Income Inequality in the European Union & United States: A Comparative Decomposition

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Abstract: This study applies improved household income data to measure and decompose trends in pan-European income inequality from 2006 to 2014. To contrast the relative significance of economic homogeneity versus the efficacy of welfare state and labor market institutions in shaping income distributions, we compare the structure of inequality in the EU-28 to that of the 50 United States. This comparison stands in contrast to the standard practice of evaluating the US against individual EU Member States. Despite the greater relative heterogeneity of the 28 EU Member States and our corrections for the underreporting of household income in the US, post-fisc income inequality in the EU-28 remains lower than that of the US from 2006 onward. Moreover, inequality appears to be rising in the US while it has remained stagnant since 2008 in the EU-28. In both unions, and particularly the US, within-state income differences contribute more to union-wide inequality than between-state differences. In a counterfactual analysis, we find that if the EU-28 matched the between-state homogeneity of the US, but maintained its relative within-country inequalities, pan-European inequality would fall by only 20 percent. Conversely, inequality in the US would fall by 34 percent if it matched the within-country inequality of the EU-28. Our findings suggest that the strengthening of egalitarian institutions within the 28 Member States is more consequential than economic convergence in reducing pan-European income inequality. We highlight institutional challenges toward achieving a ‘more equal’ Europe and discuss implications for future EU policymaking.

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INTRODUCTION

The rise of income inequality across advanced economies has become a central concern of political discussion and policy research. While most analyses of inequality focus on within-country income differences, the European Union (EU) has focused primarily on decreasing inequality *between* its 28 Member States. The ‘Five Presidents’ Report’, for example, devotes a full chapter toward the aim of “convergence between Member States” (Juncker, 2015: 4), while the more recent European Pillar of Social Rights similarly offers a framework for achieving upward convergence in working and living conditions across Member States (European Commission, 2017b). Despite these aims to reduce disparities within the broader EU, few evaluations of social indicators, such as poverty or income inequality, exist at the European level. It thus remains unclear the extent to which the current ‘European social model’ reduces pan-European income differences, or how the structure of inequality within the EU compares to that of other federalist unions.

This study decomposes levels and trends of income inequality within the 28 Member States of the European Union (EU-28) and benchmarks its relative success against levels of inequality across the 50 United States (US). We give particular analytical focus to the role of *economic convergence* between states versus the strength of *egalitarian institutions* within states in shaping income differences within two unions.

This distinction of within- versus between-state equality helps to frame the vast set of differences between the US and EU-28. Compared to the EU-28, the 50 United States are relatively homogenous with respect to their economic performance. Moreover, the states operate within a highly-centralized federal government which, through its administering of social transfers, acts to reduce income disparities between richer and poorer states. Conversely, the EU is a collection of politically, culturally, linguistically, and economically diverse Member States with limited centralization at the European level and few mechanisms for redistribution

from richer to poorer states. At the same time, prior evidence makes clear that national welfare states within the EU tend to be more effective than the US at reducing *within*-country income disparities (Alber et al., 2010).

The diverse features of these two unions provoke several questions. In comparative research, the 50 United States are most often compared to individual EU Member States, or clusters of Member States situated in Western and Northern Europe (Brandolini and Smeeding, 2011; OECD, 2015; Alesina et al., 2001; Corak, 2013). But when compared to today's larger and more heterogeneous European Union, does the US still feature comparatively high levels of income inequality? Moreover, does the structure of income inequality within the two unions suggest that economic convergence *between* states or the strengthening of egalitarian institutions *within* states is of greater relative importance? And to what extent does Europe's lack of robust cross-state transfer mechanisms, *a la* that of the US, inhibit its aim to become a 'more social', or at least more *equal*, European Union? These inquiries not only challenge prior comparisons of income inequality within the US and EU, but also offer implications for policymaking decisions aimed at narrowing income differences within the two unions.

In addressing these questions, we add three primary contributions to the broader literature on social policy and income inequality. First, we utilise improved household income data from the EU and US to provide the most accurate portrait yet of differences in income inequality within the two unions. Specifically, we correct for the issue of income underreporting within US household survey data, apply a common definition of disposable household income to facilitate accurate comparisons across the two unions, and correct for price differences across EU Member States *and* the 50 United States. Despite the relative diversity of the EU Member States and our utilisation of improved American income data, we still find that income inequality in the US is higher than that of the EU-28 after accounting for taxes and transfers.

Second, we clarify the relative importance of within- versus between-state differences in shaping levels of income inequality within the EU-28 and US. In the EU, we find that income differences between countries contribute to about 21 percent of pan-European income inequality (applying the Theil index) in 2014, though this relative contribution has decreased by 6 percentage points since 2006. Despite recent theorizations of state-level divergence of social and economic policies in the US (Bruch et al., 2016), we find that income differences within states contribute to more than 99 percent of the nation's overall inequality levels.

