ICT POLICY
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New Frontiers and Opportunities in Work
ICT is dramatically reshaping the global job market

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Information and communication technology (ICT) is enabling new job trends through opportunities such as microwork, ICT-enabled contracting, online gaming work, and in the growing "app" economy. These new trends have risks and benefits. But with the appropriate enabling conditions, they can create jobs and new income opportunities. ICT-enabled work can be performed anywhere through regular computers and Internet connections, has low entry barriers, offer high flexibility in skills requirements, and is resilient toward and countercyclical to economic downturns. Finally, as forms of telework or virtual work, these trends may have a positive environmental effect by reducing commuting and delivery costs.

This series highlights transformative analytical and operational work and discusses emerging policy issues in the information and communication technologies sector.

ICT ENABLES NEW TYPES OF JOBS AND INCOME OPPORTUNITIES

ICT creates jobs and also profoundly effects the structure of the job market, leading to greater efficiencies, cross-boundary collaboration, and deep changes in the global supply chain of services. Social media, smarter tools and systems, and larger computing capacity create new possibilities for employment (Institute for the Future 2011). Four significant new job trends enabled by ICT are microwork (the smallest unit of work in a virtual assembly line), ICT-enabled contracting, online gaming work, and opportunities around the growing application ("app") economy. The potential is great as much of the world is now connected (Min and Rossotto, 2012).

Microwork

Microwork is a new approach to outsourcing that breaks down larger business processes into small and simple tasks that rely on human intelligence. These microtasks are then distributed via 'aggregators' to workers across geographic boundaries, using the Internet or mobile phones. Tasks include image tagging, translation, and content creation including for product descriptions, proofreading, and transcription.

The microwork market is growing rapidly. The World Bank (2012) estimates that the global microwork market size is between US$450 million and US$900 million annually, and employs between 1.45 million and 2.9 million microworkers. This suggests an increase from the past; more than 1 million workers earned a total of US$1 billion to US$2 billion in the past 10 years (Frei 2009).

Microwork benefits workers in developing and developed countries—especially women and young people—with low to midlevel skills. For example, Somali refugees in Kenya were able to do microwork after training by nonprofit Samasource even though those refugees had never used a computer (Hegarty 2011). Microwork attracts workers in a range of countries because of a "discretionary income" effect, and because it allows flexible work arrangements. About half of the workers on Amazon Mechanical Turk, one of the earliest generalized platforms for microwork, live in the U.S.; a third are from India. And most are 21 to 25 years of age. Participation among women is high, including above 30 percent in India and up to 70 percent in the U.S. (Ipeirotis 2010). Other benefits of microwork include access to employment for disadvantaged segments of the population, increased computer and communication skills, and increased confidence and status within households and communities for workers and particularly women (Sharanappa 2011).

Microwork poses some risks because of the ambiguous regulatory framework for virtual employment. These risks can be mitigated through policy measures and self-regulation. Regulation for such labor is ambiguous and complicated. Each country's laws may differ; some may protect workers while others could be detrimental to aggregators' operations. Regulatory differences among countries also create opportunities for aggregators to offer unfavorable terms to microworkers. Firms may also encounter intellectual property risks through distributing microtasks to a widely dispersed set of workers. However, they may develop agreements with workers to limit this risk (Felstiner 2011).

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ICT-Enabled Contracting

ICT-enabled contracting typically involves larger, more creative projects. These projects appeal to highly skilled professionals, and can be contracted out globally. Companies like Elance, Freelancer, and oDesk allow clients to hire independent contractors, using online collaborative working platforms to structure tasks and monitor contributions and performance. Such contracting frees business from geographic barriers of traditional hiring, allowing them to hire the talent that is best aligned to their needs from anywhere in the world. Information technology (IT) jobs form the majority of those posted on these virtual marketplaces. However, jobs in other areas, such as graphic design, animation, music, writing, and even legal services, are also growing. For example, as of April 2012, more than 60 percent of the jobs on oDesk were non-tech (oDesk 2012).

