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Yonatan Berman[1] and Branko Milanovic[2]

December 2020

Abstract

Homoploutia describes the situation in which the same people (*homo*) are wealthy (*ploutia*) in the space of capital and labor income in some country. It can be quantified by the share of capital-income rich who are also labor-income rich. In this paper we combine several datasets covering different time periods to document the evolution of homoploutia in the United States from 1950 to 2020. We find that homoploutia was low after World War II, has increased by the early 1960s, and then decreased until the mid-1980s. Since 1985 it has been sharply increasing: In 1985, about 17% of adults in the top decile of capital-income earners were also in the top decile of labor-income earners. In 2018 this indicator was about 30%. This makes the traditional division to capitalists and laborers less relevant today. It makes periods characterized by high interpersonal inequality, high capital-income ratio and high capital share of income in the past fundamentally different from the current situation. High homoploutia has far-reaching implications for social mobility and equality of opportunity. We also study how homoploutia is related to total income inequality. We find that rising homoploutia accounts for about 20% of the increase in total income inequality in the United States since 1986.

Keywords: income inequality, homoploutia, political economy

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1 Introduction

In classical political economy, and often implicitly in functional income distribution studies, it is assumed that the people who receive most of their income from ownership (capital) are different from those who receive most of their income from working (labor). In classical political economy, this was very clear: capitalists were not only assumed to be richer than workers, but to have their entire income come from property. Similarly, few workers were thought as deriving a part of their income from ownership of property. Under such "classical capitalism", workers and capitalists (or rentiers) were two separate groups of people with the composition of their personal income reflecting their positions in the process of production. Typically, of course, capitalists were at the top of the income distribution and workers in the middle or at the bottom.

In recent functional income distribution studies that have documented the increase in the capital share in many countries (Elsby, Hobijn and Şahin (2013); Karabarbounis and Neiman (2014); Dao et al. (2017)) that assumption is implicit. A concern these studies express with the rising capital share is that it is likely to lead to higher interpersonal income inequality (Piketty (2014); Wolff (2017); Kuhn, Schularick and Steins (2020)). This is so because capital income is more unequally distributed than labor income and is highly concentrated in the hands of the rich. If capital and labor income shares were similar across the income distribution (*i.e.* across poor and rich individuals), a rising overall capital share would not affect the interpersonal income distribution.

New findings on the United States show, however, that the dichotomy between capitalists and workers may no longer hold (Atkinson and Lakner (2017); Milanovic (2019)). In fact, an increasing percentage of people who are capital-income rich are also labor-income rich. Using data from US household surveys over the past thirty years, Milanovic (2019)[Ch. 2] shows that the percentage of people in the top decile of capital income who are also in the top decile of labor-income recipients has steadily increased in the United States from around 15 percent in 1980 to almost 30 percent in 2017.

This is clearly a very different capitalism (from classical): people at the top of the income distribution are simultaneously top capitalists and top wage-earners. Milanovic

(2019) called this phenomenon *homoploutia*, from the Greek word *homo* for equal, and *ploutia* for wealth or "richness". In this paper we define the phenomenon, and document and analyze the evolution of homoploutia in the United States over the past 70 years. We also study the link between the rising homoploutia and the rising interpersonal income inequality.

Homoploutia breaks the strong capital-labor segregation that exists under classical capitalism. If it were to spread to the rest of the distribution, it would also break the link between the rising capital share and rising interpersonal inequality. It thus poses at least two new problems. First, having the rich who are rich in terms of both property and skills (human capital) may enable them to create an upper class that has little in common with the rest of the population and that is able, through significant investment in offspring (Markovits 2019), to transmit these advantages across generations. Thus, social mobility will likely be reduced. Second, from an ethical point of view, high taxation of a homoploutic upper class becomes more difficult: the rich are not mere passive coupon-clipping rentiers of the classical capitalism, but hard, and often excessively hard, working wage-earners.[3]

To quantify homoploutia we use the intersection between the top decile of capital-income recipients and labor-income earners (top10K-top10L or $H_{10,10}$). Under classical capitalism, we would expect top10K-top10L to be very small, and even close to zero. The more different it is from zero, the more we move away from the capital-labor dichotomy, at least at the top of the income distribution. We then estimate $H_{10,10}$ in the United States since 1950 by combining three datasets which allow covering different time periods: the Luxembourg Income Study (2020), the US Distributional National Accounts (Piketty, Saez and Zucman 2020) and early versions of the Survey of Consumer Finances (Kuhn, Schularick and Steins 2020). We find that homoploutia was low after World War II, has increased by the early 1960s, and then slightly decreased until the mid-1980s. Since 1985 it has been sharply increasing: In 1985, about 17% of adults in the top decile of capital-income earners were also in the top decile of labor-income earners. In 2018 this indicator was about 30%.

[3] Kuhn and Lozano (2008) find that in 2002 the best-paid ventile (20 percent) of workers were twice as likely to work long hours (defined as more than 50 hours per week) as the bottom ventile of workers. This is the reversal of the relationship that existed twenty years earlier.

We also look at the relationship between $H_{10,10}$ and overall capital share, and the relationship between $H_{10,10}$ and marginal distributions of capital and labor incomes. These relationships are contingent on what happens elsewhere. For example, marginal distributions of capital income and labor income may have become more unequal, leading to increasing overall inequality (given some positive rank correlation between capital and labor incomes), while leaving $H_{10,10}$ unaffected.

Similarly, if there is an increase in the capital share, raising, for example, all capital incomes proportionally (so that the marginal income distribution of capital incomes does not change), homoploutia may be unaffected. The composition of the capital top 10% will in that case remain the same (the same people would be in the top 10% by capital income), and whether $H_{10,10}$ will go up or down will depend on the changes in the top 10% of labor-income recipients. The latter can go either way and so could $H_{10,10}$. In conclusion, for homoploutia to increase it is not sufficient that one of several factors (correlation between capital and labor incomes, marginal distributions of capital and labor incomes, or the capital/labor share) move in a given direction, regardless of what happens to the other factors. Yet, in practice, we find a strong and robust positive relationship between homoploutia and labor income inequality, especially after 1985. This will lead us to formulate a hypothesis about the forces that drove US homoploutia up in the recent period.

The understanding of these relationships allows us to study the link between rising homoploutia and the rising interpersonal income inequality in the US during the past 35 years. The income share of the richest decile in the US increased between 1986 and 2020 by 10 percentage points, from 37% to 47% (Piketty, Saez and Zucman 2020). We find that, ceteris paribus, the increase in homoploutia has contributed 2 percentage points, or 20%, to this increase.

This paper contributes to different threads of literature. First, from an empirical perspective, its primary contribution is describing how homoploutia evolved in the US between 1950 and 2020. This allows a better understanding of the dynamics of income inequality over that time period. Studying homoploutia is also important for political economy and social mobility and studies of capitalistic systems. It is relevant for economic theory more generally, as many models in various subfields of economics assume a strict division to capitalists and workers, which may not be realistic anymore.

Furthermore, pointing out the increase in homoploutia has practical relevance when estimating top income shares while making assumptions on how missing income is redistributed.