Finally, we analyse the relative efficacy of economic convergence versus egalitarian institutions, such as more equitable labor markets and more robust tax and transfer systems, toward union-wide inequality levels. To do so, we construct a counterfactual in which the EU-28 matches the economic homogeneity of the US, but maintains its relative within-state inequalities. In this scenario, pan-European inequality would fall by 20 percent in 2014, far less than the relative change (34 percent) if the US matched the within-state inequality of the EU-28.

This collection of findings reveals that the strengthening of welfare state and labor market institutions is of greater relevance than economic convergence in reducing union-wide income inequality. Though the 'European social model' is, indeed, superior to the American model in narrowing income differences among individuals in countries as diverse as Sweden and Romania, the evidence nonetheless suggests that 'social convergence' between Member States must accompany economic convergence if further reductions in pan-European income inequality are to be achieved.

THEORY & BACKGROUND

Union-Wide Inequality

Analyses of income inequality have most often focused on the national level to evaluate the sources, consequences, and potential remedies of the widening gap between the 'haves and the

have nots.’ Recently, however, the literature has turned its analytical focus to understanding *global* inequality, particularly in light of data advancements in many emerging economies and the scholarship of researchers such as Milanović (2016). Despite this shift in unit of analysis, few studies have adopted the European Union as the focal point of analysis. We elaborate on three sets of reasons why a pan-European measure of income inequality serves as a useful complement to national and global measures of inequality.

First, a pan-European focus on inequality carries implications for established policy targets and social objectives. As detailed in ‘The Five Presidents’ Report: Completing Europe’s Economic and Monetary Union’, Juncker (2015) explicitly call for upward economic convergence between Member States, while the European Pillar of Social Rights calls, in effect, for greater ‘social convergence’ of the EU (European Commission, 2017b). Similarly, the UN’s Sustainable Development Goals (SDGs) explicitly identify inequality-reducing targets to be achieved by 2030, combined with “sustained, inclusive, and sustainable economic growth”. A pan-European measure provides a useful tool to monitor the fulfilment of these policy targets, while an analysis of the structure of European inequality can inform future policy priorities.

Second, sociological research has offered some (albeit contested) evidence that individual perceptions of inequality and wellbeing are not limited to the boundaries of nation-states. Delhey and Kohler (2006), for example, suggest that Europeans tend to evaluate their position in society relative to other Europeans, not simply to other citizens of their country of residence. For this reason, many have criticized the national, rather than EU-wide, focus on trends in inequality (Beck et al., 2007; Heidenreich, 2016). Others, however, have disputed claims of a ‘Europeanization of reference groups’, suggesting instead that relative perceptions of wellbeing remain largely confined to national borders (Whelan and Maître, 2009; Nolan and Whelan, 2011).

Regardless of precise reference group, evidence suggests that rising levels of income inequality within the EU-28 may have consequences for intra-European migration, public trust, and social cohesion. Standard migration models assume that income differentials induce migration from poorer to richer areas (Todaro, 1969), and recent trends in the EU serve as evidence to this claim: after the economic recession hit European economies in 2009, the level of migration from Southern and Eastern European countries towards wealthier countries increased (Fries-Tersch et al., 2016).³ Moreover, increases in inequality between states in a common federation or union can negatively affect social cohesion and undermine support for the union's institutions (Milanović, 2016; Ferroni et al., 2008; Ferrera, 2005). These issues appear to be particularly relevant in the EU as levels of trust in EU institutions have generally declined throughout the past decade (European Commission, 2017d)⁴ and as frictions have intensified regarding financial obligations between some Member States (i.e. Greece and Germany, as well as public debate in the UK leading up to the 'Brexit' referendum).

Several previous studies have made progress in describing pan-European inequality trends (Heidenreich, 2016; Darvas, 2016; Brandolini, 2007; Dauderstädt and Keltek, 2014; Benczúr et al., 2017; Eurofound, 2017; Firebaugh, 1999; Bornschier et al., 2004; Beckfield, 2009). Of these, Heidenreich (2016) provides perhaps the most comprehensive portrait to-date, estimating EU-wide inequality with EU-SILC data and decomposing the mean logarithmic deviation of disposable incomes into between-country and within-country inequality. However, no analysis has, to our knowledge, combined four elements necessary for a more thorough understanding of pan-European inequality: household income data across all Member States over time, pre/post evaluations of market and disposable income inequality, decomposition of

³ Over the 2009-2014 period the migration inflow was positive especially in Germany (+219%), Austria (+86%), the UK (+57%), Denmark (+54%) and Finland (+60%), with increasing immigration to Germany and Austria from both Southern and Eastern European countries (Fries-Tersch *et al.* 2016, p. 13).

⁴ In 2016, however, levels of trust in the EU did experience a slight increase and remain overall higher than trust in national governments as documented in QA9 of the cited publication

the relative importance of economic convergence versus national welfare states in shaping EU-28 inequality, and benchmarking against the US using more accurate American income data. As we detail, the combination of these four features leads to greater clarity of the structure of pan-European inequality and more precise policy recommendations for achieving a more equal Europe.

