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Discussion

The participants focused on the broad research agenda of the paper and directions for further development of its model.

Daron Acemoglu initiated the discussion with a question regarding the big-picture motivation and objectives of the paper. More specifically, he asked how procyclical is the entry of new firms and new products, and how important is this entry in terms of employment at the business-cycle frequency. As an example, he compared the highly procyclical restaurant industry, which is not responsible for a lot of the movements in unemployment, to the durable manufacturing sector, in which one observes little entry or exit, but substantial employment swings. Additionally, Acemoglu sought further clarification of the mechanisms that one would hope to get out of combining endogenous entry with sticky prices.

Marc Melitz clarified that the paper actually deals with product creation within the firm, rather than firm entry and exit. He pointed to new evidence that the share of product creation is larger by a factor of three or four than that of firm entry. He cited the paper by Bernard, Redding, and Schott (2006), which shows product creation of as high as 10 percent per year. Melitz pointed out that the paper obtains estimates of product creation for very broad product groups: a new product is a plant producing at a different five-digit Standard Industrial Classification (SIC) level. Melitz also referenced the authors' own dataset on the number of products that are being imported and exported, which also confirms large cyclical correlation.

Acemoglu further questioned the use of CES preferences, which could be inappropriate in this context. The CES model, he pointed out, fails to capture any of the issues that concern IO economists, such as the

effects of product entry on competition and elasticities of demand. Melitz motivated the use of CES as a reference-modeling framework in the macro literature, but also pointed out that one section of the paper employs more general homothetic preferences, for which the markup does respond to the number of producers and to the prices of competitors. Florin Bilbiie added that using translog preferences did not substantially alter the results.

In response to Acemoglu's initial question, Michael Woodford offered one potential motivation for investigating the consequences of variation in the number of products. He referenced the Broda and Weinstein (2006) paper, which shows that there is important variation over time in the number of products, and argues that this variation is a source of important bias in the traditionally measured CPI relative to what would be the welfare-relevant price measure. These authors suggest that monetary policy might be focusing on stabilizing the wrong price index. Hence, with that as a motivation for their analysis, Woodford suggested that one might want to explicitly ask which price index monetary policy should target, given variation in the number of products in the model.

Regarding directions for developing the model, Woodford amplified Julio Rotemberg's comments—that relying exclusively on the tendency of higher entry to bid up wages has the disadvantage of yielding unrealistic dynamics of markups. He suggested that introducing additional frictions that would make it costly to have a lot of entry at the same time might result in more reasonable dynamics of markups. Melitz agreed that adding more costs to delay entry would improve results. He stressed that the model only incorporated sluggishness from the macro parts of the model; specifically, the endogenous response of the interest rate, because the authors wanted to highlight a theoretical point. However, if the paper is to be evaluated more in terms of matching specific impulse responses, then he agreed that more adjustment costs should be incorporated.

Ricardo Reis continued the discussion by urging caution when using the phrase "cost of living," as the authors had done in the presentation. Measures of the cost of living are mostly compensations for changes in relative prices. In the standard model, he argued, changes in relative prices are almost always inefficient, and that is why changes in the cost of living become the welfare target for monetary policy. However, he pointed out that in the data there is a tremendous amount of idiosyncratic, sector-specific shocks that lead to relative price movements that are very efficient. So the cost of living should certainly not be stabilized:

it should respond to such idiosyncratic shocks. He underscored that Broda and Weinstein (2006) and other work that has looked at biases in the CPI and other measures of the cost of living are precisely related to the substitution bias that arises because the relative prices have changed for efficient reasons.

In turn, Bilbiie distinguished between the substitution bias and the new-goods bias. He argued that if one believes that price stickiness is at the product level, as is probably the case, because there is no reason to believe that the CPI should move sluggishly, then monetary policy should stabilize the average price of output, which is the producer price index. This makes the measurement bias accounted for by new goods actually welfare improving, because although optimal policy is stabilizing the wrong index, it is quantitatively wrong in the opposite direction, so the policy may be doing the right thing.

In response to Virgiliu Midrigan's comments regarding optimal policy, Bilbiie also clarified that the optimal policy exercise in the paper is in a first best environment; it is a commitment problem, in the sense that expectations are taken into account and are not treated parametrically, but it is a nonlinear problem. As a result, the authors find that zero inflation is optimal, and this is related to the results of the authors' flexible-price paper (2006), which finds that the flexible-price equilibrium with CES preferences and inelastic labor supply is inefficient despite the presence of monopolistic competition. This result is due to the fact that all goods have the same markup and the markup incentive for product creation and the benefit of product variety are aligned.

Marc Melitz addressed questions raised by the discussants regarding the numerical calibration of elasticities and the issue of heterogeneity. He defended the use of elasticities of slightly less than four by citing micro level data that consistently yields numbers in the range of two to five. Regarding product heterogeneity, he clarified that the simulation results do take that into account by making an adjustment to compensate for the size differential between entrants and incumbents. Specifically, the authors reduce the number of entering products, so that their share of labor and output match the Bernard, Redding, and Schott (2006) manufacturing data and the numbers from Broda and Weinstein (2006).

Nobu Kiyotaki concluded the discussion by suggesting that the authors differentiate between the entry of consumption goods, intermediate goods, or investment goods. This more refined modeling approach would enable one to see what kind of entry is most relevant and which wedges are most important.