The number of hours worked at online workplaces is growing exponentially. According to the Financial Times, the number of hours worked at the oDesk online workplace grew from 2 million hours in the first quarter of 2010 to almost 8 million hours in the first quarter of 2012. On this platform, the earning of workers grew more than 20 times from 2007 to 2011 to reach US$225 million (Vanham 2012), with oDesk projecting earnings of US$1 billion (oDesk 2012). The impact is global. Nine out of the top 10 countries for number of hours worked at oDesk are developing countries (Figure 1). Indian contractors are hired by U.S. clients in 40 percent of cases, according to Freelancer (2012). Contractors from the Philippines have worked almost 18 million hours at oDesk, the highest among all countries on this platform.

An emerging trend in ICT-enabled contracting is of employers from developing countries. The company laimoon.com offers a virtual marketplace for sales and marketing professionals from the Middle East interested in working in the Gulf. Employers from India represent 9 percent of all the jobs posted on the Freelancer.com virtual marketplace, making India the third largest country by employers after the U.S. and United Kingdom. Most of the jobs posted by Indian contractors are filled by workers in South

Asian countries and in other developing countries. However, workers in high-income countries have started filling jobs posted by Indian employers; workers in the U.S. are hired by Indian contractors 3.2 percent of the time (Freelancer 2012).

The presence of global ICT-enabled contracting platforms carries the promise of having an important countercyclical effect on the local job markets. As the countries of Greece and Spain were suffering a severe economic downturn in 2011, earnings from Elance contractors in those countries grew by 122 percent and 142 percent, respectively (Elance 2012).

Gaming Services

Online games are a hugely popular form of entertainment, and have created a virtual employment market, where services are traded for currency. Gamers in multiplayer environments can earn virtual currency (in-game currency that is used to purchase virtual goods within online communities) as well as monetary compensation. Estimates of the market size for multiplayer online gaming vary considerably: from US$12.6 billion globally to US$25 billion for the U.S. in 2011 (Lehdonvirta and Ernkvist 2011; ESA 2011).

Gaming platforms can support the outsourcing of small tasks. CrowdFlower, a platform that outsources tasks to groups to solve problems ranging from product categorization to business lead verification, outsourced half of its tasks in 2009 through online gaming channels and paid for them with virtual cash, according to the company (Mahajan, 2010).[1]

Virtual currency sales account for more than three-quarters of the gaming market and can be used to obtain virtual goods, which have a social status value among gamers. In 2009 consumers paid US$1 billion for virtual goods in the U.S. alone. Virtual currency and goods can be converted into real currency. Estimates of earning levels for online gaming workers vary (Heeks 2008).

One survey suggests the majority of online gaming workers earn between US$0.60 to US$1.20 per hour, although some earn up to US$13.40 per hour. An estimated 100,000 young, low-skilled workers in China and Vietnam earn their primary income by accumulating such virtual resources and outsourcing their services through gaming platforms (Lehdonvirta and Ernkvist 2011). There are an estimated 100,000 to 1 million workers in gaming services (Lehdonvirta and Ernkvist 2011).

On the downside, the industry has been compared to a virtual sweatshop because of long working hours and

Figure 1: Total Hours Worked on oDesk

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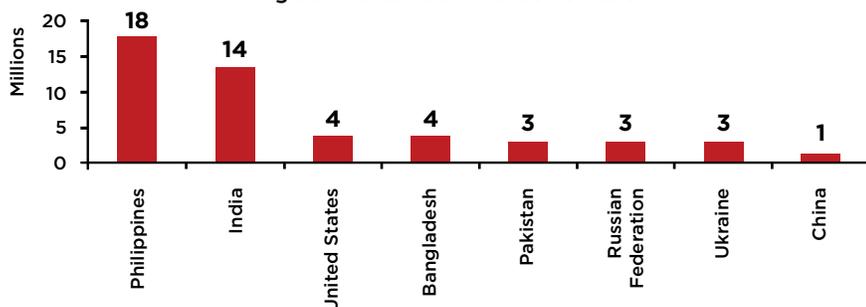
[1] CrowdFlower embeds its tasks in online games like FarmVille, Restaurant City, It Girl, Happy Aquarium, Happy Pets, Happy Island, and Pop Boom.

low wages. However, online gaming also has provided workers benefits through income generation and improved skills. Workers who earn income through gaming compare their working lives positively to the immediate alternatives (Heeks 2008; Jin 2006). A recent survey in China also suggests that many gaming studio workers see their work as a source of positive skill formation toward future careers (Lehdonvirta and Ernkvist 2011).