The rest of the paper is organized as follows. Section 2 defines homoploutia and describes how it can be measured. Section 3 specifies our data sources and presents the main results. Section 4 discusses the link between homoploutia and interpersonal income inequality. We conclude in Section 5.

2 What is Homoploutia?

We first discuss how homoploutia is defined and measured. There are various ways in which it could be defined. One could look at how many of the top one-percenters by capital income are also top one-percenters in terms of labor income (we denote this by top1K-top1L or $H_{1,1}$). This definition would focus on the very narrow sliver at the top (see Appendix A). In this paper, our focus will be on a somewhat wider group, the intersection between the top decile of capital-income recipients and the top decile of labor-income earners (top10K-top10L or $H_{10,10}$). Under classical capitalism, we would expect $H_{10,10}$ to be small; the more different it is from zero, the more we move away from the capital-labor dichotomy, at least at the top of the income distribution.

Other partitions are possible. One could be interested in "asymmetric intersections", *e.g.*, the percentage of top 1% capital-income earners who are also in the top labor income decile (top1K-top10L). The advantage of $H_{10,10}$, and similar symmetric intersections, is that the percentage of such (top) capital-income earners in such (top) labor-income earners will be, by definition, the same as the reverse, the percentage of top labor-income earners among the top capital-income earners.

To highlight the changes in the distribution, it is also possible to look at *homophtocheia* (*phtocheia* is poverty in Greek), that is, at the percentage of people who are poor in both capital and labor income terms. For example, those that may be in the bottom decile of labor income but also in the bottom decile of capital income. For our present purposes, however, and in order to better discriminate between classical and homoploutic capitalism, it may be more interesting to look at the presence of rich

capitalists among poor wage earners (top10K-bottom10L). This is an analog of the top10K-top10L because high values of top10K-bottom10L should be characteristic of classical capitalism. On the other hand, absence of such intersection may be expected in homoploutic capitalism. As we will see in the next section, the evolution of top10K-bottom10L indeed mirrors that of top10K-top10L over the past 50 years.

We focus on the top or bottom shares, yet it is possible to define homoploutic capitalism in a more expansive way, as the situation where capital and labor shares are the same throughout income distribution, that is, where the poor receive the same percentage of their total income from capital as do the rich. Such an approach to homoploutia was recently studied by Ranaldi and Milanovic (2020). The difference between these approaches is similar to the difference between studying the inequality of the full distribution using synthetic measures like Gini coefficient, and studying the same income distribution by focusing on the top, as in works that look at the top 1% or 10% shares only. Our paper, in terms of its approach to homoploutia, belongs to the second category.

It is also possible to consider the joint distribution of labor income ranks and capital income ranks, or the copula of labor and capital incomes. The copula is commonly used in intergenerational mobility studies to describe the probability of children to end up in the *j*th income rank as adults, conditional on their parents occupying the *i*th income rank at a similar age. This concept is also used, though less commonly, in the context of the joint distribution of labor and capital incomes (see, *e.g.*, Atkinson and Lakner (2017), Aaberge, Atkinson and Königs (2018) and Alvaredo, Atkinson, et al. (2020)). We use the copula for the purpose of studying the link between homoploutia and interpersonal inequality in Section 4. Technical details on copulas are thoroughly discussed in Appendix B. Copulas are linked to the rank correlation, also a possible way to quantify homoploutia. When the correlation between labor and capital income ranks is close to 0, we expect $H_{10,10}$ to be around 10%. When the rank correlation is close to 1, *i.e.* perfect correlation, $H_{10,10}$ will be very high, and close to 100% (see also Appendix B).

Homoploutia needs, however, to be distinguished from capital-labor correlation ρ_{KL}, whether that correlation is measured by nominal amounts of capital and labor income, or by ranks. The capital-labor correlation looks at the entire distribution while

homoploutia (in the sense it is studied here) has a more specific and narrow focus on correspondence of high labor and high capital incomes among the same people. In general, we may expect that as the correlation between capital income and labor income increases, homoploutia would tend to go up. But this is not guaranteed. For example, we can imagine that the correlation between capital and labor incomes (by amounts) increases throughout and even within the top of the distribution, but that nobody who was in the top decile by capital, nor in top decile by labor, drops from those two groups (and nobody new comes in). Then, rising ρ_{KL} may not affect $H_{10,10}$.

3 The Evolution of Homoploutia in the United States, 1950—2020

The main empirical result of this paper is the characterization of homoploutia in the US since 1950. The primary indicator we use for this purpose is the share of top decile capital-income earners in the top decile of labor-income earners, the top10K-top10L, which we denote for brevity as $H_{10,10}$. The estimation of $H_{10,10}$ requires individual or household income microdata that cover the top decile of both labor and capital income.

We use three data sources:

- Luxembourg Income Study (LIS) (2020): A cross-national harmonized database based on household surveys (in the case of the US it is based on the Current Population Survey (CPS 2020)). The data are available for the US for the years 1974, 1979, 1986 and 1991—2018.
- The US Distributional National Accounts (DINA) Micro-Files (Piketty, Saez and Zucman 2020): The US DINA combine tax, survey, and national accounts data, and capture 100% of national income in the US. The data are available for 1962, 1964 and 1966—2020.
- The SCF+ (Kuhn, Schularick and Steins 2020): The SCF+ is an augmented version of the Survey of Consumer Finances (SCF), a household survey conducted every three years by the Federal Reserve. In the SCF+ archival data were added to the SCF and harmonized to account for the years that precede

1983. For our purposes, the data cover the years 1950—1971 (every three years), 1977, 1983 and every three years between 1989 and 2016.

The income definitions and the units used in the three datasets are not identical. For example, in LIS and SCF+ the unit, *i.e.* the income recipient we consider, is a household. In the US DINA it is an equal-split adult.[4] These differences are relevant for the interpretation of the results and they may also explain some of the differences in the results between the sources described below. Appendix C details the income definitions and the units used in each of the datasets. Appendix C also describes several robustness tests showing that including capital gains, pension income and insurance payments in the income definitions matters little to the homoploutia estimates.

Using the three data sources allows both covering a period of 70 years and testing the robustness of the estimates by comparing between them. To estimate $H_{10,10}$ we detect in each year the income threshold above which units are to be included in the top decile of labor income and of capital income. Then we simply count the number of capital-income earners in the top decile who are also included in the top decile of labor income. This methodology cannot be applied when income tabulations are available but requires microdata.

The main results are presented in Figure 1. Broadly speaking, it shows that homoploutia was low after World War II, when $H_{10,10}$ was about 10%. $H_{10,10}$=10% is indeed what we would expect in the case of absence of positive correlation between capital and labor incomes at the top. With a purely random distribution of labor incomes among the top decile of capital-income recipients $H_{10,10}$ would be 10%. Homoploutia increased by the early 1960s, rising to about 25%, and then slightly decreased until the mid-1980s. Since 1985 it has been sharply increasing: In 1985, about 17% of adults in the top decile of capital-income earners were also in the top decile of labor-income earners. In 2018 this indicator was about 30%.

