



Emerging market multinationals and internalisation theory

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Emerging Market Multinationals and Internalisation Theory

Abstract

There is ongoing debate about the applicability of internalisation theory to Emerging Market Multinationals (EMNEs). Internalisation theory normally describes multinationals exploiting superior knowledge directly abroad rather than licensing its use to foreign firms. We argue that EMNEs can be explained readily in terms of internalisation theory. This involves internalisation in the opposite direction: knowledge is internalised by EMNEs which then exploit it utilising home-country cost advantages. However, this is normally achieved by means that avoid the licensing of key technologies from leading firms. This clarifies the theoretical basis of EMNE strategic asset seeking investment. Market-seeking investments are also linked to technology-seeking investments through fixed costs. A model formalises the arguments, establishing conditions leading to different types of equilibria when an advanced-economy firm competes with an emerging-economy firm. The range of factors that it incorporates means that it is also compatible with other theories of the EMNE.

Keywords: Internalization, Emerging Economy, Multinational, Technology, R&D, Foreign Direct Investment, Firm.

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Emerging Market Multinationals and Internalisation Theory

1. INTRODUCTION

Controversy remains over the applicability of internalisation theory, and of theories of international business more generally, to EMNEs regarding whether existing theories need to be amended or whether new theories are needed (Mathews, 2006; Cuervo-Cazurra, 2012; Ramamurti, 2012; Verbeke and Kano, 2015). The traditional approach originally sought to explain developed-country MNEs. The assumption was that it was leading firms that would become MNEs, internalising the exploitation of their knowledge abroad due to market failure in knowledge markets. Such internalisation by leading firms should then be all the more likely in emerging economies where intellectual property rights are weak. EMNEs have been heavily engaged in FDI in recent times (Pillania, 2009), including technology-seeking FDI. However, they do not match the traditional picture of the MNE as an advanced firm with leading technologies and expertise. Rather, they are more likely to have mid-level technologies. Some have claimed that EMNEs actually do have significant firm-specific advantages so that traditional theory still holds as an explanation of their FDI. However, these advantages are seen as being of a different nature to those of advanced-economy MNEs (Ramamurti, 2009, 2012; Verbeke and Kano, 2015). They include, for instance, understanding of emerging-economy consumers, labour intensive production methods, competencies in operating in difficult institutional environments, and products that are cheap, basic, and rugged.

Dunning described EMNE FDI in terms of strategic asset seeking FDI (Dunning and Narula, 1995) and of 'country specific ownership advantages', giving Chinese firms' access to ample financial assets as an example of the latter (Dunning, Kim, and Park, 2008). However, he saw such strategic asset seeking investment as augmenting existing ownership advantages. Narula (2012) argued that a threshold level of firm-specific assets is necessary before international expansion can take place and that emerging-economy firms have been pushed into strategic asset seeking FDI in order to help them survive in their home markets. Hennart (2012) argued that Dunning's OLI framework, which incorporates internalisation, has a basic flaw which limits its applicability to EMNEs. This is that it assumes that the location advantages of a country are freely available to all firms operating there. Hennart argued that location advantages are sometimes owned by particular firms, usually local ones. He claimed that many inputs are sold in imperfect markets in which their local owners have significant market power. This allows such local firms to make profits which can then be enhanced by undertaking intangible-seeking FDI in developed countries.

Rugman and Nguyen (2014: 54-55) criticised the concept of strategic asset seeking FDI as being inconsistent with the OLI framework. They viewed Dunning as having made a theoretical mistake because strategic asset seeking FDI is inconsistent with theories of the EMNE based on firms developing ownership advantages at home and then exploiting them abroad. They claimed that foreign firms would also be unlikely to be willing to sell advanced knowledge to emerging-economy firms. Buckley and Tian (2017) have argued that the debate on EMNEs has focussed on knowledge-based advantages and locational advantage and has failed to focus adequately on internalisation. It has therefore failed to coherently link internationalisation, strategic asset seeking, location, and profitability. We are therefore left with an unsatisfactory situation where the concept of strategic asset seeking investment has

been used to explain the existence of EMNEs but this has not been properly incorporated into theory (Meyer, 2015). Fundamental to this is a failure to explicitly recognise that the concept of internalisation does not preclude that it can occur in the opposite direction to that traditionally assumed under certain circumstances. Internalisation theory is in fact flexible in that it recognises that the outcome depends on the costs and benefits of any particular case. In contrast to the normal description of internalisation theory, where a firm may have an incentive to internalise the exploitation of its knowledge abroad, it is possible that a firm has incentives to internalise knowledge from abroad.

Instead of the original owner of a technology exploiting it abroad through FDI, a firm domestic to the foreign country may instead internalise foreign knowledge. It will be argued below that there are incentives for this when the benefits of operating in a country are strong but there are high costs to foreign firms in taking advantage of them. This can allow an emerging-economy firm to be profitable in competition with advanced-economy firms despite employing inferior technology. Such conditions are present in emerging economies, as will be shown. The use of foreign knowledge by emerging-economy firms is then likely to be gained through means that avoid licensing by market-leading firms. It is necessary for the unit of analysis to be widened beyond that of the individual firm, to consider firms from different countries in competition, for the logic behind EMNEs to be properly understood.

A model is presented below in order to help to resolve the question of why emerging-economy firms can be profitable in competition with advanced-economy firms with superior technologies and the closely related issue of the logic for them undertaking technology-seeking FDI. The particular variety of internalisation theory employed in the model has been termed by Casson (2018) as “internalisation plus”, and was introduced by Casson, Porter, and Wadeson (2016). Instead of taking the firm as the unit of analysis, it focuses on equilibrium outcomes of competition between the firms in an industry. To do this it employs game theory, which has developed substantially since internalisation theory was first introduced. The debate over the EMNE centres on its existence in competition with firms with superior technologies. There has therefore been difficulty in applying the logic of internalisation theory to the EMNE, including its technology-seeking FDI, because the dominant firm-centred version of that logic involves firms with superior technologies being the ones that undertake FDI. We therefore argue that it is necessary to instead apply internalisation theory to competitive outcomes between firms. The internalisation plus approach is specifically designed to address such competitive outcomes using a game-theoretical approach. In the firm-centred approach, firms are seen as having given advantages. Many have viewed emerging-economy firms as tending to lack such advantages while some have argued that they have distinctive advantages, as explained above. In the internalisation plus approach the competitive outcome is endogenous. Any advantage that a firm has is partly a matter of the costs in the international business system, rather than being assumed to exist *ex ante*. A firm having a higher level of technology does not necessarily imply that it will win out in competition with a firm from another country.

The contribution of the article is therefore to formally model equilibria of competition between an advanced-economy firm and an emerging-economy firm and to use the equilibria and logic of the model to make related arguments about the EMNE. The model involves a set of alternative Nash equilibria. A Nash equilibrium exists when neither firm has an incentive to change its plans, given the plans of the other firm. Under certain conditions the emerging-economy firm becomes a multinational by engaging in FDI to the advanced economy. This can include technology-seeking FDI. The basis of the EMNE changes as the emerging economy becomes more open and developed. This is represented in the model in as much as

different sets of parameter values lead to different types of equilibria. Note that in some industries EMNEs have had little impact on advanced-economy markets. This can also be explained through the model through relevant equilibria and related parameter values. An example is the contrast between recent car assembly in China and its manufacture and export of car parts, as will be discussed later. The formal maths of the model is presented in the appendix. The basic underpinnings of the model are explained in the next section. Following this, the different alternative types of equilibria in the model are presented. Consideration is then given to how real-world conditions can lead the emerging-economy firm to become multinational. The impact of technology-seeking FDI on the equilibrium outcome is then discussed.

