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Separate Worlds?

Explaining the current wave of regional economic polarization

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Abstract

Inter-regional and inter-metropolitan economic divergence is greater in many western developed countries than it has been in many decades. Divergence manifests itself in many ways, including per capita income, labor force participation, and the spatial the distribution of skills and returns to education. At the same time, geographical polarization of political preferences and electoral choices has increased, with gains in populism and nationalism in some regions, and broadening of socially liberal, pro-trade, and multicultural attitudes in other regions. The task of explaining these developments poses challenges to economic geography and regional and urban economics. These fields have already developed some of the building blocks of an account, but a number of important gaps persist. This article is devoted to identifying priorities for regional science and urban economics, the new economic geography, and proper economic geography to tackle the key mechanisms behind divergence as well as to integrate them in a common overall framework.

JEL: R10, R21, R23, O18, J61

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“Regional inequality is proving too politically dangerous to ignore” – *The Economist*,

December 17, 2016

The Challenge

The variance of per capita personal income among US metropolitan areas was 30% higher in 2016 than it was in 1980 (Ganong and Shoag, 2017). In the European Union, inequality among NUTS-2 regions, after falling in the 1990s from a high level in 1980 (prior to intensified European integration), has turned sharply up again in the new millennium. In the United States, inter-regional migration has fallen to half of its century-long average up to 1980, and it is more spatially selective by skill level (Kaplan et al, 2012; Giannone, 2017). Labor force participation rates have a higher inter-regional variance in the EU and the USA than since the Great Depression of the 1930s. Inter-generational mobility increasingly differs by region (Chetty et al, 2014). The divergent new geography of employment and incomes thus seems to correspond to a divergent new geography of opportunities.

This polarization contrasts to the broad geographical development patterns of the middle of the 20th century. From 1940 to about 1980, variation in inter-state incomes in the USA steadily narrowed, and suburbs and metropolitan hinterlands grew more in population and incomes than inner metropolitan areas. It is for this reason that we speak today of the geography of the last few decades as a “great inversion.”

The geographical polarization of opportunity seems to be mirrored in geographical splits in political attitudes and voting behavior. In the 2016 Brexit referendum and US and French (first round) presidential elections, there were sharp divisions between urban and less urban, prosperous regions and less prosperous ones, regions with higher average levels of education and less, and those with less ethnic diversity and those with more. The basic

density gradient of employment, income and opportunity creates sharp cleavages in perceptions and politics. Thus, to take the US example, Hillary Clinton prevailed in just 473 of the 3144 US counties, but with super-majorities in the most densely-populated. Trump prevailed, but with generally narrower majorities, in the vast majority of counties, that were on average much less densely populated. More generally, there is long-term geographical polarization of the US House of Representatives (Sussell and Thompson, 2017; Bishop, 2008).

Political and economic polarization have a complex granularity that can be expressed at several, nested geographical scales: between states or provinces; between metropolitan areas and less dense areas; between bigger and smaller metropolitan areas; and between inner metropolitan areas combined with their closer suburbs and the wider hinterlands of both (Yamamoto, 2007). The economic geography that creates sharper gradients of density, prosperity and opportunity is thus a key feature of both political and economic life today.

We should be concerned about these forms of polarization for both economic and political reasons. As *The Economist* (2016) puts it, “orthodox economics has few answers to the problem of regional inequality,” and I will argue that the same could be said for the allied field of economic geography. Regional economics and economic geography together face the challenge of developing analytics that can explain these outcomes and better informing policies that could spread prosperity because, as the same *Economist* article puts it, “if economists cannot provide answers, populist insurgents will” (December 17, 2016: 66).

The purpose of this article is to begin this work of seeking answers, by assessing where we stand in the fields that are most closely involved with regional convergence and divergence, including regional science and urban economics (RSUE), the new economic geography (NEG), and proper economic geography. I will propose some internal critiques of their core models and identify opportunities for progress. I then go on to identify elements of

a broader framework that would help them to place their investigations of the geography of employment, wages, housing, amenities, migration and productivity in common context and to draw on one another in their work on specific dimensions of regional convergence and divergence. The current situation requires both a strong dose of improved regional economics as well as a strong dose of improved and more analytical economic geography, all of which contribute to a common field of interest that seeks to understand the geography of the economy and under the right circumstances can be mutually strengthening.

The phenomenon of divergent development is found widely around the world today, but its magnitude and the contributions of different causes vary according to national context. In a review paper such as this, where the purpose is to consider theory and research agendas, it is impossible to refer precisely to all these different versions of divergence, and for this reason, the paper will rely more on the well-developed US evidence than any other, but with an eye toward extracting issues that are of general relevance to theory and research on inter-regional divergence around the world.

Spatial equilibrium theories: revisiting the roles of amenities, housing and jobs

In the past twenty years, the field of RSUE has developed a set of general equilibrium models that place factor mobility (and hence, the sorting of factors among regions) at the center of its narrative. The reason these frameworks are important to a consideration of inter-regional divergence is that they emphasize the attainment of inter-regional distributions of population that maximize utility under constraints, but the resulting spatial distributions do not necessarily lead to convergence in standard regional development indicators, such as nominal income or employment/unemployment rates. We are going to start with canonical versions of this model because its basic assumptions and predictions continue to dominate

much modeling and policy circles, especially in North America and Britain. We will consider some recent add-ons in subsequent sections.

In the strongest standard version, there are few barriers to labor and capital mobility. In this context, households choose regions by arbitraging a wide variety of preferences, with the key ones consisting of nominal income, housing type and cost, and a variety of priced and unpriced amenities, and the avoidance of dis-amenities (Glaeser, 2008). The model generates a powerful narrative about US regional development in the past fifty years. In a first wave of migration beginning as far back as the 1960s, people picked up and moved from the Northeast and Midwest Rust Belts of the USA to the Sunbelt in search of warmer winters and cheaper housing. They accepted generally lower nominal wages than in their regions of origin, but their resulting real incomes were at least equal due to access to cheaper housing, or – in an alternative version – their total utility increased due to better and more housing and amenities such as warmer winters or lower density living and more recreation.