[4] This means that individuals in tax units that are composed of more than one income-contributing individuals are assumed to contribute each an equal part to the total income (see Alvaredo, Atkinson, et al. (2020) for more details).

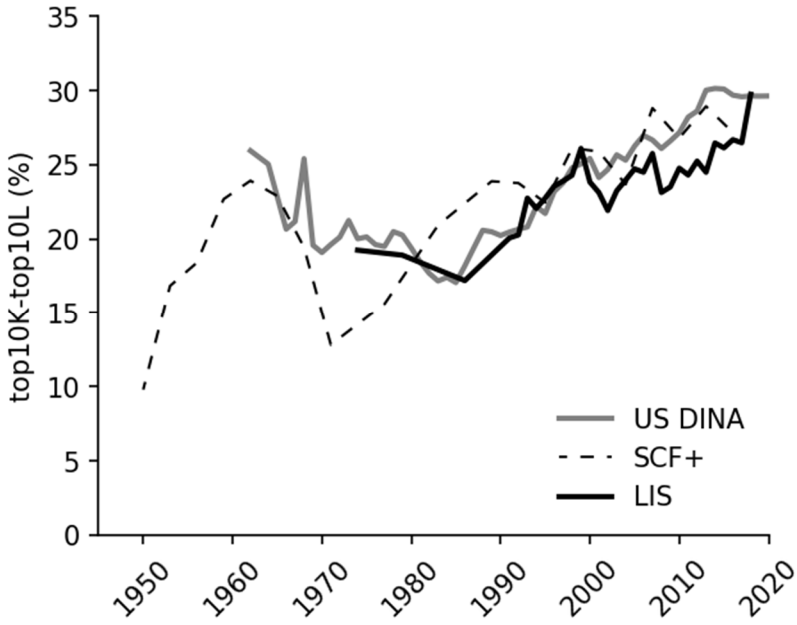

Figure 1: The evolution of homoploutia in the US, 1950—2020. The figure shows top10K-top10L, the share of top decile capital-income earners in the top decile of labor-income earners, based on three data sources: The US DINA (Piketty, Saez and Zucman 2020), the SCF+ (Kuhn, Schularick and Steins 2020) and Luxembourg Income Study (2020).

Figure 1 also shows that the different data sources are in good agreement with one another, despite the major differences between their methodologies and original raw data. Excluding one year in which the SCF+ seems to significantly underestimate homoploutia (1971, in which the SCF+ sample size was uncommonly small (Kuhn, Schularick and Steins 2020)), the various estimates are always within less than 5 percentage points from one another and follow a very similar trend. This is especially the case after the mid-1980s when all three sources move in unison.

In particular, we can see that the current levels of homoploutia are the highest to be recorded. This is indicative, among other things, of how the American capitalistic system has evolved over time. Not only that “capital is back” (Piketty and Zucman 2014) in the sense that the capital-income ratio and the capital share of income have increased in the past few decades, but also the traditional division to capitalists and laborers, which may have been relevant when $H_{10,10}$ was low, is much less relevant today (Milanovic 2019). Thus, periods characterized by high interpersonal inequality, high capital-income ratio, and high capital share of income in the past are fundamentally different from today, despite the clear similarities.

The currently high homoploutia has far-reaching implications for social mobility and equality of opportunity, as explained above.

Figure 2 complements the result in Figure 1. It shows how the average labor income rank of top 10% capital-income earners changed from 1974 onward. Until the early 1990s the average rank was limited within percentiles 45—48, meaning that on average, top 10% capital-income earners had below median labor income. The average rank had increased since to percentile 63 in 2018.

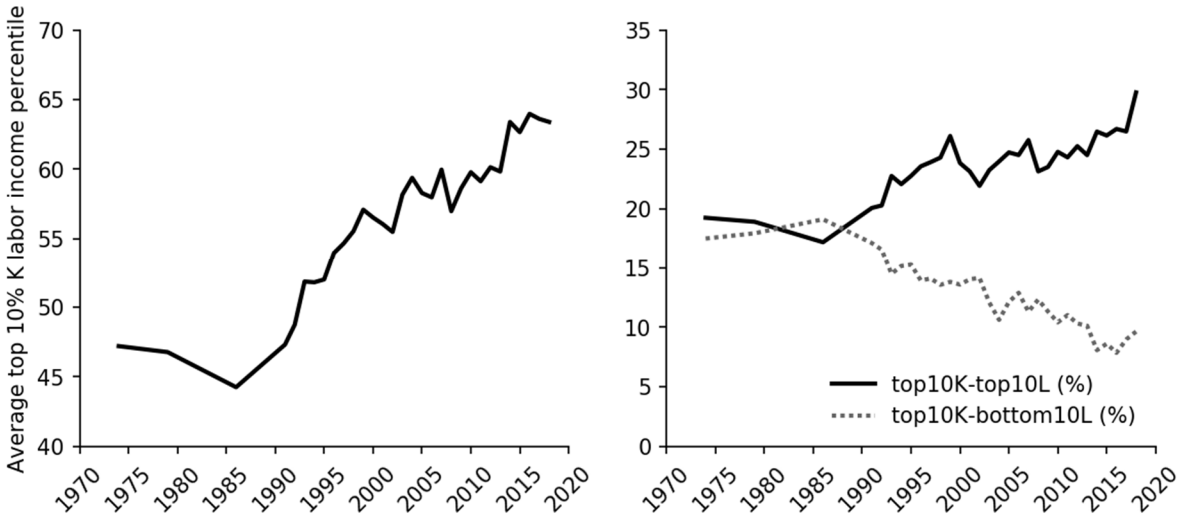

Figure 2: Additional facets of rising homoploutia. Left: The average labor income percentile among the top 10% capital-income earners in the US, 1974—2018, based on LIS data; Right: The top10K-top10L and top10K-bottom10L in the US, 1974—2018, based on LIS data.

The data do not only allow describing the evolution of homoploutia using the share of top decile capital-income earners in the top decile of labor-income earners. It is also possible to consider the share of top decile capital-income earners in the *bottom* decile of labor-income earners, the top10K-bottom10L. Such individuals or households are closer to the traditional definition of ‘capitalists’, who are capital rich and do not work. The right panel of Figure 2 depicts the evolution of top10K-top10L and top10K-bottom10L using LIS data and shows that the two measures roughly mirror one another. While the top10K-top10L increased from 17% to about 30% between 1985 to 2018, the top10K-bottom10L decreased from 19% to 10% during the same period.

3.1 Drivers of Homoploutia

The increasing homoploutia and the falling share of top capital-income earners in bottom labor income decile may indicate that an older generation of capitalists was replaced by another, characterized by much higher labor income ranks. What is driving this evolution of homoploutia? In part, the rising homoploutia may be driven by the abundance of individuals who earned high wages, saved a large share of their wages, invested it, and after some years began receiving large capital incomes. It might also be driven by an increasing importance of inheritance, received predominantly by individuals in the higher labor income ranks. Moreover, whatever the cause of the original movement toward higher homoploutia, it is likely that in the next generation homoploutia would even increase. This is because individuals born to capital-rich families that can invest heavily in children's education would likely command high wages. In this sense, high homoploutia is an important mechanism that limits social mobility.

