
Strange New World: Globalization, AI and Development

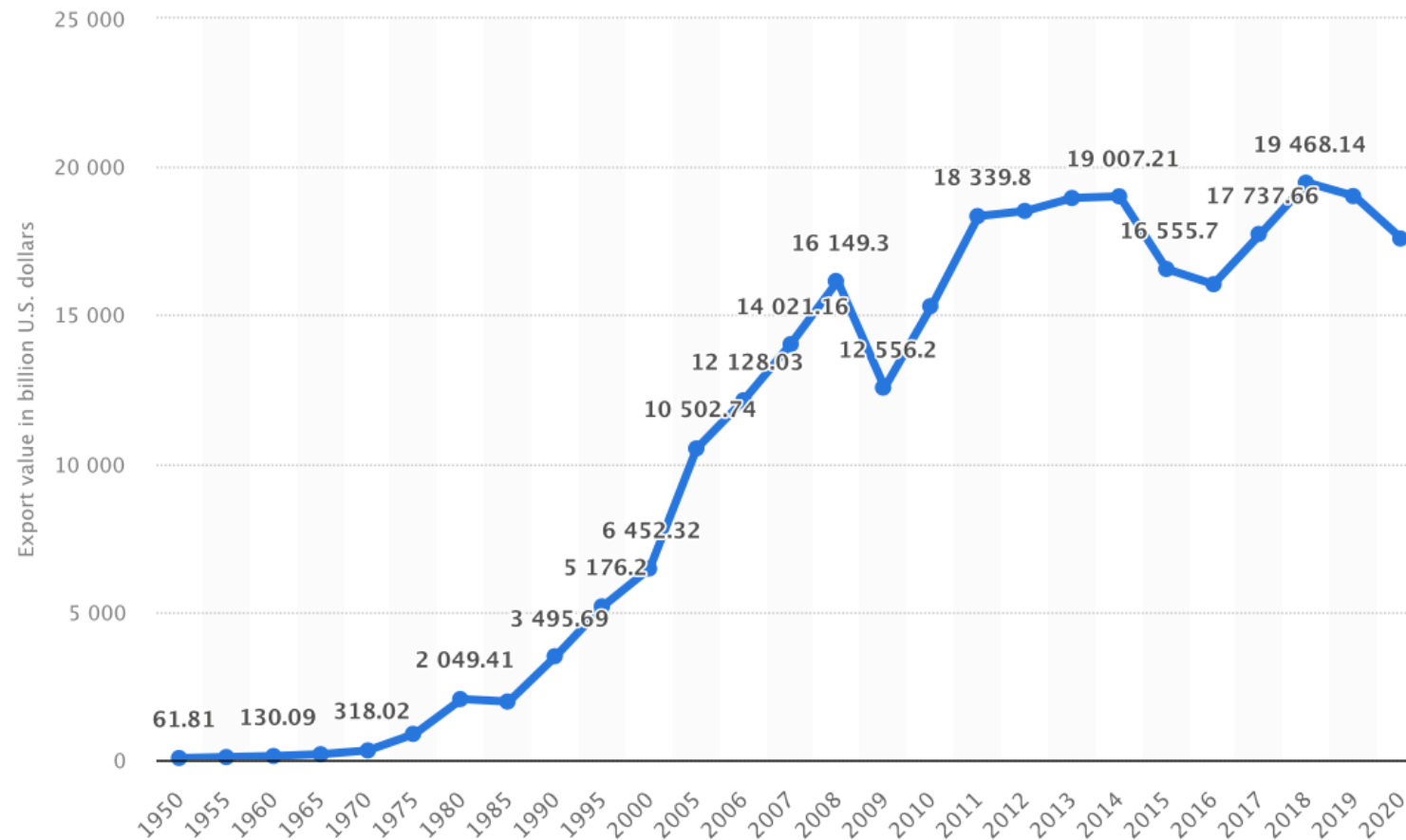
Alexander Copestake
University of Oxford

23rd August 2021

Readings

- Rodrik (2016): Premature deindustrialization
- Bloom et al. (2019): The impact of Chinese trade on US employment
- Baldwin & Forslid (2020): Globotics and development
- Copestake (2021): Inputs, networks and quality upgrading
- Copestake, Pople & Stapleton (2021): AI, firms and wages

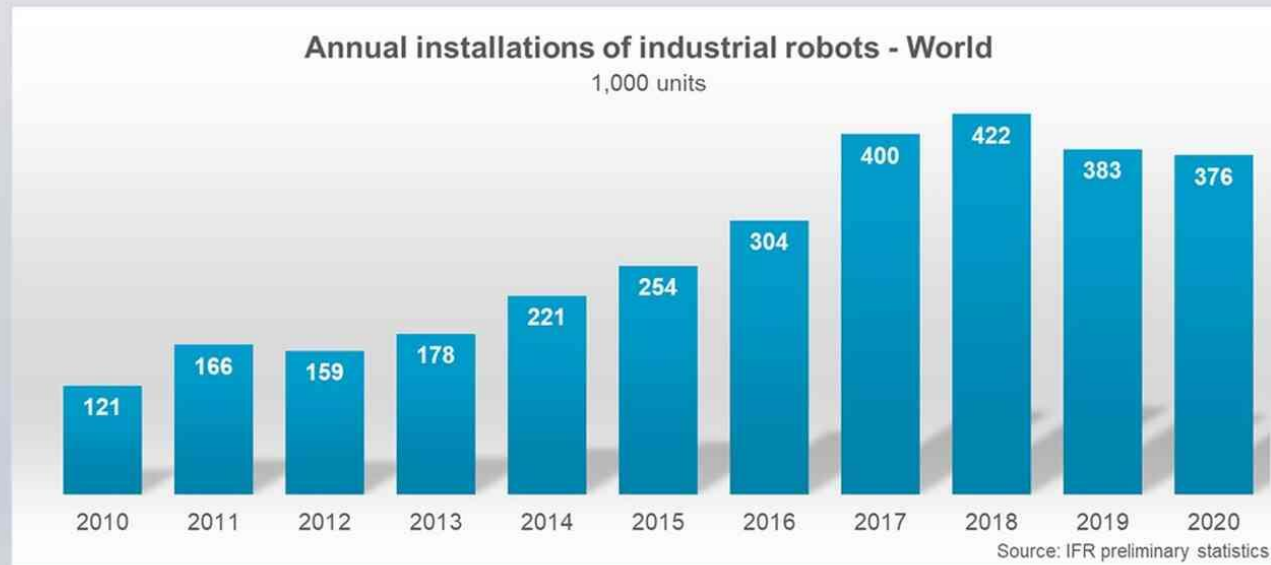
What are we talking about?