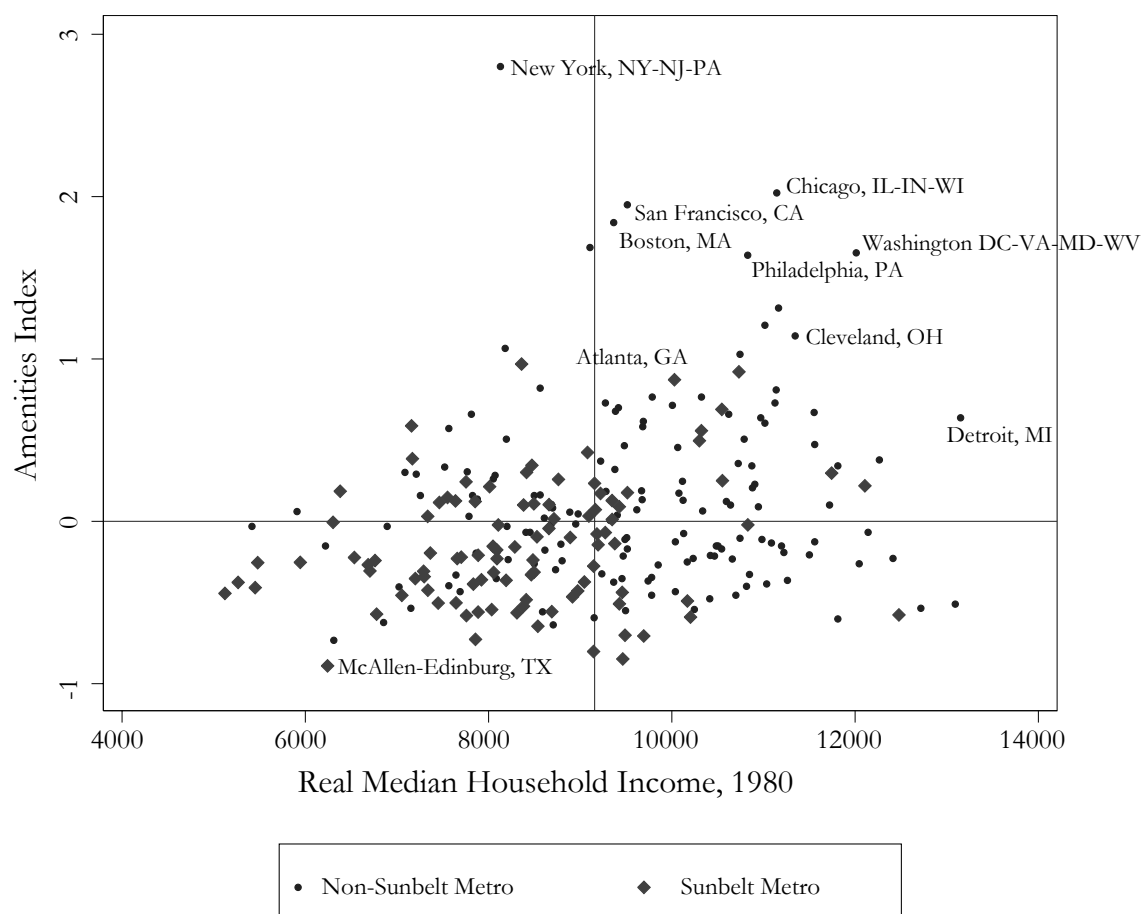
While the first wave of this research was addressed principally to migrations away from older cities in the Rust Belt, spatial equilibrium researchers later turned to the selective resurgence of certain cities such as New York and Boston in the Rust belt, as well as the strong growth of high-cost cities such as San Francisco or Seattle. These accounts center on a switch in the preferences on the part of higher-skilled workers to interact in close proximity with other skilled people, whereas in the mid-20th century they were suburbanizing or moving down the urban hierarchy (Glaeser and Maré, 2001). These skilled people also wanted access to newly resurgent urban amenities, in the form of declining crime and the rise of a bigger “creative class.”

These mechanisms of consumer or worker choice generated two geographies of regional development from the 1940s until roughly 1990: lower-skilled and lower-waged industries sorted themselves to certain (mostly Sunbelt and interior) regions, where their

workers' lower nominal wages were offset by cheap housing and attractive climates or lifestyle amenities. Meanwhile, higher-skilled and higher-waged industries went to other (largely coastal and large metropolitan) regions, where high housing costs reduce real incomes and utilities, but urban buzz and culture and high nominal wages add to the total utility package. In spatial equilibrium modeling, there is a strong assumption that real income – and even more so, total real utility – variations are held to a narrower range of variation than nominal income. This leads spatial equilibrium theorists to claim that the only really relevant measure of the regional development process is population change, since nominal income and opportunity variations are compensated by arbitraging on other fronts.

The inter-regional divergence and especially the political anger that accompanies it that we observe today nonetheless should cause us to ask whether the geographical process of utility maximization is functioning and how well we understand the utility of households in different regions. To begin with, there has been considerable debate over just how much real income convergence among regions the US experienced even in the heyday of Sunbelt migrations. When rigorous controls and micro-data for housing costs are used, then real (market-generated incomes, before redistribution) have tended strongly to diverge among metropolitan areas in the U.S (and many other developed countries) in recent decades, even for workers with similar demographic and skill profiles (Kemeny and Storper, 2012). Real wage convergence in the United States, a slow trend from 1880 onward, basically came to a halt sometime in the 1980s (Moretti, 2012; Diamond, 2016; Giannone, 2017). Moreover, rather than people moving to places with the RSUE-predicted combination of low money income compensated by high amenities, the city-regions with high population growth in the USA were, for a long time, characterized low nominal income and poor amenities, as can be seen in Figure 1.

Figure 1: Amenities and Real Income in U.S. Metropolitan Areas



(Source: Kemeny and Storper, 2012).

It is conceivable that millions of people moved to low amenity-low wage metro areas, while in the meantime amenities endogenously improved in many older metropolitan regions that had higher incomes, but it still remains unclear then why population growth was so high in the areas that either had low levels of amenities to begin with or since have exhibited little endogenous improvement in them as they receive so many people. If we add together these observations -- real income convergence was more limited than in many spatial equilibrium accounts, and in addition if there has been a reversal of long-term nominal income convergence -- then it makes sense that sharp geographical cleavages in subjective satisfaction or dissatisfaction have emerged. The Brexit and Trump elections, as well as

survey data, can be interpreted as indicating that in some regions many people perceive their total utility to be unsatisfactory, whether or not their locations represent some kind of inter-regional equilibrium in the distribution of people. This is because they aspire not just to the best possible landscape of opportunity and utility under present constraints, but to a world where some of those constraints are lifted, and below we shall examine in detail the possible constraints in housing and labor markets and how well we explain them. This notion that dissatisfaction is high is supported by the growing literature describing how people in less prosperous regions perceive the prosperous urban regions such as New York, London, Houston, Boston, and San Francisco to be better off than where they live and enjoying rigged benefits, a phenomenon labeled “the politics of resentment” (Hochschild, 2016; Cramer, 2016; Graeber, 2009; Vance, 2016; Isenberg, 2016; Guilluy, 2016; Gest, 2017). I return to this subjective dimension later in this paper, in discussing values and narratives.