United States and the Union of European Welfare States

To contrast the relative importance of within- versus between-state income differences in shaping union-wide inequality, we benchmark the levels and structure of income inequality in the EU-28 against that of the United States. Traditionally, indicators of poverty or inequality in the US are compared to those of individual EU Member States (Corak, 2013; Brandolini and Smeeding, 2011; OECD, 2015). Some scholars have argued, however, that such comparisons may conceptually undervalue the size and heterogeneity of the U.S (Smeeding and Rainwater, 2001; Alber et al., 2010). Consider that New York City, on its own, has a larger population (8.5 million) than roughly half the EU Member States. If inequality in the US is compared to the larger, more heterogeneous EU — encompassing all 28 of its Member States — does the EU still stand out as the more egalitarian union? In decomposing the structure of inequality within the two unions, we focus on two particular distinctions of the US that should facilitate lower levels of inequality within the country: its relative homogeneity and its mechanisms of cross-state redistribution.

The relative homogeneity of the US compared to the EU-28 is straightforward: the economic, political, social, and culture differences between Sweden and Romania are, by any imaginable measure, likely to be larger than the differences between New Hampshire and Mississippi. Consider, for example, that disposable median income in Sweden is more than 10 times larger than that of Romania, while the richest state in the US has a median income only

1.6 times larger than the poorest state (Eurostat, 2017; Guzman, 2017). Even after correcting for purchasing power between countries and states, the relative differences remain large. Given this, the US has an inherent advantage in reducing levels of inequality: the relative difference *between* states is likely to be much smaller than the differences in incomes between the EU-28. Upward economic convergence between Member States has long been a priority for the European Union; from an inequality perspective, however, it remains unclear the extent to which convergence between countries affects pan-European income inequality.

It is well established that the ‘liberal’ or ‘residualist’ welfare state within the US is less conducive toward narrowing income differences than the more robust tax and transfer systems of Western and Northern Europe (Alber et al., 2010; Esping-Andersen, 1990; Alesina et al., 2001). Nonetheless, the American welfare state’s mechanisms of cross-state redistribution provide the US an institutional advantage (relative to the EU-28) in generating reductions of within-state inequality even in its comparatively poor regions. Several of the nation’s largest social programs – Old-Age, Survivors, and Disability Insurance (OASDI); the Earned Income Tax Credit (EITC); the Supplemental Nutrition Assistance Program (SNAP, generally referred to as ‘food stamps’); and Medicare – are predominantly federally funded. Though many states offer supplements to the EITC and each manages its own social assistance program (Temporary Assistance for Needy Families), spending on state-administered social programs remains small and is steadily declining relative to federal spending on social programs (Falk, 2014). The result is that federal tax revenues, to which states with higher shares of high-income households contribute more, are redistributed in the form of transfer benefits to states with greater shares of low-income or vulnerable households. This system of ‘social federalism’ is largely absent in the EU, where social policy is legislated and administered at the national level.⁵ As a result,

⁵ However, some actions in the context of the Cohesion Fund and the European Regional Development Fund aim to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions.

welfare states across the EU-28 are more diverse in size and scope: poorer Member States tend to have less financial capacity administer a robust welfare state, whereas richer Member States can perhaps more effectively narrow income differences through generous social policies. While several proposals have been put forth to create a European-wide unemployment scheme (European Commission, 2017c) or to redistribute funds toward social protection schemes in poorer countries (Jones, 1993), social policy nonetheless remains a national competence. Unclear, however, is the extent to which this decentralization prevents the EU-28 from achieving lower levels of inequality. It may be the case that the ‘European social model’ (Alber et al., 2010), or the tendency for its Member States to prioritize egalitarian labor markets and welfare states, is sufficient to produce lower levels of pan-European inequality despite the union’s lack of cross-state redistribution. Conversely, the differences between Member States – both in economic performance and redistributive capacity – may be too large to overcome the homogeneity and institutional advantages of the US.

Economic Convergence & Egalitarian Institutions

With these differences of homogeneity and welfare state institutions in mind, we highlight two narratives that guide our measurement, decomposition, and comparison of inequality in the EU-28 and US. The *economic convergence* narrative is rooted in the European Union’s desire to “deepen its Economic and Monetary Union” and achieve greater macroeconomic homogeneity among its diverse Member States (and its newer, less wealthy Member States, in particular) (Juncker, 2015; European Commission, 2017a). If economic convergence were to be of greater consequence toward the reduction of income inequality, we might find in our analyses that between-state inequalities are of greater relevance than within-state differences in explaining union-wide inequality. In other words, the relative homogeneity of the 50 United States is more significant than the equalizing effect of national tax and transfer systems. If this were the case,

we might expect the data to point toward three findings: that income inequality in the US will be lower than pan-European inequality; that between-country inequality will contribute more to pan-European inequality than within-country income differences; and that if the EU-28 matched the between-state homogeneity of the US, it would see greater relative reductions in inequality than if the US matched the within-state inequality of the EU-28.

