Chapter 4
Firms' Human Resource Management for Local Economy and Wellbeing

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Abstract This article addresses how firms can utilise human resource management through cooperative behaviour across a region. The outcome may improve not only the efficiency of production for the local firm but also the level of residents' well-being. The conceptual idea of this article is similar to that of localisation economies, which work within the same industry. However, our idea is applicable among different industries as long as intermediaries properly operate the regional economic system for some local issues in a small-scale non-metropolitan area. Hence, rural agglomeration economies are partly employed in this analysis together with incentive theory about firms, individuals, and intermediaries. As described throughout the article, rural agglomeration economies are different from established notions of agglomeration economies such as localisation economies and urbanisation economies. This article also demonstrates how a sustainable region, which has the optimal economies of scale and scope under partnerships with neighbouring areas, can be organised.

Keywords Agglomeration economies · Division of labour · Labour pool · Comparative advantage · Incentive theory

JEL Classifications D62 · I26 · M54 · R58

4.1 Introduction

This article contributes to rural development studies by organising special coordination within an area. Studies on rural development are important for modern society, in particular cases in which a rural population decreases, typically because of a shrinkage of economic activity due to the ageing of society. This is a serious issue in developed countries, in which rapid national economic growth can no longer be expected and the national economy faces severe international economic competition in terms of cost-saving contests. In such a circumstance, firms must engage in

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their productions more efficiently with value-added competitive forces under limited available resources. Here, we demonstrate how firms in rural areas become secure on operational management as members of regional economic players. Especially, we focus on firms' human resource management to enhance the local economy and residents' wellbeing.

In other words, our primary objective through the analysis is to address how firms can utilise human resource management through cooperative behaviour across a region. Profit maximisation behaviour may be solely beneficial for that firm. However, once an efficiency of production is improved because of regional cooperation, the level of residents' wellbeing may also improve. Those phenomena are called externalities and were investigated in detail by Meade (1952) and Scitovsky (1954). Cooperative actions in a particular area can be referred to as localisation economies. Localisation economies are spatially constrained external economies of scale according to Parr (2002). These economies are also characterised as external to the firm and internal to the industry. Cooperative behaviour was described by Marshall (1892) and a concrete example in Italy was investigated by Capello (2015), who addressed the notion of 'trust' among the members of an industrial district.

Conversely, we here do not limit ourselves to the condition of 'internal to the industry'. This could relate to other types of agglomeration economies called urbanisation economies. Urbanisation economies are both external to the firm and to the industry. However, another condition must be added to define urbanisation economies. That is, there are so many people and economic players in the area. We also exclude this condition to examine the case of rural areas. When classifying agglomeration economies, such situations may be referred to as 'rural agglomeration economies' according to the definition of Parr (2015) on the topic of regional externalities. These ideas were partially expanded by Nakamura (2022a), who examined the relationship between profit maximisation and utility maximisation through a cooperative behaviour within a region and Nakamura (2022b) addressed an advanced regional economy beyond the market mechanism.

In this article, we show that rural agglomeration economies are valid among different industries as long as intermediaries properly operate the regional economic system. This includes the division of labour and the labour pool within the region. In addition, incentive theories on firms, individuals, and intermediaries should be argued to sustain these benefits in the long term. This may expand the horizon of the analysis to include comparative advantage, effective policy actions, and well-motivated behaviours of people with the notion of equity. We also demonstrate how a sustainable region, which has optimal economies of scale and scope under partnerships with neighbouring regions, can be organised under a circumstance in which a single region cannot suffice the required division of labour as a sustainable criterion of the local economy in terms of availability on resources.

These aspects are studied throughout the article as follows. Section 4.2 introduces a location model with a simplified regional economy based on a framework of the labour market. The model is described through hypothetical scenarios in Sect. 4.3. Incentive theory is discussed as an extension of this in Sect. 4.4, before the conclusion is presented in Sect. 4.5.

4.2 Location Model

In this section, we examine a simple location model with the following assumptions. First, there is a closed economic district such as a small city or town. Members of the regional adult population can be either employed, unemployed, or not in the labour force. There are some business firms, which employ residents to engage in production as high-skilled or unskilled workers. For simplicity, there is no inter-regional commute for work at this stage of the analysis. In labour markets, it is common to face temporary leave, as life remains uncertain at all times. For firms, maximising profits under uncertainty can be a risk, unless they are always ready to change labour without delay.