Several decades later, the current landscape seems to offer a very different equilibrium from the world used to construct the canonical spatial equilibrium models, from Roback to Glaeser. In light of this, spatial equilibrium research could take a fresh look at precisely which utilities are most relevant to the locational choices of households today, including the roles of employment, wages, housing, and amenities. It also behooves us to see how the spatial distributions of these fundamentals have changed, perhaps themselves as endogenous outcomes of deep forces that set off divergence in the first place. Current attempts to do so focus on how housing, labor demand and skill formation are shaping migration, incomes and opportunity. Let’s now look more deeply at these questions.

Slower and more selective labor mobility: is it housing and amenities?

A principal candidate for the non-convergence of utilities is the slowdown in interstate mobility in the USA since the 1980s, and especially in the new millennium. This is coupled to more geographically-selective mobility, where skilled persons migrate among high-income places and the less-skilled stay in low-income places more than they have historically. The slowdown applies to virtually all age and skill categories, (Kaplan, Schulhofer-Wuhl, 2012; Molloy et al, 2014).

Much RSUE research turns to housing markets as the main source of the slowdown. The general backdrop to the slowdown in migration is that inter-regional housing price gaps have grown considerably since the 1990s. In this version of things, in the 1970s and 1980s there was low demand for housing in the northeast coastal cities, and expansionist housing policy in the South and interior West. Since then, the major metropolitan regions in the Northeast and Pacific Coast have restricted housing construction, so that in the new millennium, these city-regions have had big housing price increases compared to the rest of the country (Glaeser, Gyourko, Sachs, 2005).

In a widely-cited analysis, Hsieh and Moretti (2015, 2017) generate a counterfactual simulation that embodies the assumption that housing is the key explanation for the migration slowdown and much regional income polarization. They claim that if only city-regions such as San Francisco, NY, Washington, London or Paris would open the floodgates on housing construction, then there would be considerable increase of migration out of the regions characterized by high unemployment and relatively low wages such as the Upper Midwest of the USA, and the prosperous regions would become bigger through in-migration, but workers would enjoy higher real wages due to lower housing prices. Even areas of low unemployment but low nominal wages, such as much of the American South, would send their people back to the coasts and big cities in search of higher wages, if the amenity of housing were somehow made substantially cheaper in the booming high-wage regions. They

predict that this process would transfer income away from landowners to wage-earners, and generate major economy-wide gains in productivity by limiting land rents that hold down real wages and, most importantly, by allowing more workers to migrate to more productive regions. The numbers in their simulations are striking: with less housing regulation, they argue that US GDP would be between \$1.4 trillion and \$1.95 trillion greater, that per capita income would rise by \$6775, and that there would be a five-fold increase in employment in the San Francisco CSA and a 787% increase in employment in the New York CSA. Similar analyses are made for Britain, claiming that were the London Greenbelt to be opened to 1 million new housing units, then metropolitan London would be bigger and Britain as a whole would be more prosperous and less inter-regionally and inter-personally unequal (Cheshire, Nathan, Overman, 2013). These authors imply that such new spatial configurations would resolve some of the problems of subjective dissatisfaction that I allude to above, by affording people access to opportunity, said to be currently denied them by housing-generated spatial traps.

This is an appealing vision, because it identifies a relatively simple and singular solution for a host of problems, and on a very large magnitude. For this reason it merits close scrutiny. Consolidated statistical areas such as LA, NY, SF and Boston are identified in the Wharton Index as highly restrictive, in contrast to Orlando and other Sunbelt cities. Yet all of them, whether Sunbelt or not, whether highly restrictive or not, whether declining in density (Austin, Orlando) or increasing (eg Boston, NY, Los Angeles), are enjoying considerable population growth in the new millennium. Cheap Orlando and expensive Seattle both took in about the same number of net additional people between 2010 and 2016. Expensive metropolitan LA expanded by just over 800,000 people, about the same as for cheap Dallas. Both highly expensive NY and SF gained more than half a million people each, more than much more affordable Orlando, Pittsburgh, or Denver. On the surface of it, there is a mystery

as to how and where these so-called super-restrictive and expensive regions are managing to accommodate so many new people (Bronstein, 2017).

This leads us back to the task of explaining these population movements. They follow almost exactly the great inversion in the geography of employment, which continues today, such that metropolitan areas with greater than one million people created three-quarters of the net employment increase in the USA from 2010-2016. Population increases seem to match more consistently the places with growing employment – whether in expensive, dense, highly regulated metro areas or in cheaper less regulated areas. By contrast, population does not expand in cities in either of these categories where there is little employment growth: thus, there are some expensive, dense old metros with little job growth (e.g. Chicago, Philadelphia), just as there are many cheap housing cities with little job growth (in the interior west and old rustbelt). They have weak identification of the role of housing restriction on housing supply, because there are much greater variations in restrictiveness than in housing supply change. The proof for the claim that housing is expensive primarily because of supply restrictions rather than changes in income distribution in the New Economy is, simply, inexistent.

Most importantly, by averaging across labor and housing markets and concluding that high housing costs are due to restricted housing supply, the models also avoid any kind of real causal identification of the role of housing prices in migration behavior. They do this by associating an average affect of high average housing prices on population growth rates, but the effects on different categories of wage-earners and potential migrants and different local labor and housing markets is a black box. Thus, if housing supply expansion really did open up such regions to population increase (something that is assumed, not demonstrated), we would need to know the skill composition of the additional in-migrants. As I shall argue below in discussing the role of skills in labor sorting today, it is likely that any additional domestic migrants to prosperous regions today would be the most skilled. In this case, then

even more neighborhoods of prosperous metropolitan regions would come to be dominated by the skilled, doing little for the less skilled within the prosperous regions. Moreover, these flows would increase inter-regional divergence by filtering even more of the skilled out of the less prosperous regions, possibly deteriorating the ability of less-performing regions to attract better jobs. Simulations for London show these two effects (Szumilo, 2017). Notice that we are echoing what Gyourko, Mayer and Sinai (2013) argued for the case of “super-star cities.” In these cities, the excess demand over supply for housing on the part of those with high incomes drives up local housing prices, which in turn skews the composition of in-migration to these areas by excluding lower income people.

A different approach makes less expansive claims about housing and migration, and instead focuses on income effects. These models assume locationally-fixed demand for labor (incorporating the strong employment agglomeration dimensions of the contemporary economy), and finds that the supply (and population) adjustments are not mechanically restricted by housing supply function. The adjustment occurs through a combination of housing prices and supply, with the latter taking many forms. In another reading of Hsieh and Moretti (2015), they conclude that housing supply restriction affects the income distribution and reduces the national GDP (by \$1.4 – 1.95 trillion) by extracting high rents from workers in prosperous regions and transferring income to landowners but – critically – they do not argue that it restricts migration to these regions, because that is what allows the landowners to extract these rents and hence lower national GDP. Moreover, Hsieh and Moretti do not resolve all of the empirical anomalies, notably that – even with this rent-extraction by landowners going on -- skilled people even in high-cost metropolitan areas still have both higher nominal and real income compared to other regions, and that returns to education exhibit increasing inter-regional divergence (Diamond, 2016; Giannone, 2017; Storper and Kemeny, 2012).