To disentangle the different effects rare detailed longitudinal microdata, which include information on inheritance and saving, are required. Nevertheless, we can shed light on such effects in the absence of these data by considering four key variables:

- Marginal labor income inequality (quantified, *e.g.*, by the top 10% labor income share)
- Marginal capital income inequality
- The capital share of income
- $H_{10,10}$ (top10K-top10L)

These variables are a priori independent in the sense that there is no clear mechanical relationship between them. For example, there is no reason for a change in labor income inequality to mechanically lead to a change in any other variable. Therefore, robust statistical links between the variables may be indicative of deeper mechanisms at play.

To map these relationships we use the US DINA, which cover the years 1962, 1964 and 1966—2020. We regress $H_{10,10}$ on the other three components for the entire period and for the years 1986—2020, in which the changes in all of them were most visible. We also regress $H_{10,10}$ on the top 10% labor income share only for 1986—

2020. The results are presented in Table 1. They show that there is a strong and robust positive relationship between homoploutia and labor income inequality, especially after 1985. There is no robust positive or negative association between $H_{10,10}$ and the other variables before 1986.

Table 1: Regression results for the relationship between $H_{10,10}$, the overall capital share of income (S), the top 10% labor income share (L) and the top 10% capital income share (K). The values in brackets represent p-values.

	Full model (1962—2020)	Full model (1986—2020)	Lab. income only (1986—2020)
	$H_{10,10} = \alpha + \beta_S S_i + \beta_L L_i + \beta_K K_i + \varepsilon_i$	$H_{10,10} = \alpha + \beta_S S_i + \beta_L L_i + \beta_K K_i + \varepsilon_i$	$H_{10,10} = \alpha + \beta_L L_i + \varepsilon_i$
β_S	0.18	0.71	
	(0.067)	(< 0.001)	
β_L	0.66	1.53	1.74
	(< 0.001)	(< 0.001)	(< 0.001)
β_K	28.5	22.0	
	(0.310)	(0.084)	
R^2	0.72	0.97	0.96
Obs.	57	35	35

The strong association between $H_{10,10}$ and the top 10% labor income share is further demonstrated in Figure 3, showing how their evolution is almost identical after 1985.

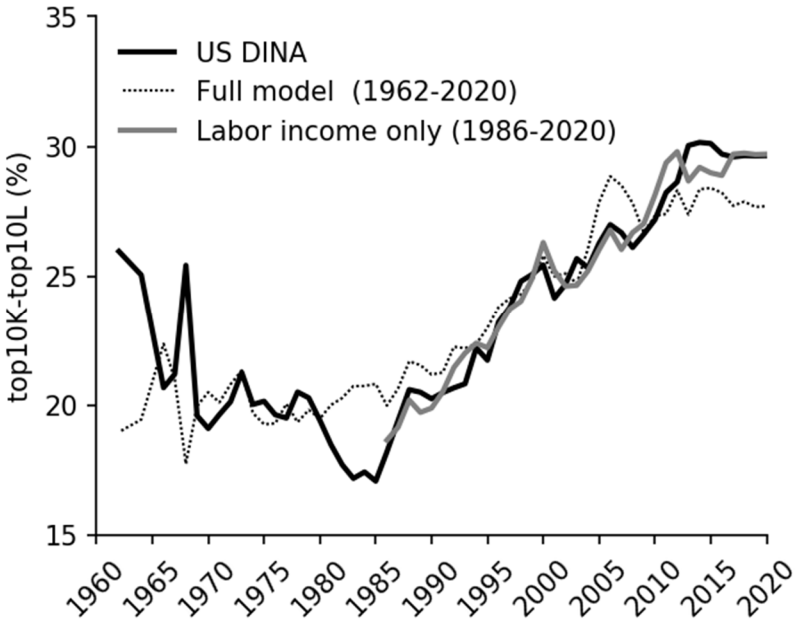

Figure 3: The statistical relationship between homoploutia, the capital share of income, the top 10% labor income share and the top 10% capital income share. The black line is the baseline estimate of $H_{10,10}$ from the US DINA. The dotted line is the estimate of $H_{10,10}$ when using the linear model $H_{10,10} = \alpha + \beta_S S_i + \beta_L L_i + \beta_K K_i$, using the capital share of income (S), the top 10% labor income share (L) and the top 10% capital income share (K) for the period 1962—2020. The gray line is the estimate of $H_{10,10}$ when using the linear model $H_{10,10} = \alpha + \beta_L L_i$ for 1986—2020.

The robust association demonstrates that there are two mechanisms for the increase in homoploutia supported by the data. First, as described, it is possible that following the increase of income inequality over the 1970s and early 1980s high-wage earners were able to save a large share of their wages, invest it, and then begin receiving large capital incomes. Another possible mechanism is that the growing labor income inequality made top labor incomes more attractive for the capital-rich, who were less incentivized to engage with the labor market while labor income inequality was relatively low. This can be reinforced by higher bargaining power that such workers may have due to their high capital incomes. This mechanism is also related to mechanisms suggested for the increase in wage inequality (Katz and Murphy 1992) and executive compensation (see, *e.g.*, Piketty and Saez (2003) and Philippon and Reshef (2012)).

We also note that the observed trend in homoploutia is not mechanically driven by structural changes in the compensation structure of executives in the past decades. While executives are paid more through stock options and shares today than a few

decades ago (Piketty and Saez (2003); Philippon and Reshef (2012); Smith, et al. (2019)), this change does not lead to higher top10K-top10L. First, bonuses and exercised stock options are accounted for as labor income. In addition, capital gains are excluded from our capital income definitions in all datasets (even when included they have a small impact on the estimates, see Appendix C). Most importantly, executive pay is only relevant for a small group within the top labor income decile, mostly restricted to the top percentile, so it cannot be a dominant factor in the top10K-top10L trend.

4 Homoploutia and Income Inequality

In addition to the possible causal relationship between labor income inequality and homoploutia, there is also a clear mechanical link between homoploutia and interpersonal or total income inequality. Intuitively, as the association between labor and capital incomes becomes stronger, *i.e.* higher homoploutia across the entire distribution, we should expect total income inequality to be higher as well. This is because both types of incomes are at least somewhat unequal. Therefore, if the highest incomes of any type (labor or capital) would be more likely to go to the same households or individuals, then the sum of those incomes, or the total income, will be more unequally distributed than in the case of low homoploutia. Thus, the increase in homoploutia in the past several decades may have played a role in the rising income inequality in the US.

Specifically, the recent 35 years have seen a rise in the US in all four variables discussed above: labor income inequality, capital income inequality, the capital share of income, and homoploutia. Keeping all the others constant, an increase in each of these indicators may mechanically lead to an increase in total income inequality. While the literature has focused so far on the first three, in this section we attempt to describe the relationship between the rise in homoploutia in the US since 1985 and the rise in total income inequality. Moreover, we can compare the relative importance of changes in homoploutia with the importance of the capital share of income, both as factors contributing to the increase in income inequality.

