Hymer's Multinationals

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Abstract

Stephen Hymer (1976) states two principal factors that would compel a firm to control an enterprise in a foreign country. The first is that it might be possible to eliminate the competition between them. The second is to exploit firm-specific competencies or technological advantages. Neary (2008) explores the first, demonstrating the potential for cross-border takeovers to increase profits by annihilating the competition, increasing goods prices. Nocke and Yeaple (2005) demonstrate the potential for cross-border takeovers to increase profits by exploiting firm-specific technology, always resulting in reduced goods prices. This paper combines both motivations for the first time in one model. Duopolistic competition in a framework based on Bernard, Eaton, Jensen, and Kortum (2003) capitalizes both on firm heterogeneity and strategic pricing behavior to show that cross-border takeovers can increase firm profitability and introduce improved efficiency in production, while markups and prices for particular goods rise or fall after mergers according to the degree of competitiveness in particular industries.

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1 Introduction

Stephen Hymer (1960,1976) states two principal factors that would compel a firm to control an enterprise in a foreign country. The first is that it might be possible to eliminate the competition between them, increasing the acquiror's market power. The second is to exploit firm-specific competencies or technological advantages. Advances in modern trade theory fomented several models to examine the effects of technological advantages, including Helpman, Melitz, and Yeaple (2003) and Nocke and Yeaple (2005). These models rely on a constant elasticity of substitution across a continuum of goods to limit the market share of any individual firm, even if it is far more efficient than its average rival. The love of variety prevents any firm from absorbing the entire market share no matter how superior its technology or how low its price. They provide a window on the interesting tradeoff between exporting and investing abroad for greenfield foreign direct investment (FDI) and cross-border mergers and acquisitions (M&A), showing that FDI allows the most technologically efficient firms to capitalize upon their superiority, as their tariff-jumping gives them an additional cost advantage over exporters, boosting their market share above what the technological edge by itself would imply. Nonetheless, the preference structure imposes a constant markup in price setting, precluding the type of strategic behavior that constitutes Hymer's first motivating factor behind cross-border takeovers.

Neary (2008) explores this strategic basis for cross-border M&As in an innovative way. He shows that trade liberalization can trigger waves of cross-border M&As, as firms hurry to buy up new rivals in foreign countries and shut them down to eliminate price competitors. The result is an increase in prices and firm profits, extremely plausible in a world characterized by the market concentration that accompanies the existence of enormous multinational firms. At the same time, the annihilation mechanism driving the result precludes any potential benefits of FDI for firm profits (and consumer welfare) stemming from the transfer of technology across countries. Our model captures the effects of both strategic behavior and technological advantage, providing a unified framework to evaluate the impacts of FDI on prices, profits, and welfare.

The intuition behind the result rests on a form of duopolistic competition modeled in the context of trade by Bernard, Eaton, Jensen and Kortum (2003). They use the CES love of variety to limit the market shares of heterogeneous firms. Only one firm ends up supplying each good, similar to the Dixit-Stiglitz model of monopolistic competition. However, the supply side of the market for each good in the continuum is characterized by a fierce competition among a group of firms competing to be the sole producer. The most efficient firm in this group ultimately becomes the only supplier of that particular good, but only because it beats back its competitors by underselling them: it can not charge a price higher than the marginal cost of its next best rival. The low-cost supplier can not automatically charge the CES markup despite the CES preferences. Rather, if the competition is sufficiently strong, it must charge a price equal to the marginal cost of its next best rival. The CES markup becomes the maximum markup that it might charge over its own marginal cost without jeopardizing profits, not the default markup.

On average, takeovers increase markups and reduce prices in the host country. When a cross-border takeover transfers a superior foreign technology to a local target firm, the target becomes even more efficient than its next best local competitor, increasing the markup. At the same time, the marginal cost of the next best local rival has not changed, so the acquired firm can not increase increase its price and may even end up cutting it, passing on some of its technological efficiency gains to consumers. We show that prices can only increase if a cross-border takeover allows a multinational firm to segment the market for its good so that it can price discriminate.

We also show the importance of the pre-existing level of domestic competition when evaluating the impact of FDI and trade on markups and prices. To do this, we generalize the BEJK framework to allow for free entry. This entry does not affect the number of goods produced, but rather the number of firms competing to be the low-cost supplier of a particular good. "Competing" in this sense means paying an entry fee for the right to draw an efficiency parameter from an identical distribution.

