies considered to be open to trade (Holmes, Hsu and Lee, 2014, or Edmond, Midrigan and Xu, 2015). Finally, it has recently been shown by Gaubert and Itskhoki (2020) that these markups are a key determinant of the granular origin – i.e. linked to the activity of big exporters – of comparative advantages, or in other words, they may be a

determinant of trade competitiveness.

In a recent paper (Auray and Eyquem, 2021), we introduce a dispersion of profit margins by assuming strategic pricing viaBertrand-type competition in a two-country model with endogenous variety effects and international trade along the lines of Ghironi and Melitz (2005). Our aim is to understand the interaction between these margins, firm productivity and entry-and-exit phenomena in domestic and foreign markets. If there are distortions in the allocation of resources, as is usually the case in these models, our corollary objective is to study the implementation of optimal fiscal policy.

In models with heterogeneous firms such as Ghironi and Melitz (2005), firms are assumed to be heterogeneous in terms of individual productivity. The most productive firms are more likely to enter markets, because they are better able to pay fixed entry costs, whether in local or export markets. Moreover, because these firms are more efficient, their production costs are lower, which allows them to capture larger market shares. These effects, which seem relatively intuitive, have already been widely validated empirically.

In general, the introduction of strategic pricing behaviour allows firms with larger market shares to benefit from greater price-setting power, which leads them to charge higher markups – it being understood that the resulting selling prices may be lower than those of their competitors. A growing literature on international trade emphasises the importance of this kind of strategic behaviour and the resulting dispersion of markups for determining patterns of trade openness and their sectoral composition (see, for example, Bernard, Eaton, Jensen and Kortum, 2003; Melitz and Ottaviano, 2008; Atkeson and Burstein, 2008) but also for the magnitude of the welfare gains associated with trade (Edmond, Midrigan and Xu, 2015). Indeed, in addition to the usual impact of openness to trade, it could also reduce the adverse effects of the dispersion of markups through the resulting increase in competition, thereby boosting its positive effects.

First, as expected, when fiscal policy is passive, Bertrand competition generates a distribution of markups such that firms that are larger – hence the more productive firms – offer lower prices, attract larger market shares and obtain higher profit margins. Moreover, the mechanism for the selection of exporting firms described by Melitz (2003) implies that these firms are

more productive and therefore charge higher markups. These results are intuitive and consistent with the observed distribution of markups (see Holmes, Hsu, and Lee, 2014).

Second, we characterize the optimal allocation of resources and show how it can be implemented. The best possible equilibrium fully corrects for price distortions and implies a zero dispersion of markups and a near zero level of markups. It is implemented, as is often the case in this literature, by generous subsidies that cancel out markups while preserving the incentive for firms to enter domestic and export markets, i.e. by allowing them to cover the fixed costs of entry. This first-order equilibrium can be achieved using a combination of subsidies for a firm's specific sales, a tax scheme on profits that differentiates between non-exporting and exporting firms, and a specific labour tax.

In a similar model where markups are assumed to be the same for all firms, the best equilibrium is the same but, in contrast, much easier to implement through a single policy instrument: a uniform and time-varying subsidy for all firms.

In both cases, the gains associated with such policies are very large compared to the laissez-faire case, representing a potential increase in household consumption

of around 15%. However, given the complexity of implementing a scheme with heterogeneous markups and a cost to the public purse of over 20% of GDP – implementation requires large amounts of subsidies, whether the markups are heterogeneous or homogeneous – we consider second-order alternative policies, where the number of policy instruments is limited and the government budget must be balanced. We find that these restrictions significantly reduce the ability of policy makers to cut the welfare losses associated with the laissez-faire equilibrium, and that only one-third of the potential welfare gains can be implemented in this case.

Third, while the first-order allocations are independent of the degree of pricing behaviour, we find that the welfare losses observed in the laissez-faire equilibrium are lower when markups are heterogeneous and higher on average than the markups observed in the absence of strategic pricing. While this may seem surprising, the result can be rationalized by considering the effects of markup dispersion on both the intensive markup – the quantity produced per firm – and the extensive markup – the number of firms in the markets. Indeed, Bertrand competition implies that the dispersion and the average level of markups are positively related. Markup dispersion thus increases the level of markups with two effects. On the one

hand, all other
things being equal, higher markups reduce the quantity produced by each firm – the
intensive markup – and induce a misallocation of resources that generates
welfare losses. On the other hand, higher markups imply higher expected profits
for potential entrants, which stimulates entry and thus increases the number of
existing firms – the extensive markup. According to our model, the welfare
gains associated with the second effect dominate the welfare losses associated
with the first effect. The result therefore implies that the dispersion of markups
can generate welfare gains, at least when no other tax or industrial policy is
pursued.

Fourth,
while the previous results mainly focus on the implications of our model and
the associated optimal policies on average over time, we also study their
dynamic properties. Within the framework of passive (laissez-faire) fiscal
policies, when the economy experiences aggregate productivity shocks – technological,
for instance – the model behaves broadly like the Ghironi and Melitz (2005)
model. An original prediction of our model is that markups are globally
countercyclical while export markups are procyclical. The optimal policy
involves adjustments in tax rates in order to reverse this trend, to align all markups
over the business cycle and to make all markups procyclical.

These results are consistent with the findings of studies that focus on the optimal cyclical behaviour of markups with heterogeneous firms in closed (Bilbiie, Ghironi and Melitz, 2019) and open (Cacciatore and Ghironi, 2020) economy models. However, conditionally on aggregate productivity shocks, the dispersion of markups has little effect quantitatively compared to a similar model with homogeneous markups.

Finally, in the spirit of Edmond, Midrigan and Xu (2015), we conducted a trade liberalization experiment whereby the costs of trade gradually and permanently decline to almost zero. We find that the long-run welfare gains are much larger when the policy implemented is optimal. On the other hand, the laissez-faire equilibrium indicates that short-run welfare gains are affected by markup dispersion. Indeed, markup dispersion affects the dynamics of business creation resulting from trade liberalization in a critical way. As in Edmond, Midrigan and Xu (2015), markup dispersion reduces the long-run welfare gains from trade, but for a different reason: it affects the dynamism of business creation and reduces the number of firms in the long run. However, since in this case fewer resources are invested in the short run to create new companies, consumption increases more at the intensive markup in the short and medium run – less than

10 years. While the long-run welfare gains from trade integration vary from 12%
to 14.5%, depending on the calibration, the short-run welfare gains with
heterogeneous markups can be up to 3% larger than with homogeneous markups.

The
conclusions of this study lead to an approach to corporate profit margins that
is more nuanced than that usually found in the literature. Indeed, while the markups
and their dispersion do have negative effects on the economy, they also have an
important role to play in the phenomena of business entry and participation in
international markets. Our work is a complement to a strictly microeconomic
approach to industrial policy issues, which would conclude unequivocally that
the market power at the origin of these markups is harmful. As such, in the
manner of Schumpeter, this calls for a more balanced view of the role of company
markups in modern economies, which would show a tension between distortions of
competition and incentives to business creation.

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