Alternatively, the efficacy of national welfare states in narrowing within-country income differences may prove to be more consequential for union-wide inequality than cross-state homogeneity. We refer to this as the *egalitarian institutions* narrative: the role of national labor market and welfare state institutions in reducing within-country inequality may be more consequential than between-state homogeneity. If this were the case, we might expect to find that the EU-28, despite its relative diversity, has lower levels of inequality than the US; that within-country inequality will contribute more to pan-European inequality than between-state diversity; and that if the US matched the within-state inequality of the EU-28, it would see greater relative reductions in inequality than if the EU-28 matched the between-state homogeneity of the US. We now turn toward testing these two narratives.

DATA & METHODS

Harmonized Household Income Data

We use household income data from EU-SILC to obtain pan-European income inequality measures, and data from the US Current Population Survey (CPS ASEC) for the United States. The two surveys allow for comprehensive and comparable definitions of pre-fisc (‘factor’) and post-fisc (or ‘disposable’) income for the 28 EU Member States and 50 United States. Our timespan runs from 2006 to 2014, the first and latest years in which comparable household income data for each of the EU-28 is available.⁶

⁶ We refer to the year (2014) of the income reference period rather than the survey year (2015). Most EU-SILC samples inquire about income in the previous year, with the exception of the UK, in which the survey respondents

The CPS ASEC suffers from severe underreporting of means-tested transfers; thus, incomes are underestimated in many households in the bottom half of the income distribution. Prior research shows, for example, that between 40 to 60 percent of transfers from the TANF, SNAP, and SSI programs are not captured in the survey data (Meyer and Mittag, 2015; Parolin, 2017). To address this, we apply benefit imputations from the TRIM3 model developed by the Urban Institute. The TRIM3 augmentations match administrative records on social assistance caseloads across the 50 states to impute more accurate information on TANF, SNAP, and SSI benefit receipt back into the survey data. Underreporting of means-tested transfers has not been identified as a similar issue in the EU-SILC data. This is largely due to the reliance in many countries on register data, which provide more precise estimates of household income.⁷ Thus, the available evidence suggests that use of the TRIM3 imputations provides a more accurate comparison of the two unions rather than ‘overcorrecting’ for the US.

We follow the framework of LIS, the Cross-National Data Centre in Luxembourg, in harmonizing our income concepts between the EU-SILC and CPS ASEC. Our pre-fisc income variable includes gains from employment (including self-employment) and gains from rents, interest, and dividends. Our post-fisc variable additionally takes into account all taxes and transfer income. We do not include imputed rents into our analyses. In Appendix I, we provide an overview of the income components used to assess household income in the EU-SILC and CPS ASEC. We apply the modified OECD equivalence scale to adjust the income concepts for the household size. In robustness checks available in the online appendix, we also test our findings using the square root equivalence scale, but the findings are not substantively altered.

are asked about their current income. To solve this reference period mismatch, we substitute the income variables for the UK in every EU-SILC cross-sectional file with those of the previous year. Thus, our analysis uses EU-SILC files from 2007 to 2015 to refer to incomes during the period of 2006-2014.

⁷ Countries using register data include Sweden, Finland, Slovenia, the Netherlands. In recent years, France, Italy, Latvia, Spain, Austria and Ireland have also started to use income data from registers.

To ensure that the income concepts are comparable across all countries, we follow standard practice in correcting the income variables for national price-level indices (Milanović, 2011). We download price-level indices normalized to EU-28=1 from Eurostat (`prc_ppp_ind`), selecting them for different levels of aggregation (GDP or household final consumption expenditure (HFCE)). We present the results for the income distributions corrected for the GDP-based price-level indices, but provide the results for the HFCE-corrected income distribution in the online appendix. Price indices also vary across the 50 United States. To account for this, we apply the US Bureau of Labor Statistics' regional price parities (RPPs) to incomes in each state (Cover, 2016). The RPPs indicate, for example, that one dollar in the state of Alabama tends to carry more purchasing power than one dollar in Alaska.

We combine data for the 28 EU Member States into one sample for each year to produce pan-European estimates of income inequality.⁸ Our primary analyses observe the total population of each of the samples; in 2014, for example, this leads to a total sample size of 556,953 individuals for EU-28. In Appendix II, however, we also present all inequality results for the working-age population (ages 18 to 65). The primary differences come when observing pre-fisc income inequality, as the estimates using the total sample includes many households headed by pensioners, which are less likely to have any factor income. In each wave, individual weights account for the different probabilities of selection and survey non-response at the individual level. Moreover, the weights are constructed in a way that it makes the merged sample of all EU countries representative of the EU population when it is applied to EU-wide statistics. We compute standard errors using the household identifier as primary sampling unit.⁹ We also use the standard population weights in the CPS ASEC for our US estimates.

⁸ Data for Malta are only available from 2007 onward, while data for Croatia are available from 2009 onward. We include these countries for all years in which data are available. In a robustness check available upon request, we also re-run all analyses excluding these countries for all years to ensure longitudinal consistency, but the trends and primary findings are not substantively altered.