Source: <https://www.statista.com/statistics/264682/worldwide-export-volume-in-the-trade-since-1950/>

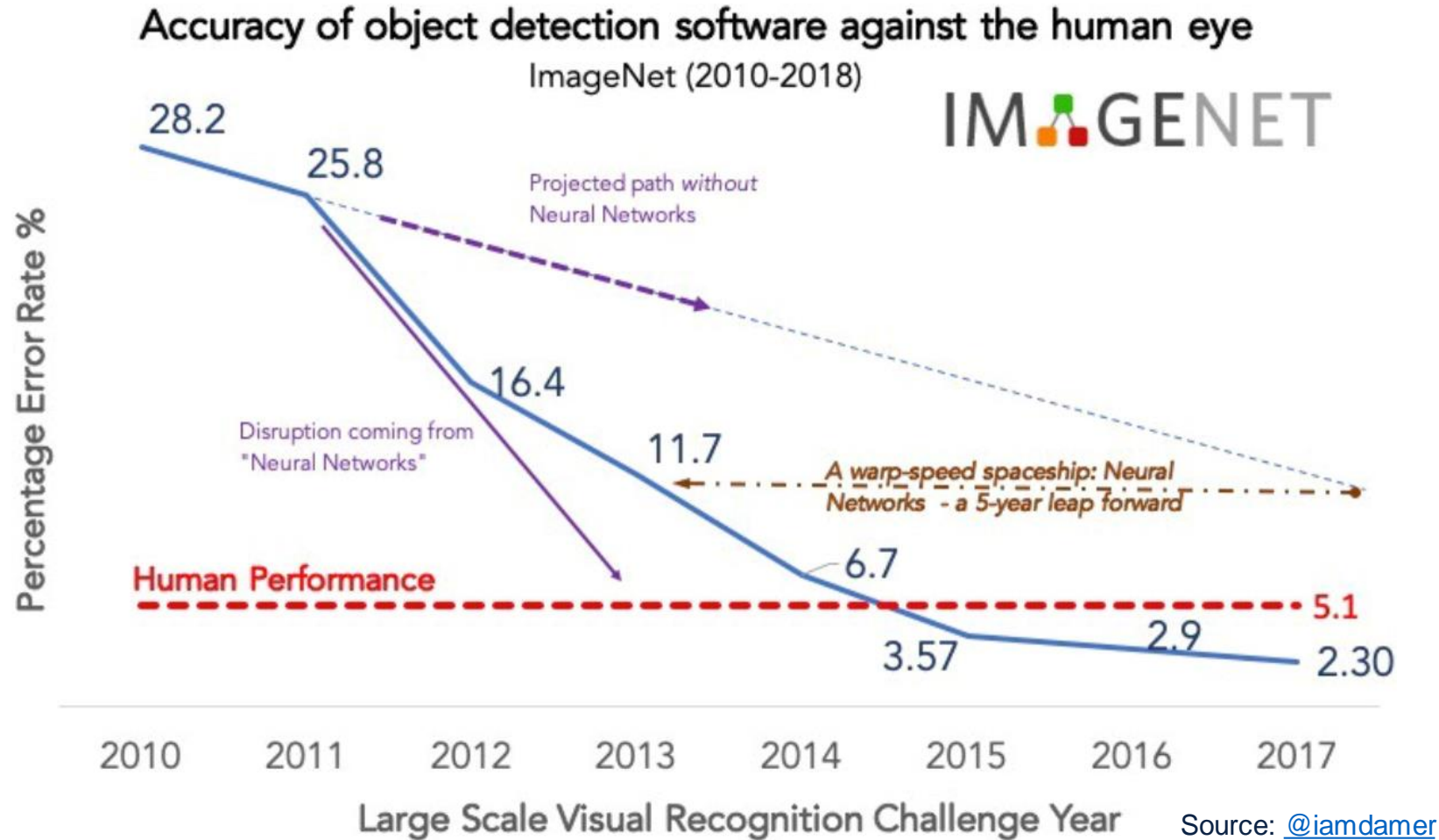
What are we talking about?

Global robot installations – preliminary data for 2020



July 2021

What are we talking about?



Today's discussion

1. Straw men: one academic over-simplification and two media myths
 1. Development = Agriculture → Manufacturing → Services
 2. Globalization 'over there' destroys jobs in my country
 3. Robots/AI will reduce the number of jobs, particularly in developing countries
2. What's actually happening?
 - Key themes: gains from trade, creative destruction, transitions vs. equilibrium.

1. Development is about Agriculture → Manufacturing → Services

Economic Development with Unlimited Supplies of Labour

W. Arthur Lewis, 1954:

Unlimited Supplies of Labour

In the first place, an unlimited supply of labour may be said to exist in those countries where population is so large relatively to capital and natural resources, that there are large sectors of the economy where the marginal productivity of labour is negligible, zero, or even negative. Several writers

circumstances). The phenomenon is not, however, by any means confined to the countryside. Another large sector to which it applies is the whole range of casual jobs—the workers on the docks, the young men who rush forward asking to carry your bag as you appear, the jobbing gardener, and the like. These occupations usually have a multiple of the number they need, each of them earning very small sums from occasional employment; frequently their number could be halved without reducing output in this sector. Petty retail trading

So: take some of the surplus labour, put it into a more productive use (manufacturing), and you have growth!