In sum, the literature on the role of housing in inter-regional divergence offers quite a confused picture. It cannot be claimed simultaneously that housing limits inter-regional migration as a whole, that it selects for migration streams, and that it generates extremely high returns to landlords due to excess demand. The counterfactuals of these claims are radically different in terms of policy advice, ranging from constructing housing in order to unleash massive inter-regional unskilled domestic migration (and reducing inter-regional polarization), constructing housing that would attract more skilled (and exacerbate inter-regional inequality), or constructing housing so as to raise real wages for those fortunate enough already to be in prosperous places (with again the effect of increasing inter-regional real income polarization).

More broadly, the current situation offers an opportunity to update the canonical versions of spatial equilibrium thinking, which for the USA were rooted in the high-migration/booming Sunbelt world of the 1960s and 1970s, the first wave of deindustrialization of the Rustbelt from the 1960s through early 1980s and a bit on the first superstar cities. In a 2018 context, there is an opportunity for substantial updating of both our behavioral assumptions about the relevant utilities, and the empirics about how they behave and their degree of transitivity or elasticity. Some starting points for this updating include the following. First, rather than looking for inter-regional variation in average wage and housing price curves and possible points of overlap, these should be disaggregated for different skill groups. A good way would start with three groups: skilled domestic workers and foreign migrants; unskilled domestic workers; and unskilled foreign migrants.

Second, we may need more expansive and updated views of utilities themselves, insofar as lifestyles and livelihoods in the New Economy are substantially different from those of the mid-20th century. In choosing a region, households consider the cost and quality of housing, including (in variable proportion) the intra-regional locations of the housing they

can afford, including their likely commuting time and expense and access to the social (externality or amenity) characteristics of the neighborhood where they will reside, all of these which vary in their choice set across different regions. Thus, for a given housing budget, the housing one can access in Region A and Region B differs not only in the characteristics (size, comfort) of the individual unit, but its location in the spatial system of each region (I might be able to access more prestigious housing in a poorer region at a given income level than I could in a wealthier region).

The utility that comes from employment is also more complex than a job and a wage. For higher-skilled workers, labor markets represent dynamic systems for acquiring experience by becoming part of networks. It is for this reason that many such (especially young) workers choose to go to very expensive metropolitan housing markets: young skilled workers have lower real incomes than in other regions in the early part of their careers, but their long-term incomes are higher as they capitalize on learning in the turnover- and network-based agglomerations of those regions (Glaeser and Mare, 2001; Duranton and Puga, 2004; DeLong, 2016). Likewise, in today's circumstances, many less skilled domestic workers avoid big, expensive cities not simply because housing prices are high for them. They could secure housing in these vast metropolitan housing markets, but – as suggested above -- at the cost of high commute times and possible subjective social downgrading, such as having to co-locate with immigrant groups that they consider to be of lesser social status than them. At the same time, their probability of unemployment, or at least uncertainty about the future in these labor markets, will be high. In other words, there may be no realistic housing supply expansion in prosperous metropolitan areas that could address the finer dimensions of the employment and residential utility requirements of unskilled domestic workers in less prosperous regions and enable them to move to prosperous regions today. Unskilled foreign migrants have still

another set of employment and residential utility preferences and tradeoffs from these other two groups.

There is thus much to be gained through renewed theory and empirics that update our understanding of the interaction of employment, housing, and amenities in shaping the economic landscape.

The geography of jobs as the principal driver of divergence?

The great inversion from convergence to divergence occurred in the 1980s. The calculus of individuals and households that collectively led toward mean reversion for decades prior somehow reversed course, and this great inversion cannot have happened spontaneously from some kind of massive decentralized change in preferences. Thus, explaining divergence requires that we understand what kinds of shocks caused preferences and trade-offs to change, with the attendant impacts on spatial sorting of people. Ideally, such shocks would not be considered random and exogenous to a theoretical framework about regional development.

The obvious candidate for the shock behind the great inversion is the two features of the New Economy: technological change in the form of the rise of new, spatially-concentrated sectors, and globalization, through a generalized revolution in trade costs. For theory and research design, the reversal of a period of convergence and unleashing of a period of divergence raises several explanatory challenges. First, what changed in the micro-mechanisms of firm location and hence the geography of labor demand? Second, how do we weigh the relative contributions of employment location and the search for housing and amenities in the distributions of households? Third, how does the great inversion affect migration? Finally, is there a way to understand the specific geography of divergence, i.e. why specific regions have risen up the ranks of income and others have stagnated or fallen?

Starting with the micro-analytics of job location, New Economic Geography models help us understand the turn from an economy dominated by de-agglomeration processes to one dominated by agglomeration, specialization, and the cumulative advantages of certain regions. The core NEG models provide insights into the post-war wave of de-agglomeration from the US Rustbelt to the Sunbelt, followed by a second wave in the form of post-1972 globalization. These processes continue, but in place of simple product cycles, NEG analyzes complex unbundling of supply chains, and a concomitant growth of intra-industry trade (cf. Norton and Rees, 1979). For present purposes, these developments have also generated strong successive local trade shocks to employment and wages in certain manufacturing regions in developed countries (Autor, Dorn, Hanson 2013, 2015; Acemoglu et al, 2017).

In turn, NEG agglomeration models account largely for why the large metropolitan areas, including their suburbs, many of which had suffered decline in the 1960s-1980s, are now the most dynamic in terms of incomes and employment creation. And it is not just these regions as a whole, but the inner areas of large metropolitan regions that are gaining high shares of the high-wage jobs (Inner London now generates more employment than the rest of the Southeast UK region, for example). In the presence of high intermediate trade costs – a condition that holds for many of the most innovative industries of the new economy – the main criterion for a firm’s location is where other similar, or closely-related firms are located (Krugman, 1991a,b; Fujita and Thisse, 2002). More generally, NEG has greatly expanded our understanding of the role of trade costs in defining the border between agglomerated and dispersed activities and the ever-changing border between trade-able and non-tradeable goods and services.

One of the NEG’s core models suggests powerful circular and cumulative processes that could contribute to the current situation of sharp interregional inequalities. In this

explanatory sequence, some initial spark of agglomeration draws workers into the orbit of an urban area. The core-periphery model of NEG sees the further development of an urban center as a dialectic between the trade-able and non-tradeable sectors (home markets). NEG then adds a new twist, which is to explain why, due to economies of scale and lower costs of access in consumption of certain local goods and services, bigger cities will offer high consumer variety and relatively low prices for many such goods and services. This effectively augments the real income of their workers, so a combination of high nominal wages, lower consumer prices, and higher consumer variety offset some of the high land and housing costs of such areas in determining real income and total utility.

