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Issues and opinions

Addressing the causes of mass migrations: Leapfrog solutions for mutual prosperity growth between regions of emigration and regions of immigration



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ABSTRACT

Mass migrations can be perceived to be intractable crises comprising maritime rescues, security reinforcements, violent protests, and other high socio-economic costs. Yet, intractable real-world problems can be dealt with by changing their representations and seeing new associations. In this paper, it is argued that addressing the causes of mass migrations can be represented as opportunities for mutual prosperity growth rather than as intractable socio-economic crises. In addition, new associations for addressing the causes of mass migration are set-out in terms of leapfrog solutions. These are solutions that enable people to skip centralized inflexible dirty industrialization and go straight to local flexible clean solutions. Some leapfrog solutions are off-grid for local sanitation management and local energy generation. Other leapfrog solutions are mobile, such as Web-based education platforms, moveable factories, and text-based banking. Leapfrog solutions disintermediate, democratize and distribute opportunities. In other words, leapfrog solutions make the means to create prosperity directly accessible to all kinds of people in all kinds of places. Four inter-related leapfrog strategies are proposed for mutual prosperity growth between regions of emigration and regions of immigration as follows: highly distributed infrastructure; presumption with leapfrog solutions; mutual prosperity hubs; and access to latent resources. Overall, it is argued mass migrations can appear to be intractable crises due to out-of-date preconceptions about how to establish prosperity.

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1. Introduction

Across the world, throughout time, people have migrated from regions where they see no hope of prosperity to regions where they believe they can find prosperity. In 2016, migrants risk the dangers of the Indian Ocean to Australia, the Sahara Desert to Europe, El Tren de la Muerte to the USA; and other perilous routes to where they believe they can find prosperity. Recent responses to mass migration have included maritime rescues, humanitarian goodwill, border reinforcements, and migrant allocation disputes.

Meanwhile, addressing the causes of mass migration through leapfrog solutions for mutual prosperity growth has not been proposed. Here, mutual prosperity growth refers to prosperity growth that is created and shared on the basis of productive contributions from both regions of emigration and regions of immigration. Leapfrog solutions may be ignored because of

preconceptions that prosperity is always best facilitated by industrial centralized provision of resources to meet mass demand in stable conditions. For example, central banks providing fiat currencies; central governments providing school curricula; central energy generation providing electricity; centralized manufacturing of mass produced goods, etc. In particular, industrialization is put forward as being the way to bring increased prosperity to regions of emigration [1].

Industrialization can have prerequisites that many regions of emigration do not have, including homogeneous population, capital wealth, and decades of stability. Moreover, industrialization can involve centralization of resources, including centralization of fixed infrastructures in a few over populated cities. This can lead to large geographical areas being left without clean water, reliable energy, adequate sanitation, and other infrastructure needed for prosperity [2].

Furthermore, preconceptions that prosperity is always best facilitated by centralization are out-of-date. This is because there

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are an ever increasing number of leapfrog solutions that enable prosperity to be highly distributed. These include digital alternatives to centralized control of fiat currencies; mobile devices bringing online and offline education; mini-grids generating energy from solar, wind, etc.; moveable factories for local production of local goods by local people, etc. Leapfrog solutions enable people to skip centralized inflexible dirty industrialization and go straight to local flexible clean solutions. Some leapfrog solutions are off-grid for local sanitation management and local energy generation. Other leapfrog solutions are mobile, such as Web-based education platforms, moveable factories, and text-based banking. Leapfrog solutions disintermediate, democratize and distribute opportunities. In other words, leapfrog solutions make the means to create prosperity directly accessible to all kinds of people in all kinds of places [3].

Importantly, leapfrog solutions can overcome the centuries old trade-off between the distribution and the efficiency. Within subsistence economies, for example, production is distributed but not efficient. By contrast, within industrial economies, production is efficient but centralized [4]. Accordingly in this paper, leapfrog solutions, which can be both highly distributed and highly efficient, are proposed for enabling mutual prosperity growth between regions of emigration and regions of immigration.

2. Leapfrog solutions

2.1. Widespread distribution of prosperity infrastructures

Centralization in regions of emigration leaves the majority areas without infrastructure for clean water, reliable energy, adequate sanitation, rapid communication, and other requirements for prosperity. This pattern of polarization, between those who have infrastructure and those who do not have infrastructure, is being reinforced by gated smart eco cities. These are new cities being built around, for example, Accra, Kampala, Kinshasa, Lagos, and Nairobi, which provide high specification accommodation and amenities, together with constant security [5].