The above description can be expressed by a formal representation descripted by Eq. (4.1).

$$T_r = \mu T_e + (1 - \mu) T_u \sigma \tag{4.1}$$

Here, T_{r} ($T_{\mathrm{r}} \geq 0$) is the total regional adult population, T_{e} ($T_{\mathrm{e}} \geq 0$) is the number of employed residents, T_{u} ($T_{\mathrm{u}} \geq 0$) is the number of employed residents who need temporary leave, and μ ($\mu \geq 0$) is the ratio of those who can fully engage in work. Here, the parameter μ may be a part of workers who cannot avoid unexpected life events such as maternity leave. In addition, σ ($0 \leq \sigma \leq 1$) is an index of flexibility for replacement of human resources. For instance, $\sigma \to 0$ implies that replacement is more difficult because the job is specialised, such as work requiring high-skilled workers.

Equation (4.1) is a part of the firm's profit function (π). The entire form can be expressed by Eq. (4.2).

$$\pi = p f(L, K) - w_L L - w_k K \tag{4.2}$$

Here, p ($p \geq 0$) is the product price, w_{L} ($w_{\mathrm{L}} \geq 0$) is the unit wage, L ($L \geq 0$) is the number of residents in the labour force, w_{K} ($w_{\mathrm{K}} \geq 0$) is the unit price for capital, K ($K \geq 0$) is the amount of capital, and f (L, K) is the production function of the firm. Regarding the relationship between Eq. (4.1) and Eq. (4.2), we can state that as $T_{\mathrm{e}} = \delta L$, δ ($0 \leq \delta \leq 1$) is the weight with which this firm dominates the regional labour force. In other words, $\sigma \to 1$ as there are fewer firms in this region. Additionally, for simplicity at this stage of the study, every individual in the labour force has the same skill level.

If the value of parameter μ in Eq. (4.1) is not large enough, this firm may not be able to employ workers at the optimal level of L and its profit maximising condition cannot be attained. That is the situation for firms that face a misallocation of human resources within the organisation. Even though the volume of T_{r} is large enough, it remains insufficient because the firm's requirements and the job candidates' characteristics may not always match. An image can be illustrated by Fig. 4.1, in which a worker, individual I_1, is supposed to be temporarily unavailable and a replacement is needed.

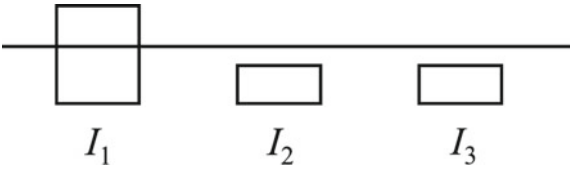

Fig. 4.1 Human resource allocation

If there is a nominated person, individual I_2, replacement is not possible because the volume of task completed by individual I_1 may not be fully compensated. In that case, another person, individual I_3, in addition to individual I_2 can jointly take this offer and the firm would be able to operate.

Alternatively, a more complex pattern can be considered in which worker I_1 has two different types of tasks, one that can be done only by this person and one that can be done by almost anyone else. If another person such as individuals I_2 and I_3 can complete all of the tasks of individual I_1, a replacement can be made. However, if individual I_1 just specialises on his or her expertise task and the remaining tasks can be conducted by individual I_2 or I_3, this could be a feasible alternative and perhaps better for all parties, including the firm, because of a comparative advantage. The following section investigates how the misallocation of resources can be avoided by coordinating specific systems within the area.

4.3 Hypothetical Analysis

This section demonstrates how misallocation of human resources can be avoided by describing two hypothetical scenarios, Case *A* and Case *B*. Case *A* is a situation in which potential local resources are being more utilised, while Case *B* attempts to improve the level of μ in Eq. (4.1), that is, the ratio of residents who can fully engage in work.