2. THE MODEL: SOME BASICS

2.1 Competition between Firms

Internalisation theory goes beyond the individual firm centred focus of much international business theory (Buckley, 2016; Buckley and Hashai, 2004; Casson, Porter, and Wadeson, 2016). The model presented in this article (see Appendix) assumes an industry consisting of an advanced-economy firm and an emerging-economy firm. This is because the main question that is being addressed is how the emerging-economy firm can find it profitable to become a multinational in competition with advanced-economy firm(s) with superior technologies. The model follows the “internalisation plus” approach introduced in Casson, Porter, and Wadeson (2016), as explained above, but involves price competition between differentiated goods, rather than perfect substitutes. The degree of substitutability between the two products depends on the levels of both vertical and horizontal differentiation, where vertical differentiation refers to objective differences in the level of quality and horizontal differentiation refers to differences over which buyers will vary in their rankings. For instance, consumers will prefer a vehicle that breaks down less frequently but they will vary over which body style they prefer. Consumers will, however, differ in their willingness to pay for both improvements in vertical quality and for better matches between their preferences and horizontal product features, one key influence on this being differences in incomes. The model is also more focussed than the Casson, Porter, and Wadeson (2016) model, with an industry consisting of one firm in each of two countries, instead of possibly many firms across many countries. This allows a set of different types of equilibria to be considered in more detail. The model also adds the possibility of technology-seeking FDI and explicitly incorporates a choice over the level of labour intensity of production.

The model involves a structure of costs within the international system, outcomes of competition between differentiated products, market sizes, and firm-specific factors. Proprietary technologies are assumed to require recurrent fixed R&D expenditures and so involve firm-level economies of scale. Because of the different factors involved, the model can be seen as synthesising different theories of the EMNE. It analyses the conditions that favour different equilibrium outcomes of competition between the advanced-economy firm and the emerging-economy firm. Each firm may or may not engage in internationalisation, may or may not close down, and if it does not close down then needs to decide its price in each of the markets that it serves. It is assumed that each firm can internationalise through exporting, FDI, or licensing. As the model is game theoretical, the equilibrium outcome for each firm depends also on the conditions facing the other firm. When the firms compete in a country’s market it is assumed that standard results of oligopoly theory apply in determining the equilibrium outcome (Mazzeo, 2002) in terms of the price and sales of each firm given

their products' relative positions in the product space. So, for instance, if the two firms compete head-on with close substitutes then if one firm has a cost advantage it will capture the market. However, a higher cost firm may be able to achieve significant sales if it offers a more differentiated product, either in the form of higher quality or of one horizontally differentiated to better serve the preferences of some customers than its competitor's product. In many cases more advanced technologies used by developed-country MNEs, combined with the cost disadvantages of foreign firms in exploiting their technologies in emerging economies, will result in products that are relatively expensive for the emerging economy aimed at the higher ends of its markets. They will sometimes be seen as status symbols by emerging-economy consumers, so increasing their willingness to pay price premiums (Kumar et al., 2009). Competition across the different countries' markets is linked by fixed costs of R&D, helping to determine overall profitability and so whether a firm will continue in operation when faced with competition from the other firm.

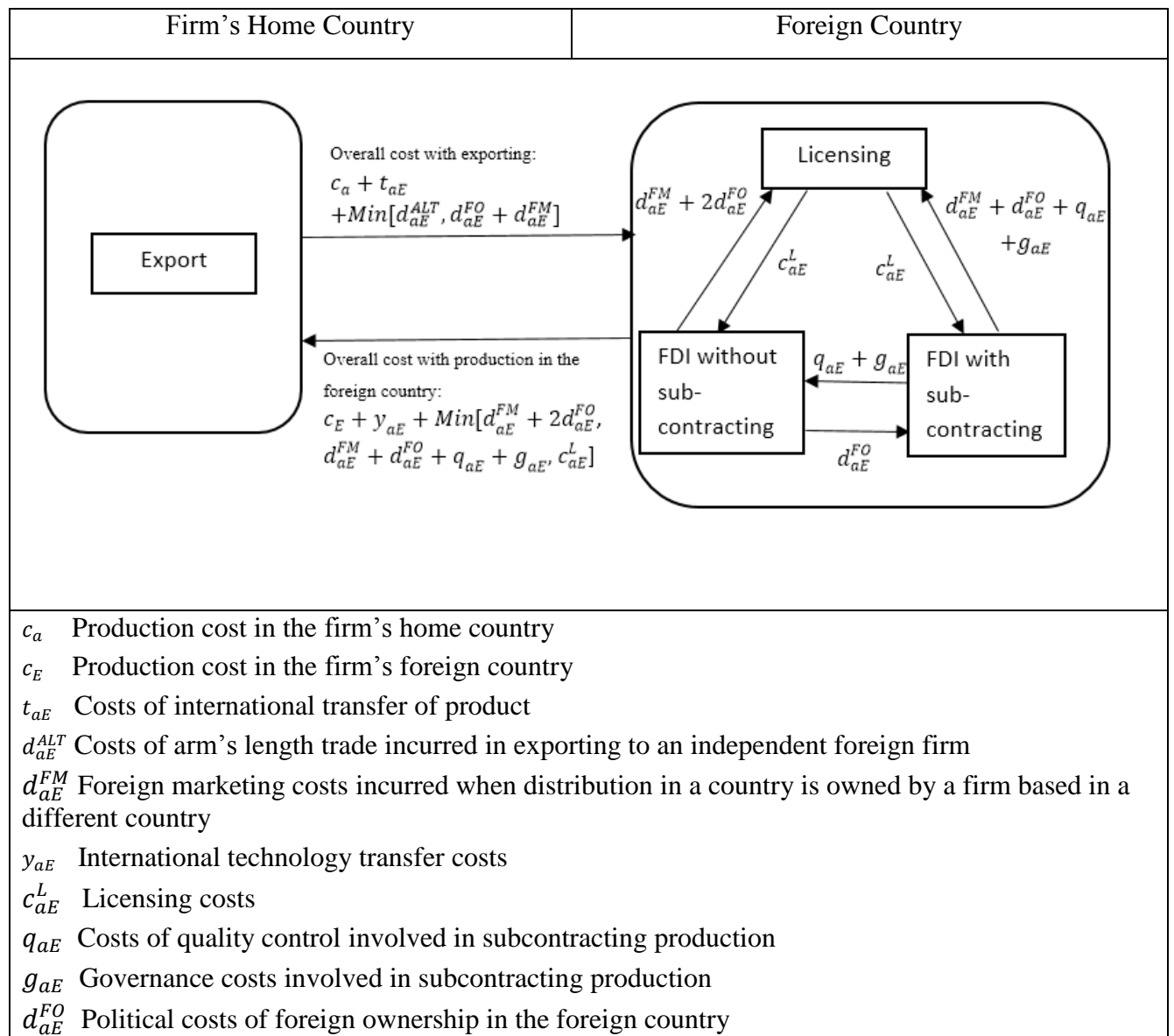
It should be noted that profitability is derived through demand conditions and the levels of costs in the international business system as well as through the technologies of the individual firms. A firm can potentially be profitable in both its home and foreign markets despite employing a technology that is technically inferior. Remember that the equilibrium outcome depends on the conditions faced by both firms. In other words, instead of the model being solved in terms of an individual firm making decisions faced with given conditions, the equilibrium outcome for either firm depends also on the responses its choices would generate from the other firm. For instance, entry into the foreign market might not be an equilibrium action if the firms' products are close substitutes and the other firm has low enough costs to be able to react by substantially reducing its price.