4.1 Homoploutia and Inequality: Static Analysis

To test the impact of homoploutia on total income inequality, we assume that the joint rank distribution of labor and capital incomes follows a Gumbel copula. This has been shown as a good approximation used in the inequality literature in recent years (Alvaredo, Assouad and Piketty (2019); Piketty, Yang and Zucman (2019); Alvaredo, Atkinson, et al. (2020)). Appendix B presents a discussion of this assumption and demonstrates the differences between realistic copulas and the approximated Gumbel copulas. Given marginal labor and capital income distributions (and implicitly the capital income share) we can use the copula to match together the two distributions and obtain a joint distribution of labor and capital incomes. This allows, by summing the two components together, obtaining the total income distribution.

Thus, repeating the matching procedure systematically, each time with a different parameter for the copula, allows showing how inequality reacts to changes in homoploutia. This is demonstrated in Figure 4 for the marginal labor and capital income distributions in the US in 1985 and 2018. It shows how the top 10% total income share mechanically depends on homoploutia. As hypothesized, total income inequality increases with homoploutia. The dependence of the top 10% share on $H_{10,10}$ is concave, and is steepest for realistic $H_{10,10}$ values, between 10% to 30%.

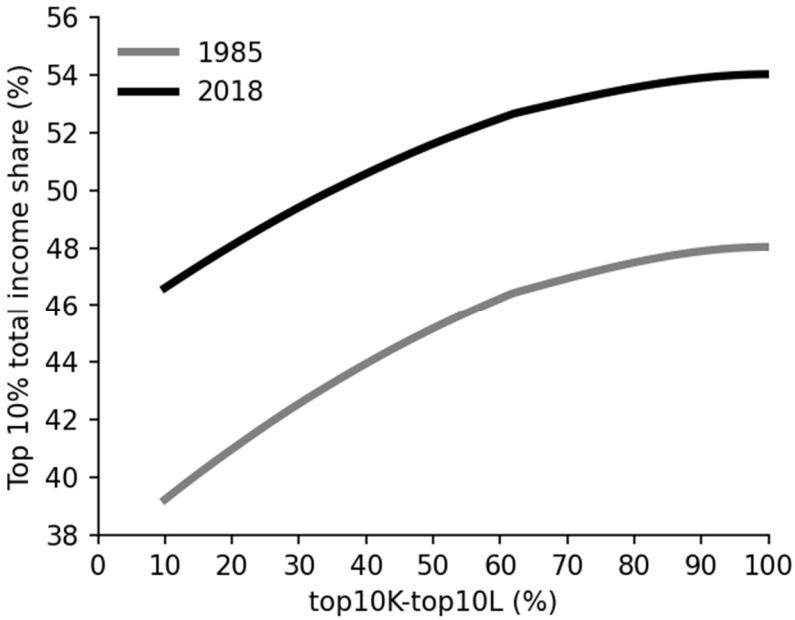

Figure 4: The top 10% total income share in the United States in 1985 (gray) and 2018 (black) as a function of homoploutia. We match the labor income and capital income distributions (from the US DINA) using a Gumbel copula, each time with a different parameter, equivalent to changing $H_{10,10}$ (see Appendix B for details on how $H_{10,10}$ is related to the Gumbel copula). We then obtain a joint distribution of labor and capital incomes, which allows, by summing the two income components, obtaining the total income distribution, and estimate how unequal it is.

Figure 4 also demonstrates that even with perfect homoploutia, *i.e.* when the top10K-top10L is 100%, the top 10% total income share is limited. This limit depends on the marginal capital and labor income distributions and on the capital income share. For 2018 it is about 54%, a level classified as “very high inequality” (Piketty 2014).

4.2 Inequality Effects of Homoploutia and Capital Share Increase Over Time

We are interested in further exploring the impact of homoploutia on total income inequality in practice. Specifically, we are interested in understanding how it interacts with the changing capital share of income. In Figure 4, the capital share of income was fixed (to the shares representing the US in 1985 and 2018). In practice, however, both variables — homoploutia and the capital share of income — are changing and have been increasing in the past few decades. We will try to answer what is the contribution of each of them to the increase in total income inequality. This question is central in

current discussions on inequality (see, *e.g.*, Piketty (2014) and Milanovic (2019)), and has importance for policy aiming to impact total income inequality.

For this analysis we look at two counterfactual scenarios from 1986 to 2020. In the first scenario we fix homoploutia to its 1986 level but let the capital share change according to its historical evolution (using the US DINA data). In the second scenario we fix the capital share to its 1986 level but let the homoploutia change. In both scenarios we let the marginal labor and capital income distributions change according to their historical evolution. In each scenario we calculate the top 10% total income share every year. The first scenario neutralizes the impact of rising homoploutia on inequality. The second scenario neutralizes the impact of rising capital share.

The results are shown in Figure 5. Both scenarios, as well as the baseline (real) scenario show somewhat similar evolution. This demonstrates that the changes in the marginal distributions are the biggest contributors to the increase in total income inequality. In the first scenario (dashes in Figure 5), in which the impact of rising homoploutia is neutralized, there is an increasing distance from the baseline, reaching about 2 percentage points in the late 2010s. Thus, we can say that the rising homoploutia mechanically led to an increase of 2 percentage points in the top 10% income share. This is about 20% of the entire increase in the top 10% income share between 1986 and 2020. The direct impact of the rising capital share on the top 10% total income share (as indicated by the dotted line in Figure 5), is much smaller, and was less than half a percentage point over the entire time period.

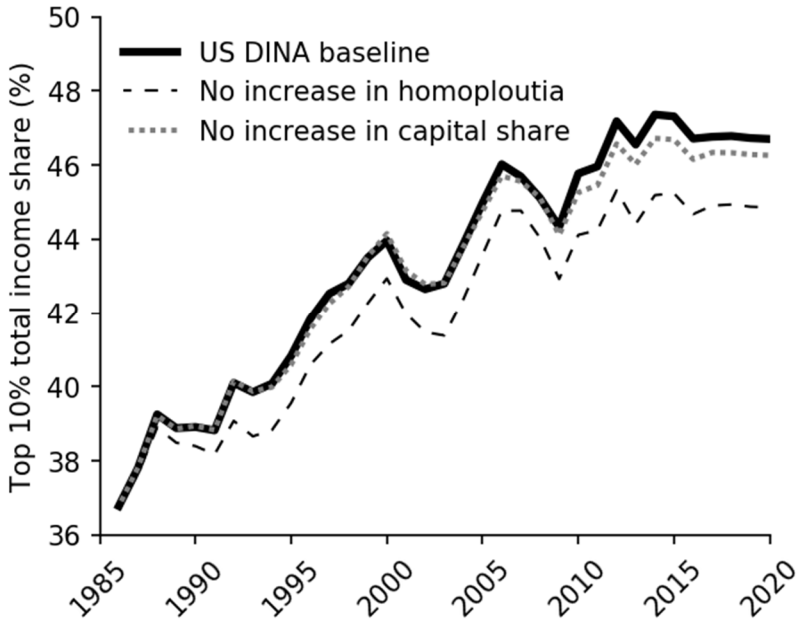

Figure 5: The mechanical impact of rising homoploutia and capital income share on total income inequality, 1986—2020. The baseline result shows how the top 10% total income share has changed between 1986 and 2020. The other lines show counterfactual calculations in which homoploutia is fixed (dashed black) and capital income share is fixed (dotted gray).

