1. Income instability

Incomes vary over time as people enter the labour market and progress in their careers, take time off work to care for children or other family members, and retire. But not all changes in work patterns are predictable or welcome. Unexpected job loss, variable working hours or illness can create income shocks that are difficult to manage. In European OECD countries, it is common for people's employment status to change multiple times per year, and for the most part, these changes do not result in sustained income growth. Being exposed to frequent changes in income is linked with stress, anxiety, poor health and worse childhood development outcomes; this is particularly troubling as income instability is concentrated among people who are susceptible to poverty, such as those who are unemployed or lack job security, or from single-income or young households.

1.1. Why should we focus on income instability?

Most, if not all, people will experience changes in their incomes at some point in their lives – often termed income instability in the literature. Income instability arises as people enter the labour market, advance in their careers, reduce their working hours to care for children or transition to retirement. While some of these life events are planned and likely to have positive effects on individuals' income and overall well-being, falls in income can have adverse consequences. Unforeseen events like illness, family breakdowns, job loss or involuntary reductions in working hours can significantly disrupt individuals' ability to plan for the future and meet their daily financial obligations. The resulting income instability can have detrimental effects on individual well-being, such as by exacerbating financial stress, limiting access to resources and opportunities, contributing to poor health, heightening the risk of poverty and impeding upward social mobility – see Section 1.2; (Hill et al., 2013[1]; Wolf et al., 2014[2]; Hill et al., 2017[3]; Morduch and Siwicki, 2017[4]; Wolf and Morrissey, 2017[5]).

Concerns about income instability intensified following the Global Financial Crisis and more recently during the COVID-19 pandemic, when many people faced a heightened risk of unemployment and reduced working hours. Unemployment in the OECD rose from 4.9% in December 2019 to a peak of 8.8% in April 2020 in the midst of COVID-19 (OECD, 2022[6]). In most OECD countries, unemployment has now fallen below pre-pandemic levels, and labour markets are tightening (OECD, 2023[7]). However, income instability is likely to remain a risk, given weak prospects for economic growth in the next year (OECD, 2023[8]) and signs that European and OECD economies have become more unstable over the past few decades. People are on average more exposed to instability, as economic contractions have become more frequent, while at the same time, average living standards have not risen as quickly, limiting people's capacity to build financial buffers to use in times of need (Figure 1.1).

Figure 1.1. Shocks are more common and living standards rising less rapidly than in the past

Annual real GDP per capita and periods of negative GDP growth in the euro area and the OECD
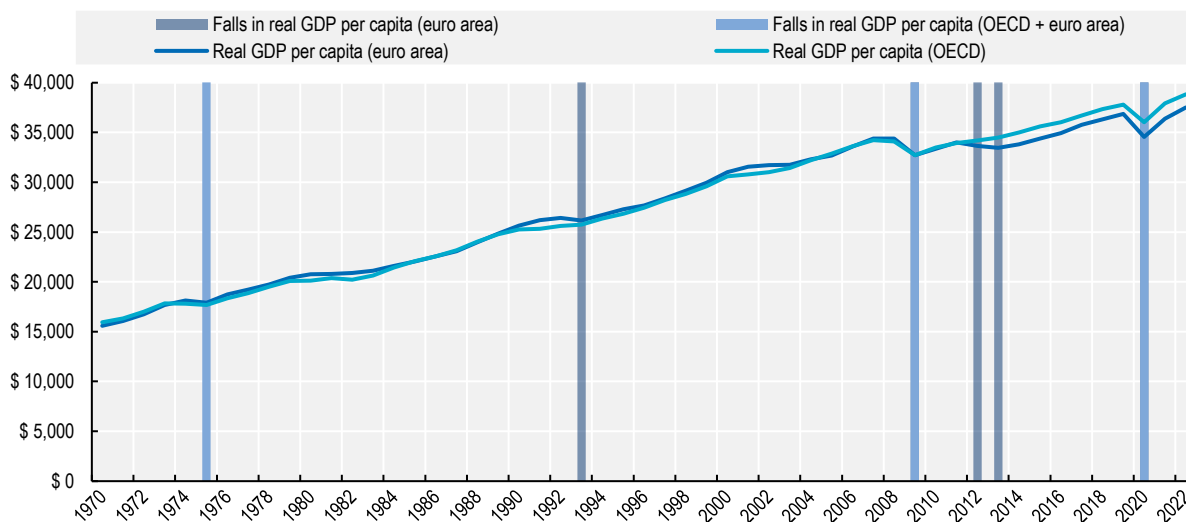
Note: Falls in annual real GDP are used as markers of economic shocks, because quarterly real GDP data – conventionally used to indicate recessions – are not available for the entire period.
Source: World Development Indicators (2023), https://databank.worldbank.org/home.aspx.