The most efficient firm will have the lowest cost, the first order statistic for costs in the industry. An increase in the number of firms that compete to be the low-cost supplier of a good lowers the expected value of the first order statistic. In addition, we show that higher entry results in fewer firms charging the maximum markup. Naturally, higher entry in all industries reduces the aggregate price level. Openness to trade and FDI have a bigger effect on prices and markups in countries with few entrants, a situation that we call low contestability.

The following section discusses the findings of existing literature with regard to the effects of FDI, trade, and contestability on markups and prices. Section 3 presents a simple closed economy model with analytical solutions for the distribution of markups and prices, including contestability. Section 4 considers the transition from autarky to one with FDI and no goods trade and uses closed form solutions to illustrate the boost that cross-border takeovers give to the average markup. It then opens the economy to trade, examining the countervailing effects of FDI and trade on markups and prices in the host versus source country given different degrees of contestability, market segmentation, and trade openness. Section 5 concludes.

2 FDI, Markups and Competition: Stylized facts

As authors since Caves (1974) have pointed out, it is difficult to disentangle the impacts of technology transfer from changes in market competitiveness when foreign-owned firms enter a market. Authors such as Chung (2001), Arnold and Javorcik (2005), Alfaro, Kalemli-Ozcan, and Sayek (2009) have documented the technological transfer and spillovers that accompany foreign takeovers or inflows of foreign direct investment. Only a few studies have measured the effect of foreign takeovers on industry competiveness and firm profits. The most extensive set of studies analyzes foreign takeovers and markups in the banking sector. An array of studies, including Barajas, Steiner and Salazar (1999), Claessens, Demirgüç-Kunt, and Huizinga (2001), Goldberg (2007), and Vera, Zambrano-Sequin, and Faust (2007), demonstrates that net interest margins– which de Blas and Russ (2009) show is equivalent to the log of a markup in standard trade models– increase in targeted banks following foreign takeovers, while costs tend to fall.

Sembenelli and Siotis (2008) show that the same pattern applies among Spanish manufacturing industries. In the industries most intensive in research and development (R&D), "FDI has a positive long-run effect on the mark-ups of target firms (p.108)." They argue that the key role of R&D in predicting the behavior of pre- versus post-takeover markups implies a key role for technology transfer between parents and subsidiaries in augmenting market power. In these sectors, they interpret their findings as support for "the fact that MNCs possess firm-specific advantages that can be transferred" so that after a foreign takeover, targeted firms "enjoy greater levels of efficiency, and therefore mark-ups (p.115)." Thus, despite the difficulties of splicing technology gains from pricing behavior, evidence for both financial and non-financial firms points to increased markups and efficiency following foreign takeovers.

3 Autarky

The heart of the model lies in the production of intermediate goods by heterogeneous firms. For simplicity, we assume that producers of the final good are perfectly competitive and simply assemble the intermediate goods, with no additional capital or labor necessary. The continuum of intermediate goods j spans the fixed interval [0,1]. The assembly process uses a technology involving a constant elasticity of substitution across inputs,

$$Y = \left[\int_0^1 Y(j)^{\frac{\sigma-1}{\sigma}} dj \right]^{\frac{\sigma}{\sigma-1}},$$

with elasticity of substitution σ greater than one. The demand for an individual input is downward sloping in its price,

$$Y(j) = \left(\frac{P(j)}{P} \right)^{-\sigma} Y,$$

and the aggregate price level P is given by

$$P = \left[\int_0^1 P(j)^{1-\sigma} dj \right]^{\frac{1}{1-\sigma}}.$$

Each producer of an intermediate good draws an efficiency parameter z from a cumulative distribution $F(z)$ with positive support over the interval $(0,\infty]$. Eaton and Kortum (2009, Chapter 4) describe a process whereby over time, $F(z)$ can emerge as a frontier distribution representing the efficiency levels associated with the best surviving ideas available to produce a particular good j. Being the distribution of the best surviving ideas, this distribution naturally takes on an extreme value form and under mild assumptions, it can be characterized by a Fréchet distribution.[1] Thus, we assume that a number of firms n each draw an efficiency parameter from a distribution given by

