Foreign Direct Investment into Open and Closed Cities

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Abstract: This paper argues that the more open a city is to immigration, the more likely it is to welcome – and hence also receive – foreign direct investment. If immigration is allowed to complement the inflow of foreign capital, urban rent rises by more. This extra rise in rent aids in appeasing owners of capital specific to local traditional industries who else become worse off as foreign direct investment flows in. The paper's model may help give a simple alternative explanation of why urban centers such as Hong Kong, Singapore, Dublin or many cities on China's Eastern coast have received so much more FDI per capita. These cities could draw on a nearby pool of extra labor that – by driving rents up and keeping wages down – may have been decisive in the political struggle over whether to let foreign direct investors in.

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1 Introduction

Foreign direct investment (FDI) can often be traced back to the characteristics of the investor, the host country or the home country (Blonigen/Piger (2011)). Enjoying a coincident inflow of labor is, to be sure, not commonly considered one of these determinants of FDI. Yet such an inflow is at the heart of the World Bank's explanation of why Hong Kong and Singapore became those eminent recipients of FDI (World Bank (1993)). Employment with foreign direct investors attracted an influx of workers from the two cities' respective hinterlands. This immigration did not drive out indigenous households, who had been provided with their own housing. Instead this immigration drove up urban rent, making indigenous landlords better off. Capitalization of FDI-induced immigration into land values may be why indigenous voters embraced, rather than opposed, FDI in the first place.

Attracting FDI, so this political economy narrative suggests, is easier for cities that enjoy an abundance of extra labor close by, and whose indigenous residents own their dwellings themselves. This paper explores this idea further, in a model that combines standard characteristics of a small trading and factor importing economy with the rivalry for land typical of the urban society. The modeling synthesis we obtain reveals a number of price changes that may characterize an FDI recipient city. Not just may wages rise, and may returns to capital specific to local traditional industries fall as FDI flows in. Urban rent might rise, too. It is this variety of price changes and the corresponding ambiguities in household income changes that must inevitably impact on political interests and hence government's decision on whether or not to bid for foreign direct investment.

Despite these ambiguities in detail we are able to obtain an overall result that seems unambiguous and straightforward enough. We will show that a city is the likelier to welcome (and hence receive) FDI in the first place the more extra immigrants it can count on once FDI has started flowing in. Borrowing a little terminology from urban economics, an open city is one that is surrounded by a worker supply which is perfectly elastic with respect to the city's living conditions, whereas a closed city is one that can never hope to pull in any extra labor. So this paper simply finds that an open city is more likely to attract FDI than a closed city is. We will also show that in some circumstances this labor mobility distinction can be sharpened further still. Then a closed city not just attracts less FDI than an open city does but even fails to attract FDI altogether.

Our distinction between open and closed cities ultimately derives from the pivotal role of urban land ownership and rent. We will see that those FDI induced changes in wages and capital rentals are independent of just how open the city is. But the same will not be true of the implied changes in the urban rent. Urban rent always rises by more if the city is open, reflecting immigrants' extra pressure on the market for urban land. It is precisely this increase in rental incomes that may help offset those losses certain to arise in the city's more traditional industries (as in Corden/Neary (1982)). In an open city the class of indigenous land-owning capitalists may then actually still be better off. In the closed city, in contrast, owning land provides no consolation for local traditional industries' decline. Put differently, having reason to hope for land value capitalization may be a driver of providing local public inputs specific to FDI. This paper might thus also be seen as an addition to the household mobility (i.e. Tiebout-) literature on local public goods.

While our focus is on the political economy of FDI, our auxiliary results may be of interest, too. In an open city, providing a local public input to FDI not just fuels both FDI and immigration by itself. Also, in this paper's model these inflows reinforce each other. Mutual reinforcement may well have been part of the spectacular growth observed in Hong Kong and Singapore, where several million immigrants surely not just followed foreign investors but in turn also attracted them. Mutual reinforcement may also have been underlying Chinese coastal cities' success in attracting FDI (Madariaga/Poncet (2007), Zheng et al. (2010)). There the recent surge in FDI coincided with the partial dismantling of the hukou system which before placed tight restrictions on hinterland emigration. To give a European example, Dublin seems another open city with a strong history of simultaneous inflows of FDI and workers (Barry/Hannan (1995), Barry (2002), Honohan/Walsh (2002)).

Ireland has even been noted to "...in effect operate under constant returns ..., able to sustain rapid growth" (Blanchard (2002)). Indeed it seems difficult to disconnect the large inflow of FDI from the drastic simultaneous expansion of the work force, with Ireland attracting almost half a million immigrants from across Europe. The beneficial effect this immigration may have had on FDI, as identified in the literature (e.g., Bartel (1989), Kugler/Rapoport (2007), Javorcik et al. (2011)), at least metaphorically also plays out in this paper's model, even as the underlying mechanics may not always be the same. – Of course, this little list of open city FDI destinations is highly selective. To settle all those various issues of causality a rigorous analysis of immigration's role for FDI is needed. Such an analysis would not just proceed to test this paper's key theme, but could also be more closely informed by the detailed theoretical predictions set out below.

In using duality theory to address general equilibrium, our model builds on Dixit/Norman (1980). In letting government provide a public input to the production sector, we borrow an idea initially set out in Kanemoto (1980) and Michael/Hatzipanayotou (1996). In allowing capital mobility alongside trade in goods and in assuming the existence of specific factors in at least some of the industries, the paper is also closely related to Neary (1995). In discussing labor mobility in line with a given reservation level of utility and a rudimentary land market, the paper makes use of urban economics' open city concept (e.g. Fujita (1989)). Finally, in pointing to land owners' interests the paper relates to the public finance literature on property owners' incentives to provide local public inputs (e.g. Wildasin (2002)).

Obviously the paper draws on conventional building blocks from both international and urban economics. At the same time, combining these blocks into a single model of urban foreign direct investment is, to the best of the author's knowledge, novel. To be sure, numerous authors have analyzed the role of FDI into an urban economy before (e.g. Fung et al. (1999), Yabuuchi (1999)). But because these papers are written in the Harris-Todaro style their focus is on the urban labor market and on the role of FDI for urban unemployment. Making explicit the urban land market, too, not just brings to light the political economy of an FDI induced rise in land values. Adding an urban land market also suggests that foreign investors' hiring from the pool of unemployed residents (whose reemployment will not do much to raise rent) may not be the same as their being able to draw on immigration (which is more certain to drive up urban rent).