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Further, the megatrends of digital transformation, globalisation and population ageing are shaping labour markets in ways that may bring greater income unpredictability (OECD, 2018[9]). For instance, people in emerging parts of the labour market, such as those in the gig economy, are likely to fall into a "grey zone" – neither being employees with predictable hours and conditions nor having the bargaining power of the self-employed (OECD, 2019[10]).

Despite the growing recognition of the persistent (and potentially increasing) risks of income instability in the face of megatrends, income instability is not well-tracked or regularly measured in household surveys. In most OECD countries, little is known about how much employment and income vary over shorter time intervals. Due to data limitations, studies tend to focus on annual income changes, which "smooth out" some of the volatility in incomes and hence conceal the difficulty of living with incomes that change at more frequent intervals. The main exception is the United States, where monthly income data are available and a handful of studies have examined the extent and effects of infra-annual income instability.

This chapter extends previous analysis by estimating month-to-month changes in income (infra-annual income instability) and changes in income across years (inter-annual income instability) for European OECD countries. Examining both infra-annual and inter-annual income instability can help identify those most at risk of economic insecurity (i.e. who do not have the means to cope with income shocks), as frequent changes in income increase exposure to economic insecurity (Chapter 2), and in designing policies to deal with this (Chapter 3). This chapter first sets out an empirical approach to measuring income instability (Section 1.2) and then examines the extent of income instability in selected European OECD countries (Section 1.3). It concludes by identifying the groups that are most likely to experience income instability, which heightens their exposure to economic insecurity (Section 1.4).

1.2. Measuring income instability and understanding its impacts on people's well-being today and tomorrow

Most of the literature on instability focuses on annual changes in income in the United States, which finds that income instability has increased since the 1970s – particularly for men and low-income families (Moffitt and Gottschalk, 2010[11]; Moffitt and Gottschalk, 2002[12]; Hyslop, 2001[13]; Haider, 2001[14]; Heathcote, Storesletten and Violante, 2010[15]; Moffitt and Gottschalk, 2012[16]), see Annex 1.A for a detailed literature review. More recently, some American studies have started to examine the month-to-month variations in income, adding to the understanding of the experience of income instability at a household and societal level.

Income instability rarely leads to an upwardly trending income for low-income earners, and as such income instability makes it exceedingly difficult for those on low incomes to move up the distribution (so-called infra-generational upward social mobility). Infra-annual instability is in fact associated with growing income inequality. Between the 1980s and 2008 in the United States, the growth of income instability among the poorest 10% of households with children was not matched by an increase in instability at the top end of the income distribution. Indeed, income instability has fallen for the top 10% of households, creating a four-fold increase in the "instability gap" between the rich and poor (Morris et al., 2015[17]).

Infra-annual income instability places the greatest risk on the current and future well-being of low-income families, who are more exposed. Low-income families are more likely to have a single source of income, and when they are dual-earning households, there is evidence that both earners tend to experience income changes at the same time (Hardy and Ziliak, 2013[18]). Further, instability does not often occur in isolation, but rather as a "domino effect", with one form of instability (e.g. income) precipitating instability in other domains (e.g. childcare and housing) (Sandstrom and Huerta, 2013[19]). Such a domino effect can be extremely stressful, contributing to poor physical and mental health and making it harder to manage finances and plan for the future.