2.2 The Use of a Technology to Serve a Foreign Market

A simplified cost structure for the exploitation of each firm's technology in a foreign country is assumed, as illustrated in Figure 1. This is under the assumption, for simplicity, that the firm's R&D is located in its home country. Note that, although each firm faces the same structure of different types of costs, the size of each cost is firm specific. The firm in the diagram is labelled as firm *a*. It is domestic to country *A*, the advanced-economy country. The foreign country for firm *a* is therefore country *E*, the emerging-economy country. The arrows in the diagram represent the "direction of force" of each cost. For instance, a high cost of firm *a* home-country production increases the relative attractiveness of locating production in country *E* and so the cost c_a is shown above an arrow pointing away from its home country (*A*) towards the foreign country (*E*).

FDI with production in the foreign country is split into two possibilities: one with subcontracting and one without. Ownership of both the product and the production facilities is achieved through FDI without subcontracting. Ownership of the product but not the production facilities is achieved by subcontracting production to a firm domestic to the foreign country while retaining responsibility for selling the product. Ownership of neither, while still exploiting the technology in the foreign market, is achieved by licensing. A further option for FDI, but with production in the home country, is to couple exporting with FDI into distribution. The model also includes the option for the advanced-economy firm to offshore production to the emerging-economy country in order to serve its home market.

Figure 1: Firm a 's Exploitation of its Technology in Country E



Subcontracting involves costs of quality control and of governance (the latter consisting of other transaction costs involved in subcontracting). Costs of quality control depend both on the nature of the technology and on the availability of reputable subcontractors with good quality control procedures in the foreign country. FDI involves political costs of foreign ownership. Ownership of production and of distribution in the foreign country each incurs these costs. They include factors such as special controls, the risks of seizure of facilities or arbitrary taxation, and risks of future adverse policy changes with respect to foreign firms. Such costs tend to depend partly on the stage of development of the country concerned. However, it is one area where conditions can change quickly, such as where a different government comes into power. Ownership of distribution also incurs a cost of foreign marketing.

Licensing costs involve costs related to bargaining, contract formation and enforcement, and market failure. Market failure is well-recognised for markets for knowledge and is at the heart of internalisation theory. The extent of the costs of market failure depend partly on the

quality of the system of intellectual property rights in the foreign country. These may vary significantly over time and are likely to tend to improve as the foreign country becomes more developed and economically open. Licensing costs may not only relate to those concerned with the emerging-economy market. For instance, there is a risk that license infringement will involve global exporting by the infringing firm.

FDI into production, subcontracting, and licensing all also involve costs of transferring technology to the foreign country. These have been eased to some extent by modern information technology and by cheap jet travel. However, they can still be high, particularly where the technology is beyond the existing expertise of recipients in the receiving country, so that they lack absorptive capacity. For example, engineers who are used to dealing with more basic technologies may struggle to understand an advanced technology. In such cases, there may need to be a more heavy involvement of home-country staff in foreign-country exploitation of the technology. The costs also depend on the degree of complexity and modularisation of the technology concerned. They will tend to be eased to some extent where the foreign country has higher levels of human capital, including emerging economies that have invested more heavily in education and training. In the diagram, production costs in the foreign country are represented as being equal, for simplicity, no matter whether production is by a licensee firm, a subcontractor firm, or firm *a* itself. Note, however, that in the model production costs are allowed to vary by each type of firm.

Exporting involves both production costs in the home country and costs of international transfer of the product. Where there is FDI into distribution, it also involves a cost of foreign ownership and a cost of foreign marketing. Otherwise, it involves costs of arm's length trade. In many cases these costs have changed significantly over time. Capital intensive production costs have reduced with increased automation, such as the use of computerised production machinery. Costs of transferring product abroad have been reduced by improvements in shipping technology (such as containerisation), information technology, and international agreements that have reduced state-imposed costs of trade. In the model, the level of labour intensity of production is partly determined by the relative costs of labour and capital. As emerging-economy countries have lower labour costs than advanced-economy countries, their production tends to be more labour intensive. The unit cost of production of each firm in each country depends on the countries' labour costs, the firms' costs of capital, and on the options for different levels of labour intensity given by available production technologies.

3. OVERALL COMPETITIVE NASH EQUILIBRIUM IN THE MODEL

Given the market sizes and buyer preferences, the two firms compete based on the levels of costs that they each face and on their products' positions in the product space. Note again that firm *a* is the advanced-economy firm and firm *e* is the emerging-economy firm. Country *A* is the advanced-economy country and country *E* is the emerging-economy country. Assume that barriers to trade and FDI between the two countries fall. Prior to this the two firms were profitable monopolies in their home markets. Now country *A* has low barriers to trade and FDI and an advanced system of intellectual property rights. However, country *E* may retain significantly higher barriers than country *A* and has a less-developed system of intellectual property rights. There are a number of possible alternative overall Nash equilibria in which neither firm has an incentive to change its course of action:

1. Internationalisation of Firm *e* to Country *A* and with the Continuation of Firm *a* Selling only in its Home Market

This equilibrium would be made more likely by a combination of the following factors:

Firm *a* continuing to sell only in its home market would be made more likely by high costs of firm *a* internationalisation into country *E*. In the model, this would involve all three of the alternative forms of internationalisation having high costs for firm *a*. These are exporting, licensing, and FDI. FDI has two variants in the model, one into both production and distribution and one into distribution only. The latter involves the subcontracting of production to a domestic firm. So high costs of subcontracting, such as where there is a lack of reliable subcontractors in the emerging-economy country, make it more likely that a strategy involving FDI will have high costs.

The entry of firm *e* into the country *A* market would be encouraged by firm *e* having a production cost advantage, helping it to overcome costs of internationalisation. This can result from low labour costs in the emerging economy (as well as other low costs) combined with the use of labour-intensive production methods. Firm *a* is blocked from taking full advantage of low costs of production in country *E* by high costs of offshoring production there.

The survival of firm *a*, despite the encroachment on its home market, would be made more likely by the two firms' products not being close substitutes and by the country *A* market being large. For instance, the emerging-economy firm's product may rely on less advanced technology and be seen as an inferior product so that it is restricted to the lower end of the market. Also, the larger the country *A* market, the more likely it is to be able to sustain firm *a*, given its fixed costs of R&D, even after some loss of market share and reduction in price resulting from the competition from firm *e*.

2. Internationalisation of Firm *e* to Country *A* and with Exit of Firm *a*:

The conditions favouring this equilibrium are similar to those for equilibrium 1 except for the following:

A larger cost advantage will help firm *e* to be able to undercut the pricing of firm *a*. Price competition will also be more intense, so helping to force the exit of firm *a*, the closer the products of the two firms are as substitutes. Alternatively, if firm *e*'s product does not suit many country *A* buyers' preferences then many may continue to buy from firm *a* even if its product is significantly more expensive.