1. Development is about Agriculture → Manufacturing → Services

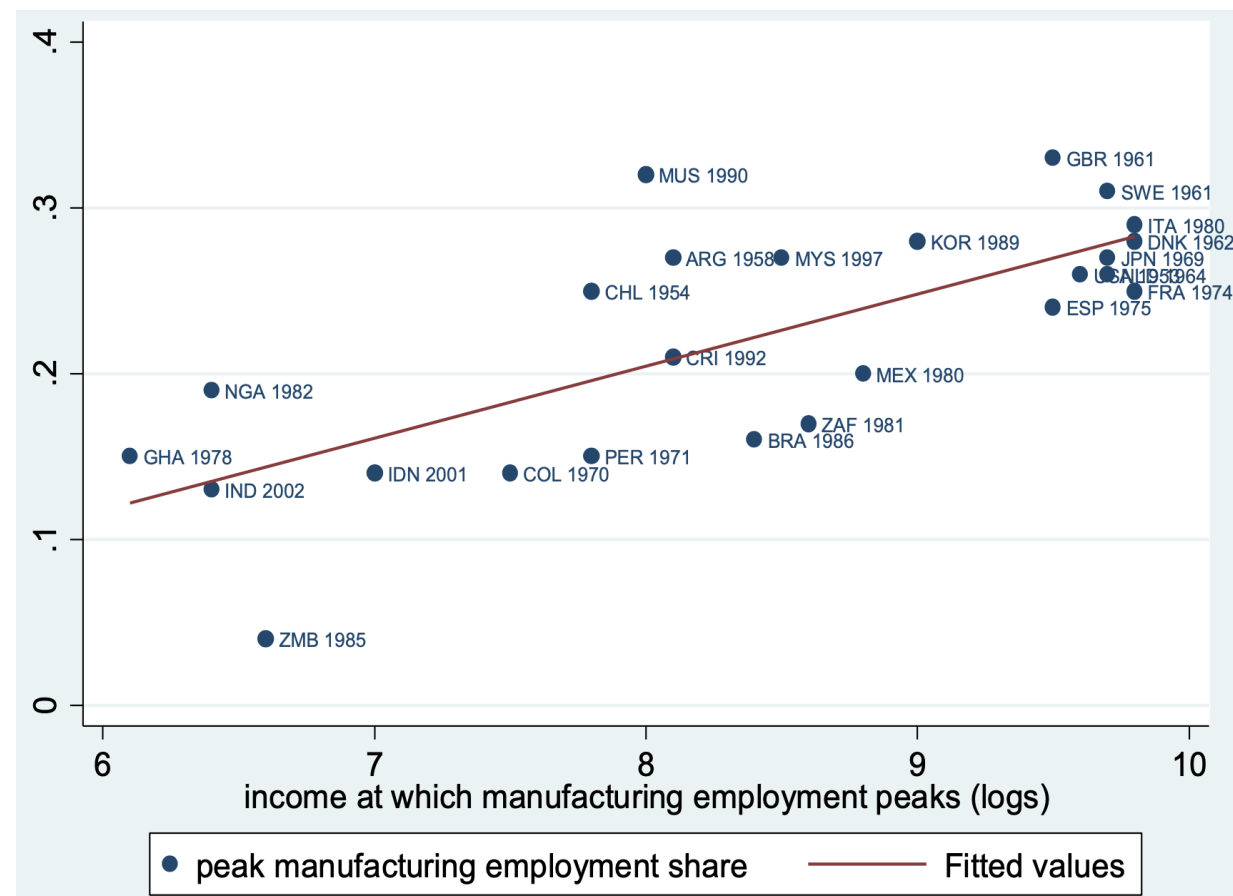


Then: primary source of **value-creation shifts from capital to knowledge** (e.g. financing, strategy, design, technology, etc) → the services transformation, ‘capitalism without the capital’ (Haskel & Westlake 2018)

1. Development is about Agriculture → Manufacturing → Services

BUT #1: We are seeing 'premature de-industrialization' (Rodrik 2016)

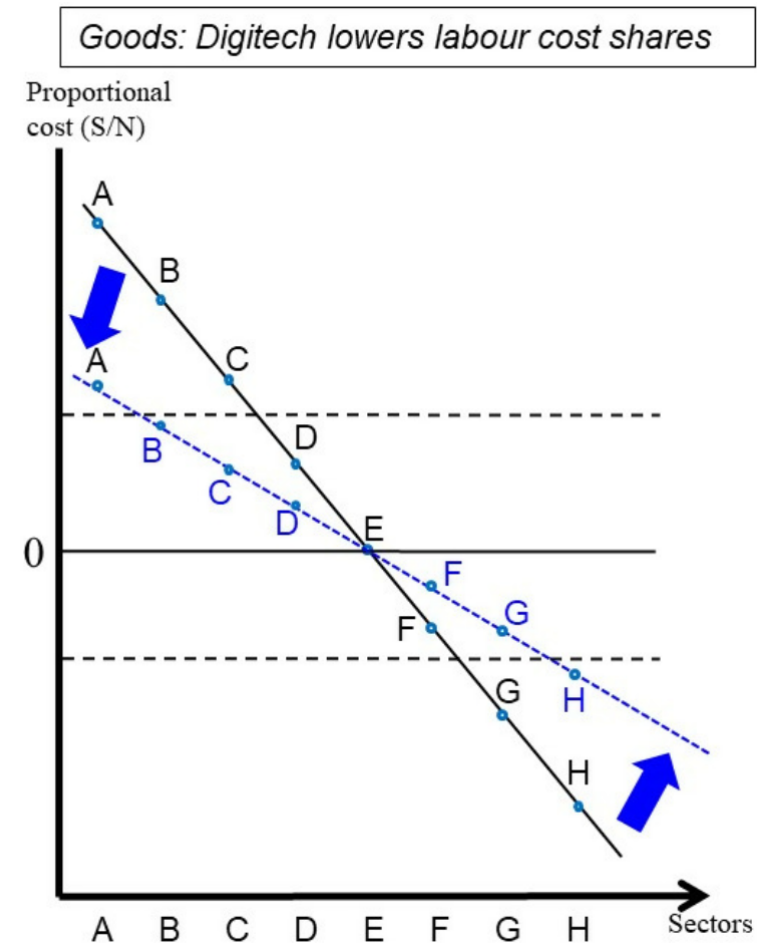
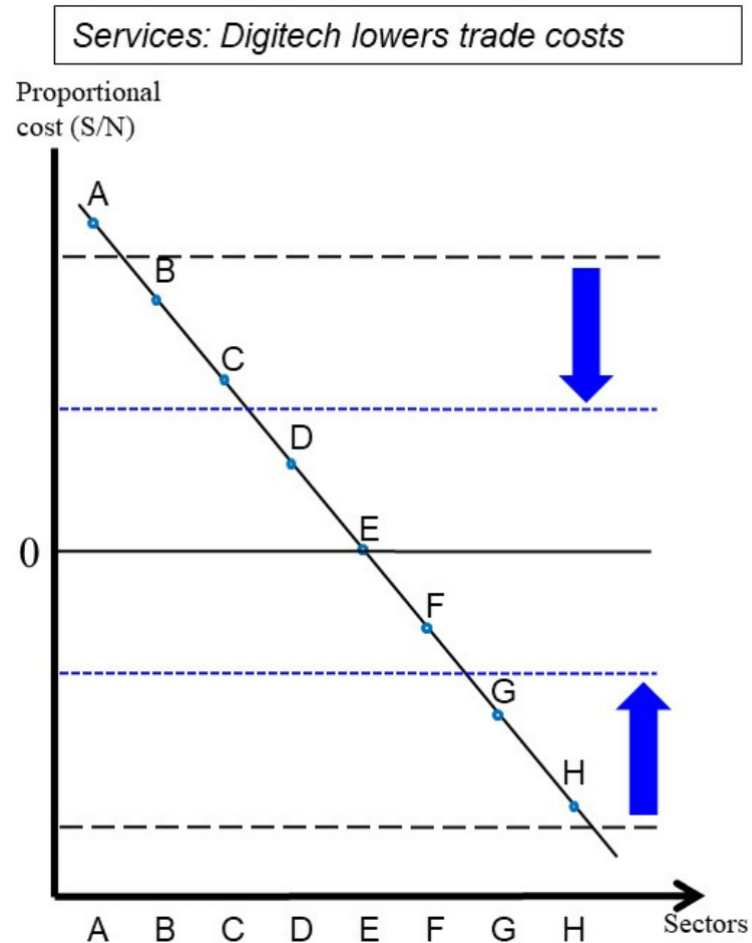
- 'Industrialization peaked in Western European countries such as Britain, Sweden, and Italy at income levels of around \$14,000 (in 1990 dollars). India and many sub-Saharan African countries appear to have reached their peak manufacturing employment shares at income levels of \$700.'



