



Broadband and job creation: Policies promoting broadband deployment and use will enable sustainable ICT-based job creation

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Countries are keen to stimulate economic growth and job creation during the ongoing economic crisis. Some have initiated national broadband programs to stimulate innovation and knowledge-based growth and job creation. This policy note discusses broadband-enabled job creation. Broadband networks and services deployment immediately create jobs. However, transformational uses of broadband could have wider effects, albeit over a longer period and with more uneven outcomes. The note proposes that countries could accelerate long-term job creation by addressing both supply and demand sides: by promoting investment in the deployment of networks and services and by building the capacity of businesses and citizens to absorb and use broadband.

BROADBAND AS A GLOBAL PHENOMENON

Broadband networks enable high-speed Internet access and support multimedia services and applications. They now reach more than a billion users and are increasingly becoming an integral part of social and economic activities worldwide.

Increasing availability of broadband

This is the first of a series of ICT policy notes that will highlight transformative analytical and operational work and discuss emerging policy issues in the information and communication technologies sector.

Broadband networks and services are now growing in both developed and developing countries. Estimates suggest that the penetration of fixed and mobile broadband subscribers per 100 people globally will be 8.5 and 17.0, respectively, by the end of 2011, an increase of 34 times since 2001. Growth has been especially strong in mobile broadband subscriptions, which have grown 45 percent annually over the past four years. Today there are twice as many mobile broadband as fixed broadband subscribers globally (ITU 2011a).

Indeed, mobile broadband technologies are beginning to push high-speed data deeper into developing countries. The number of mobile broadband subscribers in middle-income countries has grown from 3 million to more than 400 million in the past three years (TeleGeography 2011).

Broadband's transformation of societies and economies

As broadband becomes widely available, it has also begun to enable the transformation of social and economic activities, increasingly becoming part

of their basic infrastructure. Broadband enables productivity increases and knowledge dissemination in the economy, thus enhancing knowledge-based employment and growth (Qiang and Rossotto 2009).

Broadband is thus a transformational platform, facilitating growth and innovation throughout the economy. Broadband-based services and applications serve as a vital input for a range of sectors and strengthen the economy as a whole. Broadband applications are now being used in the information and communication technologies (ICT) sector and other sectors of the economy, including health, education, trade, and business management.

JOB CREATION EFFECTS OF BROADBAND

Broadband and its accompanying transformations create jobs in four ways:

- Direct job creation through the construction of broadband networks related to civil works and installation of network equipment
- Indirect job creation through incremental employment generated by businesses selling goods and services to those directly involved in broadband network construction
- Induced job creation through additional employment induced by household spending based on the income earned from direct and indirect effects
- Transformational job creation, through new jobs created by new businesses as well as business innovations and flexible work practices in existing firms, enabled through broadband adoption.

Estimating direct, indirect, and induced job creation

Several studies have estimated the effect of broadband in the first three of these categories for specific countries by calculating employment multipliers for each of the categories. They find that each direct job creates between 1.4 and 3.6 indirect and induced jobs (*infoDev* and World Bank 2011). These studies provide evidence of the positive employment effect of the construction of broadband networks, albeit only short term.

The effect varies by country depending on local capacity to self-provide goods and services for the construction of a broadband network and on the country's market structure. According to one study, the U.S. broadband stimulus plan would create about 37,000 direct jobs in the construction, telecommunications, and electronic manufacturing sectors (Katz and Suter 2009).

Evaluating transformational job creation

Estimating transformational job creation is more complex. Broadband transformation creates job opportunities in innovative businesses. But it can also have a negative impact on employment because of process optimization and capital-labor substitution in traditional industries. This effect can occur because broadband changes the structure of employment by, for example, facilitating working from home or working part time. Overall, however, country-specific studies that have examined the effects of broadband network on employment suggest a net positive effect (Atkinson, Castro, and Ezell 2009; du Rausas and others 2011; Fornefeld Delaunay, and Elixmann 2008).

Direct and indirect job creation will likely be more immediate. In contrast, induced and especially transformational job creation will take more time to appear, although such forms of job creation might have longer-lasting and deeper impacts.

Two areas of broadband-enabled activities are especially relevant for transformational job creation: business process outsourcing (BPO) and self-employment.

Business process outsourcing

The global diffusion of broadband increases trade of services between countries and affects the job market across countries. Jobs are created through offshore service provision both in highly value-added services, such as accounting and information technology, and in lower-skill services, such as back-office and call center activities. Indeed, global job restructuring is increasing as more services can be traded because of bandwidth increases (OECD 2008).

Such changes often have jobs shifting from advanced countries to developing countries in response to labor cost considerations. These changes have driven the growth of BPO in China, the Arab Republic of Egypt, India, Mauritius, the Philippines, and South Africa, among many others.

To maximize BPO-led job growth, developing countries are targeting support to their local BPO industries. Kenya's ICT Board introduced a BPO Bandwidth Capacity Purchase Scheme to help the local BPO industry access affordable broadband services. Through this program, Kenya aims to create 7,500 direct jobs in the BPO sector and 2,500 indirect jobs by 2012.