Over the longer term, income instability can undermine the economic prospects and opportunities of the next generation, especially those who grow up in low-income families (thereby inhibiting inter-generational upward social mobility). Families with low, unstable incomes can face challenges in devoting enough resources to their children, for instance, as they struggle to find childcare options that meet their frequently changing circumstances or delay investments in child education (Hill et al., 2013[1]; Wolf et al., 2014[2]; Carrillo et al., 2017[20]; Wolf and Morrissey, 2017[5]). The lack of consistent investment in education, and exposure to parental stress, can create barriers for children's educational attainment, particularly for those growing up in low-income families. Exposure to low, unstable incomes in childhood is associated with poor educational performance, mental ill-health, cognitive development delays and school suspensions and expulsions (Sandstrom and Huerta, 2013[19]; Hill et al., 2013[1]; Wolf et al., 2014[2]; Wagmiller, 2015[21]; Gennetian et al., 2015[22]; Hardy and Ziliak, 2013[18]; Hardy, 2014[23]; Balestra and Ciani, 2022[24]). A lack of educational attainment, in turn, contributes to weak labour force attachments as adults and to fewer economic opportunities to get ahead (Balestra and Ciani, 2022[24]). Even if the episodes of instability experienced in childhood are short, the effects on children can be long-lasting and detrimental – indeed, they may be comparable to experiencing sustained (or chronic) poverty (Navarro, 2021[25]; Wagmiller, 2015[21]).

The existing literature on the effects of infra-income instability on individual well-being, social mobility, inequality and society focus on the American experience. Nevertheless, there are a few studies of income instability in European countries, which for the most part, are based on annual changes in income.[1] These studies have pointed to different trends in income instability in recent times: with income instability increasing in Germany (Myck, Ochmann and Qari, 2011[26]) and Italy (Menta, Wolff and D' Ambrosio, 2021[27]), but declining in Luxembourg (Sologon and Van Kerm, 2017[28]), Spain (Cervini-Plá and Ramos, 2011[29]) and the United Kingdom (Daly and Valletta, 2008[30]; Ramos, 2003[31]; Avram et al., 2021[32]; Kalwij and Alessie, 2007[33]; Cappellari and Jenkins, 2014[34]).

Despite the dearth of research on infra-annual income instability outside of the United States, it is possible to extend the analysis of infra-annual income instability to European countries using the monthly employment status information contained in the European Union Statistics on Income and Living Conditions (EU-SILC). Monthly employment status information is mapped to various market income sources in the EU-SILC, such as income from employment and private pensions (Box 1.1). This mapping exercise can capture changes in income that are attributable to shifts in work patterns, such as movements into and out of the labour market, switches to and from full-time work, the end of studies, and retirement. However, because the EU-SILC does not include monthly income, it is not possible to identify all the drivers of infra-annual income instability, including wage rate increases and paid overtime, and as such estimates of infra-annual income instability are likely underestimated. Further, the analysis focuses on employment-related shocks, and as such examines only households that do not change their composition during the 48-month reference period. This methodological choice is also likely to lead to conservative estimates of income instability, as it does not capture the income instability that arises from family breakdowns or other major life events.

Box 1.1. Constructing monthly income using the EU-SILC

No European datasets collect information on monthly income across countries, so this report uses a novel way to construct monthly income from the European Union Statistics on Income and Living Conditions (EU-SILC). The survey includes information on people's employment status in each calendar month, which is used to estimate variability in income within each year and across years. The EU-SILC includes a longitudinal component, which is used for the analysis of income instability, wherein

the same people are interviewed over four years, and each year a quarter of all respondents are replaced by new respondents.[1] The period of analysis is between 2013 and 2018.[2]

Survey respondents are asked to report whether they work full- or part-time and whether they are employees or self-employed each month during the income reference period. Using this employment status information, this chapter allocates income sources in the following way for each individual.

- Employment income is split between the months that an individual reports to have been an employee or self-employed. Periods of part-time work are assigned half the value of full-time work. In the small handful of cases where individuals earn employment income but have not reported being employed, it is assumed that income was derived from a secondary activity, and this income is divided equally across the year.

- Private pensions are split between months in which the individual reports to have been retired or unemployed. If an individual who is always employed reports having a private pension, this income is split over 12 months.

- Capital income is divided equally across the year, as it is usually accrued as part of a long-term investment, even though returns are distributed at discrete points in time.

- Private current inter-household transfers (received or paid) are split by 12, as they are regularly received or paid transfers, such as alimony.