Notice that in these models, labor mobility is essentially exogenously assumed. A new generation of work, building on the Eaton-Kortum framework, attempts to incorporate migration in a more nuanced manner, having it respond to a wider variety of attractors, such as productivity, amenity and market access differences, but it too explores little in the way of barriers to mobility that I discussed in the previous section (Allen and Arkolatis, 2014). NEG has also yet to integrate some of the emerging insights about migration of the skilled to prosperous agglomerations. Giannone (2017) and Diamond (2016), among others, suggest that the strong migration of the skilled to certain prosperous metropolitan areas involves increasing spatial differentiation in return to education. The effect of skill-biased technological change on the spatial distribution of labor demand might, in this view, express some kind of enhanced local interaction or experience effect. De la Roca and Puga (2017) argue that the skilled migrate to certain agglomerations not merely because of present wages, but due to the accumulation of dynamic experience effects, supporting an earlier notion of cities as learning environments, with their dynamic labor markets of matching and turnover (Glaeser and Mare, 2001; Duranton and Puga, 2004). The point of all this is that an NEG-

inspired framework on agglomeration needs a more complete integration of labor mobility to explain current inter-regional divergence.

Let's return to what the NEG says about the forces that set off the current divergence. NEG can be read as an argument that the great inversion and new geography of jobs were generated by historical changes in trade costs – those that led to unbundling and de-agglomeration of certain industries, and those that required agglomeration of others, combined with a perfect labor mobility assumption. A number of authors have documented the precipitous decline in trade costs that underlie waves of geographical change (Glaeser and Ponzetto, 2010; Duranton and Puga, 2005; Beaudry, Doms, Lewis, 2010; Anderson, van Wincoop, 2004).

The NEG's historical drivers are somewhat different from those embodied in the work of proper economic geographers. The latter see major changes in the geographical development patterns of capitalism as coming from its successive industrial revolutions, meaning waves of major technological change that generate core new general-purpose technologies and industries that are likely to be strongly agglomerated due to their innovative, non-routine character (cf. Feldman and Audretsch, 1999; Storper and Walker, 1989; Garretsen and Martin, 2010). Major waves of economic and geographical change are endogenous to the economic system, as evidenced in the four industrial revolutions since the late 18th century. This perspective is critical, as it anticipates the possibility of switches in aggregate regional convergence and divergence, and hence encourages micro-research to be on the look for such switches. As such, major waves of change are not due to random exogenous shocks (Storper and Walker, 1989; cf. Lin, 2012; Hadjimichalis and Hudson, 2014; Storper, 1997, 2013).

In addition, economic geographers emphasize the appearance of key new innovative industries that will agglomerate in certain specific places. The latter view would explain divergence as a result of both the general, overall changes in the trade cost surface, and the

specific geographies of growing or declining agglomerations (what some geographers would call “place”). Agglomerations are initiated as exogenous shocks in trade costs, followed by lock-in (Garretsen and Martin, 2010; Kerr, 2010; Glaeser, 2003). Thus, for economic geographers, the general economics of agglomeration should be joined to a specific economics of innovation. New agglomerated industries do not just appear anywhere: they seem to be captured by certain kinds of places and not others. Some of the work in urban economics on super-star cities and entrepreneurship does attempt to join the general phenomenon of agglomeration economies to the specificities of certain such agglomerations, but it hasn’t become a general yardstick for the fields of NEG and RSUE (Glaeser, 2003; Kerr, 2010; Storper et al 2015; Chatterji et al, 2013).

All in all, NEG offers essential building blocks of understanding the force of agglomeration in divergence, and the epochal changes in trade costs that affect dispersion and convergence. However, NEG has not yet provided a framework for drawing together all the threads of technology shocks, agglomeration and de-agglomeration, and labor migration, and has not definitively taken on how job location intersects with the full range of household behaviors in choosing locations (Prost and Thisse, 2017). It has not yet integrated a fully historical perspective on why we see some periods dominated by agglomeration and divergence and others dominated by de-agglomeration and convergence.

Reformulation around a developmental perspective: the great inversion and the new geography of jobs, incomes and opportunity

How can we improve our framework to better account for the divergent development patterns of the past 30 years? I propose that there are four key elements that can shape a theory and research framework in both regional economics and economic geography.

(1) Macro-historical perspective: waves of technological change are endogenous to the capitalist market system and regularly disrupt convergence and even reverse it. Importantly, by technological change we mean both those in transport and communications, as emphasized by NEG, and industrial revolutions that create key new, innovative production sectors with strong agglomeration economies, as emphasized by Schumpeterian economic geographers.

(2) The geographical centers of each industrial revolution are characterized by innovative dynamics that prolong their advantages and enhances divergence by maintaining their attractiveness to the skilled, so long as sharp geographical differences in the returns to innovation and hence to skills are maintained.

(3) At certain moments in time, convergence forces can strengthen, through declining innovation-generated agglomeration economies in relation to the routinization and de-agglomeration of employment.

(4) Amenities and housing are weaker long-term forces than the geography of nominal wages and employment in determining whether convergence or divergence dominates, although housing and amenities do shape the magnitude of divergence and convergence. As the forces of agglomeration strengthen, and with them, the concentration of incomes and amenities are generated endogenously in high-income places. As the forces of agglomeration weaken, the roles of housing and exogenously-supplied amenities strengthen in determining locational choices of firms and households, as the fundamental attractiveness of agglomerations weakens, enhancing convergence processes.

Thus, the current regional disparities were set into motion by a major wave of technological innovation that began in the 1970s – stimulating output in high technology, finance and advanced services sectors that depend on agglomeration economies and therefore whose core, non-routine jobs favor large metropolitan areas and draw from pools of skilled

workers in high-turnover labor markets. This wave of technological change also allowed the routinization of previously-dominant manufacturing sectors, thus decreasing their employment through automation, and revolutionized trade costs, allowing these forces to become more geographically dispersed (Levy and Murnane, 2005). These epochal technological changes have been coupled to an expansion of world trade, itself an outcome of the ways such technologies have reduced trade and interaction costs, and allowed global value chains to emerge due to routinization of tasks.