Broadband-enabled self-employment

Another transformation is an increase in self-employment as individuals deliver their services directly to customers through broadband applications. In the Republic of Korea, one of the most broadband-connected countries in the world, many people have used ICT to create small firms and self-employment opportunities. For example, in March 2011, 80,301 Internet shopping malls were registered in Seoul Metropolitan City. Most were run by fewer than five persons, and a significant number were run by one person.

Broadband also makes telecommuting easier and assists employees working from home. Therefore, the labor market opens up to those excluded from productive employment, such as people with disabilities or those who live in rural areas. Broadband also enables many more part-time opportunities, such as trading on



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Box 1: The development effect of Australia's National Broadband Network

Many countries have invested in national broadband programs. In 2010, Australia began construction of a new open-access, wholesale national broadband network. This program shows the extent of possible job creation. Total funding, provided by a mix of public and private sector parties, will be \$A 40.9 billion (US\$41.8 billion) over eight years. The plan will directly support up to 25,000 jobs over the life of the project and will create a national infrastructure that will support long-term growth. By 2020, Australia aims to be among the top five countries of the Organisation for Economic Co-operation and Development in the percentage of businesses and not-for-profit organizations using online opportunities to drive productivity improvements, to expand their customer base, and to enable job growth.

Source: ITU 2011b.

eBay for supplementary income. According to a July 2005 eBay Survey, around 724,000 Americans reported that eBay was their primary or secondary source of income and a further 1.5 million used it to supplement their income. In 2011, the University of Maryland reported their own estimates for employment of developers using Facebook as a platform. The Facebook “App Economy” has generated between 180-235,000 new jobs and created value of up to US\$16 billion for the US economy (Digits 2011).

GOVERNMENTS’ APPROACH TO BROADBAND AND JOB CREATION

Recognizing the growth effects of broadband deployment and adoption, governments have begun to implement policies and programs to accelerate the deployment and adoption of broadband networks. Job creation is an objective in some of these plans. For example, the national broadband plans for Australia (see box 1), Germany, Ireland, Korea, Spain, and the United States all include projections of job creation through broadband in their national broadband strategies.

However, most countries do not include job creation as a main objective. Rather, most plans have objectives such as target penetration rates and speeds. Although these policy objectives are important and the growth of broadband diffusion and capacity will certainly help the growth of business activities, countries should consider including well-designed policies and programs to accelerate job creation.

These policies and programs will need to address two complementary objectives to maximize job creation: (a) attracting investment in broadband networks and services to build supply and (b) increasing the absorptive capacity of broadband users to create and participate in transformational activities.

Countries can deepen the influence of broadband on job creation by enabling its sustainable and market-driven development through appropriate supply-side policies. Such policies are especially important in developing countries, where access to broadband networks is still limited. Key policies will include measures that promote competition in the market, introduction of new technologies and innovative services, and sharing of infrastructure. Importantly, governments will need to consider mechanisms to expand the use of wireless broadband technologies and services, which have potentially deeper effects on economic growth than do wireline services.¹

¹ A detailed examination of possible policies and programs is outside the scope of this note, and readers are encouraged to refer to other material, including Kim, Kelly, and Raja (2010) and infoDev and World Bank (2011).

Policies to increase absorptive capacity

The extent of transformational job creation also depends on each country’s ability to take advantage of broadband Internet technology for making new business opportunities (that is, the country’s absorptive capacity). The absorptive capacity of a country depends both on its internal capacity to deliver broadband-enabled services and applications and on its residents’ capacity to use these services and applications in a productive and efficient way (infoDev and World Bank 2011).

Countries with a more knowledge-intensive economy have greater broadband absorptive capacity. Hence, more jobs can be created in countries with a more knowledge-intensive economy than in those with a less knowledge-intensive economy. For example, according to the European Commission, companies in the most advanced knowledge economies use e-business twice as much as those in less advanced knowledge economies (Fornfeld, Delaunay, and Elixmann 2008). This finding implies that increasing absorptive capacity and then broadband adoption in an economy will create both jobs and a skilled labor force.

Governments seeking such an outcome will need to enhance their absorptive capacity by implementing policies and programs that (a) increase ICT skills and higher education, (b) create an enabling environment for ICT-based innovation, (c) foster the use of ICT in all economic transactions and processes, and (d) encourage their local information technology-enabled services sector to create jobs that are broadband enabled.

CONCLUSIONS

Whereas direct, indirect, and induced job creation might be quicker and easier to measure, these forms of job creation are likely to have a short-term, temporary effect on employment. The transformational effect of broadband on job creation is strategic and long lasting. To maximize it, governments will need to consider both supply- and demand-side policies that promote competition and encourage innovation in broadband services. However, policy makers looking to stimulate employment through broadband development should be mindful of the time lag between the policy and its effects.

In developing these policies, high-level coordination among ICT-related agencies and other sector ministries, in particular the education and labor ministries, will be important. Such coordination is essential because a focus on ICT-enabled tools for education is crucial to the development of the knowledge society and the achievement of broadband-related job creation benefits. Governments will therefore do well to ensure that they define policies and programs in a consultative



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manner that will build the supply of and demand for broadband and thereby create sustainable jobs.

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