These results show that homoploutia works as an independent factor in raising inequality. Even if the capital share were fixed (while allowing marginal capital and labor income distributions to evolve as they did), homoploutia would make the income distribution more unequal. The direct mechanical impact (*i.e.* regardless of a causal relationship) of homoploutia on total income inequality in the US in the past 35 years has been substantial. We have thus shown first, that statically (in a one-year analysis) greater homoploutia is leading to higher inequality, and second, that over the recent past, homoploutia has played a bigger role in increasing US inequality than the aggregate capital share.

5 Conclusion

A typical assumption made explicitly and implicitly in classical political economy and in studies of income distributions is that an economy can be thought of as divided into workers and capitalists. Capitalists receive their income from ownership (capital) whereas workers receive their income from working (labor). However, the percentage

of people in the top decile of capital income who are also in the top decile of labor-income recipients has steadily increased in the United States from around 15 percent in 1980 to almost 30 percent in 2017. Milanovic (2019) called this phenomenon homoploutia. In this paper we formally define homoploutia and the ways in which it is quantified. More importantly, we describe the evolution of homoploutia in the United States from 1950 to 2020.

To quantify homoploutia we use the intersection between the top decile of capital-income recipients and labor-income earners (top10K-top10L). Combining three datasets we find that homoploutia was low after World War II, has increased by the early 1960s, and then slightly decreased until the mid-1980s. Since 1985 it has been sharply increasing: In 1985, about 17% of adults in the top decile of capital-income earners were also in the top decile of labor-income earners. In 2018 this indicator was about 30%.

To better understand what drove the rise in homoploutia we then study its relationship to the capital share of income and the marginal distributions of capital and labor incomes. We find a strong and robust positive relationship between homoploutia and labor income inequality, especially after 1985. This suggests that the increasing labor income inequality in the US during the 1970s led to an increase in homoploutia later on. A possible mechanism for this relationship is that the growing labor income inequality made top labor incomes more attractive for capital-rich, who were previously less incentivized to engage with the labor market. This can be reinforced by higher bargaining power that such workers may have due to their high capital incomes. In addition, it is possible that wage-stretching, which started in the 1970s made it possible for top earners to save large shares of their wages and to acquire capital assets, receiving high income from those assets later on.

We also study the link between rising homoploutia and the rising interpersonal income inequality in the US during the past 35 years. The top 10% total income share in the US increased between 1986 and 2020 by 10 percentage points, from 37% to 47% (Piketty, Saez and Zucman 2020). We find that ceteris paribus, the increase in homoploutia has contributed 2 percentage points, or 20%, to this increase. These results suggest that homoploutia may have played a bigger role in increasing income inequality in the US than the aggregate capital share. This complements the recent

literature on the role of the capital share in the evolution of inequality in the past few decades (Piketty (2014); Milanovic (2017); Wolff (2017)).

The current trend of rising homoploutia is potentially unprecedented in modern times. It has far-reaching implications for social mobility. Having the rich who are rich in terms of both property and skills may enable them to create an upper class that has little in common with the rest of the population and that is able, through significant investment in offspring, to transmit these advantages across generations. This, in turn, may lead, as explained, to even higher interpersonal income inequality.

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Appendix A The top1K-top1L

We focus our analysis of homoploutia on the top10K-top10L, the share of top decile capital-income earners in the top decile of labor income. Yet, using the fine-grained data of the US DINA it is also possible to consider the top1K-top1L in the US, the share of top percentile capital-income earners in the top percentile of labor income. The methodology is similar to the methodology of estimating top10K-top10L (see Section 3). The results are presented in Figure 1A. It shows that the top1K-top1L levels are much lower than top10K-top10L. Yet, they follow a similar trend, increasing substantially between the mid-1980s and today.

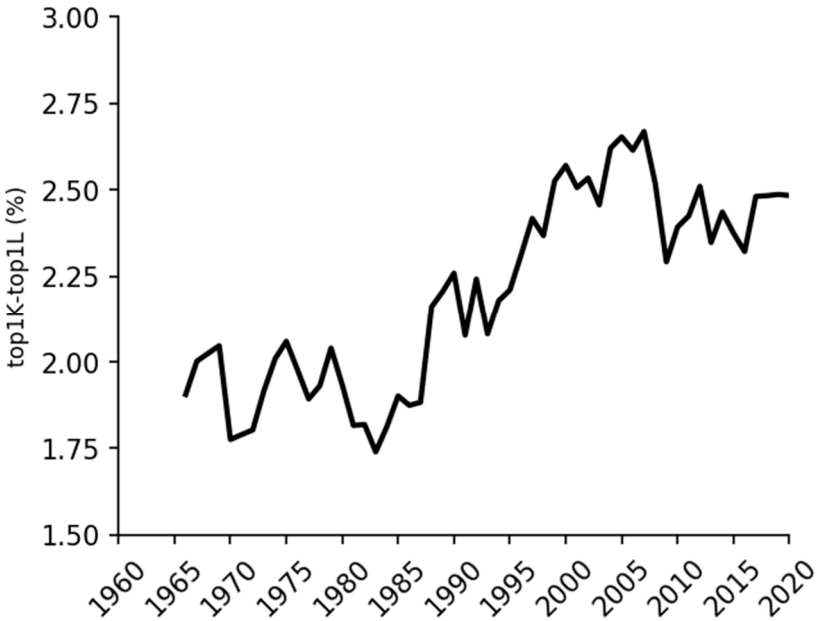

Figure 1A: The evolution of top1K-top1L in the US, 1964—2020. The figure shows the share of top percentile capital-income earners in the top percentile of labor-income earners, based on the US DINA (Piketty, Saez and Zucman 2020).

Appendix B Labor and Capital Income Copulas

The measurement of homoploutia was done by studying the evolution of the top10K-top10L. We can have an even closer look at the evolution of homoploutia by looking at the copula of capital and labor income. The copula is the joint distribution of capital and labor income ranks. It can be represented as a bi-stochastic matrix $P \in \boldsymbol{P}(N)$, where the element p_{ij} is the probability of occupying quantile j in capital income for those occupying quantile i in labor income, and N is the number of income quantiles. For example, the top10K-top10L is simply the element in the position (10,10) of the copula that represents the joint labor and capital income ranks, assuming a division into deciles. The top10K-bottom10L is simply the element in the position (1,10).