A second important element of a framework is the endogenous reinforcement of agglomeration. As captured by Duranton and Puga (2004), agglomeration may be initially caused by some kind of macro-technological change or innovation that, in turn generates strong intermediate supply chain concentration. But in turn, there is likely to be labor pooling due to this skill-biased technological change, and localized innovation feedbacks – the trio of sharing, matching and learning. Geographers and some economists have empirically examined the process of learning and local technological spillovers while economists attempt to capture circular and cumulative productivity advantages for regions that innovate or learn, by adding them to their workhorse models (Acs, Audretsch, Carlsson, 2010; Romer, 1994; Aghion and Howitt, 1997; Martin and Sunley, 1998; Feldman, 1994). Sometimes, changes in external conditions (long-distance trade costs) generate endogenous increases in product complexity and variety that in turn raise unit trade costs and strengthen agglomeration (Duranton and Storper, 2008). The point is that it is crucial for the big technology shocks to be seen in light of endogenous regional innovation dynamics that further cement and reinforce divergence once it begins, and until there is a major counteracting force in favor of convergence. This perspective captures, in more modern analytical terms, the classical “circular and cumulative causation” thinking of Myrdal (1957; cf. Kanbur and Venables, 2005).

Third, we need a framework to accommodate both times when migration contributes to divergence and when it reverses that role and contributes to convergence. In the mid-20th century USA, people left the deindustrializing regions of the Rustbelt to move to more dynamic ones, either on the coasts or in the South. This served as a safety valve and opportunity-increasing mechanism migrants. In contrast, today we require a deeper understanding of why certain categories of worker continue to crowd into expensive metropolitan areas as well as the apparent the slowdown in mobility of the less-skilled from lower-wage or lower-opportunity regions to the prosperous metropolitan areas.

The precise magnitude of income inequality and geographical divergence in incomes is, of course, shaped not only by these deep structural processes but also by how they are encouraged or tempered by policies. Empirical trade economics has considered the extent to which increases in income inequality are due to skill-biased technological change, or specific and contingent policy choices that may have magnified the inequality effects of technology and trade on wages and income distribution (Card, 2001; Checchi and Garcia-Penalosa, 2008; Rodrik, 2009; Bagwell and Staiger, 2017). Standard welfare-statist and labor market regulation approaches in places have tempered aggregate income inequality in France and Italy, but at the price of high long-term unemployment, high upper tail inequality, and regional deindustrialization shocks that are similar to those in the UK and USA, as well as the fact that European countries are still mostly increasing educational opportunity, while it has stagnated in the USA since 1975 (Goldin, Katz, 2010). In economic geography, with the notable exception of Rodriguez-Pose (2012), there has been little quantification of facts and counterfactuals in terms of alternative scenarios of inter-regional patterns of income, employment and population, that might have come about under different levels and terms of trade. Bourguignon (2015) argues that countries with a bigger finance sector, less progressive taxation, and less regulated labor markets have reacted to technological change and

globalization with more income inequality than other countries. This seems like a framework (appropriately expanded to include a wide range of policies) that could be used to examine inter-regional inequality as well.

These are the elements of a combined regional economics and economic geography framework for understanding the powerful wave of inter-regional divergence that began in the 1980s. Expansive as this framework may be, however, we may need to think even more broadly. These elements of a basic structural framework may themselves be structured and shaped by social and institutional forces. Migration, skills, innovation, and the agglomeration of firms are embedded in wider processes that I will group together under the term “institutions,” in the final section of this article.

The Institutionalization of Separate Worlds

Rodriguez-Pose (2013), echoing an important current in contemporary social science, argues that there is a widespread consensus that “institutions are important to development” (Acemoglu et al 2004; Acemoglu and Robinson, 2012; Rodrik, Subramanian and Trebbi, 2004; Farole et al, 2010). Conventionally, a wide definition of institutions includes those that are both formal and informal. Formal institutions that shape development can range from very big framework conditions, such as constitutions, laws and governmental structures, to very specific formal rules and laws, and to organizations that apply and enforce and interpret them. Institutions also refers to routines, in the form of manifold informal practices, norms, conventions and beliefs, as well as informal networks of persons and organizations (North, 1990; Storper and Salais, 1997). Moreover, it is widely agreed that formal institutions and informal institutions (also often labeled “culture”) have two-way joint effects (Alesina and Giuliano, 2015).

In what follows, I discuss four possible ways that institutions are shaping current inter-regional economic polarization: institutions that capture and prolong agglomeration; institutionalized value systems and interactions that influence migration, skills and sorting; institutional construction in place that shapes skilling and socialization; and feedbacks to the politics in turn affect divergence through policy choices.

Institutions, agglomeration, and divergence

I noted above that NEG brackets the specific geography of agglomerations, and some models explicitly assume it to be random or accidental. Economic geographers are more reluctant than spatial economists to let the origins of a pattern of regional economic divergence be explained by randomness or shock. A recent generation of research has elaborated micro-institutional foundations of long-term economic performance of region, such as trust, social capital, corruption, good and bad government and other aspects of social modernity (Farole et al, 2010; Crescenzi, Di Cataldo and Rodriguez-Pose, 2016). One way these institutions could shape the pattern of divergence is through selection or repulsion of the industries and activities that generate high growth in output and employment, especially during the epochal technological shifts I allude to above (Storper et al, 2015).

Some dimensions of these processes have been suggested in empirical work. Capturing promising new industries involves the nurturing of the entrepreneurs who come up with breakthrough innovations or products, and transforming older ones involves spin-off firms who aid the major existing firms to remain dynamic (Saxenian, 1994; Klepper, 2009; Chatterji et al, 2013). Kenney and Mowery (2014) emphasize the different ways that business and research institutions network in regions, as the relational infrastructures that shape innovation and entrepreneurship, so that R&D gets translated into development in different

ways from one place to another. Feldman and Lowe (2017) use the case of North Carolina to make a wider argument about the gradual enhancement of regional capabilities. But the field still lacks systematic large-scale evidence, as well as structured theories, on the preconditions that enable certain regions to capture major waves of development and others to be excluded.

A related theme concerns why in this wave, agglomeration-driven advantages have concentrated in certain places, and why overall divergence has thus far been so strong relative to convergence and spread processes. Detailed studies of existing prosperous places suggest that this might be because of the endogenous co-evolution of agglomeration and the local informal institutions that are specific to certain industries and places. These are the specific practices that sustain and shape sharing, matching in leading regions such as Silicon Valley or London today, or Detroit or Manchester in the past.

In one prominent study, Feldman and Zoller (2012) identify new types of economic intermediary agents, such as venture capitalists and deal brokers, showing that their uneven geography accompanies the growth of knowledge-intensive industries. Other recent research along these lines has quantified the value of certain kinds of local economic networks that underpin agglomeration (Kemeny et al, 2016). Another key question for such institutional approaches is how entrepreneurs emerge, what kinds of entrepreneurs emerge, where they emerge, and whether they flourish or are blocked by the regional economic environment (Acs et al, 2010; Fairlie, 2013; Chatterji et al, 2013; Kirzner, 1979). Taking all these institutional forces together – existing firms, innovation, networks and leadership, conventions and world views, entrepreneurship – economic sociologists speak of the emergence of “organizational fields” or ecologies (Powell et al, 2012; Padgett and Powell, 2012), referring to a complex institutionalization process. In the language of regional economics, the places that develop the institutions mentioned above, in tandem with the location of firms that have leading-edge technology or knowledge endowments, develop double monopolistic advantages, from hard

economies of scale to informal institutions that are difficult-to-imitate or transfer. This difficulty of imitation may not last forever, but it seems to prolong advantage in ways not fully incorporated in either RSUE superstar city approaches or NEG agglomeration modeling.