⁹ The original primary sampling unit variable provided in the EU-SILC data (DB060) was missing for some countries and there were less primary sampling units than reported; thus, we use the household identifiers.

Measuring Inequality

Our primary measure of income inequality is the Gini coefficient, the most utilized index in inequality research. Other inequality measures, such as the generalized entropy family of indices, the Atkinson indices and some quantile ratios, were also computed and are available on request. After we present levels and trends of the Gini coefficient for the EU-28 and US, we turn toward decomposing the relative contribution of within-state and between-state inequalities. To do this, we exploit the property of decomposition in non-overlapping groups of individuals typical of many inequality indices. For example, the overall inequality measured by the Theil index (GE_1) can be additively decomposed as the sum of the between-country and the within-country inequality:

$$GE_1(Y) = GE_1^B(Y) + GE_1^W(Y) \quad (1)$$

with:

$$GE_1^W(Y) = \sum_{m=1}^M v_m GE_1(Y^{(m)}) \quad (2)$$

where v_m is country m 's share of the total income and $GE_1(Y^{(m)})$ is the inequality within m . In turn, $GE_1^B(Y)$ is the between-country inequality, in which each individual is assigned the mean income of the country in which he or she is surveyed. We decompose the within- and between-contributions by country of current residence (in the EU) and state of current residence (in the US). As such, the between-country component of the decomposition should be interpreted as inequality between the mean incomes of citizens residing in the different countries or states. We present only the Theil index (GE_1) decompositions, but data for mean logarithmic deviation (GE_0) decompositions are provided in the online appendix.

In a counterfactual analysis, we evaluate how EU-28 inequality would change if the Member States matched the between-state income homogeneity of the 50 United States, but maintained their relative within-state income inequality. To do this, we substitute the between-state contribution ($GE_1^B(Y)$) of the EU with that of the US to produce a counterfactual estimate

of pan-European inequality. We also perform a similar analysis to evaluate how inequality in the US would change if it were match the within-country inequality of the EU Member States, substituting the within-state ($GE_1^W(Y)$) of the US with that of the EU. The Stata code to replicate our analyses can be found in the online appendix.

RESULTS

With our equivalized, PPP-adjusted income distributions for the EU-28 and US, we now evaluate levels and trends in income inequality. We first present trends in post-fisc income inequality within the two unions, then evaluate the role of taxes and transfers in shaping these results. We then decompose the relative contribution of within-state inequality versus between-state inequality toward overall income disparities within the two unions. As a final step, we construct a counterfactual in which the EU-28 matches the between-state homogeneity of the US, and the US matches the within-state inequality of the EU-28, to further evaluate the relative significance of egalitarian institutions versus economic convergence in shaping inequality.

Figure 1 displays the Gini index for net disposable income of households in the EU-28 and US from 2006 to 2014.

Figure 1: Income inequality (Gini) in the United States and EU-28

Note: Y-axis begins at 0.3 to narrow focus on changes over time. Lower- and upper-bounds represent 95 percent confidence intervals.

Despite the relative diversity among the 28 EU Member States, post-fisc income inequality is consistently *lower* than that of the United States. In 2014, for example, the Gini of the EU-28 was .35, while that of the US was .38 (a statistically significant difference). Though levels of inequality nearly converged in 2010, the peak of the recession, the differences have otherwise remained steady since 2006. Within the EU-28, we do observe slight evidence of a decline in income inequality over time: from 2006 to 2014, the Gini index fell from .36 to .35 — a small, but statistically significant decline. Conversely, the Gini in the US in 2014 was not statistically different than its value in 2006.

How does our evaluation of pan-European inequality change if we evaluate pre-fisc income inequality? Figure 2 adds the Gini coefficient from market incomes in the EU-28 and

US. The gap between the pre- and post-fisc inequality levels provides a rough estimate of the role of taxes and transfer systems in reducing income inequality within the two unions.

Figure 2: Inequality (Gini) among United States and EU-28 Member States Before/After Taxes & Transfers

Note: Y-axis begins at 0.3. Lower- and upper-bounds represent 95 percent confidence intervals.

As the dashed lines indicate, pre-fisc income inequality has remained slightly higher in the EU-28 relative to the United States.¹⁰ Though the average EU Member States performs slightly better than US with respect to pre-fisc inequality (an unweighted mean around 0.5 in 2014), between-country differences in pre-tax wages add enough to overall inequality to move the EU-28 line above that of the US. A key difference between the US and EU-28, though, is the relative trends: while factor income inequality has basically remained steady in the EU since

¹⁰ As detailed in Appendix II, however, this is not the case for pre-fisc inequality for the *working-age* population (ages 18 to 65). From 2009 to 2014, differences in levels of pre-fisc inequality among working-age adults in the US and EU were not statistically significant between the two unions.