We emphasize that we do not pursue an analysis of overall welfare. A rigorous analysis of the effects of FDI on welfare would require a more detailed description of how precisely the local economy caters for foreign investors, and of how precisely foreign investors impact on the urban economy, than is provided below. Instead the paper's more modest aim and focus is to relate the strong international variation in FDI to countries' urban openness. Herzer (2012) provides an overview over a number of developing countries' FDI acquisition. In his Table 1 (p. 400), city states surrounded by a rural hinterland such as Singapore (featuring an average FDI/GDP ratio of 10.03 over the 35 years between 1970 and 2005) and Hong Kong (with an average FDI/GDP ratio of 6.71), but also nation states with a dominant primate city surrounded by a less urbanized hinterland such as Chile (3.00), stand out clearly against the sample's median FDI/GDP ratio of 1.23 – even as those other factors stressed in the literature naturally will have contributed to these countries' top ranking also.

The paper has five sections. Section 2 presents a basic single open city model with FDI. Section 3 discusses comparative statics with respect to the city's providing a local public input in both the open and closed city, and assesses this input provision's effects on interest group welfare and local politics. Section 4 embeds the single open city into an urban system. This shifts the analysis' focus from cities to countries, and also to the question of to what extent cities can choose to be open or closed. Section 5 concludes.

2 An Open City

Consider a single open city, surrounded by its rural hinterland. Immigrants from the city's hinterland may move into the city if they wish. Immigrants' reservation utility level is fixed, ever unaffected by the city's policies. The city's non-tradables sector supplies land (or synonymously, housing) I to whoever is prepared to pay the urban rent q. The city's tradable goods sector consists of two industries, supplying electronic consumer goods E and food F at prices p_E and 1, respectively. While each industry employs an industry-specific type of capital it also relies on labor as the complementary input. As in the standard model of specific factors, only labor can move from one industry to the other. Moreover, the degree of spatial mobility varies by factor.

First, capital specific to electronics K is perfectly mobile internationally, expecting the same return in the city as can be achieved anywhere else. The city's stock of such capital is considered to represent its stock of FDI, and hence a reduced form description of the many various ways – e.g. spillovers of knowledge, transfer of technology, increased competition – in which FDI may benefit traditional ways of production. Second, labor is not as mobile as capital. Owners of urban land, or "indigenous households", are assumed completely immobile whereas renters of urban land, or "immigrant households", are assumed completely mobile. There is a total of I households indigenous to the city and a total of M immigrant households, i.e. households that have immigrated into the city recently. The overall number of workers resident in the city is $M + I = L$. Third, capital specific to food C is assumed not mobile at all, an assumption going back to Neary (1995) where capital mobility varies by sector. Below "electronics capital" K simply is labeled as "capital" while "food capital" C will always be referred to as such.

Let electronics output E be produced according to the neoclassical production function $\gamma f^E(K, L_E)$. Food production is by the neoclassical production function $f^F(C, L_F)$ or $f^F(C, L - L_E)$. The local public input γ is specific to electronics, and fixed by the city government. This public input captures the city's targeting internationally mobile capital, and enters into electronics production much like a product augmenting technological externality (see Dixit/Norman, 1980). For instance, γ could capture something as straightforward as lifting preexisting restrictions on how foreign direct investors may operate, sometimes requiring nothing more than the simple stroke of a pen. Or, γ could represent the city's governance with respect to foreign investors, including credible commitments to not expropriating investors once the investment has been undertaken. These inputs are clearly vital yet at the same time do not seem to exhibit large immediate costs.

Alternatively, and more graphically, γ may also represent the development of urban infrastructure targeted to foreign direct investors. But even then do we continue to assume that the provision of γ is costless. Where the provision of γ is costly – also requiring the imposition of extra, and even distortionary, taxes – we shall argue that those costs are unlikely to depend on the degree of the city's openness. It is certainly true that public input costs would affect the assessment of how FDI affects welfare. Yet welfare is not this paper's focus, which instead is comparing FDI in open with FDI closed cities. Neglecting the costs of providing γ does not bias the paper's comparison of open with closed cities yet will permit us to maintain a tractable model.

We also assume that γ has no equivalent in traditional industries. Consider the model being placed at the dawn of a new age, with electronics capital only recently having become highly mobile (the early 1980s, say). In this initial equilibrium all possible improvements to local public inputs in either industry have been exhausted already. Just now foreign direct investors are starting to knock on the city's doors. Now there is scope for improving the electronics industry's operating environment further, while there is no scope for further such improvements in the traditional food sector. Or, from a slightly alternative perspective, the effects of further public input provision to the traditional sector may be seen to be less dramatic and hence controversial than the effects of raising γ. This is because there no attendant inflow of – immobile – food capital needs to be expected, or feared. We argue that our interest in equilibrium FDI makes it reasonable to ignore (further adjustments of) the public input into the food sector.

Production functions both in the food and electronics sector exhibit constant returns to scale with respect to its two inputs. Maximum revenue in the tradables sector at given output prices, factor endowments and at an exogenous level of the public input is given by the revenue function $r(p_E, K, C, L, \gamma)$. As C has earlier been assumed immobile, C does not vary throughout the model and hence is dropped from the notation of the revenue function. Since the exogenous terms of trade p_E will not vary throughout what follows either, we also drop p_E. By the envelope theorem, the revenue function has the property that its partial derivatives $r_K(K, L, \gamma)$ and $r_L(K, L, \gamma)$ equal the value marginal products of capital and labor, respectively, both evaluated at the optimum (and equilibrium) allocation of labor to the two industries.

Below we request these factor returns' responses to changes in the stocks of capital or labor, or to changes in the public input. After all, the city's stocks of capital and labor are liable to change due to their mobility, and the public input may change due to shifts in policy. Factor return responses are standard in the specific factors model (see Dixit/Norman (1980, pp. 40-43) and Lemma 1 in the Appendix). An inflow of labor depresses the wage and drives up both rentals, hence $r_{LL} < 0$ while r_{KL}, $r_{CL} > 0$. An inflow of capital depresses both rentals yet drives up the wage rate, so that r_{KK}, $r_{CK} < 0$ and $r_{LK} > 0$. Finally, a higher level of γ increases the wage rate as well as the return to capital yet decreases the return to food capital, i.e. $r_{L\gamma}$, $r_{K\gamma} > 0$ while $r_{C\gamma} < 0$.