The exit of firm *a* would also be more likely the higher are the fixed costs of R&D and the smaller is the country *A* market. A small home market means that firm *a*'s average fixed costs of R&D will be high if selling only within it, particularly after losing some market share to firm *e*. Firm *e*, on the other hand, is already covering its fixed costs through sales in its home market, making it further able to undercut the pricing of firm *a* when selling in country *A*.

3. Internationalisation of Firm *a* to Country *E* but with Firm *e* Continuing to Sell only in its Home Market

This is similar to equilibrium 1 but with the positions of the two firms reversed. It is therefore favoured by the following conditions:

The costs of internationalisation of firm *a* to country *E* must not be prohibitive relative to other factors. At least one of the three forms of internationalisation (exporting, licensing, and FDI) must be of low enough cost. For instance, there may

be a reliable subcontractor in country e or the country E authorities may be relatively welcoming to FDI from firm a .

Firm e 's cost advantages in serving the country A and E markets must not be high enough for it to be able to substantially undercut the pricing of firm a to the point where firm a finds it unprofitable to serve either market. For example, cost advantages of firm e will be reduced if firm a can offshore production to country E at relatively low cost. Again, this would be favoured by the presence of a reliable subcontractor firm in country E or by a relative openness to FDI into country E by firm a . Additionally, there may be little cost advantage to producing in country E if automation technologies are available that mean that higher labour costs in country A are of far less significance.

If firm e 's product is inferior then there may be little demand for it in country A . It may also be less well matched than firm a 's product to country A preferences regarding horizontal differentiation. At least some customers in country E will be willing to pay a price premium for a superior product, so helping to overcome any cost disadvantage faced by firm a in serving the country E market.

Firm e is more likely to be able to survive if its home market is large enough to sustain it despite losing some market share given the level of its fixed costs of R&D and the effect of competition on pushing down its price. If firm e has a technologically inferior product then it may have relatively low fixed costs of R&D, giving it a greater chance of remaining profitable after losing some market share in its home market.

4. Internationalisation of Firm a to Country E and with Firm e Exit

This is a similar case to equilibrium 3 except that Firm e exit is brought about by one or more of the following factors:

If firm a 's product has a significant vertical quality advantage then buyers will prefer it so long as it is not too expensive for them, so helping to reduce the viability of firm e . Firm e will also be more likely to exit if it faces large fixed costs of R&D and its home market is not large enough to give it large-scale sales after losing some market share to firm a . Note that there may be a significant price fall if the two firms compete in the country E market, partly because firm a is profitable based on its home market sales and so it does not have to cover its fixed costs of R&D in its pricing in country e .

5. Bi-Directional Internationalisation

This offers the advantages of choice and price competition to buyers in each country. It is favoured by the following factors:

If neither firm has a substantial cost advantage in serving either market then this helps to ensure that neither is driven from either market. Costs of internationalisation must also be low enough so as not to block internationalisation by either firm, while the products must not be too close as substitutes which ensures that price competition is not so intense as to force the higher-cost producer out of business. In other words, any cost advantage of either

firm in supplying either market does not stop some buyers from purchasing from the more expensive firm in order to better match their preferences.

The combined market size across the two countries must be large enough to sustain both firms, given their fixed costs of R&D, even though neither monopolises the market in either country. The higher each firm's fixed costs of R&D, the more important it is that it is able to achieve high sales in competition with the other firm in order to achieve economies of scale.

This equilibrium can exist early on in the emerging economy's development. It is common for an emerging-economy firm to export a low-cost product aimed at the lower end of the advanced-economy market while the advanced-economy firm's product may gain some sales in the high end of the emerging-economy market despite its high cost. The equilibrium will be likely, in practice, to change in nature as country *E* becomes relatively economically open and developed so long as fixed costs of R&D are not so high as to create a natural monopoly in the international (i.e. combined country *A* and *E*) market. This happens as the emerging-economy firm's cost advantage recedes and so its sales rely increasingly on horizontal product differentiation rather than just on low price. If it has not already upgraded its product, this also puts pressure on the emerging-economy firm to offer a product of comparable quality. It is possible that firm *a* will continue to dominate the upper end of the market if the fixed costs of R&D for an upper-end product are high enough, though if the technology matures then the costs of R&D are likely to decline.

6. No Internationalisation

This is likely if there are high costs of internationalisation for both firms, the two firms' products are close substitutes so that buyers are not willing to pay a significant price premium for either firm's product, and neither firm has a strong production cost advantage. Additionally, it is also more likely if neither firm can achieve much in the way of economies of scale by entering its foreign market. Instead, average fixed costs of R&D are low for both firms based on sales in their home countries alone. This would result from a large market in each country and relatively low fixed costs of R&D.

4. CONDITIONS LEADING TO AN EMERGING MARKET MULTINATIONAL

An emerging-market multinational may come into existence in the model in equilibria 1, 2, and 5. The relevance of these can be illustrated through reference to some observations about the real world. First of all, emerging economies are known for production cost advantages based on cheap labour, among other factors, particularly while they are still earlier on in their processes of economic development. Note that the extent of such advantages for any specific type of product partly depends on available production technologies, as will be discussed below. Secondly, where the emerging-economy production cost advantages are combined with asymmetric costs of internationalisation which favour the emerging-economy firm, this can lead to it having cost advantages over the advanced-economy firm both in production and in serving its home market. This can lead to its internationalisation and to it becoming an EMNE. Note how these arguments are based around the costs in the international business system, and the positions of firms in competition with each other, in contrast to the traditionally dominant firm-centred approach in which the firm has given advantages.

4.1 Production Cost Advantages in Emerging Economies

Advantages to producing in an emerging economy, rather than in a high-wage advanced economy, are generally pronounced in industries lacking in technologies allowing automation. Where automated, capital intensive production can be undertaken in advanced economies and this may largely or wholly cancel out the cost advantages of an emerging economy. This can be seen in the patterns of production in emerging economies. For instance, China is only one example of an emerging economy that has been a major assembler of electronics during its period of emergence. It is no coincidence that the assembly of electronics involves tasks that have been difficult to automate. For instance, traditional circuit board assembly involves the picking up of small components, their realignment, and their insertion through holes. However, in recent years, there has been increased automation, including greater use of surface mount technology (Wable, 2013). While China's electronics industry has been building competencies and external economies of scale (Wang and Wu, 2016), future emerging economies may have to develop along different paths as increased automation will have reduced their cost advantages in significant parts of electronics manufacturing.

Most Chinese-built cars, by contrast, are sold domestically with a low level of exports to advanced economies, though with some being exported to other emerging-economy markets. A large proportion of the great number of cars now produced in China are western products assembled in China for the domestic market in joint ventures with state-owned enterprises. Such joint ventures have been required by the Chinese government. This is akin to equilibrium 3, but with quasi-integration in the form of joint ventures rather than subcontracting to independent firms. Modern car plants can be highly automated and are fed by global supply chains. This helps to explain why China has so far largely failed to export cars to advanced-economy markets but nonetheless has substantial exports of car components (Li, Kong, and Zhang, 2016). This is in contrast to the paths followed by past Asian emerging-economy car industries when car plants were less automated and when international trade in car parts was more limited. For instance, Japanese firms were initially able to break into western markets in the 1950s with cheap but relatively low-quality products (Kumar and Steenkamp, 2013: 25), exploiting Japan's labour and capital cost advantages at the time.