In the short-term, such cities can provide havens for those few with sufficient financial wealth to be able to move out of overcrowded old cities. In the medium-term, gated smart eco cities can function as islands of infrastructure, which are surrounded by informal settlements without any infrastructure and old cities with malfunctioning infrastructure. However, in the longer term, the concentration of infrastructure at a few locations can lead to rural exodus that overflows conurbations into migrant tides across borders and continents. Moreover, the abandonment of large areas of countries' land can leave countries vulnerable to incursions from resource hungry neighbors, which in turn can lead to mass migrations [6].

Focus on centralization is based on perceived advantages of centralized intermediated economies of scale, which involve separation of production and consumption. However, this is not a recent paradigm for providing supply and satisfying demand. Rather, centralized intermediated economies of scale became the dominant paradigm for production and consumption two hundred and fifty years ago in Europe during the Industrial Revolution. Over time, the limitations of this paradigm have become increasingly apparent. For example, need for more diversity of offerings has led to greater emphasis on economies of scope. These are derived from multiple combinations of components into many different offerings: rather than from mass production of a few standard products. In addition, disintermediation has reduced the number of intermediaries between producers and consumers; local supply has increased to address the limitations of centralization; and division between production and consumption has been reduced into

prosumption by leapfrog solutions for increased self-service, do-it-yourself, etc. Hence, highly distributed prosumption is a much more modern option than continued centralized industrialization [7].

Moreover, as summarized in Fig. 1, compared to centralized industrialization, transition from distributed subsistence to highly distributed prosumption can greatly increase the geographical area in which people can create their own prosperity.

Increasing the geographical area in which people can create their own prosperity is essential to decreasing mass migrations. This is because the smaller the global area in which people can create their own prosperity, the more likely it is that mass migrations will take place: first, within borders, and then over borders and across continents. In particular, centralized industrialization can leave huge areas to suffer environmental degradation, economic stagnation and social decay, as lack of infrastructure leaves local populations with too few resources to create their own prosperity while trying to adapt to exogenous forces such as climate change. Thus, as illustrated in Fig. 2, centralized industrialization can cause vast expanses of the world's surface to become less resilient and more fragile, as so called smart eco cities glow with light while the lands beyond them are engulfed by darkness [8–15].

Causation can be summarized with the DPSIR framework [16]. In particular, industrialization is a Driving Force (D), resultant infrastructure centralization is a Pressure (P), consequent polarization of prosperity opportunities is a State (S), and mass migration is a subsequent Impact (I). Hence, more industrialization and centralization are not Responses (R) which can reduce mass migration. Rather, more industrialization and centralization can drive more mass migration.

2.2. Leapfrog prosumption of multi-adaptive highly distributed infrastructures

By contrast, leapfrog solutions can enable highly distributed infrastructures, which can be multi-adaptive in order to function well in the face of significant unpredictable challenges brought to populations by, for example, climate change and market forces. Multi-adaptive infrastructures can encompass ecological, built, and electromechanical elements. Ecological elements can include green walls, shelter belts, windbreaks, etc.; built elements can encompass drainage, roadways, housing, etc.; electromechanical elements can include turbines, motors, pumps, etc. To maximize engagement and employment, highly distributed infrastructures, and any subsequent adaptations of their multiple elements, can be achieved through production involving local populations.

When people make what they use, they are involved in prosumption. This is part of everyday life in subsistence economies. However, subsistence prosumption is inefficient. By contrast, prosumption that involves leapfrog solutions can be highly efficient and highly distributed. Moreover, leapfrog solutions make production work clean and light. Hence, it can be carried out by men and women, young and old. Thus, opportunity and employment can be highly distributed demographically as well as geographically.

Importantly, low cost leapfrog technologies can be introduced very quickly to provide people with the means, of creating necessary infrastructures. For example, moveable factories can be fabricated and delivered in a few months to enable highly efficient production ranging from agricultural processing to assembly of consumer goods. Using established industrial engineering techniques, high quality production can be set-up quickly with workforces that do not have existing relevant production skills.

In addition, digitally-driven manufacturing innovations enable

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