1. Development is about Agriculture → Manufacturing → Services

BUT #2: 'Globotics' could encourage service-led development

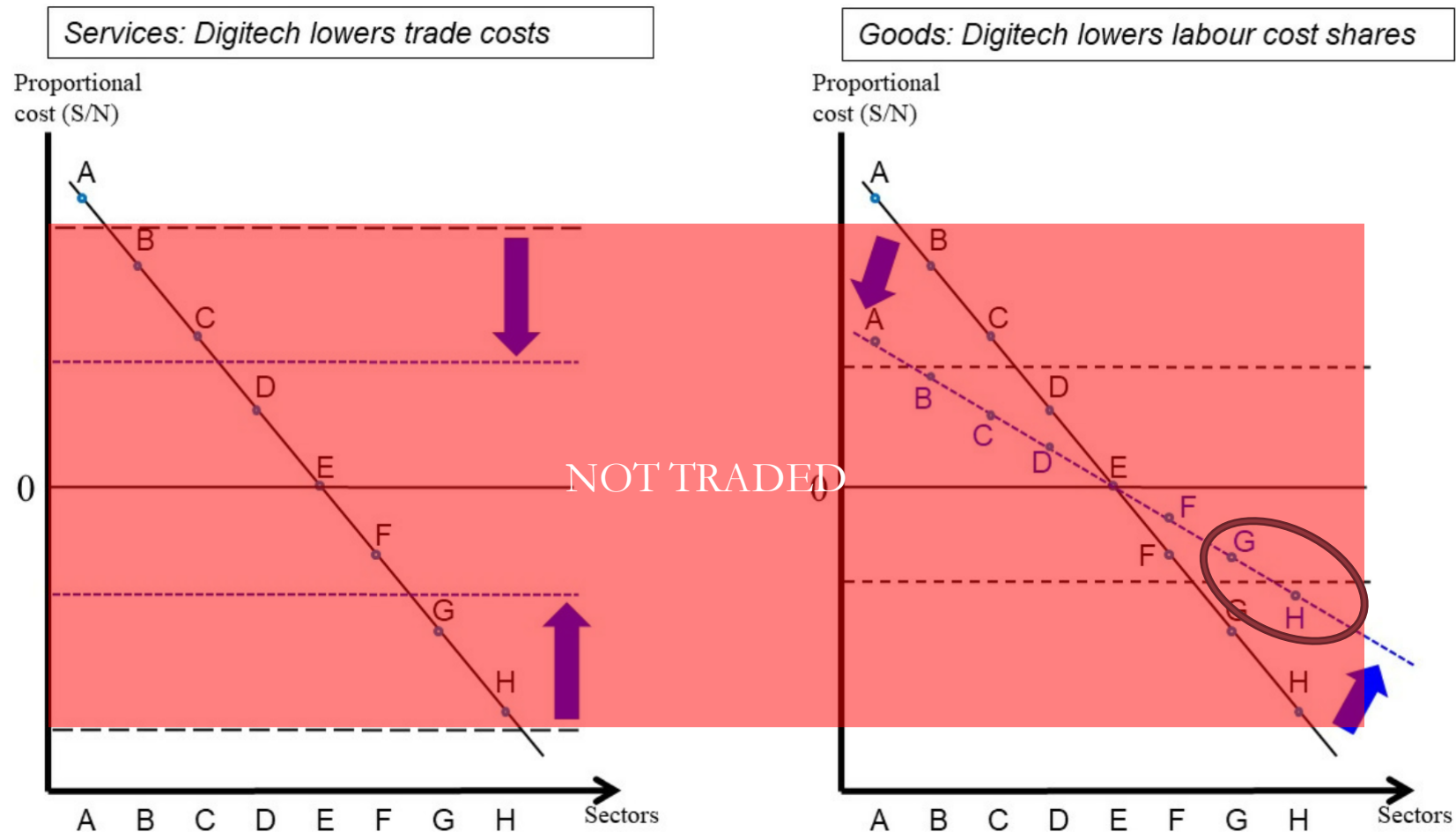
(Baldwin & Forslid 2020)