$$F(z) = 1 - e^{-Tz^{-\theta}}.$$

We assume that $T > 0$ and also that the shape parameter, θ, is greater than $\sigma - 1$ to ensure the existence of certain moments of interest below. Only the most efficient firm with efficiency level $Z_1(j)$ in any industry supplies the market. This efficiency parameter increases the level of output a firm produces from one unit of labor:

$$Y(j) = Z_1(j)L(j).$$

[1] In particular, EK suppose that each period a group of new ideas emerges with the quality of these ideas distributed as Pareto. Over time, the distribution of the best (lowest cost) idea from each period then becomes Weibull. More generally, BEJK (2003) state that if firms draw from this frontier distribution, the lowest cost (the first order statistic) takes on a Weibull distribution. We note that the first order statistic of a Weibull distribution is also Weibull, so the underlying distribution from which firms are drawing their cost parameters can be reasonably modeled as Weibull, as we do here. Costs and efficiency levels are simply the inverse of one another, so that assumption implies efficiency levels distributed as inverse Weibull. The Fréchet distribution is isomorphic to an inverse Weibull distribution, so we can equivalently describe the distribution from which firms draw their efficiency levels as Fréchet. We do this to match the model with the EK and BEJK terminology.

We define a cost parameter as the inverse of the efficiency parameter,

$$C_1(j) = \frac{1}{Z_1(j)}.$$

The unit cost is equal to $C_1(j)wd$, where w represents the wage rate and $d \geq 1$ any frictions involved in distribution of intermediate goods to the assemblers of the final good. As such, the cost parameter drawn by any firm hoping to produce good j is distributed

$$G(c) = 1 - e^{-Tc^{\theta}}.$$

Given that n rivals draw an efficiency parameter hoping to be the low-cost supplier of industry j, the distribution of the lowest cost $C_1(j)$ is[2]

$$G_1(c_1) = 1 - e^{-nTc_1^{\theta}}.$$

3.1 The distribution of markups

Let $C_2(j)$ represent the unit cost of the second-best competitor in industry j, who sits inactive but ready to begin production instantly should the opportunity arise. Given the CES assembly technology for the final good, the lowest-cost firm producing good j would like to set a price that provides the maximum markup possible subject to demand— the CES markup, $\bar{m} \equiv \frac{\sigma}{\sigma-1} > 1$. However, if charging the CES markup results in a price that exceeds the unit cost of its next best rival, the low-cost supplier may find itself undersold by the second-best competitor waiting in the wings. In short, no firm can charge a price that exceeds the unit cost of its next best rival. The low-cost supplier in each industry j takes the prices of the low-cost supplier in

[2] See Rinne (2009), p.237 for derivation. EK and BEJK simplify their frameworks by using the underlying assumption that the number of firms competing to be the low-cost supplier in any industry is a random variable with a Poisson distribution. It elegantly drops from the analysis, though one could possibly interpret an increase in the technology parameter T in their model as an increase in the mean number of competitors because T enters their Fréchet distribution of surviving ideas through the Poisson exponent.

every other industry as given. The markup for industry j is then

$$M(j) = \min\left\{\frac{C_2(j)}{C_1(j)}, \bar{m}\right\}.$$

With this formula for the markup, we compute the expected output-weighted price for any good j in several steps. First, note that the price for good j, $P(j)$, is given either by

$$P(j) = \frac{C_2(j)}{C_1(j)} C_1(j) = C_2(j) \quad \text{for} \quad \frac{C_2(j)}{C_1(j)} \leq \bar{m},$$

or by

$$P(j) = \bar{m} C_1(j) \quad \text{for} \quad \frac{C_2(j)}{C_1(j)} \geq \bar{m}.$$

Thus, the pricing rule depends not only upon the distribution of the first and second order statistic of the unit costs, but also upon the distribution of the ratio of the two order statistics. Rinne (2009, p.243) provides a formula for the distribution of $\frac{C_1(j)}{C_2(j)}$. We apply a Jacobian transformation to find the distribution of $\frac{C_2(j)}{C_1(j)}$. Assuming that the frontier distribution of efficiency parameters is identical for every industry j, for values of the markup less than or equal to $\bar{m}$ the probability density of the markup is given by[3]

$$h(m) = \frac{n(n-1)\theta m^{-(\theta+1)}}{\left[(n-1) + m^{-\theta}\right]^2}.$$