(Case *A*)

In this scenario, the misallocation of resources is improved by utilising potentially available local resources. In addition to the definition of the labour force, the total number of adults in the region is provided, as expressed in Eq. (4.3).

$$T_a = T_r + T_u + T_g \tag{4.3}$$

The above expression shows that the total number of adults in the region, T_{a} ($T_{\mathrm{a}} \geq 0$), is the sum of the total number of workers T_{r} ($T_{\mathrm{r}} \geq 0$), the number of unemployed T_{u} ($T_{\mathrm{u}} \geq 0$), and the number of people who are not in the labour force T_{g} ($T_{\mathrm{g}} \geq 0$).

The above scenario suggests a policy in which potential local resources are more utilised. There, potential resources are people who are unemployed and who are not in the labour force, that is, T_{u} and T_{g} in Eq. (4.3). They may be able to find new

jobs much easier if there are sufficient opportunities for them to improve their skills. In other words, the provision of local training programmes may result in more job opportunities, as they would have more opportunities to engage in skilled labour with respect to supply and demand in the local labour market as long as there are advanced economic activities such as export-base sectors. Here, 'local programmes' are different from services supplied by private firms, which require a cost burden and travel to the site of the services. Conversely, 'local programmes' can receive these services with little or no charge to receive and it is not necessary for residents to travel a long distance to reach these services.

In this case, how locally operated management can provide these services should be considered. Perhaps local firms can offer affordable job training seminars to residents because these are useful as soon as they start working in the region. Such offers may send signals to the local job market about what kinds of skills are desired. Additionally, the frequency of offers might indicate how many workers are needed by local firms.

(Case *B*)

This scenario is a policy for $\sigma \rightarrow 1$ through regional cooperative coordination. Such a scenario is applicable for a situation in which an individual must stay at home with his or her children instead of working somewhere outside the home. In many cases, both public and private agencies offer nursery services with contracts. If these are inflexible to coordinate and individuals face barriers to work, it may be possible to find a better outcome through regional cooperative coordination. An important condition here is to have trust among members of the region.

Trust can be grown through community-based events and meetings, unless there is a specific industry that emerges from localisation economies, as exemplified by Capello (2015). Otherwise, the initial incubation may be led by the local authorities and/or publicly owned agencies. This can be easier as the hierarchical order of the urban system is lower. In other words, small-scale areas such as non-metropolitan or rural areas should benefit more because they generally have less complex local administrative and functional systems than large-scale areas such as large metropolitan regions in which more economies of scale and scope are available (see Parr, 2008 for the structure of administrative and functional systems within the framework of central place theory).

(Cases *A* and *B*)

Our argument does not necessarily promote either Case *A* or Case *B*. Rather, both cases may be compatible and play different roles. While Case *A* can be effective for both individuals and firms, it is more difficult to coordinate opportunities under limited resource availabilities. In this sense, it should be easier in Case *B* to organise cooperative behaviour but incentives and motivation for individuals to participate are needed. That is, both cases would be beneficial if they could be coordinated at any time, and the next concern should be given to long-term sustainable arrangements. Regarding this point, the following argument may be relevant.

An incentive policy can be made by deposit and refund systems in the field of environmental economics (c.f., Hanley et al., 2013). Services within this framework of the analysis are treated as club goods. Here, both types of markets are involved in our argument, namely, markets for factors of production and markets for services. Markets for factors of production may have demand side as firms and supply side as households. Conversely, markets for services have demand side as households and supply side as intermediaries. For both markets, incomplete information can be covered by informal exchanges of communication. Firms must provide necessities for work with respect to quantity, quality, tasks, duration, and so on. Households are required to show what kind of services they desire and what they can do. The extent may depend on the hierarchical urban level. In other words, informal matters are more accessible in lower hierarchically ordered areas, whereas more variety and a greater volume of resources are available in higher hierarchically ordered areas.

4.4 Application

We have previously revealed that there are effective policies regarding the local job market system. It is now necessary to reveal how such a coordination can be securely organised. Here, a presence of intermediaries can be important. Intermediaries are agents that connect two facets of needs such as lenders and borrowers matched by commercial banks (see Baumol & Blinder, 2012). Local stakeholders in an area as intermediaries may be public characters, such as local governments and local universities, as local universities are sources of expertise on education and research and might seek collaboration with local governments. Such external opportunities can include local spillovers through recurrent education and advanced research opportunities. Once the system is well organised, a value-added highly advanced regional system in social and economic terms would be expected.