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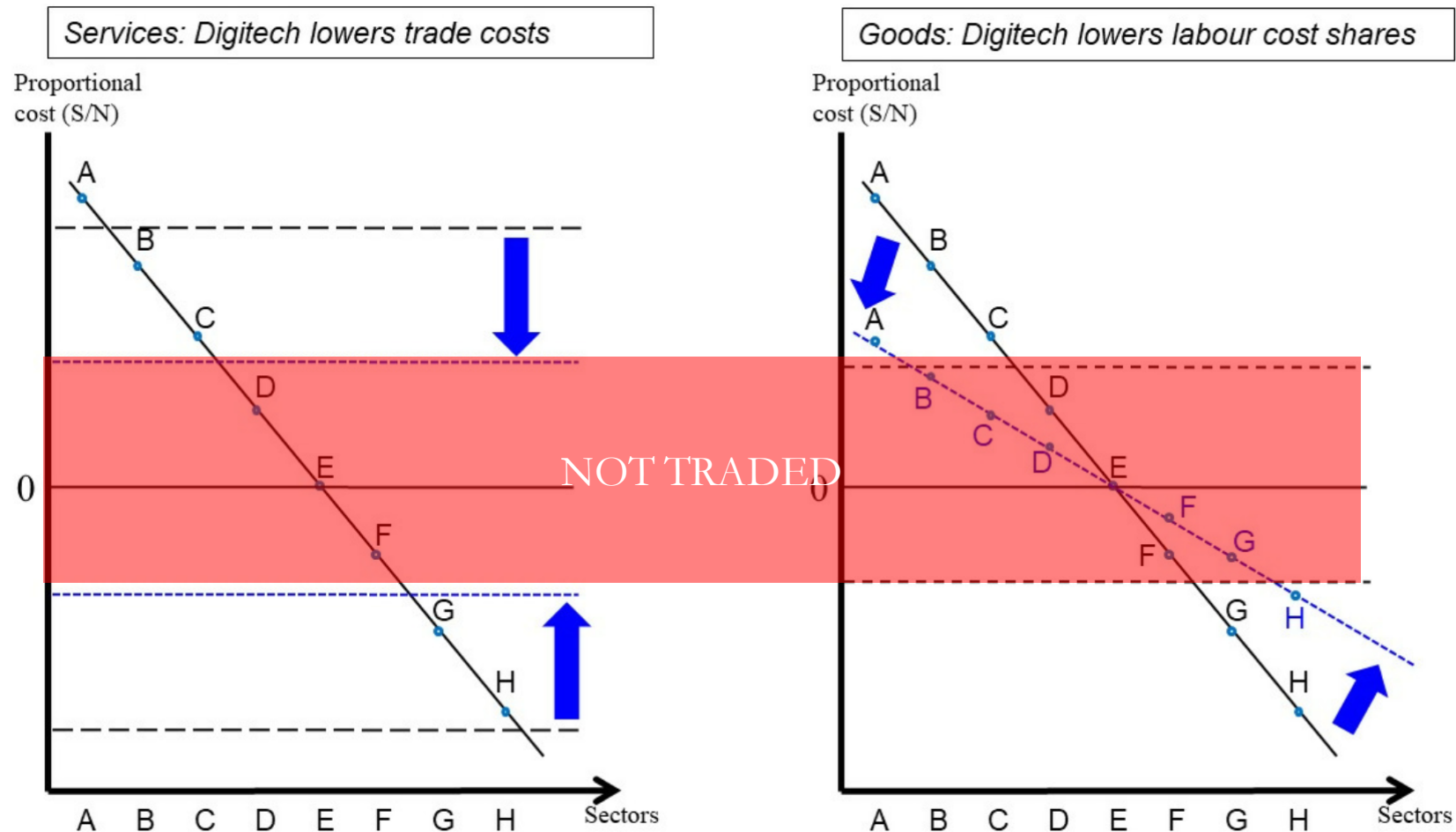
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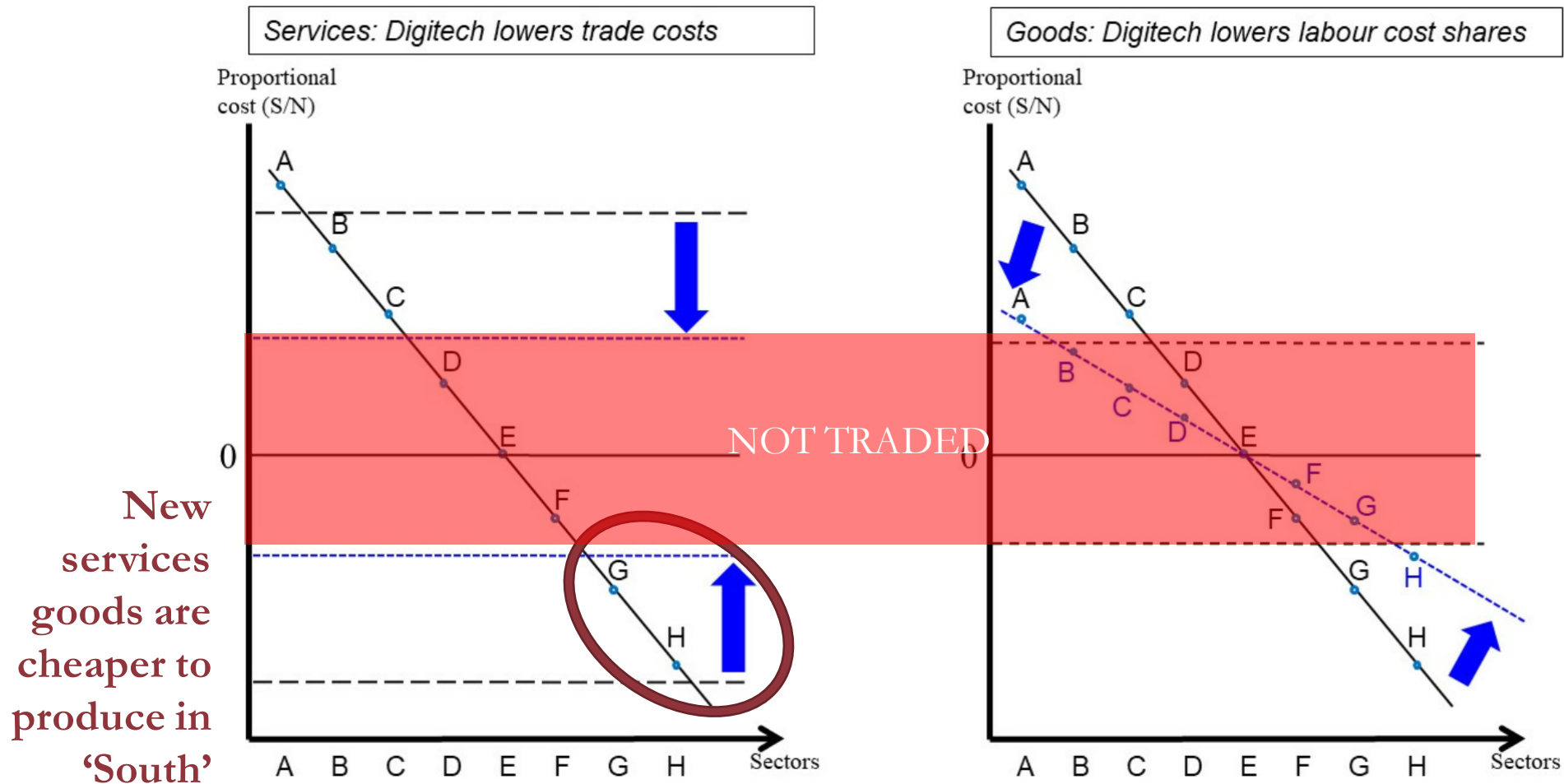
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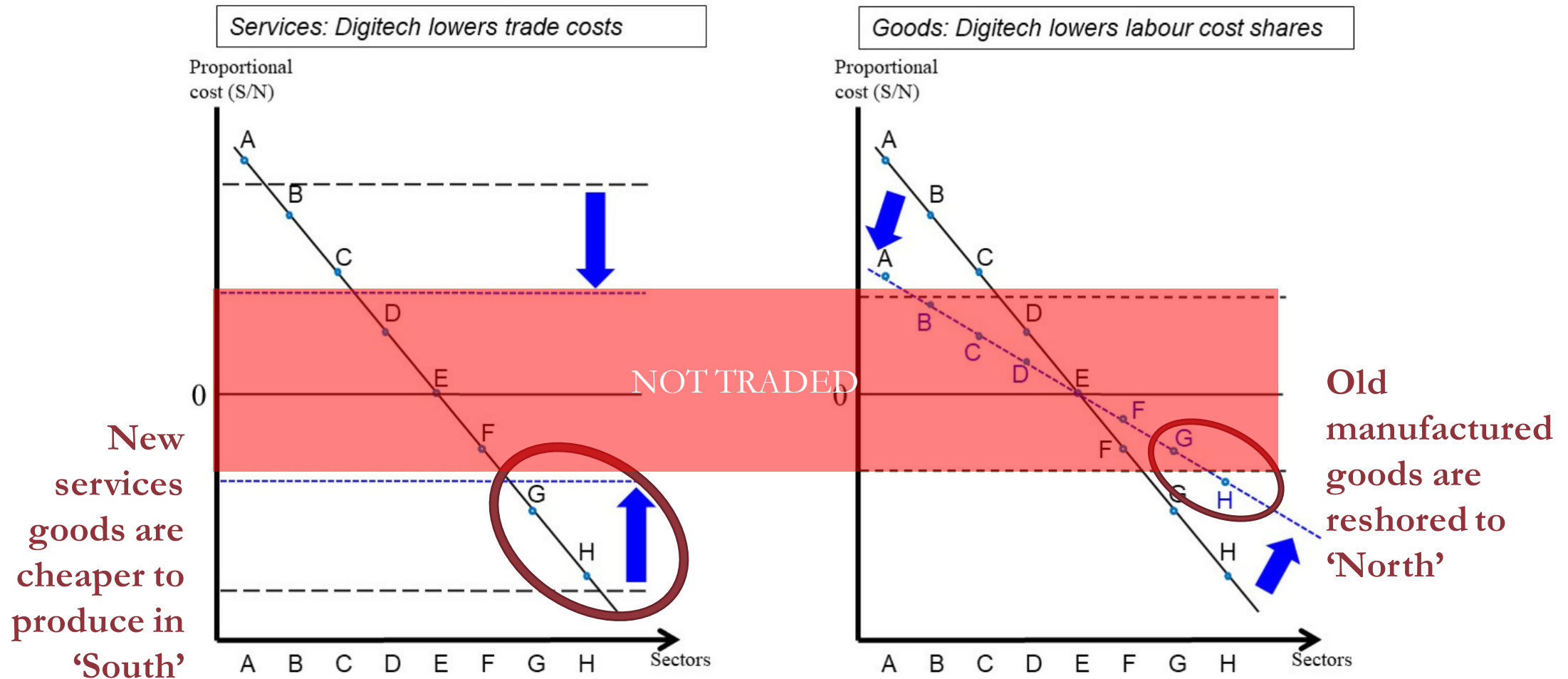
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2. Globalization ‘over there’ destroys jobs in my country



“China has used the imprimatur of WTO membership to become a dominant player in international trade ... it seems clear that the United States erred in supporting China’s entry into the WTO on terms that have proven to be ineffective in securing China’s embrace of an open, market-oriented trade regime.”