The implication of this is that traditional mean reversion models—whether of the standard convergence type or of the spatial equilibrium variety -- may under-estimate the extent and duration of advantage, its geographical concentration, and some of the magnitude of inter-regional inequalities that we currently face. When we are asked to give policy advice to regions about how to attain advantage, we tend to focus on how to get sharing, matching, and learning going (with an emphasis on the cocktail of supply chains, entrepreneurship, universities and so on). But they are notoriously hard to imitate and this is in part because they are not standing still, but endogenously evolving in the leading regions.

A related question is whether institutions also have some kind of limit to their ability to create divergence and local advantage. The standard model of economic development institutions relies on Tiebout or public choice assumptions about the value of inter-place competition in insuring efficient local choices of policies. There is a long line of reflection in political economy that suggests that institutions can generate their own rigidities and be taken over by rent-seeking groups. In regional studies, this dates from the classical work on Pittsburgh and New York by Chinitz (1961), and is echoed more widely in a line of work from Mancur Olson (1965), to recent studies such as Puga and Trefler (2014) and Acemoglu et al (2007). Might this be the case today with the institutions – formal and informal – that strengthen and secure the advantages of prosperous agglomerations? We have yet to see the effects of such rigidities, but it will be essential to observe both the evolution of institutions in the prosperous places, and the attempts of other places to compete with them through institutional innovations, as possible shapers of the future of divergence and convergence.

Network-embedded skills, job search and spatial traps

As noted earlier, the combination of slower and geographically more selective labor mobility is considered to be at the heart of contemporary regional divergence, as well as the political frustrations associated with it. The debate between spatial equilibrium approaches, housing-based models, and jobs-centered SBTC models can be enriched by considering how skills themselves may have changed and how skills are captured in models.

Many scholars now consider that new economy skills are not just individual human capital, but are acquired and exercised through networks, which are social institutions (Granovetter, 2005; Kemeny et al, 2016; De Long, 2016; Deming, 2015; Owen-Smith and Powell, 2012). In this view, more formal skills are indeed required than ever before, but in addition to diplomas, there are also more experience skills that can only be acquired by “being there” (de la Roca and Puga, 2017). Experience itself appears to have several different components and geographies. One is simply having learned the unwritten or informal aspects of job performance. Another is that the high-turnover and highly-individualized work in the skilled sectors of the new economy requires social networks: knowing people. The implication of this reasoning is that even those individuals who succeed at formal schooling in certain regions are increasingly disadvantaged by their location. They are less apt to acquire the informal experience knowledge and cues, and to build the networks that create advantage to individuals in the wealthier regions with similar formal education levels. Such opportunities are scarcer and less “in the air” in the less developed regions than in those that are already ahead. If this is the case, then the institutions in the wealthier regions can also give their students better overall capacities via better networking and social cue-ing than in less advantaged regions. Such differences then cumulate over the development cycle through the differential ability of families in the right regions to have the income and connections to

get their children such capacities. This could help us explain the observed increase in regional differences in return to education, especially of the highly skilled.

This doesn't mean that workers in less successful regions lack networks. Rather, as Granovetter (2005) classically suggested, their ties are likely to be different from those of successful and metropolitan regions. In successful regions, the skilled seem to have a wide range of "weak" ties; in less successful ones, the nature of employment and local society are structured around more local networks, narrower ranges of deeper inter-personal "strong" ties.

There are opportunities to bridge between this sociological work and economics approaches, by considering how ties might , respectively contribute to the sorting of people into different jobs and regions, as well as to their acquisition of skills and capacities in different places. Consider the finding by Autor, Dorn and Hansen (2011), that the employment rate in manufacturing-intensive US regions declines 0.77% for every additional \$1000 of import exposure. Harrison, McLaren and McMillan (2011) find that both workers who are re-employed in manufacturing and those who switch occupations have wage declines. Such downward switching increased by 17% in the early 2000s. These people seem to lack not only the formal skills but also the networks that are required for switching upward successfully, the latter possibly by migrating to places with more opportunity.

In follow-up work, Autor Dorn and Hanson (2013) hint at these dynamics. They find that workers exposed strongly to trade in local labor markets have lower cumulative employment, lower cumulative earnings, and higher use of disability benefits (in other words, long-term effects). They also show that local economies have cumulative effects through reductions in upstream and downstream linked industry employment, plus lower local aggregate demand (home market). The situation is different for high-wage workers:

"High wage workers are usually able to rapidly separate from their initial employers to move to other firms, often outside manufacturing. High wage workers frequently make these adjustments prior to large-scale layoffs and without notable declines in earnings."

They continue:

“Low wage workers instead stay longer in their initial trade-exposed firms and industries, are more likely to separate from their initial firm during mass layoffs, and incur greater losses of earnings both at the initial firm and after moving to other employers.”

Research on skills, mobility and inter-regional divergence should thus consider education and experience in relation to strong and weak ties and how they affect sorting between regions, and behaviors within them. It seems likely that this contributes to why less-skilled people find themselves more spatially trapped today than in previous waves of economic change.

Organizations, values and culture: socialization and economic divergence

As I noted above, institutions are generally broken down into formal and informal components, with the latter consisting of a variety of elements including values, norms, conventions, beliefs and customs. Some theorists argue that all these informal dimensions should be described by the term “culture” (Alesina and Giuliano, 2015). There is increasing recognition that these forces can contribute to economic divergence.

Scholars such as Graeber (2009), Cramer (2016), Vance (2016), Hochschild (2016) and Williams (2016) call attention to different systems of values in different regions of the United States. They argue that we should consider variables that capture individual characteristics in context, because it is experiences that count for people (and not just inputs such as education or outputs such as income). Operationally, two such experience-capturing variables are occupation and place. There seems to be a values split between people in manual-occupational cultures and cognitive-occupational cultures that is sharper than the splits between people at different educational and income levels (Wallace, 2016). Income is

less closely related to many attitudes than notions of dignity and expectations of social mobility or hope about the future (see also Inglehart and Norris, 2016).

These interpretations are supported by quantitative findings on voting patterns. Gelman (2008) demonstrates that the standard individual attributes adduced to explain voting – income, religious observance, race and ethnicity – change in importance and sometimes in direction when geographically dis-aggregated. For example, high-income people in American blue states vote much farther to the left than their high-income counterparts in red states, and the effect of a similar degree of religious conviction varies greatly across different places. American blue counties aggregate left-wing preferences from the two tails of the income distribution, but in less urban places, the upper tail votes overwhelmingly right-wing. This implies that interactions within places, and not just individual characteristics (even in combination at the individual level), determine at least some part of attitude formation and voting (Gordon, 2017).