Figure 1B shows such matrices for 1974, 1986, 1995 and 2018 using LIS data. First, it shows a typical shape, somewhat similar to characteristic copulas that represent intergenerational mobility, in which the diagonal and the elements near the diagonal are dominant (Jäntti and Jenkins 2015). It also shows two important asymmetries: first, the top10K-top10L is more pronounced than the bottom10K-bottom10L. In other words, homoploutia is more pronounced than homophtocheia; second, the top10K-bottom10L is more pronounced than the bottom10K-top10L. This may be thought to be the typical feature of labor and capital copulas. As we argued, under classical capitalism, the top10K-bottom10L position will be quite important and even under modern capitalism, it is unlikely to entirely disappear. On the other hand, people who are very capital-poor are unlikely to get to high-paying wage position *and* to remain capital poor. So we can expect that that position will be rather vacant. The latter makes the typical shape of the labor-capital income copula distinct from widely used copula models in economics such as Gaussian, Gumbel or Plackett copulas (Trivedi and Zimmer (2007); Bonhomme and Robin (2009); Berman (2020)).

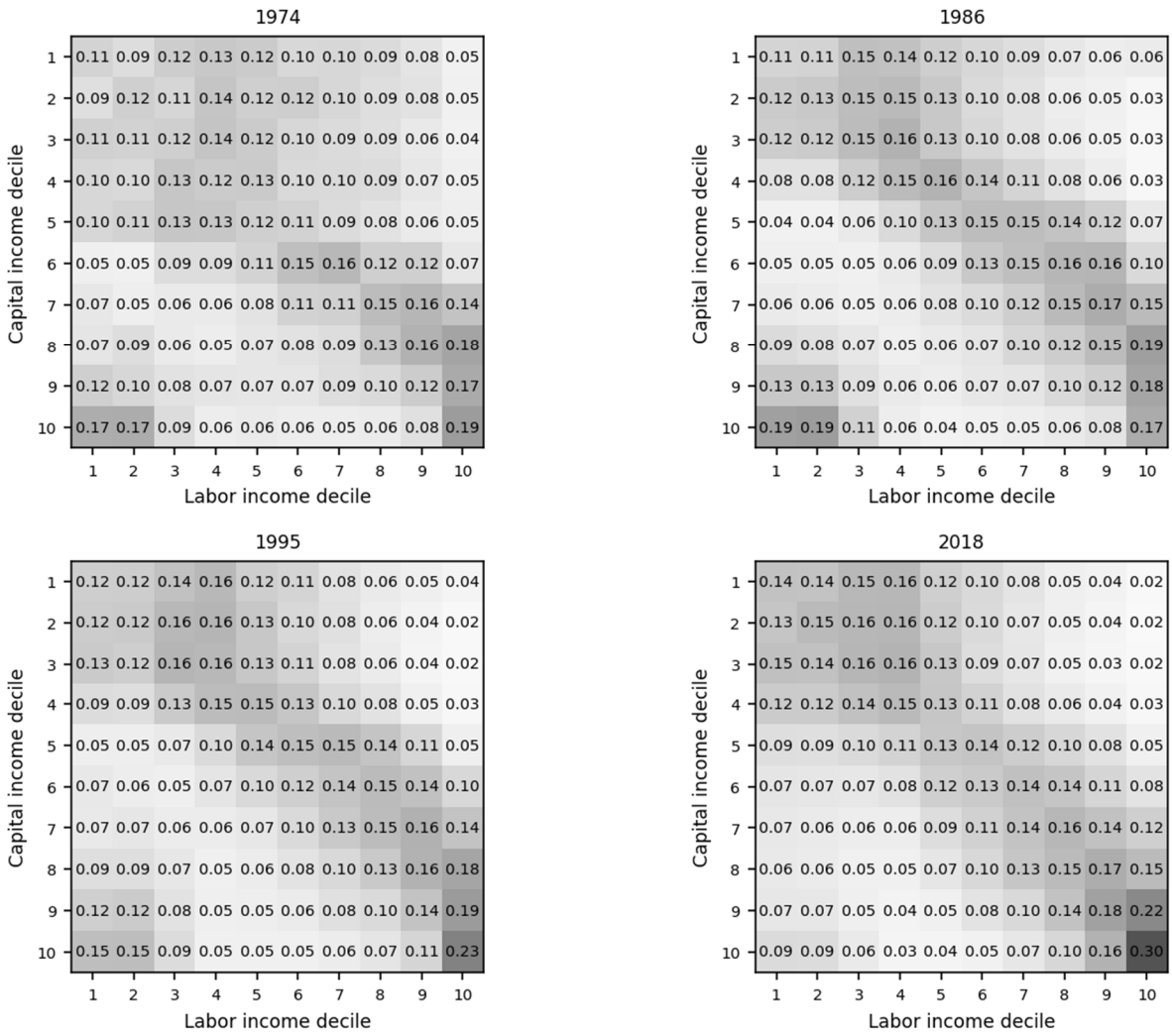

Figure 1B: Labor and capital income copulas for 1974, 1986, 1995 and 2018 in the US using LIS data.

The copulas in Figure 1B indicate that while the top10K-top10L and the top10K-bottom10L changed substantially over time, changes outside the upper capital income deciles were milder. The major increase of $H_{10,10}$ in the past 35 years could have been accompanied by major changes in the entire copula. Since the matrices are bi-stochastic, the increase in homoploutia requires decreasing shares at other parts of the joint rank distribution. Yet, it is almost exclusively accompanied by decreasing shares of top capital-income earners in bottom labor income deciles, as depicted in Figure 2 in Section 3. This is an important finding that indicates stability in the copulas except for the placement of the top capital decile which has tended to “emigrate” from the bottom labor decile into the top labor decile.

Figure 2B illustrates that the rank correlation and the top10K-top10L are strongly related. There is a close-to-linear relationship between the two, which can be

approximated by $H_{10,10} \approx 0.52\rho_S + 0.1$, where ρ_S is the rank correlation. There is also a similar, yet less steep, linear relationship between the rank correlation and the bottom10K-bottom10L.

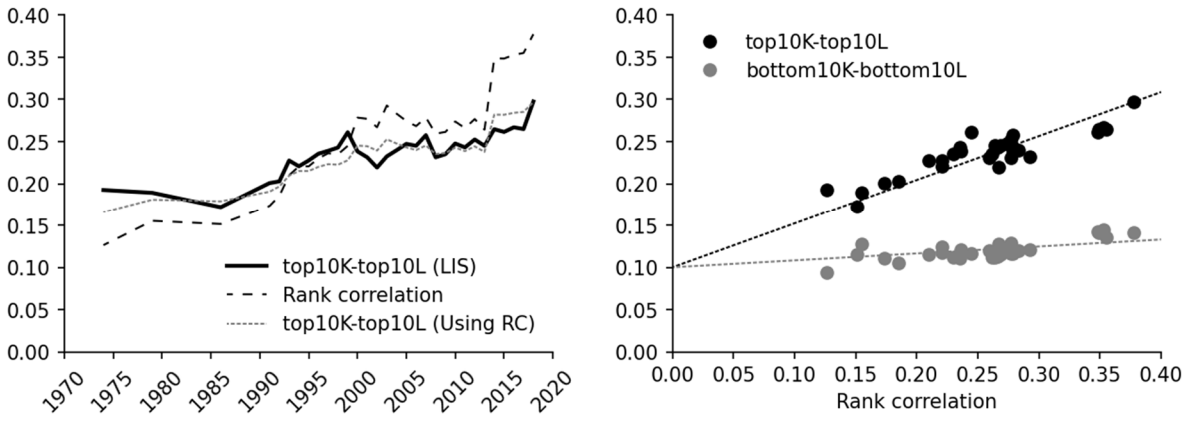

Figure 2B: The relationship between homoploutia measures and the rank correlation in the US, 1974—2018. Left) The top10K-top10L (solid black) and the rank correlation (dashed black). The dotted gray line represents the top10K-top10L predicted by the linear relationship found between the rank correlation and the top10K-top10L; Right) The association between the rank correlation and the top10K-top10L (black) and between the rank correlation and the bottom10K-bottom10L (gray). The dotted lines are linear fits under the constraint that the top10K-top10L and the bottom10K-bottom10L are 10% for rank correlation of zero.