4.2 Asymmetric Costs of Internationalisation

As noted above, production cost advantages in emerging economies, when combined with significant barriers to advanced-economy firms internationalising to them, are important in the model in helping to lead to equilibria 1 and 2 and to the existence of the EMNE. This can also be the case for equilibrium 5, particularly earlier on in the emerging economy's process of economic development, when the emerging-economy firm may specialise in a low-cost, low-end product. However, equilibrium 5 can also result from competition based more on horizontal product differentiation. It is a matter of observation that there tend to be significant barriers to the internationalisation of advanced-economy firms into emerging economies, restricting access to their low production costs in relevant industries and also to their markets. For instance, China had a value of 0.627 in the OECD Total FDI Regulatory Restrictiveness Index in 1997 that dropped to 0.327 by 2016. The OECD averages, by contrast were 0.127 and 0.067 respectively. Countries with high scores in the index tend to have significantly lower stocks of FDI relative to GDP compared to those with low scores. Clearly, China retains significant barriers to inward FDI, though these have been falling in strength according to this index. However, there is evidence that some elements of political costs have risen in emerging economies (Henisz and Zelner, 2010). One alternative form of internationalisation to FDI into production is to instead subcontract production to a local firm

and have FDI only into distribution. However, this can require fairly extensive quality control and contractual governance costs when there is a lack of available high-quality, reputable subcontractors. FDI without subcontracting exposes the foreign firm additionally to higher costs due to political risks. These risks are particularly strong where production is capital intensive. The evolving situation in Russia from the early days after the fall of the Soviet Union is an example of the political risks of FDI (Gans-Morse, 2012), in this case involving international sanctions as well as domestic risks. The foreign marketing costs involved with FDI can also be high where a foreign firm is unfamiliar with the emerging-economy market. The failed entry of Ebay into China is an example of this. For instance, Ebay's site failed to facilitate real-time communications between buyers and sellers. This was important due to the stress placed on the building of trust in Chinese culture (Yang and Wang, 2013). Production in the emerging-economy country also incurs technology transfer costs for the advanced-economy firm which are likely to be more significant the more complex, leading-edge and firm-specific the technology. These costs will tend to be lower than they would be for less-developed countries, however, where emerging-economy countries have invested heavily in human capital.

There are also the alternatives to FDI of licensing and of exporting. In an emerging economy, licensing can be a costly option. For instance, there was relatively little protection of intellectual property rights in China historically but this started to change following the turn of the millennium (Holgersson, 2015). Exporting can also be costly. Data for tariff rates applied to imports tells a similar story to inward FDI with China having had an unweighted average rate of 16.7% (World Bank: Average MFN Applied Tariff Rates) in 1997 that had dropped to 7.9% by 2010. This is in contrast to values of 3.8% and 2.8% respectively for high-income OECD. Again, China had significantly higher tariff rates which declined significantly. Each one of the alternatives available to the advanced-economy multinational to exploit cheap production conditions in the emerging economy, whether through FDI, subcontracting, or licensing will therefore tend to be costly. Exporting to the emerging economy will also normally be costly, so reducing the incentives for FDI into distribution only.

Where there is a combination of low production costs in emerging economies and barriers involved in foreign firms taking advantage of them, this gives emerging-economy firms a significant cost advantage over advanced-economy firms. This home-country cost advantage is not firm specific, as it arises from being native to the emerging economy rather than factors specific to the individual firm. However, the greater the value of the capabilities and assets of the emerging-economy firm, the better placed it will be overall. One past exception was Singapore which remained open to foreign firms with the result that it is a notable case where foreign multinationals heavily engaged in labour-intensive manufacturing for export (Lim, 1983) rather than the economy being more focussed on domestic firms. In contrast, South Korea was similarly heavily reliant on labour-intensive manufacturing of exports during its economic emergence but relied on large domestic conglomerates (Kim et al., 2004) rather than foreign multinationals. FDI by these firms ballooned in the 1980s when government restrictions were relaxed (Lee, 2010).

4.3 Further examples of specific equilibria relevant to the EMNE

When Japanese car firms came to have large-scale sales in western markets, many western consumers nonetheless remained faithful to western brands. It was therefore a case close in nature to the model's equilibrium 1. Alternatively, in the model it is quite likely that equilibrium 2 will result, with firm *e* internationalisation leading to firm *a* exit, if the firms' products are instead close substitutes, assuming also that firm *e* has a significant production

cost advantage and faces relatively low costs of internationalisation to the advanced economy. For instance, some advanced-economy steel firms have only survived competition from Chinese producers because of special trade barriers put in place to protect them. Chinese manufacturers have benefitted both from cheap labour and cheap power produced by polluting coal-fired power plants while advanced-economy firms have faced power costs inflated by their governments' green policies.

Equilibrium 5 is more likely in the model if the products are not close substitutes, so that consumers value the choice between them, there is sufficient demand across the two economies to sustain both firms, and the emerging-economy firm does not have too great a cost advantage. This includes cases where the emerging-economy firm's product is lower end but competes based on cheapness. With smartphones, for instance, we see two-way internationalisation with Chinese phones selling in advanced-economy markets and advanced-economy firms' phones, such as Apple's iPhone, selling in China. Apple has a global supply chain, including subcontracted Chinese assembly, so helping it to compete with Chinese firms even though they now also offer higher-end products. Despite the increased global competition, there are advanced-economy firms that continue to be highly profitable. The success of Chinese firms has been partly facilitated by their large home market, as noted below.

While advanced economies are generally relatively open to both trade and inward FDI, the emerging-economy firm is at a disadvantage in terms of foreign marketing costs in serving their markets. However, foreign marketing costs can be reduced by FDI in the form of purchases of foreign firms involved in distribution, so internalising their market expertise and brands within the boundaries of the emerging-economy firm. Both technology-seeking FDI, as will now be considered, and market-seeking FDI can therefore result in the emerging-economy firm becoming multinational.

5. CHANGING THE EQUILIBRIUM THROUGH TECHNOLOGY-SEEKING INVESTMENT

Recall that some internalisation theorists have previously argued against the importance of emerging-economy firms purchasing technologies from advanced-economy firms (Rugman and Nguyen, 2014: 54-55), claiming that leading firms will generally not be willing to sell them. However, it will now be argued that there are means for an emerging-economy firm to buy technologies that do not involve purchases from highly-profitable operations. It may instead gain technologies through alternative means such as buying an advanced-economy firm (Luo and Tung, 2007: 487-8), purchasing technologies that are of relatively low value to their original owners, or taking an organic approach such as setting up R&D facilities located in foreign clusters. The opportunity to follow either of the first two approaches is more likely to exist when competition within the global industry has resulted in some firms being relatively unsuccessful with the particular type of product concerned. For instance, IBM's PC division was making significant losses when it was sold to Lenovo. Technologies can have more value to the emerging-economy firm exploiting cost advantages, including superior access to its home market, than to their original owners. This tallies with the observation that EMNEs sometimes acquire advanced-economy firms that are owners of tired and dated brands (Buckley, 2009: 140). They have also bought patents from firms that are withdrawing from their related operations. Whichever mode is used, the purchasing firm needs the required absorptive capacity if it is to affect an international transfer of knowledge (Zheng et al., 2016). So, while leading firms are unlikely to be willing to either sell or licence their key technologies to emerging-economy firms, due to costs of market failure, this does not mean

that there are not still opportunities for emerging-economy firms to invest in acquiring technologies from abroad.