Equation (1) gives the budget constraint for each of the $i = 1, \ldots, I$ indigenous households:

$$e(q, u^i) \;=\; r_L(K, L, \gamma) \,+\, \alpha\, r_C(K, L, \gamma) \,+\, q \tag{1}$$

Preferences are uniform and are represented by the expenditure function $e(q, u^i)$. Indigenous households derive utility from living on a parcel of urban land as well as from consuming the two tradable goods. Each indigenous household inelastically supplies one unit of labor to the tradable goods sector, receiving his value marginal product $r_L(K, L, \gamma)$ in return. Moreover, each indigenous household owns $\alpha = C/I$ units of food capital, in exchange for which she or he receives αr_C. Finally, each indigenous household owns one unit of land. Selling it, she or he receives land rent q. Total income is land income plus labor income plus capital income generated in the food industry.

Next, $e(q, u^m) = r_L(K, L, \gamma)$ is the budget constraint for each of the $m = 1, \ldots, M$ households that in the past have immigrated into the city, where u^m is the utility that a hinterland immigrant enjoys when in the city. (The budget equation also is the constraint for any newly arriving immigrant households dM showing up below.) Immigrants' preferences are identical to indigenous households' preferences. Also, immigrants are similar to indigenous households in that they earn income from supplying labor $r_L(K, L, \gamma)$. But since immigrants do not own urban land, they do not receive any land income. Nor do they own any shares in the food industry. Now, let $\overline{u}$ be an immigrant's reservation utility guaranteed by the city's hinterland. Then

$$e(q, \overline{u}) \;=\; r_L(K, L, \gamma) \tag{2}$$

represents an immigrant's budget in an interior migration equilibrium.

The no-migration-condition for capital, being the other of the two mobile factors, is

$$r_K(K, L, \gamma) \;=\; \rho, \tag{3}$$

by virtue of which the city's rate of return to foreign owned capital is tied to the exogenous rate of return ρ prevailing in the Rest of the World. And finally, equation (4) has the city's land market clear:

$$I \;=\; Ie_q(q,u^i) \;+\; Me_q(q,\overline{u}) \tag{4}$$

Given that each of the I indigenous households supplies one unit of land, aggregate land supply is I. Demand for land comes from indigenous households and immigrants. By Shepard's Lemma, indigenous and immigrant households' (Hicksian) individual demands are given by the derivatives of the expenditure functions with respect to land rent, i.e. $e_q(q,u^i)$ and $e_q(q,u^m) = e_q(q,\overline{u})$, respectively. Each indigenous household is a net seller of land.

In system (1) through (4), variables K, M, q and u^i are endogenous. Adding up the I budget equations in (1) and the M budget equations in (2) reveals that incomes flowing to city residents do not add up to the total income generated in the urban economy. All capital employed in the city is owned by the Rest of the World and accordingly all income accruing to that factor, $r_K K$, exits the city economy. – For ease of notation, we drop function arguments in what follows and identify indigenous and immigrant expenditure functions and their derivatives by superscript i for indigenous households and superscript m for immigrant households.

3 Stimulating FDI by Providing a Local Public Input

To start our analysis of shocks to the model, subtract (2) from (1) to get $e^i - e^m = \alpha r_C + q$. Totally differentiating gives

$$du^i = \frac{1}{e^i_u}\Big[\,(e^m_q + 1 - e^i_q)\,dq \;+\; \alpha\, dr_C\Big] \tag{5}$$

Since immigrant utility is always driven to equal $\overline{u}$, changes in indigenous utility can be expressed by suitable changes in land rent or food capital's return. Obviously increases (decreases) in land rent benefit (hurt) indigenous households, as seen from (5) making use of the fact that $e^i_q < 1$ (itself implied by (4)).

Next differentiate land market equilibrium (4) totally and insert (5). After rearranging and setting $c_y = e^i_{qu}/e^i_u$ we have

$$dq = \frac{\Big(e^m_q dM + Ic_y\alpha dr_C\Big)}{-\delta}, \qquad \text{where } \delta = (Ie^i_{qq} + Me^m_{qq}) + Ic_y(e^m_q + 1 - e^i_q), \tag{6}$$

as the change in urban rent. Before we turn to the interpretation of this change, briefly note that in our definition of δ the expression in the first pair of brackets corresponds to the aggregate substitution effect while the expression in the second pair of brackets is the income effect per indigenous household, multiplied by their total number I. The aggregate income effect translates into demand changes through c_y, being the extra housing consumption when given a one Euro raise in income. Throughout what follows we will assume that $\delta < 0$, i.e. the aggregate substitution effect dominates the aggregate income effect. This is a condition for the Walrasian stability of the land market equilibrium.[2]

Equation (6) reveals the effects of immigration on the city's rent. Immigration increases aggregate demand for land simply because immigrant-tenants dM now also look for land to live on, of plot size e_q^m each. However, immigration also reduces the aggregate demand for land, by driving down the return to food capital by dr_C and thereby depressing indigenous households' income as well as housing demand. Finally, we observe that the wage change indigenous households experience dr_L is notably absent from (6). Totally differentiating equation (2) indicates that

$$dr_L \;=\; e_q^m \, dq \tag{7}$$

must be true if immigrants are to remain indifferent between the city and its hinterland. Fundamentally, any change in the wage must be offset by an equally sized change in rent. I.e., as in much of the urban economics literature on open cities there is complete capitalization of changes in the wage (e.g. Hartwick (1993)). This is why here the wage change enters the slope, rather than the position, of the housing demand schedule.

Inserting (6) into (7), expanding dr_C and collecting terms gives

$$\begin{aligned}\Big(r_{LL} + \Big(\frac{e_q^m}{\delta}\Big)(e_q^m + Ic_y\alpha r_{CL})\Big)\, dM \quad &+ \quad \Big(r_{LK} + \Big(\frac{e_q^m}{\delta}\Big)\, Ic_y\, \alpha r_{CK}\Big)\, dK \\ = \quad - \quad &\Big(r_{L\gamma} \,+ \Big(\frac{e_q^m}{\delta}\Big)\, Ic_y\, \alpha r_{C\gamma}\Big)\, d\gamma\,. \end{aligned} \tag{8}$$

On the l.h.s. of (8), the negative coefficient of dM collects the various crowding effects of immigration. The first term in this coefficient points to the standard wage depression in the course of immigration, and the second term relates to the thrust in the urban rent given that many household incomes rise, as does overall housing demanders' number. Next, the positive coefficient of dK captures the various beneficial effects of a capital inflow. There the first term plainly represents the beneficial impact of extra capital on the urban wage, and its second term captures the rent moderation implied by extra capital's holding down the increase in indigenous incomes.