Like the distribution of markups given in BEJK, this distribution is entirely independent of $C_1(j)$ and $C_2(j)$. However, because we explicitly include the number of rivals n— rather than elegantly integrating it out to focus on the role of gravity in a Ricardian setting as they do— we see that the distribution of markups is directly affected by the number of firms competing to be the low-cost supplier, a measure which we call contestability, drawing on work by Classens and Laeven (2004) and de Blas and Russ (2009). One can conceptualize n as an exogenous policy parameter, as in the numerical analysis by de Blas and Russ (2009), or endogenize it using a free

[3]See Appendix A for proof.

entry condition as in Melitz (2003). The key is that unlike models using a Pareto distribution of firm efficiency parameters, the degree of entry embodied in n changes the shape of the entire distribution of markups, costs, and firm size. In the case of the markup, integrating $h(m)$ over values from $\bar{m}$ to ∞ gives the probability that a firm will charge the maximum CES markup,

$$\Pr\left[M(j) > \bar{m}\right] = \int_{\bar{m}}^{\infty} h(m)dm = \left(\frac{n}{1+(n-1)\bar{m}^{\theta}}\right).$$

Assuming that at least two firms compete in each industry and recalling that the maximum markup exceeds one for $\sigma > 1$, the derivative of this probability with respect to n is negative:

$$\frac{\partial}{\partial n}\left[\frac{n}{1+(n-1)\bar{m}^{\theta}}\right] = \frac{1-n\bar{m}^{\theta}}{1+(n-1)\bar{m}^{\theta}} < 0.$$

As the number of rivals in an industry j increases, the probability that firms will be able to charge the maximum markup falls— increased contestability squeezes markups.

3.2 The distribution of prices

The joint distribution for the first and second order statistic also contains the contestability measure n:

$$g_{1,2}(c_1, c_2) = n(n-1)\left[T\theta\right]^2 c_1^{\theta-1} c_2^{\theta-1} e^{-Tc_1^{\theta}} e^{-Tc_2^{\theta}(n-1)}.$$

To find the marginal distribution for $C_1(j)$ ($C_2(j)$), one can integrate the joint distribution over values of c_2 (c_1) from 0 to ∞. We find that increasing the number of rivals leads, on average, to lower costs in the industry. We compute a particular moment of interest, $1-\sigma$, for the first and second order statistics that will be used below to construct the aggregate price level

$$\begin{aligned} E[C_1(j)^{1-\sigma}] &= \int_0^\infty c_1^{1-\sigma} g_1(c_1) dc_1 = T^{\frac{\sigma-1}{\theta}} \theta n \Gamma \left(\frac{1-\sigma+2\theta}{\theta} \right) \\ E[C_2(j)^{1-\sigma}] &= \int_0^\infty c_2^{1-\sigma} g_2(c_2) dc_2 = [T(n-1)]^{\frac{\sigma-1}{\theta}} \theta n \Gamma \left(\frac{1-\sigma+2\theta}{\theta} \right). \end{aligned}$$

Taking the derivative of $E[C_1(j)^{1-\sigma}]$ and $E[C_2(j)^{1-\sigma}]$ with respect to n, we find that the $(1-\sigma)$th moment of the second-lowest cost increases in n faster than the same moment for the lowest cost.

$$\frac{\frac{\partial E[C_2(j)^{1-\sigma}]}{\partial n}}{\frac{\partial E[C_1(j)^{1-\sigma}]}{\partial n}} = 1 + \left(\frac{\sigma-1}{\theta(n-1)} \right) > 1,$$

In other words, the second-lowest cost is falling in n faster than the lowest cost, demonstrating how increases in contestability can reduce markups. Because the distribution of the markup is independent of outcomes for the individual order statistics $C_1(j)$ and $C_2(j)$, we can compute the expected price $P(j)^{1-\sigma}$ as

$$E[P(j)^{1-\sigma}] = \Pr\left[M(j) > \bar{m}\right] \bar{m}^{1-\sigma} E[C_1(j)^{1-\sigma}] + \Pr\left[M(j) \leq \bar{m}\right] E[C_2(j)^{1-\sigma}],$$

which is also increasing in n. Since firms in all industries draw from the same underlying distribution, using the law of large numbers one can calculate the aggregate price level as

$$\begin{aligned} P^{1-\sigma} &= E[P^{1-\sigma}] = E\left[\int_0^\infty P(j)^{1-\sigma} dj \right] = \int_0^\infty E[P(j)^{1-\sigma}] dj = E[P(j)^{1-\sigma}] \\ &= \left[\left(\frac{n}{1+(n-1)\bar{m}^\theta} \right) + (n-1)^{\frac{\sigma-1}{\theta}} \left(1 - \frac{n}{1+(n-1)\bar{m}^\theta} \right) \right] T^{\frac{\sigma-1}{\theta}} \theta n \Gamma \left(\frac{1-\sigma+2\theta}{\theta} \right). \end{aligned}$$

