Digital Economies: Challenges and Opportunities for Inclusive Growth

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Multiple Aspects

- Will new digital technologies make it more difficult for developing countries to close the gap between themselves and the advanced countries?
- Will it lead to increased unemployment and wage and income inequality within developing countries, even as it increases opportunities for some?
- Will it lead to increased market power?
- Will new technologies make it more difficult for governments to collect tax revenues?
- How worried should we be about threats to privacy?
- How worried should we be about political manipulation—with those with money being in a better position to affect political outcomes, in ways that may be adverse to inclusivity?
- How worried should we be about new technologies contributing to undermining global trade order?

General perspective: double-edged sword

- New technologies open up multiple new opportunities (for instance, in finance, in e-government, in access to knowledge, in global connectivity)
- But there is a real risk that unless adequately regulated, the "dark side" will predominate—with more monopolization, more inequality of income, more inequality of voice, more invasion of privacy, more tax avoidance and evasion and less tax revenues
  - Original promise of Twitter: democratizing publishing
  - Reality: those with money can dominate through Bots

Large implications for developing countries

- New technologies may also make it more difficult for developing countries to catch up
  - On-shoring
  - Lack of trust undermining global trade regime and leading to “splinternet”
  - Problems of mental health, lack of focus that are showing up in advanced country may manifest themselves in developing countries, with less capacity to cope
  - Consequences of undermining democracy worse in countries with weaker institutions

General Theorem

- New technologies expand possibilities, but often lead to new market equilibrium with more inequality
  - And a political equilibrium which may make it difficult to address inequalities
- Historically, it took a long time before the advances of the first industrial revolution led to increases in standards of living for ordinary workers
- New technologies may be even more “biased” to advantage those in advanced countries
  - Facilitating on-shoring
  - The model of manufacturing export-led growth—the model used by successful countries in East Asia—has already been undermined, and will have to be replaced
  - Problems exacerbated by international agreements ensuring flow of patent-rents and undermining flow of tax revenues

Big concern

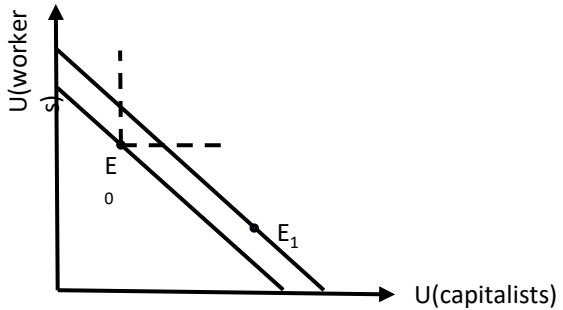
- **Growth of labor-replacing robots will lead to even more inequality and unemployment**
  - Machines have long been stronger than humans, better able to do many physical jobs
  - Computers are better at processing large amounts of information
  - AI means that robots may even be better at learning
  - Extent to which they can replace or outperform humans in immediate future uncertain—large variance in estimates
  - Alternative perspective: robots (AI) will be labor-augmenting (IA: intelligence-assisting), increasing productivities of large proportion of population

Based on A. Korinek and J. E. Stiglitz, "Artificial Intelligence, Worker-Replacing Technological Progress and Income Distribution," with Anton Korinek, NBER Working Paper No. 24174, December 2017, forthcoming in *Economics of Artificial Intelligence*, NBER/University of Chicago Press

Technological possibilities and utility

Consider arrival of a new technology that replaces workers.
Would their standard of living *necessarily* collapse?

1) If (i) the world is 1st-best and (ii) redistribution is *costless*,
the utility possibilities frontier (UPF) moves out (even if competitive equilibrium wage decreases):

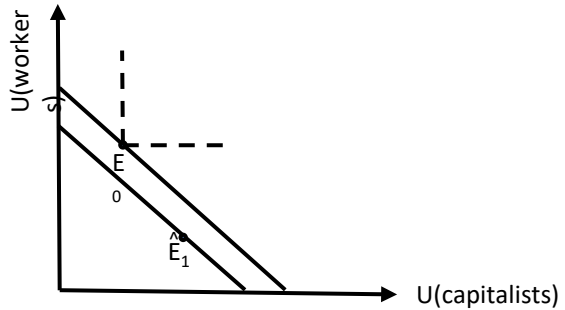


→ Redistribution can ensure that everyone is better off

Technological possibilities and utility

Consider arrival of a new technology that replaces workers.
Would their standard of living *necessarily* collapse?

2) If the world is *not 1st-best*, the utility possibilities frontier may move inwards (even with costless distribution):



→ Limiting technological change may again be desirable

Implications of "no 1st welfare theorem"

→Intervening in the innovation process may generate societal improvements

- Market produces too much "unskilled labor-replacing" innovation, too little environmental innovation
- Markets produces too much digital addiction and High Frequency Trading (HFT) innovation, too little "inclusion" innovation

- Important role for industrial and regulatory policies to shape the direction of innovation

Critical public policy question:

- Are there public policies that would ensure that everyone would be better off?
- Political economy: will these policies emerge out of our political processes?