Finally, the sign of the coefficient of $d\gamma$, on the r.h.s. of (8), is unambiguous also. Offering foreign investors a better environment to operate in makes the city more attractive for immigrants to come to in two ways. First, it raises workers' marginal product in the electronics industry. Once intersectoral migration dies down this even acts to have raised workers' wages in both sectors. And second, by driving down the return to food capital it depresses household incomes, part of which fall on housing. In this sense a public input improvement, all else equal, also aids in keeping rent down.

Totally differentiating the mobile capital equilibrium (3) gives

$$r_{KL}\, dM \;+\; r_{KK}\, dK \;=\; -\, r_{K\gamma}\, d\gamma \;+\; d\rho, \tag{9}$$

[2] Assuming that Marshallian demand is downward sloping is common in international trade theory. See, as one example, Dixit/Norman (1980, p. 131). However, in trade theory the income effect comes from (international) redistribution via changing terms of trade while here (intraurban) redistribution is through the land market.

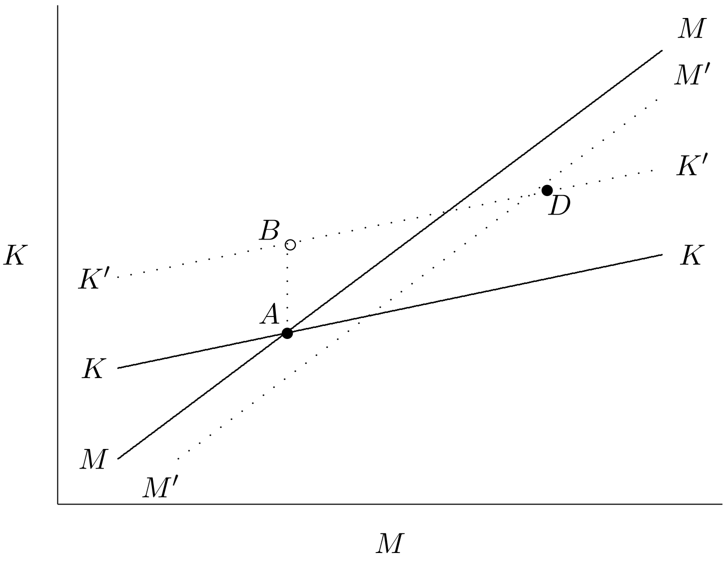

Figure 1: Equilibrium and Targeting of Foreign Direct Investment

where the coefficients' various signs correspond to what is familiar from the specific factors model. Again, these signs are found in Lemma 1 in the Appendix. For instance, it must be that r_{KL} and $r_{K\gamma}$ are positive while r_{KK} is negative. Now equations (8) and (9) can be combined into a matrix equation with (dM, dK) as the endogenous variables. Before solving this system, however, let us briefly pause for a diagrammatic treatment.

In Figure 1's diagram with K on the vertical axis and M on the horizontal one, let MM denote the locus of combinations of immigration and capital along which immigrant utility always settles at $\overline{u}$. This locus' slope is easily inferred from (8), after setting $d\gamma = 0$. For reference

$$\left.\frac{dK}{dM}\right|_{MM} \;=\; -\,\frac{r_{LL} + (e^m_q/\delta)\,(Ic_y\,\alpha r_{CL} + e^m_q)}{r_{LK} + (e^m_q/\delta)\,Ic_y\,\alpha r_{CK}} \;>\; 0\,. \tag{10}$$

Note how the various second partials' signs imply that the MM locus' slope is unambiguously positive. Here the numerator is clearly negative whereas the denominator surely is positive (recalling $\delta < 0$). In the same vein and diagram, let KK denote the locus of combinations of immigration and capital along which the return to capital remains at ρ. This second locus' slope comes from rearranging (9) after setting $d\rho = d\gamma = 0$. Again for reference,

$$\left.\frac{dK}{dM}\right|_{KK} \;=\; -\,\frac{r_{KL}}{r_{KK}} \;>\; 0\,. \tag{11}$$

As shown in Lemma 2 in the Appendix, MM must slope upwards more strongly than KK. Intuitively, as long as γ remains the same both r_L and r_K only depend on the capital intensity in the electronics sector. We conclude that the capital required to maintain a stable r_L in the face of one extra immigrant, $-r_{LL}/r_{LK}$, just equals the capital necessary to maintain a stable r_K in the face of this extra immigrant, $-r_{KL}/r_{KK}$. This implies that the two slopes in (10) and (11) share a common component. The two slopes are not equal, of course. For an immigrant to remain indifferent between the city and its hinterland urban nominal wage stability is not enough. To the extent that urban rent rises also, immigrant indifference requires a rising, rather than a stable, urban wage. The capital inflow embodied in the slope of the MM locus must be stronger than that associated with the KK locus. I.e. in Figure 1 MM is steeper than KK.

Equilibrium is where the two loci intersect, at point A. This equilibrium can be shown to be stable. Now, in the case of the open city an increase in the public input γ shifts both the MM locus down (less of that beneficial foreign capital is needed to maintain living standards) and the KK locus up (more of that capital can be accommodated even as its return is decreasing). The new intersection of the two loci at point D in Figure 1 is further up and to the right. I.e., targeting FDI incites both mobile capital and mobile labor to flow in. Alternatively, in the scenario of the closed city only the upward displacement of the KK-locus takes effect while the MM-locus is no longer relevant (i.e. points off it are compatible with equilibrium, too). The KK-locus' displacement shifts the economy from A to B. Comparing B with D reveals that the equilibrium capital inflow is greater if extra complementary labor is permitted in. Here immigration is not just caused by, but also feeds back into, the inflow of FDI. The inflows of the two mobile factors mutually reinforce each other. For easy reference these results are stated in Proposition 1, where changes occurring in the closed or open city also are indexed by subscript c or o, respectively.[3] Of course, the proposition's formal proof relies on the joint solution of equations (8) and (9) (found in the Appendix).

Proposition 1: Inflows of Capital and Labor in Open and Closed Cities
Let the local public input increase by $d\gamma > 0$. The resulting inflows of both FDI and immigrant labor are always greater if the city is open than if it is closed. More precisely, $dK|_c < dK|_o$ as well as $0 = dM|_c < dM|_o$.

Intuitively, while labor and capital simultaneously reinforce each other we might still hypothetically decompose the economy's adjustment into a sequence of two successive moves. This is also in accordance with the fact that FDI tends to flow in faster than labor. In the short run the urban economy moves from A to B. In the course of this the food capital rental falls while the urban wage rises, reflecting labor shifting out of food and into electronics. In the long run the city moves on from B to D as the economy slides up along the K′K′ schedule. This amounts to bringing in quantities of fresh capital and labor such that the capital intensity in electronics does not change further. This latter movement adds no further change to factor returns beyond what has been observed when moving from A to B.[4] Proposition 2 summarizes the long run effects.