Taking the derivative $\frac{\partial P^{1-\sigma}}{\partial n}$ and noting that for $n \geq 2$, $(n-1)^{\frac{\sigma-1}{\theta}} > 1$, it is clear that this moment of the aggregate price level is always increasing in n, given $\theta \geq \sigma > 1$.

Inutitively, this occurs because increases in n shift markups away from the maximum at the same time they reduce the first- and second-lowest unit costs on average. Thus, under autarky, the aggregate price level P is decreasing (implying that real income is rising) in the number of rivals n.

3.3 Closing the closed economy model

The BEJK framework is attractive because it combines endogenous markups and firm heterogeneity with homothetic preferences that allow for general equilibrium solutions. In this section, we present the very simple representative consumer's problem, the goods market clearing condition, the labor market clearing condition, and the free entry condition that pin down the solutions for Y, n, L, and w.

[To be completed]

4 Cross-border takeovers

Suppose that a country opens to cross-border takeovers—a foreign firm can acquire a domestic one, replacing the domestic technology with its own. To clarify the intuition behind the increase in markups that occurs as a result, we first suppose that no trade in goods occurs, forcing all production to be for local sale. For acquired firms, the markup becomes

$$M(j) = \min\left\{\frac{C_2(j)}{C_1^*(j)}, \bar{m}\right\},$$

where $C_1^*(j)$ is the lowest-cost draw among foreign firms for industry j. $C_1^*(j)$ must be lower than $C_1(j)$ for an acquisition to be profitable for the parent firm, so the markup charged by a foreign-owned firm in the home country will always be at least as large as the pre-takeover markup. The only case where the markup would not increase after a takeover is when the target was already charging the maximum markup $\bar{m}$. A takeover can be profitable for a parent firm even in this case because the parent applies its superior technology in the acquired plant, resulting in a lower price ($\bar{m}C_1^*(j) < \bar{m}C_1(j)$) and greater sales, which allow it to buyout the target firm at a price equal to the profits it would have earned had it not sold out, given the level of the aggregate price index P that would prevail if all possible takeovers had occurred.

The distribution of lowest-cost draw among foreign firms $C_1^*(j)$ is independent of draws in the home country. In addition, because the distribution of the ratio $\frac{C_2(j)}{C_1(j)}$ is independent of $C_1(j)$, the distribution of the ratio is also independent of the probability that $C_1(j)$ is greater than $C_1^*(j)$. This means that the marginal distribution of $C_2(j)$, $g_2(c_2)$, is independent of the distribution of $C_1^*(j)$, $g_1^*(c_1^*)$. The joint distribution of $C_2(j)$ and $C_1^*(j)$ given that a takeover occurs is simply $g_2(c_2)g_1^*(c_1^*)$. Using the joint distribution, we apply a simple transformation[4] to find the distribution of the markup for merged firms, $\frac{C_2(j)}{C_1^*(j)}$:

$$\begin{aligned} h_T(m) &= \int_0^\infty c_1^* g_1^*(c_1^*) g_2(mc_1^*) dc_1^* \\ &= \int_0^\infty n(n-1)n^* T T^* \theta^2 c_1^{*\theta-1} (mc_1^*)^{\theta-1} e^{-[n^*T^*+(n-1)T](mc_1^*)^\theta} dc_1^* \\ &= \frac{n(n-1)n^*\theta T T^* m^{\theta-1}}{[n^*T^*+(n-1)Tm^\theta]^2}. \end{aligned}$$

As above, we can integrate from $\bar{m}$ to ∞ to find

$$\Pr[M_T(j) > \bar{m}] = \int_{\bar{m}}^\infty \frac{n(n-1)n^*\theta T T^* m^{\theta-1}}{[n^*T^*+(n-1)Tm^\theta]^2} dm = \frac{nn^*T^*}{n^*T^*+(n-1)T\bar{m}^\theta}.$$