All of these scholars argue that individual attributes are shaped by, and mutually causal, with the collective attributes of the places people live in and the process by which narratives are constructed out of observation and experience. The institutions of a place are in part the organizations with which people interact, and that help to define and mobilize their interests and interpretations of experience. Along these lines, Hochschild (2016) reports on a detailed ethnography of Louisiana, centering on the intersection of local institutions – churches, political parties, community associations, local political and social networks – in forging narratives or world views.

The institutions of socialization are constructed by human actors and some of them can change in relatively short time periods. For the American case, the key institutions of

“CIO unionism”¹ and urban political machines have lost their force along with deindustrialization in many areas of the Midwest (CIO unions were never strong in the South) (Davis, 2017). CIO unionism was to the Northeast and upper Midwest what conservative local institutions have been to the South: a key center of associational life and information for many people and their families, shaping political choices. As CIO unions have withered due to deindustrialization and associated demographic change, other more politically- and socially-conservative local institutions have replaced them. As industrial cities in the Midwest have declined, those people who did not move out of the region have literally become more rural, and with this new rurality, their institutional attachments have changed, becoming more rural and more conservative in flavor (Cramer, 2016).

An opposite form of institutional construction appears to have occurred in most of the major cities over the last 30 years. As noted above, these regions have seen the rise of a dense tissue of organizations in local civil society, associated with a high degree of social mobilization. These organizations lobby for inclusion of immigrants, for multiculturalism, for amenities such as transportation, recreation, for aiding the homeless, for promoting urban cultural events and forums. The labor unions involved in these places are largely those of post-industrial, service-oriented workers (often non-white and female), in urban-based industries with strong immigrant constituencies. They have largely replaced industrial-manufacturing unions as participants in big city politics. Religious organizations are involved, but usually they are more concerned with justice-oriented approaches to urban problems than with religious conservatism. The civil society tissue of metropolitan areas is the source of much of the progressive politics, multiculturalism and global outlook there, and quite different from the church, military, within-group and family-dominated affinities that

¹ CIO unionism as the progressive branch of AFL-CIO, consisting of a more politicized “European style” and class-oriented union than the AFL local unions. When the two merged AFL “bread and butter” unionism came to dominate in America, but locally, many CIO unions were already in place and continued to play an important role in those communities long after the merger.

prevail in other areas. We could say, then that the content of civil society organizations and networks has gone in very different directions in different regions, in a way that seems to track economic geographies and their demographic consequences.

There is also the issue of the possible long-term relationship between certain formal institutions, informal culture and regional economic development (Earle, 1992). Banfield (1958) suggested that this was at the root of long-term underdevelopment of the Italian south, a conclusion supported by Putnam (1993), theorized by North (1990), and explored by Duranton et al (2009). Recently, Vance (2016) adopts a similar perspective for Appalachia in the US, calling attention to hillbilly culture and its possible relationship to underdevelopment. These are controversial notions, but have direct relevance for thinking about this cycle of divergence. Vance argues that, certain regions of the USA enjoyed temporary blips in prosperity in the mid-late 20th century due to the decentralization of manufacturing and mining, but lack foundations for resilient prosperity. Likewise, other regions are resilient and upward-moving over many waves of technology and skills change (Glaeser, 2003; Connor, 2017). If this is the case, then regional divergence is a new normal, not just a temporary point in a cycle. We should hope that this is not the case, but we should find out whether it is.

Political and policy polarization

It is nothing new to observe that economic polarization gives rise to a differentiated landscape of objective interests; this is the basis for a long literature on sectionalism and political choices of different regions. The current economic polarization has its version of this phenomenon. A key issue in determining the economic effects of trade is to distinguish between producer (wage, employment) impacts and consumer impacts and how they interact differently in different regions. These effects have been considered in the aggregate, where

the evidence shows that increasing manufacturing trade has generated large net benefits from consumer surplus (lower prices) in developed countries and net benefits in employment and wage incomes in developing countries. The greatest net consumer benefits are at lower ranges of the income distribution, because the wealthy consume more services and more locally-produced goods than those with lower incomes. In geographical terms, this probably means that in regions that are hardest-hit by import competition on the wage and employment side, there are probably rather high consumer surpluses on the consumption side (the “Walmart” effect). People in wealthier regions also enjoy consumer surplus from imports, but because they consume more locally-produced services, these are lower on a proportional basis. Skilled people in prosperous regions probably benefit more from the presence of low-wage immigrant labor, which provides them with labor-intensive services, more than is the case in less wealthy regions. In the latter, immigrants are likely to compete with low-skill native workers more than in metropolitan regions (Foged and Peri, 2016).

This kind of geographical decomposition of effects sheds light on the different feelings people in different regions might have about both trade and immigration on their daily lives. The institutions mentioned in the previous section are not inventing narratives out of whole cloth, but rather channeling feelings about lived reality to make some kind of sense – whether objectively true or not – of complicated underlying forces of trade, technological change, and opportunity. And yet, institutions have a separate effect: they do not merely reflect “objective” interests. Kemeny and Cooke (2017) demonstrate that immigrant diversity has economic effects that are shaped by whether local institutions are more or less inclusive. In other words, the sharp inter-regional split we observe around the value of multiculturalism is a combined effect of labor market dynamics (competitive versus complementary), institutionalized narratives, and institutionalized feedbacks on the way labor markets actually function.

Rising to the challenge

I opened this paper by noting the double challenge identified by *The Economist*: that orthodox economics has few answers to the problem of regional inequality, and yet that if we do not provide some answers, populist insurgents will do so. I have tried to suggest ways in which we could move closer to these answers, considering micro-economic questions as well as the usefulness of placing micro-economic analysis of employment location, wages, the role of housing and amenities, skills and migration within a broad structural and developmental framework that sees the strong forces of technological change as generating periodic reversal of the parameters on those behaviors that contribute to convergence and divergence.

As I stated in the introduction, contributions from economists and geographers are complementary contributors to a common field of academic endeavor in the framework I have elaborated in this paper. NEG, RSUE, economic geography, as well as nearby fields such as migration studies and labor economics, all gain by improving each their core models, but also increasing their interrelations and complementarities, as we work toward better explanations of geographical divergence and convergence.

In this article, I have tried to emphasize the general nature of the phenomena and analytical challenges while drawing mostly on US evidence. With appropriate contextual modification, the issues considered here --- migration, housing, agglomeration, skills, incomes, amenities, import competition, institutions – would find an echo in many different places around the world, and hence these issues should be of interest to regional economists and economic geographers in many places.

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