Proposition 2: Identical Factor Return Changes in Open and Closed Cities
Let the local public input increase by $d\gamma > 0$. The resulting changes in the wage and in the return to immobile local capital are the same irrespective of whether the city is

[3] The subscript c for "closed" cannot be confused with the capital C for "food capital".

[4] Equations (19) and (20) in the Appendix also provide the solutions for a analysis of a shock in ρ. For example, an increase in foreign capital's return elsewhere ρ – forcing the city to provide FDI with a higher local return – leads to a simultaneous *outflow* of both FDI and resident immigrants. Now it is the outflows that reinforce each other. Alternatively, a reduction of ρ may also reflect the case of a rudimentary analysis of the effects of a local subsidy to foreign capital (with the fiscal costs of the subsidy ignored though).

open or closed. Specifically, the wage rises and immobile local capital's return falls. I.e. $dr_L|_o = dr_L|_c > 0$ *while* $dr_C|_o = dr_C|_c < 0$.

The difference between permitting extra immigrants in or not lies in FDI's effect on the urban rent. If the city is open then by substituting the solution for immigration dM (from equation (19) in the Appendix) and for the change in the return to food capital dr_C (from equation (22) in the Appendix) into (6) and simplifying further we can conclude the reduced form change in urban rent to equal

$$dq|_o \; = \; \frac{r_{LK}\, r_{K\gamma} \; - \; r_{KK}\, r_{L\gamma}}{-\, e_q^m\, r_{KK}} \; d\gamma \; . \tag{12}$$

The fraction on the r.h.s. of (12) is strictly positive. Thus in the open city any increase in the public input unambiguously raises the urban rent. At the same time, and intuitively, this rent change is smaller if the city is closed (Proposition 3). The extra in the open city's urban rent increase represents an extra benefit to the city's landlords, and one that is inexorably tied to the immigration triggered.

Proposition 3: The Extra Land Value Appreciation Open to Open Cities
Let the local public input increase by $d\gamma > 0$. *Then the urban rent increases by more if the city is open than if it is closed,* $dq|_c < dq|_o$.

Proposition 2's adjustments suggest that indigenous residents must have mixed feelings towards FDI. While their wage rises their income from owning a share α of the capital employed in traditional production falls. The net effect on the sum $r_L + \alpha r_C$ is not clear a priori. However, the fact that the changes in factor returns are invariant under the two mobility regimes (and hence actually do not need be indexed) contributes to a straightforward evaluation of the question of which regime generates stronger political support of FDI. First, we will now see that in the open city the extra public input has indigenous welfare go up. For this we revert to equation (5) and insert our observations on the urban rent change $dq|_o$ in (12) as well as on immigration dM from (19) in the Appendix. We then make use of the housing market clearance condition (4), to obtain

$$du^i|_o \; = \; \frac{L_E f^F_{LL}}{I\, e^i_u} \left(\frac{\partial L_F}{\partial \gamma} - \frac{\partial L_F}{\partial K} \frac{r_{K\gamma}}{r_{KK}} \right) \, d\gamma, \tag{13}$$

as the indigenous welfare change in the open city.

Given our knowledge of how to sign the various derivatives (Lemma 1) we find that this welfare change is positive if and only if $d\gamma$ is. Differently put, while the drop in food capital's return does hurt indigenous households, this drop is always outweighed by the concomitant increase in landlord receipts on the housing market. In the closed city, in contrast, the indigenous welfare change can be seen to be smaller than (13) always, even as it is still positive. The changes in earnings derived from supplying labor and food capital are the same (Proposition 2), but the increase in rental income is strictly smaller (Proposition 3). This proves that the closed city change in indigenous utility $du^i|_c$, easily seen to equal $(dr_L + \alpha dr_C + (1 - e^i_q) dq|_c)/e^i_u$ after consulting (5) joint with (7), is strictly smaller, too (Proposition 4, Part (i)).

In contrast, assessing immigrant welfare is much simpler. In the open city, resident immigrants are indifferent to attracting FDI by definition. In the closed city, alternatively, resident immigrants' welfare u^m goes up. In the closed city rent rises by less than in the open city (Proposition 3), and hence also by less than makes the wage gain capitalize fully into rising rent. This is why a closed city's immigrant residents benefit from supplying γ (Proposition 4, Part (ii)).

Proposition 4: Interest Group Welfare Changes across Open and Closed Cities
Let the local public input increase by $d\gamma > 0$.
(i) Indigenous welfare rises by more in the open city than in the closed city, $du^i|_c < du^i|_o$.
(ii) Immigrant welfare rises in the closed city only, i.e. $0 < du^m|_c$ *and* $0 = du^m|_o$.

Proposition 4 insinuates that open cities have a stronger incentive to attract FDI than closed cities, at least as long as the government policy aligns with the interests of the indigenous class rather than with those of the resident immigrant class. Earlier we argued that the costs of providing the public input should not systematically depend on whether the city is open or closed. Now we suspect that if we had explicitly considered these costs then we would observe a range of costs for which indigenous residents would welcome FDI if – and only if – the city were open. This would be a sharper result than what is implied by Proposition 4. FDI would flow in not just if the city is open, but even would flow in *only* if the city is open.

Alternatively, this sharper result we also obtain in a more natural model variation. We subdivide indigenous households into the two subgroups of (i) indigenous capitalists and (ii) indigenous workers. Indigenous capitalists are invested into local traditional capital, while indigenous workers are not. We next show how these indigenous capitalists – even as they bear the full brunt of traditional industries' decline – will still agree to FDI if the city is open – yet only if it is open. In many countries getting indigenous capitalists to agree with welcoming FDI may be decisive. More concretely, we divide the I indigenous residents into (i) λI residents owning all food capital (indigenous capitalists) and (ii) $(1-\lambda)I$ households owning all labor (indigenous workers), where $\lambda \in (0,1)$. Members of both classes continue to own one unit of land each. Local decisions require indigenous capitalists' consent.

Initially utility is the same for indigenous households of both groups, e.g. due to local redistribution in initial equilibrium. Then marginal utilities of income e_u^i and marginal propensities to consume c_y^i are the same across the two groups of indigenous households, too, and all those equations introduced previously continue to hold.