As our primary concern is given to rural development strategies, the argument returns to the level of community, which is the aggregation of local economic agents. Unless barter trade is easily arranged among regional members, it is necessary to consider funding matters in the modern socio-economic system. A typical failure of the system is the issue of the free-riding problem. Memberships with fees, commonly defined as ‘club goods’, may be needed. That is the part of variable cost. The remaining part—that is, the fixed cost part—the incubation process (see take-off stage in Rostow, 1956 and Parr, 2001) may require subsidiary payment or outsource fundings. During that process, effort to increase the volume of members as a role of denominator is desired. After the take-off stage, smaller fees for all can be coordinated in addition to variable costs. This does not imply that intermediaries are running as commercial companies. Rather, they are solely better able to utilise the established resource allocation.

For a potentially problematic case such as one in which there is no intermediary such as a local university within the observing area, it may be useful to apply them for a wider-areal coordination. Wider-areal coordination is necessary to arrange

neighbouring regional partnerships (see Nakamura, 2022a). If an inter-regional transportation system is well-organised, the commuting area can be expanded and a better job-matching environment may be expected with expansion of the supply area, in line with central place theory (see also Lösch, 1938; Parr, 1993a, 1993b). Such coordination may be more strongly required as the replacement partly works ($\sigma \leq 1$) as firms access job-match agencies or regional externalities. Otherwise, the region is self-sufficient when $\sigma = 1$ and replacement works perfectly.

It is now necessary to discuss social welfare. Through this coordination, firms' efficiency improves because losses are reduced. For individuals, more job opportunities or a more stable regional system supported by community cooperation can be expected, which requires large participation rate. If Case *A* and Case *B* are both available, individual income can be expected to rise and expanded skills for jobs may be available. This might be also beneficial for the region in terms of a sustainable regional economy because of the presence of more advanced members in the area. This situation is attainable if informal information and coordination are used. In addition, the principle of 'locally knowing each other' through rural agglomeration economies may increase reductions of negative externalities and increments of positive externalities. Hence, it is important to react to mismatches in the system. Mismatches may be caused by quantity and/or quality and can be adjusted by the combination of Case *A* and Case *B*.

Once again, it is easier for firms to find unskilled workers than skilled ones. In other words, skilled workers are more inflexible regarding replacement in the labour market. However, training opportunities for local people may be partially flexible for skilled workers, which may be beneficial in the long term not only to the firm but also to the individual and to the region. Even though the population is small in a region, they can sustain because there are more education opportunities. Wider-areal coordination may boost this specific strategy because such areas might struggle to pursue economies of scope. However, this may require sufficient infrastructure arrangement regarding transportation and communication among different neighbouring areas.

Our final discussion should focus on incentive theory for its sustainability. Without incentive strategies, free-riding and other problems might occur, as discussed earlier in this article. It would be unsustainable if some parties brought about system inequity by taking advantage of merits. A concrete strategy is a reward system as a part of a rural development scheme. For instance, when someone becomes available to look after other people in a regional system, intermediaries can connect between supply and demand. When supported people become available to support others, then their roles shift to suppliers. However, if they refuse such shifts, a shortage of this system might be observed. Additionally, if supported people desire things to an excess, then a shortage will occur under limited resources. Therefore, policies must include debates on moral hazards and incentives to avoid any arguments of trigger strategy in game theory, which could be enacted by firms and individuals. Then, a better rural development under fully considered shifts that minimise potential hazardous changes in local environment would maintain the cooperative atmosphere.

4.5 Conclusion

This article has examined how rural agglomeration economies can work effectively to allocate human resources within a specific economic area. We revealed that such a system does not emerge spontaneously and certain incubation processes may be required as part of a rural development policy. Here, intermediaries are played by local institutions such as universities, which may also have a spillover effect that improves the regional welfare level by providing advanced education and research opportunities to the local economy. A wider-areal coordination enables us to apply this framework even though there may be no intermediary within the observed area.

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