Once a rationale for the survival and profitability of an emerging-economy firm in competition with an advanced-economy firm has been established, it can therefore be seen as being natural that, under the right circumstances, it will reach out to obtain more advanced foreign technologies. Firms will often, in reality, grow and expand their technological base both organically and inorganically (Deng, 2009; Sun, 2009). The purchase of foreign firms can be used to buy both technology and better market access. One motivation for both technology and market-seeking investments is that they can be used to spread the fixed costs of R&D more widely. If technology is bought then it can be applied in the purchasing firm's home market as well as in the markets where it is already exploited. The purchase of a foreign firm, purchase of patents, or investment in foreign-located R&D activities allows the EMNE to apply its home-country cost advantages and firm-specific advantages to more sophisticated and higher-end products and to improve its production quality and efficiency. Note that it is not necessary for the EMNE to match a leading advanced-economy firm's level of technology. Any improvement in its technology may improve its competitive position.

As can be seen from the model, if the emerging-economy firm has a product based on weak technology and seen as inferior then, if it does not have a strong cost advantage, it risks losing market share at home and having only limited success in the advanced-economy market. This situation is more likely if wages in its home country have already risen as its economy has become more developed and open, such that its cost advantage is reduced and its home market consumers can afford to be more discerning. However, if it competes with both an upgraded technology and a cost advantage then it may have a strong position. Utilising more advanced technologies increases recurrent fixed costs of R&D and so provides a further impetus for market-seeking internationalisation. Market-seeking and technology-seeking FDI are therefore linked.

In some cases an investment in technology would shift the overall equilibrium between the six cases above. It could allow the emerging-economy firm to enter the advanced-economy market and, if it then had a cost advantage and a similar product, force the advanced-economy firm to exit the industry. In some cases the investment would be necessary to prevent the exit of the emerging-economy firm itself, such as where its cost advantages have receded as the emerging economy has become more open. Lenovo is a well-known example of a firm forced to internationalise by increased competition in its home market. This led to the purchase of IBM's personal computer division, giving access both to technology and a significant market position (Holtbrugge and Kreppel, 2012: 22). The threat posed by changes in the home market may lead EMNEs to conduct FDI in developed countries in ways that give them more rapid access to markets and technologies. The purchase of a foreign firm can be a means of short-cutting the process of upgrading sophistication and quality, and of building brands and market penetration. This is in contrast to the more traditional so-called Asian Tortoise strategy followed in the past by firms such as Toyota and Samsung (Kumar and Steenkamp, 2013) which involves entering low-price niche markets and then making gradual improvements in quality and movements to higher price levels. It can be argued that emerging-economy firms have less time to make such improvements nowadays due to the more open international system. They may often follow the same process of beginning by competing on cost and then upgrading their products but in an accelerated fashion. This can be seen, for instance with Chinese smartphones which have moved rapidly from lower-price, lower-end products to a fuller range, including premium phones offered by firms such as Lenovo and Huawei. The success of Chinese firms has been partly based on a large home

market for lower-cost low and mid-range phones. A degree of technology maturation, leading to the standardisation of technologies, has helped to facilitate the Chinese firms' technology catch up. The extent of technological advantage of advanced-economy firms like Apple and Samsung has been reduced, though they retain strong positions.

The advanced-economy firm could also invest in additional R&D in order to create a variant of its product specifically aimed at the emerging-economy market. If offshoring production, it could also redesign its product and production technologies in order to facilitate the use of more labour-intensive production methods, incurring further costs of R&D. Again, such changes could shift the overall equilibrium. It could potentially make entry into the emerging-economy country worthwhile and could force the exit of the emerging-economy firm, particularly if the advanced-economy firm can offer higher quality without a large price premium. Eventually, rises in the costs of production in an emerging economy, and perhaps an increase in the availability of automation technologies within the industry, will undermine domestic firms' cost advantages. By then the emerging economy may have firms with significant resource-based advantages and may have built up a strong industrial cluster, making bi-directional internationalisation based more on horizontal differentiation more likely.

6. CONCLUSION

Those used to traditional descriptions of internalisation in international business theory would have expected the more technologically advanced firms from developed countries to invest heavily in emerging economies. However, they would not have expected emerging-economy firms to carry out substantial amounts of FDI, as has also happened. Researchers have been left pondering why firms that seemingly lack strong firm-specific advantages have carried out FDI. However, the links between internalisation theory, strategic asset seeking, and EMNEs have been left unclear.

A formal model, based on the "internalisation plus" approach, has been provided in this article to help to explain the existence of the EMNE. It involves price competition between both vertically and horizontally differentiated products. Using the logic of the model, it has been argued that an emerging-economy firm can be profitable in competition with an advanced-economy firm based on home-country cost advantages in both production and in exploiting the home market. These cost advantages for home firms are the result of a combination of high costs of licensing, FDI, exporting, and subcontracting into the emerging economy. This can then lead the emerging-economy firm to undertake both technology-seeking FDI and FDI into distribution, so that it becomes an EMNE. Technology-seeking FDI by the EMNE is likely to take a form that avoids licensing from a leading firm. Price competition is most intense where products are close substitutes. Fixed costs of R&D can be spread by selling products initially in the lower ends of advanced-economy markets as well as in a large home market. This allows low-cost EMNEs to be profitable despite lacking significant firm-specific advantages. However, they may then make technology-seeking investments which then lead them to compete more directly higher up in advanced-economy markets while still exploiting home-country cost advantages.

Dynamic effects, involving shifts between equilibria, that result from an emerging economy going through a process of opening up and foreign firms taking time to fully penetrate its markets can also be considered. Domestic firms that may have had fairly heavy protection from foreign and domestic competition find it falling away. If they are using inferior technologies then they may have to upgrade fairly quickly in order to protect market share in their home markets and even to survive. Domestic production costs will also tend to increase

as the home economy becomes more developed. If economies of scale are significant, such as due to large fixed costs of R&D, a domestic firm may be in danger of becoming unviable as it loses market share in its home market, and so may have to undertake market-seeking FDI. Additionally, economies of scale may well increase significantly due to the need to utilise more advanced technologies which involve larger fixed costs of R&D, so further driving market-seeking internationalisation. There is therefore not only potential profit from internationalising but there can also be an imperative to undertake it for survival.

EMNEs have advantages in labour intensive production methods and in cheap and rugged products. This is in contrast to the more capital intensive methods of production and more sophisticated products that are typical of many advanced-economy MNEs. The analysis in this article does not assume that competitive advantage exists independently. Rather, the commercial advantage of a technology in a country depends partly on the costs in the international business system. A technically inferior product can be commercially viable as can FDI to obtain technologies that are not as advanced as those used by leading firms. Similarly, a firm with a technically superior product can be unprofitable. As EMNEs upgrade their technologies and as their home economies become more open and developed, there may be two-way internationalisation based more fully on product differentiation than on the cost advantages of EMNEs. However, emerging-economy firms that have not upgraded themselves sufficiently are likely to fail when subjected to greater competitive pressures. Country-specific factors can play an important role. For instance, an EMNE operating in an emerging economy that has invested relatively heavily in human capital may face lower costs of international technology transfer. Market sizes in different countries are also important as firms need to spread fixed costs. The various basic forms of equilibrium are formally represented in the model and associated with different sets of parameter values.