2. Globalization ‘over there’ destroys jobs in my country

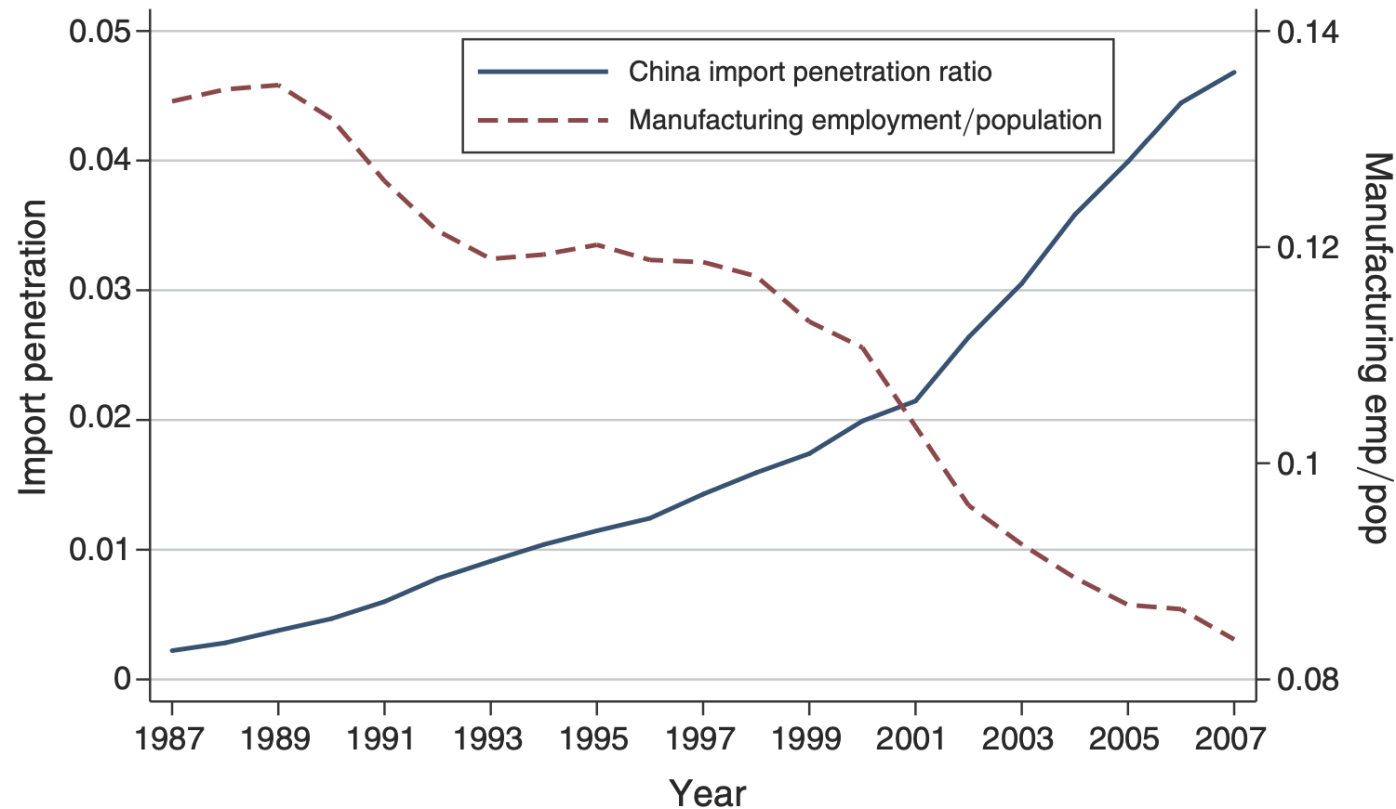


FIGURE 1. IMPORT PENETRATION RATIO FOR US IMPORTS FROM CHINA (*left scale*), AND SHARE OF US WORKING-AGE POPULATION EMPLOYED IN MANUFACTURING (*right scale*)