The proportion of firms charging the maximum markup is greater among merged firms as long as the foreign country has sufficiently high contestability and technology: $n^*T^* > 1$. For $n \geq 2$, this requires $T \geq 0.5$, well within the range estimated by Eaton and Kortum (2002). In addition, merged firms have lower costs, since the parent must be more efficient than the target to afford the takeover. It is important

[4]See Mood, Graybill and Boes (1974, pp.187-88) for a description of the transformation method used to find the distribution of the quotient of two random variables.

to note that although the markup may increase after a takeover, the price charged for the good will never exceed $\min\{C_2(j), \bar{m}C_1^*(j)\}$. Since $C_2(j)$ has not changed and $C_1^*(j) < C_1(j)$, the price charged for good j in the host country may fall, but will never increase, even if the markup does.

4.1 Trade without FDI

Here we demonstrate that trade has little effect on the distribution of markups except in countries with very low contestability, but always reduces the prices of imported goods relative to autarky, lowering the aggregate price level for both trading partners. For countries with very low contestability, trade has a second price-reducing effect in that it reduces the average markup even for goods that are not traded. The result generalizes the findings from a model of cross-border bank lending in de Blas and Russ (2009).

[To be completed]

4.2 FDI and trade

Given the complete market segmentation described above, a cross-border takeover in industry j results in a lower or unchanged price in the host country, with no change in the price or markup charged in the source country. Depending on the degree of market segmentation and symmetry between countries, trade in goods can change this result. Market segmentation can take two forms: (1) a pure gravity effect, where distance and other barriers impede the free flow of goods (2) a strategic segmentation to facilitate price discrimination. In the absence of any segmentation, then the post-takeover markup becomes $\min\{\frac{C_2(j)}{C_1^*(j)}, \frac{C_2^*(j)}{C_1^*(j)}, \bar{m}\}$. Under free trade, a post-takeover markup can be lower than the pre-takeover markup if the second-best foreign firm is more efficient than the second-best host-country firm ($C_2^*(j) < C_2(j)$). In such a case, the threat of being undersold by an exporter from its native market prevents a multinational from setting a higher markup in the host country than it charges in its native market. The markup in the source (native) country still remains unaffected by the overseas takeover in this case. It would fall only if the second-best rival in the host market were more efficient than the second-best rival in the native market, an effect which arises purely from trade and which would occur even if no takeover took place.

Strategic segmentation can result in increased markups at home. Suppose a firm's next best rival is an overseas competitor— the threat of being undersold by this foreign rival's exports forces the firm to charge a lower markup than under autarky. If the firm then goes multinational by buying out its rival, it can charge a higher a higher markup and a higher price in its native market than before the takeover as long as it can control the flow of its goods and prevent goods abroad from being reexported to its native market—a Neary-like strategic effect. Even if the foreign rival is not the next-best competitor, acquiring a branch in a low-wage country may allow a firm to increase its markup if it retains part of the savings in labor costs as profit.

Below, we use numerical simulations to show that the impact of trade and FDI on the distribution of markups and prices in the both the host and source country depends on the degree of segmentation and contestability in the two markets. We calibrate the model and present the frequency and direction of changes in markups and prices.

[To be completed]

5 Conclusions

In summary, we present a model which can capture the stylized fact that foreign takeovers result in increased markups and the transfer of improved technology. To do so, we generalize the BEJK framework with endogenous markups and heterogeneous firms to allow a role for domestic entry and foreign takeovers. Entry in our model is distinct from the number of varieties (which we fix, but which could also be endogenized) does not truncate the distribution of individual firm efficiency levels, as in Melitz (2003), rather it changes the shape of the entire distribution. Entry also influences the entire distribution of markups, with greater "contestability" in each market niche resulting in fewer firms being able to charge the maximum markup.

Takeovers by foreign firms increase the technological edge of target firms, allowing them to increase their markup and increasing the average markup in the economy, which we prove analytically for the first time in the context of heterogeneous firms. The increased markup is always outweighed by the efficiency gains arising as parents transfer superior technologies to their new subsidiaries, causing prices to stay the same in the source country and fall in the host country as in Nocke-Yeaple (2007). The exception occurs when a parent takes over its next best rival for the purpose of segmenting the market and increasing, generating a "Hymer-Neary effect" proposed by Hymer in 1960 and first demonstrated in a world with heterogeneous firms by Neary (2007).

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