Generally the change in indigenous capitalists' overall welfare is seen to be a variation of equation (5), i.e. $du^i = (\beta dr_C + (1-e_q^i)dq)/e_u^i$, where du^i now only denotes the utility change for indigenous capitalists (rather than that of indigenous households generally) and where $\beta = C/\lambda I$. Throwing in the land market clearing condition (4) turns this expression into $du^i = (\beta dr_C + (M/I)e_q^m dq)/e_u^i$ where dr_C follows (22) in the Appendix and dq becomes $dq|_o$ (see (12)) when the city is open. Making use of these various changes reveals that an open city's indigenous capitalists will be better off if and only if (adjusted) incumbent immigration λM exceeds labor employed in the food industry initially, L_F (Proposition 5, Part (i)).

Proposition 5: Local Capitalists' Attitude towards FDI
(i) Suppose the initial equilibrium features $M > L_F/\lambda$, and that the city is open. Then $d\gamma > 0$ makes indigenous capitalists better off, and hence welcome FDI.
(ii) Suppose the initial equilibrium features $M = L_F/\lambda$ instead. Then $d\gamma > 0$ leaves indigenous capitalists neither better nor worse off (worse off) if the city is open (closed).

Fulfilment of $M > L_F/\lambda$ helps muster indigenous capitalists' support of the local public input, and that this is so seems plausible enough. L_F represents labor employed in the food sector in initial equilibrium. The smaller this force the less painful do indigenous capitalists perceive the wage gain induced by the increased provision of γ and enjoyed by each of the food sector's employees. Next, M captures the benefits of the γ-policy to indigenous capitalists. The greater is M the larger are these capitalists' receipts from being net sellers of land. The fraction λ finally adjusts for the relevant share of urban land, i.e. land accruing to indigenous capitalists.

Proposition 5's Part (ii) supplies an example in which improving γ will be tolerated by indigenous land-owning capitalists if the city is open yet will be opposed by them if the city is closed. This is because if $M = L_F/\lambda$ then indigenous capitalists' welfare gain in the open city case is zero while it is strictly negative in the closed city case. In that sense Proposition 5's Part (ii) presents an example in which the mobility of labor, or the type of hinterland mobility regime, even plays a crucial role in garnering political support for FDI. While this example may appear a very restrictive result it is obtained for a very general set of functional forms. If we make these forms more specific a range of other values of M, in excess of L_F/λ, is likely to emerge for each of which it is true that indigenous capitalists will want to raise γ if the city is open yet will not want to if the city is closed.

4 Countries with no Rural Hinterland

This section addresses the extent to which the open city/closed city distinction is exogenous to the city. A model open city best corresponds to a city surrounded by a rural hinterland featuring plenty of potential immigrants. However, in many countries – particularly highly urbanized ones – cities do not have such a rural hinterland, not even across the border. Are these countries' cities condemned to being closed then, or could they also resort to luring workers away from neighboring cities instead? This section argues that immigration from neighboring cities is not an option. Neighboring cities are likely to choose to provide their own local public inputs γ to FDI, too. Effectively they will not release their own workers.

We make three additional amendments to the model setup. First, decisions are taken by a majority of indigenous capitalists only. This assumption captures the idea that indigenous capitalists either are few yet particularly successful lobbyists or are not very successful lobbyists yet are numerous. Second, we assume that M satisfies $M = L_F/\lambda$

(as in Proposition 5, Part (ii)). And third, decisions unfold in two steps. At the first stage, the federal level decides on whether extra FDI is permitted into the country. At the second stage, cities individually decide on whether they want to raise their γ by the same small discrete extra, i.e. by $d\gamma > 0$.

We explore the second stage first. We show that each city will not prefer to *not* raise its local γ if all other cities raise theirs. To see this consider some city j. If all other cities $n \neq j$ raise their γ_n then none of them can reasonably expect any accompanying immigration. (Immigration could only come from j, which by itself is much too small to supply any noticeable amount of labor to all these other cities.) Each of these cities finds itself moving into point B in Figure 1, but not further. This amounts to their being a closed city. Their urban wages increase by dr_L while their urban rents go up by $dq|_c$, i.e. by an amount that falls short of what would make wage capitalization dr_L/e_q^m complete (Proposition 3). Resident immigrants' utility in all these cities $n \neq j$ increases by $du^m = (dr_L - e_q^m\, dq|_c)/e_u^m\, > 0$.

We return to city j. From city j's perspective, this latter change amounts to an increase in the reservation utility available to its own resident migrants, so that $d\overline{u} = du^m$. The context of Figure 1 can also be used to illustrate the relevant changes for city j. An increase in $\overline{u}$ would correspond to a downward shift of the MM-schedule. This shift displaces j's equilibrium down and to the left, along an unimpressed KK-schedule. Since the equilibrium continues to be on the initial KK-schedule we conclude that in city j neither the wage nor the return to local capital change as labor and foreign capital exit. (This employs the same reasoning as that underlying Proposition 2.). In city j all the burden of adjustment must fall on a reduction in rent, now referred to as $d\widehat{q}$. Since $d\widehat{q} = -e_u^m d\overline{u}/e_q^m$ this rental change also is

$$d\widehat{q} \;=\; -\,\frac{dr_L \;-\; e_q^m\, dq|_c}{e_q^m} \;<\; 0. \tag{14}$$

City j's indigenous capitalists now need to choose whether to go along with all other cities and raise γ (not deviate) or to withdraw and retain γ at its original level (deviate). On the one hand, if they do not deviate then their payoff is $(Cdr_C + \lambda M e_q^m dq|_c)/e_u^i$. On the other hand, if they do deviate their payoff is $(\lambda M e_q^m d\widehat{q})/e_u^i$ or, after inserting (14), $-\lambda M(dr_L - e_q^m dq|_c)/e_u^i$. Since by equation (7) we also have $dr_L = e_q^m dq|_o$ and because $Cdr_C = -\lambda M e_q^m dq|_o$ having assumed that $L_F = \lambda M$ (as in Proposition 5, Part (ii)), these two payoffs are equal. We conclude that deviating does not pay, and that all cities simultaneously improving their public inputs by $d\gamma$ is one Nash-equilibrium of the second stage's simultaneous play. Besides, no other symmetric Nash-equilibrium exists at the second stage because all cities not raising the public input is not an equilibrium.

But naturally if all cities target extra FDI then none of them will experience any immigration. After all, immigrant utility rises by an identical amount in each city. Cities are effectively closed, rather than open. Moving to the first stage, indigenous capitalists will unanimously agree on not letting foreign direct investors into the country (Proposition 6), hence receiving none.

Proposition 6: (FDI into Countries with or without Rural Hinterland)
Suppose that $M = L_F/\lambda$, and that indigenous capitalists are decisive. Then a country made up of many identical cities with no rural hinterland will not receive FDI, while a country consisting of a few open cities (or just a single open city) surrounded by a rural hinterland will.