The strong relationship between these two measures suggests that the copula of labor and capital income ranks has a typical structure, or shape, as already shown in Figure 1B. This was already used in the literature, for example to create total income distributions from separate labor and capital income distributions (Alvaredo, Assouad and Piketty (2019); Piketty, Yang and Zucman (2019); Alvaredo, Atkinson, et al. (2020)). The most widely used form to capture this typical structure is by using the Gumbel copula, which uses a single parameter to describe the joint cumulative distribution function of labor and capital income ranks.[5]

We follow this convention. The rank correlation well represents homoploutia with the appropriate transformation ($H_{10,10} \approx 0.52\rho_S + 0.1$). It can also be mapped one-to-one into the Gumbel copula parameter. Thus, there is a mapping of homoploutia into the Gumbel parameter. We use this approximation in order to study the impact of homoploutia on total income inequality (see Section 4).

[5] For income ranks u and v, and given a parameter Θ, the Gumbel copula is $C(u,v)=exp[-((-log(u))^{\Theta} + (-log(v))^{\Theta})^{1/\Theta}]$.

The good characterization of realistic copulas using the Gumbel copula also shows that homoploutia and homophtocheia, the concept that the labor income poor are more likely to also be capital income poor, go together but only weakly. While the rank correlation had increased together with the top10K-top10L in the Unites States during the last 4 decades, the bottom10K-bottom10L stayed almost unchanged, with only a mild increase. Indeed, in the Gumbel copula the increase in the bottom10K-bottom10L with increasing rank correlation is much milder than for the top10K-top10L, in the realistic range of parameter values (see also Figure 2B).

We note that despite the generally good fit, the Gumbel copula fails to represent properly the substantial fraction of top capital-income earners in the bottom labor income distribution, and slightly underestimates the top10K-top10L. This is due to the symmetry with respect to the diagonal imposed by the Gumbel copula. Still, the generally high similarity provides a good mathematical characterization of realistic copulas.

Appendix C Dataset Income and Unit Definitions

Our analysis is based on three datasets: the Luxembourg Income Study (2020), the US Distributional National Accounts (Piketty, Saez and Zucman 2020) and early versions of the Survey of Consumer Finances (Kuhn, Schularick and Steins 2020). These datasets define capital and labor incomes differently and use different units of observation. Table 1C details these differences as detailed in their codebooks. The differences matter for two main reasons. First, for the interpretation of the results. Second, a part of the differences in the results between the different sources (Section 3) must be due to the differences in these definitions.

Table 1C: Income and unit definitions in LIS, US DINA and SCF+

Dataset	Labor income	Capital income	Units
LIS	Total income from labor of all household members, including cash payments and value of goods and services received from dependent employment, profits/losses, and value of goods from self-employment, as well as the value of own consumption.	Cash payments from property and capital (including financial and non-financial assets), including interest and dividends, rental income and royalties, and other capital income from investment in self-employment activity. Excludes capital gains, lottery winnings, inheritances, insurance settlements, and all other forms of one-off lump sum payments.	Households
DINA	Compensation of employees + Labor share of net mixed income + sales and excise taxes falling on labor	Housing asset income + equity asset income + interest income + business asset income + pension and insurance asset income + interest payments	Equal-split adults
SCF+	Income from wages, salaries, self-employment, professional practice	Income from rent, interest, and dividends	Households

The results in Figure 1 (Section 3) show that the top10K-top10L estimates based on the different datasets are inline with one another. To further demonstrate the robustness of the results it is possible to use the DINA data to produce estimates using different income definitions, where the capital and labor incomes definitions are different from the baseline estimates. The DINA baseline top10K-top10L estimates

use personal labor and capital factor income definitions, detailed in Table 1C. We can also estimate top10K-top10L using ‘personal pre-tax labor income’ and ‘personal pre-tax capital income’, which also include social insurance contributions and income, and income payable to pension funds. A third specification adds capital gains to the personal pre-tax capital income.

Figure 1C presents the top10K-top10L estimates using the different specifications. It demonstrates that the differences between the specifications matter little to the top10K-top10L estimates, and therefore, to the evolution of homoploutia.

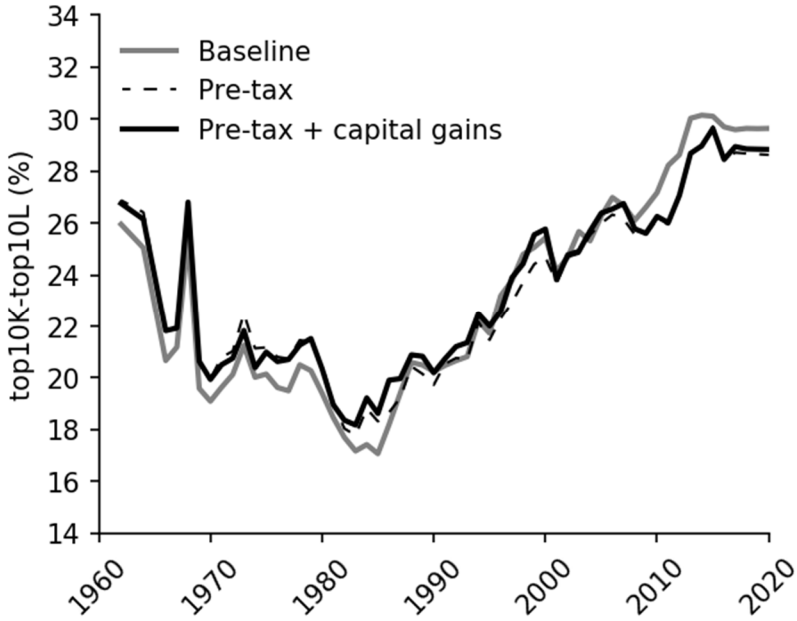

Figure 1C: Robustness of homoploutia estimates to changes in income definition. The baseline estimates (gray) are based on labor and capital factor incomes (see Table 1C). The other estimates are based on ‘personal pre-tax labor income’ and ‘personal pre-tax capital income’ (dashed black), which also include social insurance contributions and income, and income payable to pension funds. A third specification (solid black) adds capital gains to the personal pre-tax capital income. All data are taken from the US DINA. See Piketty, Saez and Zucman (2020) for full documentation.