The most obvious limitations of the model relate to its simplifying assumptions which were chosen to reflect the particular focus of this article. Firstly, the model assumes only two countries, with one firm headquartered in each country. So, for instance, a real-world firm will be in a better position to internationalise in reality if it is in a strong position relative to any domestic competitors. It will also be better able to spread fixed costs if it sells in further countries, such as EMNEs selling in developing countries. The model also assumes that each firm competes with only a single product. This therefore precludes a product proliferation strategy which could be used to reduce demand for a foreign firm's products. However, this would be relatively ineffective against an EMNE exploiting cost advantages that allowed it to undercut an advanced-economy firm with a lower-end product. It would also be less effective against a foreign firm able to cover a significant part of its fixed costs through a large home market.

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APPENDIX

Take a simple case for ease of exposition. Note that the results are nonetheless intended to be representative of factors that would also affect cases with larger numbers of firms and countries. Assume that there are 2 countries and 2 firms. There is an advanced-economy country (A) and an emerging-economy country (E). Country A has N_A consumers and country E has N_E consumers, each buying 1 unit of the good concerned per period. Initially, there is a monopoly, firm e , in country E selling only in its home market. There is also a monopoly, firm a , in country A . Each firm sells an existing product, these being differentiated versions of the same general type of product. Assume that the authorities do not allow either of the two firms to buy the other.

Assume that each firm is profitable initially and that international trade and FDI between the two countries are blocked. The initial prices of firm e in country E and of firm a in country A are p_e and p_a respectively. Recurrent R&D costs are r_{e1} and r_{a1} , expressed as per period equivalent amounts. The quantities of labour and capital per unit of output, l_e and k_e , which are treated as constant in relation to output for simplicity, are determined by the relevant production technology and by the relative costs of capital and labour. W_E is the cost per unit of labour in country E and K_e is the cost per unit of capital, where this depends both on the type of physical capital involved and the cost of financial capital faced by firm e . The function f_e represents current production technologies for firm e 's product.

$$\{l_e, k_e\} = f_e(W_E, K_e) \quad (1)$$

This minimises the constant marginal cost which is then:

$$c_e = l_e W_E + k_e K_e \quad (2)$$

The initial profits of firm e ($\pi_e > 0$) are therefore:

$$\pi_e = N_E(p_e - c_e) - r_{e1} \quad (3)$$

The initial profits of firm a in country A ($\pi_a > 0$) are:

$$\pi_a = N_A(p_a - c_a) - r_{a1} \quad (4)$$

Where c_a is minimised through:

$$\{l_a, k_a\} = f_a(W_A, K_a) \quad (5)$$

Where:

$$c_a = l_a W_A + k_a K_a \quad (6)$$

Now assume that barriers to trade and FDI fall. Country A now has low barriers and an advanced system of intellectual property rights. However, country E may retain significantly higher barriers than country A and has a less-developed system of intellectual property rights. Consider the resulting incentives for internationalisation.

There is a need to allow for the possibility that firm a will now offshore at least some stage of production in country E for sales in its home country in order to take advantage of lower production costs. For instance, this might involve assembly, particularly if it does not involve a great deal of knowledge specific to firm a . This could be achieved through a relationship with a third firm. Assume that firm a is a subcontractor based in country E . In its relationship with the subcontractor, firm a incurs costs of ensuring adequate quality control (q_{aE}) and governance costs (g_{aE}). There are also costs of transferring firm a 's product internationally to country A , t_{aA} , and costs of technology transfer, y_{aE} . The saving in the constant unit production cost from using the subcontractor is $c_a - c_{SE}(W_E, K_{SE})$.

Alternatively, the offshoring of production could be achieved through the use of FDI by firm a into production in country E . This involves costs of transferring goods internationally from country E to country A and costs of technology transfer. It also involves a cost of foreign ownership, d_{aE}^{FO} . So the overall unit cost saving, m , is:

$$m = \text{Max}[0, c_a - c_{sE}(W_E, K_{sE}) - q_{aE} - g_{aE} - t_{aA} - y_{aE}, c_a - c_{aE}(W_E, K_a) - d_{aE}^{FO} - t_{aA} - y_{aE}] \quad (7)$$

Internationalisation Decisions in Each Direction

Firm e to Country A

The choice of mode of internationalisation is made to minimise the associated costs, which are assumed to be variable with output (while R&D costs are fixed costs). Marginal cost is represented by c . This is superscripted to show the mode of internationalisation and subscripted to show the firm and the host country. For now consider any given value of firm e sales in country A , $N_A s_{eA}$, as associated with any given pair of prices following internationalisation or with firm a exiting the industry.

The constant marginal cost is determined as the minimum of that associated with exporting (trade), FDI with production in the foreign country, or licensing.

$$c_{eA} = \text{Min}[c_{eA}^T, c_{eA}^{FDI}, c_{eA}^L] \quad (8)$$

Assume that FDI with production in the foreign country can be into both production and distribution or into distribution only. The latter is accompanied by the subcontracting of production in country A . The cost c_{eA}^{FDI} is the lower of the costs of these two options:

$$c_{eA}^{FDI} = \text{Min}[c_{eA}(W_A, K_e) + d_{eA}^{FO}, c_{sA}(W_A, K_{sA}) + q_{eA} + g_{eA}] + d_{eA}^{FO} + d_{eA}^{FM} + y_{eA} \quad (9)$$

Note that licensing and FDI into production both fail to take advantage of lower production costs in country E . However, they avoid the costs of international trade. Licensing also utilises the licensee's knowledge of its home market, avoiding costs of foreign marketing, but involves potential market failure, particularly if intellectual property rights are weak and difficult to enforce. However, the emerging-economy firm's product is most likely to be of medium-level technology so that there may be little demand from potential licensees in country A where superior technologies are available. Exporting, with or without FDI into distribution, is therefore likely to be the better choice for firm e in order to exploit low production costs in its home country. This involves costs of home country production and of transferring the product to country A and either costs of arm's length trade or costs of foreign ownership plus costs of foreign marketing:

$$c_{eA}^T = \text{Min}[d_{eA}^{ALT}, d_{eA}^{FO} + d_{eA}^{FM}] + c_e + t_{eA} \quad (10)$$

If the costs of foreign ownership in country A are low and the costs of foreign marketing can be reduced by purchasing a country A firm involved in distribution, both reflecting country A 's economic openness, then FDI into distribution is likely so long as firm e wishes to build its brand in country A rather than simply supplying a low price, inferior or commoditised product.

The loss of profits of firm a resulting from the incursion into its home market, if it were to continue in operation, where the price of firm a following the incursion is p'_a , is:

$$q_a = N_A s_{eA}(p_a - c_a) + N_A(1 - s_{eA})(p_a - p'_a) - m N_A(1 - s_{eA}) \quad (11)$$

Note that q_a incorporates any saving that firm a can make by sourcing at least some part of its production for its home market in country E .

x_a represents the closure decision of firm a following the incursion into its market, given firm e 's choice of exporting, FDI, or licensing. Note that v_{aE} is the value for firm a of internationalising to country E , as defined below.

$$x_a = 1 \text{ and } s_{eA} = 1 \text{ if } \pi_a - q_a + \text{Max}[0, v_{aE}] < 0; x_a = 0 \text{ and } s_{eA} < 1 \text{ otherwise} \quad (12)$$

Closure is more likely if the two firms' products are close substitutes and if firm e has a cost advantage. However, firm e 's product may well be less sophisticated and of lower quality early on in country E 's process of emergence. In this case the products will not be close substitutes, though this may change with time.