5 Conclusions

The paper's model discusses the role of worker mobility for a city's propensity to welcome FDI. We combine an open city framework with inflows of internationally mobile capital. Improving a public input specific to the industry that makes use of foreign direct capital triggers inflows of FDI and labor, both of which not just reinforce each other but also raise the price of urban land. For land owning indigenous households, this latter increase represents an extra benefit over and above the more familiar benefits from FDI. This extra benefit contributes to offseting those losses in the more traditional local industries that FDI also triggers. Put more briefly, we show that an open city is more likely to attract FDI than a closed city. Consequently, we also show that countries whose cities have a rural hinterland are more likely to attract FDI.

Of course, in order to tap a pool of extra workers countries may also throw open the gates for both, FDI and foreign workers. This requires a large pool of potential immigrants to be sufficiently close by, i.e. a pool that not every country can tap. Chinese coastal cities may have done just that when dismantling the hukou tradition that effectively sealed off China's urban East from its rural West (Zheng et al. (2010)). Or, note that Ireland was notably more open to immigrants from new Eastern European accession countries than most of the remainder of the EU. Dublin could be considered open up until this remainder granted full mobility to new EU member countries' workers also. From this paper's perspective this regime switch alone would have brought Ireland's FDI boom to a halt, and even in the absence of the present crisis' conflagrations.

More generally, coinciding factor inflows may not be as accidental as they seem. Moreover, the idea of mutually reinforcing inflows of labor and FDI has its natural counterpart in the possibility of mutually reinforcing outflows. A shock to an open city's local public input would not just deter future FDI but could even bring down existing levels of FDI and employment, exacerbating the urban economy's contraction. This raises the question to which extent an open city suffers from greater fluctuations of output over time, and hence to which extent it is more vulnerable to such shocks than a closed city. − This issue, just as the political economy of simultaneous liberalization of FDI and immigration, we leave to future research.

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Appendix

Lemma 1: By definition, the revenue function $r(K, L, \gamma)$ is

$$p_E \gamma \, f^E(K, L_E^*) + \, f^F(C, L - L_E^*),$$

where $L_E^* = L - L_F^*$ is the revenue maximizing labor input in sector E for given values of the exogenous stocks, or $L_E(K, L, \gamma)$ in more detail. Optimal labor input L_E^* is implicitly defined by the equality of value marginal products, or $\gamma f_L^E(K, L_E) = f_L^F(C, L - L_E)$. By differentiation, the derivatives $\partial L_F^* / \partial K$ and $\partial L_F^* / \partial \gamma$ are easily seen to be negative, etc.

Further, the following properties hold (dropping function arguments):

$$\begin{aligned}
r_{KL} &= \gamma p_E \, f_{KL}^E \frac{\partial L_E}{\partial L} \; > 0 \quad &;& \quad r_{LK} = \gamma p_E \Big(f_{LK}^E + f_{LL}^E \frac{\partial L_E}{\partial K} \Big) \; > 0 \\
r_{LL} &= \gamma p_E \, f_{LL}^E \frac{\partial L_E}{\partial L} \; < 0 \quad &;& \quad r_{KK} = \gamma p_E \Big(f_{KK}^E + f_{KL}^E \frac{L_E}{\partial K} \Big) \; < 0 \\
r_{CL} &= f_{CL}^F \frac{\partial L_F}{\partial L} \; > 0 \quad &;& \quad r_{CK} = f_{CL}^F \frac{\partial L_F}{\partial K} \; < 0
\end{aligned}$$

Employing these derivatives, one can then go on to verify that

$$\frac{r_{LL}}{r_{LK}} \; = \; \frac{r_{KL}}{r_{KK}} \; = \; \frac{r_{CL}}{r_{CK}}. \tag{15}$$

Proof of Lemma 1: We find the second derivatives given in the Lemma by first applying the envelope theorem to identify the first partials. Differentiating these once more then gives the second partials. Plugging the appropriate second partials into (15) shows the two equations to be true. □

Lemma 2: The following inequality is true:

$$\frac{r_{LL} + (e_q^m / \delta) \, (I c_y \, \alpha r_{CL} + e_q^m)}{r_{LK} + (e_q^m / \delta) \, I c_y \, \alpha r_{CK}} \; < \; \frac{r_{KL}}{r_{KK}} \tag{16}$$

Proof of Lemma 2: This inequality can be verified by inserting the derivatives in Lemma 1 into it, rearranging and making use of both equalities in (15). This yields the equivalent inequality $e_q^m \, r_{KK} < 0$ – which is obviously true. □

Proof of Proposition 1: Let us write down the changes in mobile inputs if the city is closed. On the one hand, $dM = 0$ obviously. On the other hand, $dK = (-r_{K\gamma}/r_{KK}) \, d\gamma$.

Next, let us turn to the changes in mobile inputs if the city is open. Let us represent equations (8) and (9) as a single matrix equation:

$$\begin{aligned}
&\begin{pmatrix} r_{LL} + (e_q^m/\delta)(e_q^m + I c_y \alpha r_{CL}) & r_{LK} + (e_q^m/\delta) \, I c_y \, \alpha r_{CK} \\ r_{KL} & r_{KK} \end{pmatrix} \begin{pmatrix} dM \\ dK \end{pmatrix} \\
= \; &\begin{pmatrix} -(r_{L\gamma} + (e_q^m/\delta) I c_y \alpha r_{C\gamma}) d\gamma \\ -r_{K\gamma} d\gamma + d\rho \end{pmatrix}
\end{aligned} \tag{17}$$

Making use of both equalities in (15), the determinant of the coefficient matrix on the l.h.s. of (17) is

$$\Delta \; = \; e_q^m \, (e_q^m / \delta) \, r_{KK} > 0. \tag{18}$$

Solving (17) for dM and dK gives

$$\begin{aligned} dM &= \frac{1}{\Delta}\Big[\Big((r_{LK}r_{K\gamma}-r_{KK}r_{L\gamma})+(e^m_q/\delta)Ic_y\alpha(r_{CK}r_{K\gamma}-r_{KK}r_{C\gamma})\Big)\,d\gamma \\ &- \quad \Big(\,r_{LK}+(e^m_q/\delta)Ic_y\alpha r_{CK}\Big)d\rho\Big] \qquad (19) \\ dK &= \frac{1}{\Delta}\Big[\Big((r_{KL}r_{L\gamma}-r_{LL}r_{K\gamma})+(e^m_q/\delta)Ic_y\alpha(r_{KL}r_{C\gamma}-r_{CL}r_{K\gamma})-(e^m_q/\delta)e^m_q r_{K\gamma}\Big)\,d\gamma \\ &+ \quad \Big(\,r_{LL}+(e^m_q/\delta)(e^m_q+Ic_y\alpha r_{CL})\Big)d\rho\Big] \qquad (20) \end{aligned}$$

For $d\gamma > 0$, clearly $dM > 0$ also, given that the two terms on the first line of the r.h.s. of (19) are. So as labor is permitted to move, labor does move.

