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Labour supply, foreign investment and welfare in the presence of public infrastructure

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Abstract

Within the context of a small open economy where both foreign investment and the provision of public infrastructure are endogenous, this paper examines the impact of an exogenous increase in labour supply. An increase in labour supply can be attributed to labour inflow. A number of empirical studies have demonstrated the importance of public infrastructure in real economies and both developed and developing countries have attracted significant foreign investment in recent years. This paper shows that, in the case of a diversified equilibrium, variations in labour supply do not affect the wage rate, provision of public infrastructure or welfare. However, an increase in labour supply decreases foreign investment as long as the producers of the private goods derive equal benefits from public infrastructure. In the case of complete specialisation, an increase in labour supply increases the provision of public infrastructure, which leads to an increase in the wage rate and foreign investment. An increase in labour supply increases welfare as long as the provision of public infrastructure involves some fixed cost.

JEL classification: F16; F21; H54

Keywords: Foreign investment; Provision of public infrastructure; Labour supply

1. Introduction

Increased availability of primary factors of production such as capital and labour is an important source of economic growth. Foreign investment has contributed to a significant increase in the supply of capital around the globe.[1] While restrictions on capital flows have been substantially reduced, few countries are willing to relax restrictions on the free

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[1] Inward foreign direct investment increased by 29% to US$916 billion in 2005 having already increased by 27% in 2004 (United Nations, 2006). A decrease in commercial bank lending to developing countries in the 1980s combined with the easing of restrictions on foreign investment, tax incentives and subsidies have contributed to a rapid increase in non-commercial bank private capital flows to a number of developing countries in the 1990s (Carkovic and Levine, 2005). Among the developing countries, China was the largest recipient of foreign direct investment in 2005. As far as the developed countries are concerned, in 2005, the UK was the largest recipient of foreign direct investment followed by the US (United Nations, 2006).

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movement of labour. Spain and Finland have recently indicated their willingness to further relax restrictions on the free flow of labour from members of the European Union (effective from 01 May 2006). At present, some developed countries (for example Australia and New Zealand) are experiencing a shortage of skilled labour. Newly industrialised countries such as Hong Kong and Singapore offer very high salaries to attract foreign workers each year. However, declining birth rates and population ageing are likely to further increase the shortage of skilled labour in all developed countries. One solution to this problem is to increase the number of migrants accepted each year — the Australian government is seriously considering this option. An increase in migration intake increases the supply of labour, which can lead to an increase in government spending on appropriate infrastructure.[2] Most existing studies that consider the impact of labour inflow do not explicitly include public infrastructure.

A number of empirical studies have suggested that the provision of public infrastructure enhances the productivity of all factors of production. However, none of the available studies appear to have considered the impact of labour inflow on production, foreign investment and welfare in the presence of public infrastructure. Inflow of labour increases the supply of labour, which has implications for resource allocation and welfare. Within the context of a standard two-good and two-factor small open economy model that does not include public infrastructure and where capital mobility is restricted, it has been shown that a small inflow of labour increases the output of labour intensive good at the expense of the capital-intensive good and there is no effect on welfare (see Bhagwati et al., 1998; Rivera-Batiz and Oliva, 2003; Feenstra, 2004). Din (1996) has utilised a framework where capital is fully mobile across international boundaries but public infrastructure is not explicitly included. Din has shown that inflow of labour increases foreign investment. In a recent study, Gemmell et al. (2008) have shown that increase in foreign investment significantly shifts the size and composition of government spending. A significant proportion of government spending in all real economies is allocated towards the provision of production infrastructure. Ang (2008), Hill (2007), and Appleyard et al. (2007) has argued that infrastructure development promotes foreign investment.

A number of available studies have recognised and investigated the role of public infrastructure in real economies. For example, Conrad and Seitz (1994) have shown that the provision of public infrastructure can reduce the cost of production. Rioja (1999) has shown that public infrastructure investment can lead to a sizeable increase in GDP. Demetriades and Mamuneas (2000) have examined the impact of public infrastructure on production and input demand in 12 OECD countries. They have shown that increased spending on public infrastructure is associated with higher levels of production. They also found a positive relationship between the demand for inputs and the supply of public infrastructure. Boisso et al. (2000) have attempted to measure the impact of changes in public infrastructure provision on the slowing down of US productivity. Chandra and Thompson (2000) have examined the role of public infrastructure on various industries. They found that while there was a positive impact on some industries due to a reduction in costs, other industries contracted due to relocation of certain economic activities. Reinikka and Svensson (2002) have shown that poor public capital significantly reduces the complementary private investment. Paul et al. (2004) have examined the impact of public infrastructure on several Canadian manufacturing industries. They suggest that public capital serves as a substitute for private capital and labour in most industries. Salinas-Jimenez (2004) has considered the effect of public infrastructure on productivity and efficiency of the private sector in Spanish regions. Salinas-Jimenez's work supports the view that public infrastructure enhances productivity. Bucovetsky (2005) has argued that public infrastructure investment attracts mobile factors including skilled labour.

While the existing empirical studies have demonstrated the usefulness of public infrastructure provision, most theoretical studies that deal with factor mobility do not explicitly include public infrastructure. The provision of public infrastructure leads to external economies of scale to the private sector, which reduces the cost of production.

Unlike the existing literature, this paper utilises a stylised model of a small open economy that is characterised by unrestricted international capital mobility and where the supply of public infrastructure is endogenous. The model is used to examine the impact of labour inflow on production, foreign investment, provision of public infrastructure and welfare. Public infrastructure is introduced in the model in the form of a public input which enters private sector production functions. The provision of public infrastructure leads to external economies in the production of final goods which results in multiple-equilibria and hence this paper considers the case of incomplete as well as complete specialisation. The provision of public infrastructure involves fixed as well as variable cost. The paper derives a number of new results. For example, it is shown that in the case of complete specialisation, a small inflow of labour increases welfare, if public infrastructure is productive and its provision involves some fixed cost. The existing

[2] Manning and McMillan (1979) have shown that labour inflow increases the provision of public input/infrastructure.