2006, it has increased from .506 to .532 in the US, a 5 percent increase, from 2006 to 2014. By 2014, pre-fisc inequality in the US nearly climbed to the level of the EU. The higher levels of pre-fisc inequality despite lower levels of post-fisc inequality reflect the relative strength of European welfare states: in 2014, European tax and transfer systems reduced the level of income inequality by 36 percent (from 0.54 to 0.35), while the post-fisc inequality fell relative to pre-fisc inequality by 29 percent (from 0.53 to 0.38) in the US. As there is no unified European welfare state that coordinates tax and transfer payments across countries, the reduction in inequality should be interpreted as the aggregate effect of the national and subnational tax-and-transfer systems. These findings provide initial support for the role of *egalitarian institutions*: though the 28 Member States are more diverse and have higher levels market income inequality, the strength of national welfare states nonetheless drives inequality to a lower level than that of the 50 United States.

We now turn toward decomposing the relative contributions of income differences *within* countries versus *between* countries in explaining the inequality trends presented above. As detailed before, an increase in the between-country component of EU-28 inequality would signal divergence between countries, contra to the aims of the European Union's policy targets. We anticipate between-state inequality in the US to be substantially lower due to greater relative homogeneity among the 50 states, but give particular focus to extent to which the largely-centralized American tax and transfer system reduces between-state inequalities in the US (in contrast, perhaps, to the decentralized and more diverse European welfare states).

The decomposition results are presented in Figure 3 (EU-28) and Figure 4 (US).

Figure 3: Theil decomposition of income inequality among EU-28 Member States (disposable household income)

Note: Values represent GE(1) (Generalized Entropy index) inequality indicators.

We focus first on the EU-28. As Figure 3 details, inequality between the EU Member States accounted for about 27.2 percent of overall inequality in 2006. By 2014, the relative between-country inequality contributed to an estimated 21.2 percent of overall pan-European income inequality, a 22 percent decrease from its 2006 level. The general decline of the relative between-state contribution signals positive news for the European Union's push for convergence: country of residence may be increasingly giving way to intra-country differences in shaping EU-28 inequality, although this decline has recently stopped.

Conversely, income inequality in the US (Figure 4) is almost entirely a within-state story. In each year of analysis, less than one percent of overall inequality in the US is due to differences in income distributions across states. Despite divergence across the 50 states in

social and labor market policies (Bruch et al., 2016), we observe no significant change in between-state inequality from 2006 onward. Simply put, income inequality is high in each of the 50 states (the Gini index reaching a low of 0.32 in Utah, still higher than that of most EU Member States) while average incomes, particularly after accounting for regional price differences, vary little between states.¹¹

Figure 4: Theil decomposition of income inequality among United States (disposable household income)

Note: Values represent GE(1) (Generalized Entropy index) inequality indicators.

To what extent do taxes and transfers affect the relative contributions of within- and between-state inequality? To evaluate this, we assess trends in the absolute (rather than relative) contribution of between-state differences in equality. Similar to our prior analyses, we depict

¹¹ Even prior to applying regional price parities (RPPs), the within-state contribution to U.S. inequality is 97.9 percent in 2006 and 98.4 percent in 2014. Thus, the RPPs are not a central source of the small within-state contribution.

these trends before and after taxes and transfers to provide a sense of how welfare states shape levels of inequality. Figure 5 presents these results.

Figure 5: Between-state contribution (absolute) to inequality before and after taxes & transfers

Note: Values represent GE(1) (Generalized Entropy index) inequality indicators. Lower- and upper-bounds represent 95 percent confidence intervals.

The dashed lines depict pre-fisc levels of inequality, while the solid lines depict post-fisc inequality. Again, Figure 5 displays only the between-country (or between-state) contribution to overall inequality. Within the EU-28, we see declining levels of between-country inequality from 2006 to 2009, but stagnation from 2009 onward. For pre-fisc inequality, the EU-28 shows steady decline from 2006 (.061) to 2014 (.047). In 2013 and 2014, however, we find that taxes and transfers actually *increase* the level of inequalities between EU Member States, albeit by a very small level. This finding suggests that differences in the relative

redistributive strength of national welfare states across Europe slightly widen differences in average household incomes across EU Member States in recent years. In the United States, we find that taxes and transfers play only a small role in decreasing between-state inequalities: in all years of analysis, between-state differences in income inequality remain small both before and after redistribution with little change over time. But rather than increasing between-state differences, as in the case in the EU-28, the American welfare state has a small but statistically significant reduction effect on between-state inequality. The small differences in pre- and post-fisc levels of between-state inequality demonstrate that tax and transfer systems have a strong reduction effect on within-state inequalities (as detailed in Figure 2), but make little difference in average incomes between states. Economic convergence thus appears necessary to narrow between-state inequalities, but what effect might such convergence have on pan-European income inequality?