Source:
Autor, Dorn &
Hanson 2013

2. Globalization ‘over there’ destroys jobs in my country BUT #1: Maybe it just moves the jobs around

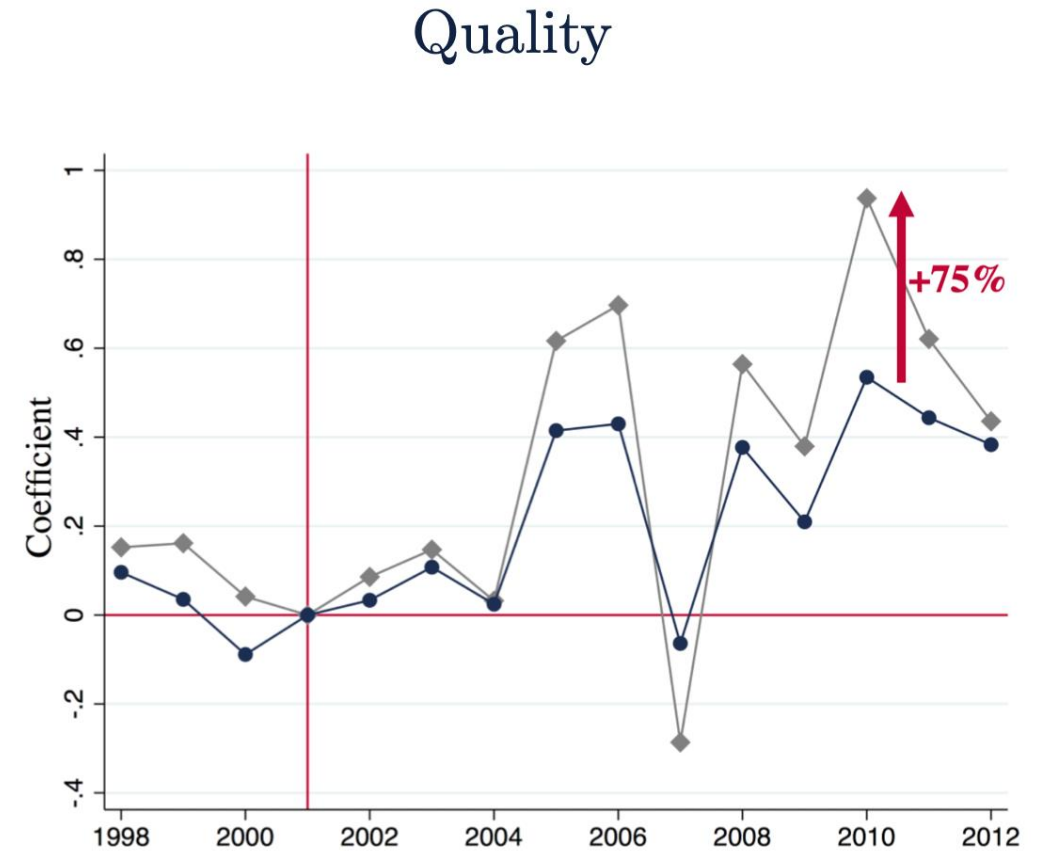
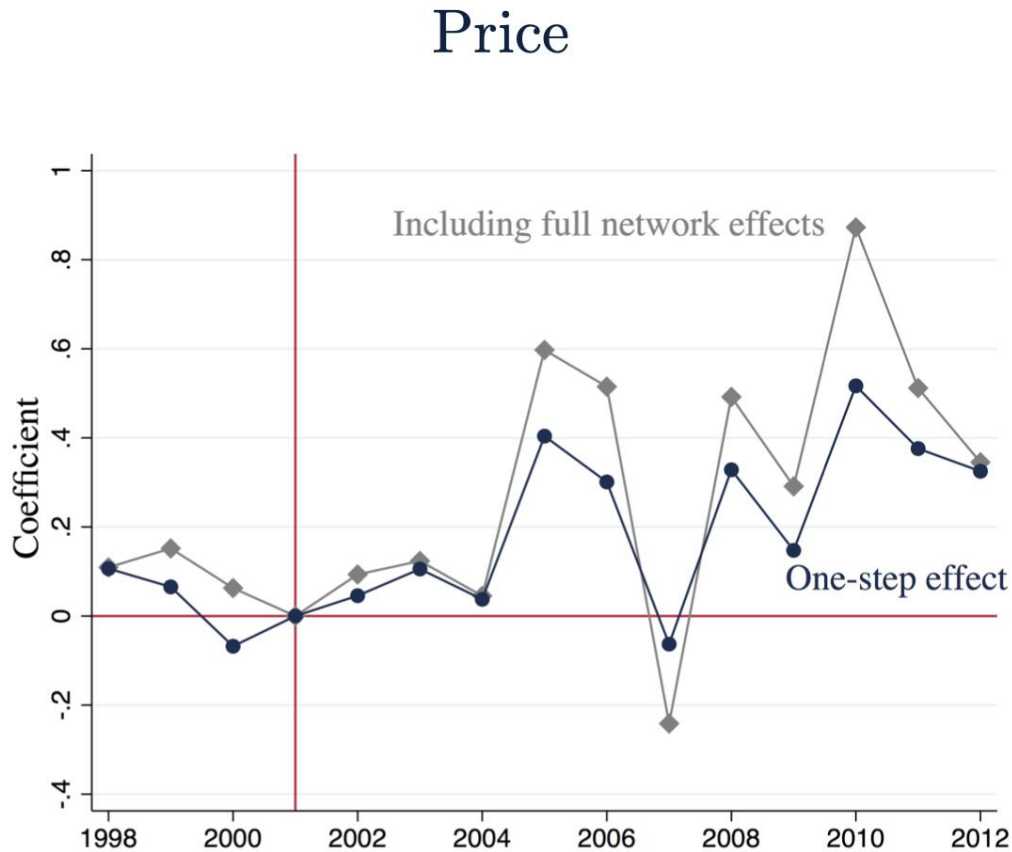
The Impact of Chinese Trade on U.S. Employment:

The Good, The Bad, and The Debatable*

Source:
Bloom, Handley,
Kurman, Luck
2019

Using confidential US Census micro data we find three results. First, there is no evidence that Chinese import competition generated net job losses. In low-human capital areas (for example, much of the South and mid-West) manufacturing saw large job losses, driven by plant shrinkage and closure. But in high-human capital areas (for example, much of the West Coast or New England) manufacturing job losses were limited, with much larger gains in service employment, particularly in research, management and wholesale. As such, Chinese competition *reallocated* employment from manufacturing to services, and from the US heartland to the coasts. Second, looking at the firm-level data we find almost all of the manufacturing job losses are in large, multinational firms that are simultaneously expanding in services. Hence, these large firms appear to have offshored manufacturing employment while creating US service sector jobs. Indeed, we show large publicly traded US firms do not seem to have been negatively impacted by the rise in Chinese imports. Finally, the impact of Chinese imports disappears after 2007 – we find strong employment impacts from 2000 to 2007, but nothing since from 2008 to 2015

2. Globalization ‘over there’ destroys jobs in my country BUT #2: Firms can join new global production networks



Source: Copestake 2021

3. Robots/AI will destroy jobs, esp. in developing countries

THE FUTURE OF EMPLOYMENT: HOW SUSCEPTIBLE ARE JOBS TO COMPUTERISATION?*

Carl Benedikt Frey[†] and Michael A. Osborne[‡]

September 17, 2013

We examine how susceptible jobs are to computerisation. To assess this, we begin by implementing a novel methodology to estimate the probability of computerisation for 702 detailed occupations, using a Gaussian process classifier. Based on these estimates, we examine expected impacts of future computerisation on US labour market outcomes, with the primary objective of analysing the number of jobs at risk and the relationship between an occupation's probability of computerisation, wages and educational attainment. According to our estimates, about 47 percent of total US employment is at risk. We further provide evidence that wages and educational attainment exhibit a strong negative relationship with an occupation's probability of computerisation.