We focus on the first question—but political economy is endogenous, can and will be affected by policies.

Essential insights

- Innovation typically gives rise to rents
- Rents can be taxed without creating distortions
- Proceeds of taxes can be used to ensure inclusive growth
- Broader institutional reforms include careful attention to regulatory, tax, and IPR regime
  - Implications for domestic competition, developmental resources, and potential for developing countries to “catch up”
  - Further implications for society (privacy, inequality)
  - Surveillance mechanisms can quickly morph from private to public, undermining democracy and basic rights
  - If the world splinters into competing trade areas, with different standards, developing countries may face difficult choices in choosing sides
    - Choice is a long-run choice, with multiple ramifications
    - Shouldn’t be excessively swayed by current terms (price, credit)

Important international dimension

- Analysis above was for a single economy
- In practice, the gainers are “superfirms” located in advanced countries, taking advantage of a technology with low MC and global IPR agreements
- Lowering globally of real wages has adverse terms of trade effects on developing countries
- Redistributions pictured above require cross-country redistributions—even less likely to occur than intra-country redistributions
- Increased income (rents) of gainers will be reflected in increased demand for some owners of scarce natural resources (“rents”)
  - Redistributive effects between developing countries—those with such assets and those without
  - Because of “natural resource curse” developmental benefits may be limited

Hidden trap

- Some of “bundled benefits” of new technologies (search engines, social media) may become apparent more quickly than the adverse terms of trade effects
  - But the globally scarce assets that give rise to AI and other new technologies are disproportionately based in advanced countries
  - And their business model is to extract rents from the ownership of those assets
  - Technologies associated with global market power
  - Inevitable that over the long term they will be using their market power to redistribute income from developing countries and emerging markets to themselves
  - *Unless the rules change*
    - Especially because it is unlikely, regardless of investments in education and technology made by emerging markets, that many (any) can close the knowledge gap to be effective competitors

IPR is a social construction

- Designed to promote innovation
- With strong distributive consequences
- With adverse effects on efficiency in the short run—inefficient use of knowledge
- Rules in TRIPS and post-TRIPS trade and investment agreements were designed to benefit particular industries in the advanced countries—not to promote global growth, let alone broader sense of global well-being
- Need to rethink the rules, including use of compulsory licenses
- Alternatively or in addition: use of taxation to prevent or mitigate adverse terms of trade effects

Taxation

- Important not to give digital commerce tax preference over non-digital
  - Could argue that it may be desirable to do reverse: presence of stores affects nature of community
- Important to tax digital multinationals
  - Important source of revenues
  - Virtually all of revenues are rents, so that optimal tax rates should be high
  - Should be viewed as part of broader program to combat tax avoidance/evasion by multinationals (global initiative)
- May be desirable to encourage digital national companies
  - Learning by doing arguments/learning spill-overs

Regulation

- Major change in perspective on regulation in last few years
  - Self-regulation will not work—hasn't worked in other areas, and hasn't been working in this arena
- Intersecting concerns over competition/privacy/security/addiction/manipulation (political, individual)
- Multiple attempts—all so far inadequate
  - GDPR, California
  - Restrictions on data aggregation (Germany)
  - Restrictions on storage/use of information
  - Informed consent on use of data
    - Giving individuals ownership rights over their data won't suffice

Competition policy

- Conventional restrictions on conflicts of interest/anti-competitive actions (Europe's actions against Google)
- Divestiture (Facebook, WhatsApp, Instagram)
- Use/sale of information
  - Including for discriminatory pricing

Trade

- Lack of trust in trade in new digital products
  - Difficulties of verification
- Relevant not just to 5G but to all products with certain classes of chips
  - Increasing fraction of all products
- Does China's lack of concern about privacy give it unfair trade advantage?
  - Or US's relative lack of concern compared to Europe?
- Increasing problem: rules of game for "fair trade" among countries with different values, regulatory regime
  - Not likely to be full regulatory harmonization—nor should there be
- But this will almost certainly have consequences for trade in other goods and services
  - Compounding tensions already created by Trump Administration

Inclusion

- Focused mostly on risks of new technologies and how they can be mitigated
- But new technologies also open up multiple new opportunities
  - Financial inclusion
    - But success has been more limited than at first hoped
    - Has failed to have broader benefits associated with other avenues of inclusion, such as micro-credit
  - Easier access to international markets/lower barriers to entry
    - Access to credit, knowledge still necessary
    - Greater barriers to entry in platforms
      - Which is where much of the profits are

inclusion

- Access to knowledge
  - But also bombarded by disinformation
  - Have to increase capacities to distinguish between the two and process knowledge
- Continuing worries about digital divide, both between and within countries

Concluding comments

- Time of rapid change in technology, with great uncertainty
- Upside potential of greater inclusion
- But matched with serious downside risks in multiple dimensions
- Responses will require oversight and regulation
  - We know many of the problems that are already unfolding
  - But there is great uncertainty about best regulatory responses
    - We know one thing: self-regulation will not work
- And will also require accompanying investments and policies to make sure that developing countries can fully avail themselves of the opportunities that these new technologies afford.