To assess this, we now turn to our counterfactual assessment of EU-28 and US inequality. As detailed, we test the extent to which inequality in the EU-28 would fall if the 28 Member States matched the economic homogeneity of the 50 United States, but maintained their relative within-country inequalities. We then test the extent to which inequality in the US would fall if the states matched the within-country inequality of the US, but maintained their relative cross-state homogeneity. From the data presented in the previous figures, we can deduce that the US will see a greater relative decline in its level of inequality: as the counterfactual states will be identical (both will have the within-state inequality of the EU-28 and the between-state inequality of the US), the union with the higher level of observed inequality (the US) will naturally see a greater relative decline. Of particular interest, though, is a depiction of the extent to which income inequality in either polity would fall in the counterfactual scenario. Figure 6 presents the findings from results.

Figure 6: Counterfactual union-wide inequality in 2014 if the US achieved the within-state inequality of the EU-28 and if the EU-28 achieved the between-state homogeneity of the US

Note: Within- and between-contributions to GE(1) (Generalized Entropy index) inequality indicators are presented.

To what extent could economic convergence further narrow pan-European income inequality? If the EU-28 were to match the between-state convergence of the US, but while maintaining the same relative income distributions, EU-28 income inequality would fall by an estimated 20 percent (from .214 to .171 using the Theil index decomposition). Conversely, if the US were to match the within-state inequality of the EU, it would see a 34 percent reduction in overall inequality (from .258 to .171). These findings support the *egalitarian institutions* narrative: more so than economic convergence between states, the ability of welfare states to reduce income differences within states is more consequential toward reducing union-wide income inequalities.

DISCUSSION & CONCLUSION

Diverging from inequality analyses that compare the US to individual EU Member States, this paper decomposes and compares trends of pan-European income inequality with that of the 50 United States. Our corrections for the underreporting of means-tested transfers in the US allow us to present the most up-to-date, accurate, and comparable portrait of income inequality within the two unions. Applying this data, we first evaluate the performance of taxes and transfers in reducing income inequality across the EU-28 and US, then decompose the relative contribution of within-state versus between-state income differentials toward union-wide inequality. We now summarize our primary findings and elaborate on their implications for the role of social policy in mitigating union-wide income inequality in the future.

Our findings reveal that despite the greater relative heterogeneity of the EU-28, its level of income inequality has been consistently lower than that of the United States from at least 2006 onward. This is largely due to the strength of national welfare states across the European Union: though pre-fisc income inequality is higher in the EU-28, redistributive systems bring it down to a level lower than that of the US. We also find that the strengthening of egalitarian institutions within states is of greater consequence toward the future reduction of pan-European inequality than economic convergence between states. If the EU-28 were to match the economic homogeneity of the 50 United States, its inequality would fall by about 20 percent -- a notable reduction, but still less than the US would gain (34 percent reduction) if it matched the within-state inequality of the EU-28.

This does not mean, of course, that greater economic integration is an unworthy aim: a one-fifth reduction in pan-European inequality would be a notable achievement, and there are other benefits beyond the reduction of income inequality that would likely result from a more economically homogenous Europe. Moreover, economic growth in the EU-28's comparatively poorer Member States may strengthen the capacity necessary for such states to enhance

redistributive systems, or it may coincide with a reduction of pre-fisc income inequality. However, the evidence is clear that the greatest gains to be made in reducing EU-28 inequality are through the reduction of within-country income disparities. Such findings are in contrast, however, with observed policy developments and country-level inequality trends: within most EU Member States, income inequality has risen throughout the past decade, while the generosity of certain social protections, such as levels of minimum income protections, has stagnated or declined throughout most Member States in recent years (OECD, 2017; Cantillon and Vandenbroucke, 2014).

Of course, large diversity exists in the extent to which EU Member States currently reduce levels of within-country inequality. A country-by-country breakdown reveals that taxes and transfers in Finland reduced levels of inequality by nearly 50 percent in 2014 (a change in the Gini index from .495 to .251), while the Bulgarian welfare state led to only a 26 percent reduction (.502 to .370). Differences in within-state inequality reductions among the 50 United States are far narrower: the states with the highest and lowest relative reductions in inequality after taxes and transfers were West Virginia (37 percent decrease in 2014) and Texas (25 percent decrease). As detailed, one institutional advantage of the American welfare state is its mechanisms for cross-state redistribution: federally-administered transfers act to redistribute funds from richer to poorer states, likely contributing to the smaller variance of within-state inequality reductions.

It is perhaps unlikely, however, that the European Union will soon adopt a union-wide tax and transfer scheme to equalize the redistributive capacity of states as diverse as Finland and Bulgaria. Though Gerhards et al. (2016) find that a majority of adults in Germany, Poland, and Spain support the implementation of a pan-European welfare state, recent policy developments within the European Commission point toward the establishment of non-binding principles and recommendations (European Commission, 2017b). Nonetheless, attempts to reduce income

disparities within the EU-28 must consider how to strengthen welfare state and labor market institutions, and of newer EU Member States in particular. Consider that the six Member States with the smallest relative decline of within-country inequality after taxes and transfers – Bulgaria, Latvia, Cyprus, Lithuania, Estonia, and Romania – are each part of the enlargement of the European Union from 2004 onward.