The price of each firm in country A is set relative to the price of the other firm and taking into account its own costs and also the relative market positioning of the two firms' products. Assume that each firm takes the price of the other firm as a given when setting its own price.

Firm e 's price and output levels for a given price of firm a :

$$\{p_{eA}, s_{eA}\} = \pi_{\max}(c_{eA}, z, p'_a, x_a) \quad (13)$$

Firm a 's price and output levels for a given price of firm e :

$$\{p'_a, s_{eA}\} = \pi_{\max}(c_a - m, z, p_{eA}) \quad (14)$$

Where z represents the relative positions of the two firms' products in the multidimensional product space. The above price equations are best response functions in that the price of each firm is that which maximises its profit given the price of the other firm.

There is a Nash equilibrium in the country A market following the entry of firm e (i.e. a 'subgame equilibrium') where neither firm would want to change its price given the price of the other firm. In the following expressions, an asterisk superscript denotes an equilibrium value.

$$\{p_{eA}^*, s_{eA}^*\} = \pi_{\max}(c_{eA}, z, p_a^*, x_a^*) \quad (15)$$

$$\{p_a^*, s_{eA}^*\} = \pi_{\max}(c_a - m, z, p_{eA}^*) \quad (16)$$

Given the standard economics of price competition between differentiated products, we can say that the closer the products are as substitutes, the more intense price competition between them will be in the absence of oligopolistic collusion. Also, if firm e has a significant cost advantage then it will capture a large part of the market if the products are close substitutes (low z , low c).

The value for firm e of internationalising without changing technology, given its choice of trade, FDI, or licensing:

$$v_{eA} = N_A s_{eA}^* (p_{eA}^* - c_{eA}) \quad (17)$$

Firm a to Country E

The constant marginal cost for the case of firm a internationalising to country E is:

$$c_{aE} = \text{Min}[c_{aE}^T, c_{aE}^{FDI}, c_{aE}^L] \quad (18)$$

We can expect the costs of all three modes of internationalisation to be relatively high for an advanced-economy firm internationalising to an emerging economy, particularly early on in the country's process of emergence.

Following the entry of firm a into country E , firm e loses sales in its domestic market and also loses further revenue as the competition leads it to reduce its price to p'_e .

The loss of profits for firm e are:

$$q_e = N_E s_{aE} (p_e - c_e) + N_E (1 - s_{aE}) (p_e - p'_e) \quad (19)$$

x_e represents the exit decision of firm e following the incursion into its market.

$$x_e = 1 \text{ and } s_{aE} = 1 \text{ if } \pi_e - q_e + \text{Max}[0, v_{eA}] < 0; x_e = 0 \text{ and } s_{aE} < 1 \text{ otherwise} \quad (20)$$

If firm a offers a superior product at a similar cost then the exit of firm e will be likely. However, it is likely that firm a 's product will be both superior and high cost in the country E market (though this could change over time). In this case, it would be at the higher end of country E 's market rather than being a close substitute. The exit of firm e would then be less likely.

$$\{p_{aE}, s_{aE}\} = \pi_{\max}(c_{aE}, z, p'_e, x_e) \quad (21)$$

$$\{p'_e, s_{aE}\} = \pi_{\max}(c_e, z, p_{aE}) \quad (22)$$

There is a Nash equilibrium in the country E market following the entry of firm a where neither firm would want to change its price given the price of the other firm:

$$\{p_{aE}^*, s_{aE}^*\} = p_{aE}(c_{aE}, z, p_e^*, x_e^*) \quad (23)$$

$$\{p_e^*, s_{aE}^*\} = p_e(c_e, z, p_{aE}^*) \quad (24)$$

The value for firm a of internationalising without changing technology:

$$v_{aE} = N_E s_{aE}^* (p_{aE}^* - c_{aE}) \quad (25)$$

Overall Equilibrium Conditions (see discussion in sections 3 and 4 of main text)

1. There is a Nash equilibrium of internationalisation of firm e to country A and with the continuation of firm a selling only in its home market if:

$$v_{eA} > 0, v_{aE} < 0 \text{ and } x_a = 0 \quad (26)$$

2. There is a Nash equilibrium of internationalisation from country e to country A and with exit of firm a if:

$$v_{eA} > 0 \text{ and } x_a = 1 \quad (27)$$

3. There is a Nash equilibrium of internationalisation of firm a to country E but with firm e continuing to sell only in its home market if:

$$v_{eA} < 0, v_{aE} > 0 \text{ and } x_e = 0 \quad (28)$$

4. There is a Nash equilibrium of internationalisation of firm a to country E and with firm e exit if:

$$v_{aE} > 0 \text{ and } x_e = 1 \quad (29)$$

Bi-Directional Internationalisation

5. There is a Nash equilibrium of internationalisation of both firms if:

$$v_{eA} > 0 \text{ and } v_{aE} > 0, \quad (30)$$

so long as both firms e and a are still viable, which is the case if:

$$\pi_a - q_a + v_{aE} \geq 0 \text{ and } \pi_e - q_e + v_{eA} \geq 0 \quad (31)$$

No internationalisation

6. There is a Nash equilibrium of no internationalisation if:

$$v_{eA} < 0 \text{ and } v_{aE} < 0 \quad (32)$$

An emerging-market multinational comes into existence in cases 1, 2, and 5 so long as the following condition is also met:

$$\text{Min}[c_{eA}^T, c_{eA}^L] > c_{eA}^{FDI} \quad (33)$$

Technology-seeking FDI

Another way for an EMNE to come into existence, or to widen its foreign-located operations, is through technology-seeking FDI. We will now look at a logic for this, based on the incentives for internationalisation that have already been considered. Note that it is not necessary for firm e to match firm a 's level of technology. Any improvement in it can strengthen its competitive position, provided that the gains are not outweighed by the costs.

Say now that there is a small number of small fringe firms in country A in addition to firm a . Each has a very small market share and its own technology. These could be licensed to firm e but assume that this is blocked due to weak intellectual property rights in country E so that licensing costs are high. Firm e may therefore instead buy one of the fringe firms, assuming that it is available for sale, exploiting the economic openness of country A in doing so. Note that, if a greater number of larger firms had been assumed then firm e might have been assumed to have had the option of buying one of them, again provided it was available for purchase. However, the assumption of small fringe firms is made here to tally with the assumption that firms e and a dominate the industry. The purchased fringe firm then continues to carry out repetitive R&D in order to keep its technology up to date and, if necessary, to make it more suitable for the mass market. The cost of purchasing the fringe firm, net of any further value that it has to firm e , is equivalent to an annualised amount P and the recurrent R&D costs are an annualised amount r_{e2} .

An alternative is for firm e to set up an R&D operation in country A in order to employ local people with advanced skills and knowledge and to access local specialist suppliers. If it does this then it has to make an initial investment and then faces recurrent annualised R&D costs in order to keep the product up to date. Combined, these are equivalent to an annualised amount of r_{e3} . With either strategy there is an annualised cost of international technology transfer and also a cost of foreign ownership, but the latter should be small in an advanced economy where political risks will normally be low.

If it is assumed that the technological upgrading is equivalent in the two cases, then the purchase of the fringe firm will be preferred to setting up a new R&D facility if:

$$r_{e3} > r_{e2} + P \quad (34)$$

Such an investment may then shift the overall equilibrium, as discussed in the main text.