3. Robots/AI will destroy jobs, esp. in developing countries

AI, firms and wages: Evidence from India*

Alexander Copestake¹, Ashley Pople¹, and Katherine Stapleton²

¹University of Oxford

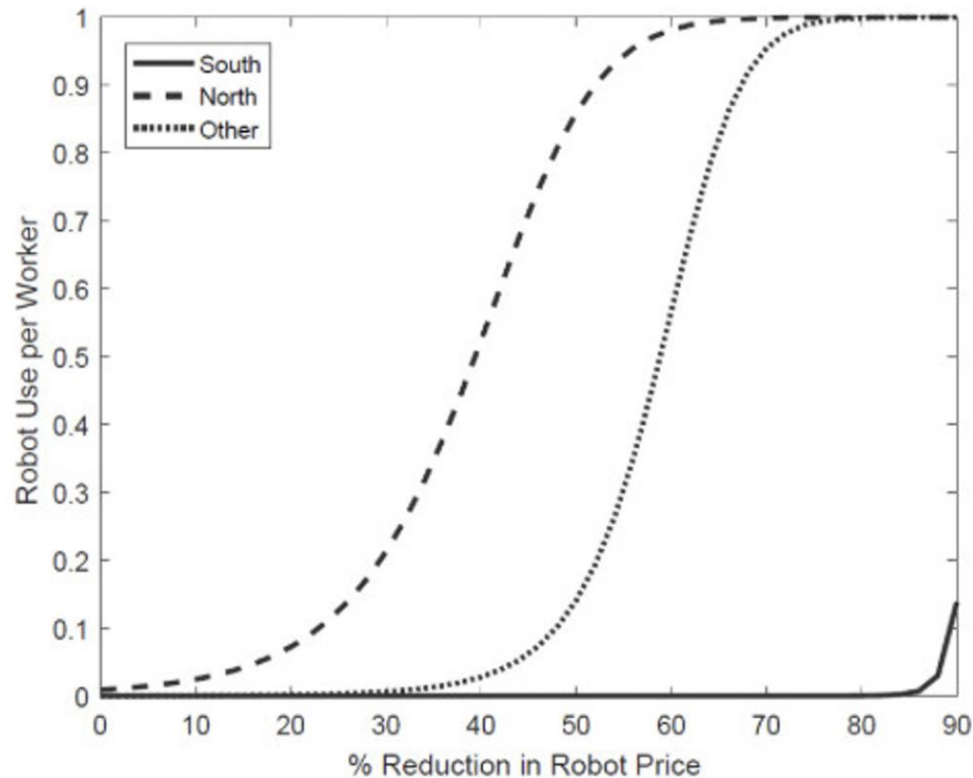
²World Bank

We examine the impact of artificial intelligence on hiring and wages in the service sector using a novel dataset of 15 million vacancy posts from India's largest jobs website. We first document a rapid rise in demand for AI skills since 2016, particularly in the IT, finance and professional services industries. Vacancies demanding AI skills list substantially higher wages, but require more education and are highly concentrated in the largest firms and a small number of high-tech clusters. Exploiting plausibly exogenous variation in exposure to advances in AI technologies, we then examine the impacts of establishment demand for AI skills, as a proxy for AI adoption. We find that growth in AI demand has a direct negative impact on the growth of non-AI and total job posts by incumbent firms, and reduces the growth of wage offers across the distribution.

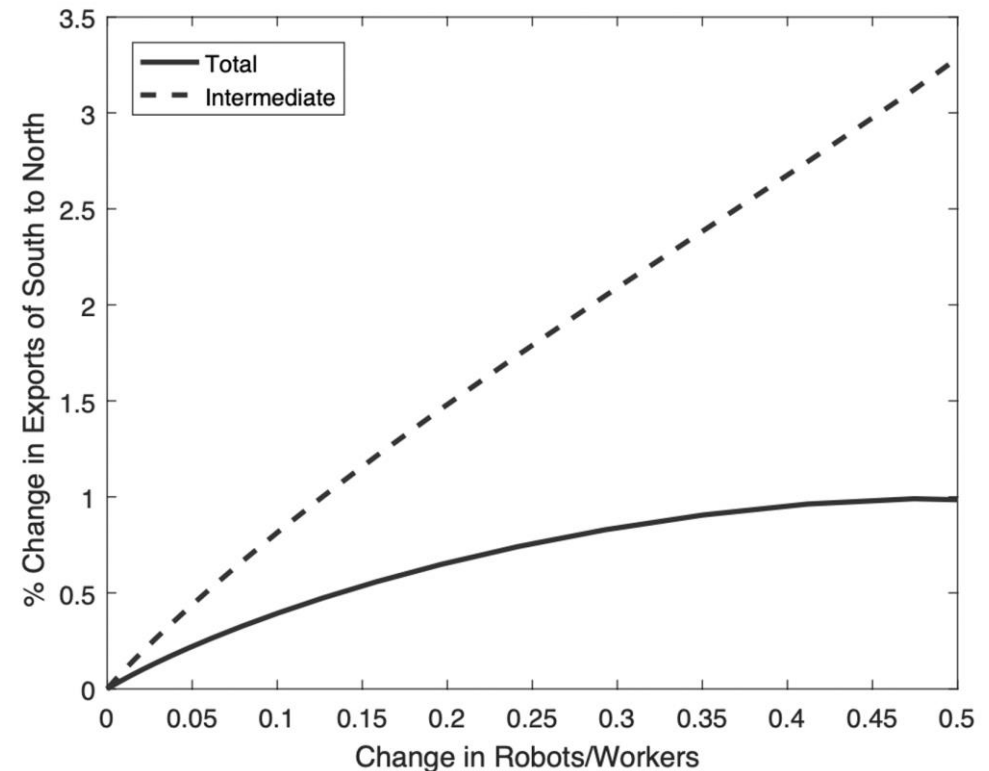
Keywords: artificial intelligence, labour markets, wages, development
JEL Classification Codes: J23, O33

3. Robots/AI will destroy jobs, esp. in developing countries BUT #1: Robot efficiency → higher demand for inputs

Panel A: Robot use



Panel F: Exports from South to North



Source: Artuc Bastos Copestake & Rijkers, 2021

3. Robots/AI will destroy jobs, esp. in developing countries **BUT #2: New technologies create new tasks & jobs as well**



The Race between Man and Machine: Implications of Technology for Growth, Factor Shares, and Employment[†]

By DARON ACEMOGLU AND PASCUAL RESTREPO*



<https://businessconnectindia.in/most-popular-tiktok-stars-in-world/>

3. Robots/ AI will destroy jobs, esp. in developing countries

... So what will the net effect be?

AI and Jobs: Evidence from Online Vacancies
Daron Acemoglu, David Autor, Jonathon Hazell, and Pascual Restrepo
NBER Working Paper No. 28257
December 2020, Revised January 2021
JEL No. J23,O33

ABSTRACT

We study the impact of AI on labor markets, using establishment level data on vacancies with detailed occupational information comprising the near-universe of online vacancies in the US from 2010 onwards. We classify establishments as “AI exposed” when their workers engage in tasks that are compatible with current AI capabilities. We document rapid growth in AI related vacancies over 2010-2018 that is not limited to the Professional and Business Services and Information Technology sectors and is significantly greater in AI-exposed establishments. AI-exposed establishments are differentially eliminating vacancy postings that list a range of previously-posted skills while simultaneously posting skill requirements that were not previously listed. Establishment-level estimates suggest that AI-exposed establishments are reducing hiring in non-AI positions even as they expand AI hiring. However, we find no discernible impact of AI exposure on employment or wages at the occupation or industry level, implying that AI is currently substituting for humans in a subset of tasks but it is not yet having detectable aggregate labor market consequences.

- Ultimately, it’s too early to tell what the net effect of AI will be on jobs
- *My guess:* human wants are almost infinite, so we’ll find new things that we want done. We always have before. The biggest problem will be that these opportunities don’t match the skills of those who lose out.

So what have we learned?

1. The straw men:
 1. Development = Agriculture → Manufacturing → Services
 - Not any more. Service-led development paths are likely to be increasingly important.
 2. Globalization 'over there' destroys jobs in my country
 - Not necessarily – can boost services employment or supply better inputs.
 3. Robots/AI will reduce the number of jobs, particularly in developing countries
 - Not necessarily. Likely to create many new jobs.
2. The challenge: many of these new opportunities are in new regions and require new skills. So people may need to move around + re-train to take advantage of them.

Takeaways for you:

1. Interested in academia? Lots of work to be done in these areas
2. Working in government? Old growth policies may no longer work
3. Thinking about careers? Be prepared to move, switch + re-train

Any questions?