For $d\gamma > 0$, moreover, the resulting dK here is greater than that obtained in the closed city case, of $(-r_{K\gamma}/r_{KK})\,d\gamma$. This is easily seen when dividing the third term within the brackets on the first line of the r.h.s. of (20) by the denominator Δ. This division just gives $-r_{K\gamma}/r_{KK}d\gamma$. Throwing in those extra two (positive) terms on the first line of the r.h.s. of (20) can only make the inflow dK in the open city case become even bigger. $\square$

Proof of Proposition 2: We first establish the factor returns in the closed city case (where $dM = 0$ and $dK = -(r_{K\gamma}/r_{KK})d\gamma$). First, $dr_L = r_{LK}dK + r_{L\gamma}d\gamma$, or

$$dr_L = \Big(-r_{LK}\frac{r_{K\gamma}}{r_{KK}} + r_{L\gamma}\Big)\,d\gamma \qquad (21)$$

Similarly, $dr_C = r_{CK}dK + r_{C\gamma}d\gamma$ becomes

$$dr_C = \Big(-r_{CK}\frac{r_{K\gamma}}{r_{KK}} + r_{C\gamma}\Big)\,d\gamma \qquad (22)$$

Next we establish the two factor return changes in the open city. First, dr_L now is $dr_L = r_{LK}\,dK + r_{LL}\,dM + r_{L\gamma}d\gamma$. Substituting dK and dM from (20) and (19), respectively, and employing the two (or actually three) equalities in (15) as many times as needed ultimately just gives the simple wage change already set out in (21).

Second, and likewise, dr_C now equals $dr_C = r_{CK}dK + r_{CL}dM + r_{C\gamma}d\gamma$. Plugging in the solutions (19) and (20) and again making use of the various equalities in (15) shows that this latter change just reduces to the simpler change in the return to local capital set out in (22). $\square$

Proof of Proposition 3: As in the main text, $dq|_o$ ($dq|_c$) denotes the rental change in the open (closed) city. We first show that $dq|_c < dq|_o$.

For the closed city, totally differentiating land market equation $I = Ie_q(q,u^i) + Me_q(q,u^m)$, indigenous household budget equation $e(q,u^i) = \alpha r_C + r_L + q$ as well as immigrant household budget equation $e(q,u^m) = r_L$, eliminating du^i and du^m and rearranging gives

$$(Ie^i_{qq} + Me^m_{qq})\,dq|_c + Ic^i_y\Big(dr_L + \alpha dr_C + (1-e^i_q)\,dq|_c\Big) = -Mc^m_y(dr_L - e^m_q dq|_c). \qquad (23)$$

For the open city, totally differentiating (1) and (4) and replacing du^i gives

$$(Ie^i_{qq} + Me^m_{qq})dq|_o + Ic^i_y(dr_L + \alpha dr_C + (1-e^i_q)dq|_o) = -e^m_q dM. \qquad (24)$$

We already know that changes dr_L and dr_C are the same in both scenarios (Proposition 2). Subtracting (23) from (24), making use of the fact that $e_q^m dq|_o = dr_L$ and collecting terms implies

$$\left[(Ie_{qq}^i + Me_{qq}^m) \; + \; Ic_y^i(1-e_q^i) \; - \; Mc_y^m e_q^m\right] \cdot (dq|_c \; - \; dq|_o) \; = \; e_q^m dM \tag{25}$$

Given our assumption on δ, the expression in square brackets on the l.h.s. of (25) surely is negative. At the same time, the r.h.s. of (25) surely is positive, given that $dM > 0$. But then the difference $(dq|_c - dq|_o)$ must be negative. This in turn implies that $dq|_c < dq|_o$.

Finally we show that $dq|_c > 0$. Replacing dr_L by $e_q^m dq|_o$ in (23) and plugging in the fact that $dq|_c < dq|_o$ just established implies that the r.h.s. of (23) is negative. But then so is the l.h.s. of (23). We conclude that $0 < dq|_c$. □

Proof of Proposition 5: Part (i): Making the adjustments suggested in the text transforms indigenous capitalists' welfare into

$$\left(-\frac{r_{K\gamma}}{r_{KK}}\right)\left(Cf_{CL}^F + \lambda M f_{LL}^F\right)\frac{\partial L_F}{\partial K} \; + \; \left(Cf_{CL}^F + \lambda M f_{LL}^F\right)\frac{\partial L_F}{\partial \gamma}\; d\gamma. \tag{26}$$

Exploiting Young's theorem (so that $f_{LC}^F = f_{CL}^F$) and the fact that the first partials of f^F are homogeneous of degree zero in their arguments C and L_F ultimately gives

$$\lambda I\, du^i \; = \; (\lambda M - L_F)\, f_{LL}^F \; \left[\left(-\frac{r_{K\gamma}}{r_{KK}}\right)\frac{\partial L_F}{\partial K} \; + \; \frac{\partial L_F}{\partial \gamma}\right] \; d\gamma. \tag{27}$$

Because the expression in square brackets is negative, for $d\gamma > 0$ capitalists' welfare change is positive if $\lambda M - L_F$ is. □

Part (ii): The welfare change in the open city is given in (27). For $M = L_F/\lambda$ this welfare change is zero. But then the welfare change in the closed city, being strictly smaller always, must be strictly negative. □

Proof of Proposition 6: Let $M = L_F/\lambda$. As explained in the text, at the second stage indigenous capitalists' payoff is $-\lambda M(dr_L - e_q^m dq|_c)/e_u^i$ if city j deviates, and $(Cdr_C + \lambda M e_q^m dq|_c)/e_u^i$ if city j does not deviate. Equivalently, deviation does not pay off iff

$$-\lambda M dr_L \; \leq \; Cdr_C.$$

This condition is satisfied with equality if $M = L_F/\lambda$ (Proposition 5, Part (ii)). Hence every city will raise its local public input which in turn makes indigenous capitalists worse off. But then indigenous capitalists vote against liberalizing inflows of foreign direct investment at the first stage. □