App Economy

A fourth trend is the emergence of the app economy— including software, hardware, and design development. The rapid growth of mobile broadband networks, coupled with the falling prices of smartphones and feature phones, creates a vast global platform where mobile software developers can sell applications.

The growing app economy has created new jobs in the U.S. and high-income countries. In the U.S., an estimated 466,000 jobs were created in this industry (TechNet 2012). This growth is significant as it happened during a period (2007–11) when the U.S. economy lost jobs. Expectations are that the global mobile app market will be worth US$25 billion by 2015 up from US$6.8 billion in 2010 (MarketsandMarkets 2012). About 70 percent of revenues generated by apps likely go to developers, suggesting the earnings potential. Major app stores also offer additional revenue to developers through advertising and in-apps purchases (Balancing Act 2011).

The app economy could create jobs in developing countries especially given the widespread availability of mobile networks, growing mobile Internet access, growth of mobile ads, and low labor costs. The global apps market is forecast to grow at 29.6 percent annually from 2009 to 2014. New start-ups from developing countries can enter this market and rapidly overcome demand constraints of their local markets. Some countries, such as the Arab Republic of Egypt, Kenya, Morocco, Nigeria, and South Africa, have already begun to take strides in developing their app economy, leveraging the talent of their local developers (Uzor 2012).

CONCLUSIONS AND POLICY RECOMMENDATIONS

ICT-enabled new job trends are reshaping the employment market and offer new income opportunities. First, ICT allows workers to bypass national and geographic boundaries, enabling massive labor cost arbitration. Second, ICT provides access to talents and skills worldwide, increasing the efficiency of the job market. Third, virtual employment platforms tend to be countercyclical. If local demand is inherently weak or depressed by a downturn, ICT-enabled jobs can offer employment and income opportunities across the range of skills. Fourth, ICT jobs also reduce retooling or retraining transaction costs. Fifth, these trends also reduce barriers to entry and enable self-employment and entrepreneurship. Finally, with increases in the cost of energy and carbon taxes, teleworking and virtual working will become even more important (Gratton 2011). Even as these trends come with risks, the inherent opportunities will reshape of the global employment market.

Policy makers in developing countries may enhance the opportunities that ICT offers to create new types of innovative jobs, while mitigating the associated risks (Table 1).

"Virtual employment platforms tend to be countercyclical. If local demand is inherently weak or depressed by a downturn, ICT-enabled jobs can offer employment and income opportunities across the range of skills."

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Table 1: Policies to foster ICT-enabled employment

Area of focus	Policy considerations
Strengthen the enabling environment	• Promote investments in broadband connectivity and cloud computing, especially to connect remote, lower-income populations. • Enable international micropayment services to give employers and workers access to efficient and cost-effective micropayment services. • Develop skills for the new economy. Developing countries should create a labor pool with ICT skills; a critical mass of talent will attract more investment and spur business creation. • Examine the environmental, social, economic, and legal implications of virtual work. Attention should be paid to labor laws and regulations and to rules that promote innovation and the growth of virtual employment platforms, while allowing room for self-regulation.
Raise awareness and promote collaboration	• Promote virtual employment for women and youth, who tend to experience higher unemployment and underemployment and can benefit from flexible income-generating opportunities. • Convene private sector and academia to ensure demand-driven development of virtual employment. Support cross-sectoral collaboration and skills development through competitions, hackathons, mentor relationships, and support groups.
Support testing to develop the virtual jobs market	• Run or contribute to pilots that test virtual employment models and applications with focus groups of users and clients. Help develop links with potential testing environments in public, nongovernmental, and private sectors such as lab networks.[2]

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[2] The World Bank is becoming increasingly involved in this area. Examples include the Global Water Hackathon, various hackathons and app competitions around development challenges, and the Digital Jam 2.0 event.

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