Proposals for and critical discussions on mechanisms to enhance social solidarity between Member States have emerged in recent years. The European Pillar of Social Rights sets out core principles that would, if acted upon, lead toward the enhancement of ‘egalitarian institutions’ within Member States. The Pillar explicitly prioritizes the development of fairer labor market conditions and broader social protections, touching on issues ranging from wage and gender equality to minimum incomes and unemployment schemes. Though the focus of the Pillar is of course broader than a concern for income inequality, progress toward its aim of creating a “fairer economic and monetary union” would surely contribute to a narrowing of income differences (European Commission, 2017b). A potential weakness, however, remains the apparent lack of the Pillar’s binding enforcement mechanisms with respect to most of its policy recommendations.¹² Prior EU strategies aimed at reducing poverty and narrowing income disparities (i.e. Lisbon and Europe 2020) have put forth similar policy recommendations. The Pillar’s principle of ensuring a “right to adequate minimum income benefits”, for example, mirrors a 1992 recommendation calling for “the basic right of a person to sufficient resources and social assistance” (European Economic Community, 1992). Nonetheless, minimum income protections in most EU Member States sit far below anti-poverty levels (Cantillon et al., 2017). As others have pointed out, these non-binding policy recommendations act as weak instruments

¹² The non-binding nature mostly refers to the implementation of the Pillar in the frame of the European Semester; however, some elements of the Pillar have already spurred legislative proposals related to the posting of workers, work-life reconciliation packages, and more.

toward reducing levels of poverty or income inequality (Cantillon et al., 2017; Saraceno, 2009; Daly, 2006), and concerns exists that this may remain the case with the Pillar of Social Rights.

Vandenbroucke (2017: 4), meanwhile, offers a more concrete call for a ‘European Social Union’ to “support national welfare states on a systemic level in some of their key functions and guide the substantive development of national welfare states”. Specific policy instruments to achieve these ends include automatic stabilization mechanisms in the form of, say, a European unemployment benefit scheme (European Commission, 2017c). As Vandenbroucke writes, and as the evidence in this paper suggests, *social* convergence is as important as *economic* convergence if the European Union is to see declines in inequality moving forward. The European Pillar of Social Rights and calls for a ‘European Social Union’ both offer promising steps toward that aim, but with an important caveat: if policy strategies and ‘key principles’ are established without an accompanying enforcement mechanism, it remains unclear whether such efforts will offer the progress needed to strengthen national welfare states and labor market institutions.

In closing, we call attention to several limitations of our study. Though we focus exclusively on income inequality, future studies may expand the scope of analysis to measure pan-European inequalities across age group, family status, race and ethnicity, education, or other subgroups. Moreover, as data on household wealth becomes more accessible, a pan-European focus of wealth inequality would be of great relevance in measuring the broader disparities within and between EU Member States. An opportunity also exists to understand how regional variation at the subnational level contributes to national and supranational inequalities. Given ongoing residential segregation of high-income earners into cities, urban-rural divides in income differences deserve greater consideration. Though our analysis finds low levels of between-state homogeneity in the US, for example, this may mask significant urban/rural inequities

within states, which may have rising political and social consequences (Lichter and Ziliak, 2017).

Finally, future research should continue to investigate how newer EU Member States, in particular, can overcome fiscal or political limitations to enhance their systems of social protection. As our findings suggest, the strengthening of welfare state and labor market institutions within Member States must accompany economic convergence if the EU is to become a more equal union.

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APPENDIX I: Harmonized Income Concept

We include the following items into our definitions of post- and pre-fisc household income for the EU Member States and the United States. This framework largely follows the harmonization process of LIS, the Cross-National Data Centre in Luxembourg.

Disposable (Post-Fisc) Household Income:	Factor (Pre-Fisc) Household Income:
<ul style="list-style-type: none">• Gross employee cash or near cash income• Gross cash benefits or losses from self-employment• Pensions received from individual private plans• Income from rental of a property or land• Regular inter-household cash transfers received• Interests, dividends, profit from capital investments• Family/children allowances• Social exclusion benefits not classified elsewhere• Housing allowances• Unemployment benefits• Old-age benefits• ‘Survivor’ benefits• Sickness benefits• Disability benefits• Education-related allowances• Regular taxes on wealth• Tax on income and social insurance contributions• Regular inter-household cash transfers paid	<ul style="list-style-type: none">• Gross employee cash or near cash income• Gross cash benefits or losses from self-employment• Income from rental of a property or land• Regular inter-household cash transfers received• Interests, dividends, profit from capital investments

APPENDIX 2: Inequality among Working-Age (18 to 65 years old) Population

Figure A1: Inequality (Gini) among United States and EU-28 Member States before/after taxes & transfers among working-age population

Note: Y-axis begins at 0.3. Lower- and upper-bounds represent 95 percent confidence intervals.

Figure A2: Between-state contribution (absolute) to inequality before and after taxes & transfers, working-age population

Note: Lower- and upper-bounds represent 95 percent confidence intervals.