- Household own-consumption is split by 12, as there is no information to justify an alternative allocation, and this income stream is small and not uniformly collected across countries.

These income sources are then summed together and aggregated at the household level to create a measure of market income, which is used to analyse income instability. Households are included in the analysis if the reference person is aged 18 to 59, and the composition of the household stays the same for the entire 48-month period. In addition, some government benefits and allowances are included in Chapter 3 when considering the role of social protection systems in countering income instability. To assess social protection systems, social benefits are added to market incomes by:

- splitting unemployment benefits between months in which individuals report being unemployed or outside of the labour market (in cases where they have not been unemployed). If individuals are employed every month, it is assumed they had a minor unemployment spell, and the benefits are split over 12 months;

- distributing old-age benefits in the same way as private pensions;

- allocating education-related allowances to the months in which an individual reports being a student, or split by 12 if they were never a student during the year.

Notes:
1. The analysis is conducted for 48-month periods between 2013 and 2018. These periods were chosen because they correspond to the timing of the third wave of the Household Finance and Consumption Survey (HFCS), which is used in the analysis of economic insecurity in Chapter 2. Further, using data that were collected before COVID 19 is likely to give a better indication of the long-run, structural levels of income instability than data collected during or immediately after the pandemic.
2. One risk of using longitudinal data is that survey respondents drop out over time before the end of the 48-month period. This can bias the results if certain types of people are more/less likely to stop responding (i.e. dropouts do not occur randomly). Eurostat (Jenkins and Van Kerm, 2017[35]) has investigated the pattern of dropouts in the EU-SILC and found that rates are highest among poor, young and unemployed people. For the purposes of this report, higher dropout rates among these groups are likely to lead to conservative estimates, since it is expected that these groups have higher-than-average income instability.

This report mainly uses equivalised household market income to measure income instability, but this is supplemented with non-market income sources to (partially) assess the role that social protection systems play in smoothing out income instability (see Chapter 3). As explained in Box 1.1, unemployment benefits, old-age pensions and educational allowances are allocated monthly based on each individual's

employment status. However, a comprehensive analysis of other benefits and taxes is not possible, because many taxes and social benefits contained in the EU-SILC are not closely linked to employment, and some cannot be easily allocated within a year, because it can be difficult to determine when they were received by households. Examples include child allowances, tax credits and disability pensions.

Nevertheless, the EU-SILC enables an examination of various aspects of income instability at the household level. To measure household-level income instability, this chapter estimates the extent to which the incomes vary over the reference period of 48 months using the squared coefficient of variation.[2] This method enables income instability to be measured in terms of income changes between months (infra-annual) and across years (inter-annual).

With these measures, it is possible to examine the extent to which households experienced upward income mobility, which is important for assessing social mobility. Upwardly mobile households are defined as those that experienced overall income growth of at least 25% in a 48-month period, no large monthly drops in income (greater than 25%) and no more than two minor monthly drops in income (less than 25%). Households that do not fit this definition either experienced downward income mobility (or, in other words, had a downward trend in income) or had volatile incomes, which varied over time without a discernible trend.[3] In this chapter, trends are assessed at the household level and are averaged across households to estimate the contribution of upward mobility to overall income instability in each country.[4]

1.3. Infra-annual changes in income are common in European OECD countries

Changes in employment status, a common precursor to income instability, were widespread even before the turbulence of COVID-19. In the lead-up to the pandemic, almost one in ten individuals aged 18 to 59 (the so-called prime working-age population)[5] changed their employment status at least once per year. Temporary changes – those lasting less than a year – were also common, as one-third of working-age people who changed their employment status did so multiple times per year. Given the high likelihood of experiencing or being exposed to temporary changes in employment status, it is not surprising that infra-annual income changes substantially contribute to total market income instability.

On average across European OECD countries, month-to-month changes in income account for about two-fifths of total instability (measured as the sum of infra- and inter-annual household market income instability). There are, however, differences in the extent of infra-annual income instability across countries (Figure 1.2). For example, countries with above-average total instability – Belgium, Greece, Ireland and the United Kingdom – all display similar levels of inter-annual instability (x-axis), although the United Kingdom is characterised by a much higher level of infra-annual instability (y-axis). Similarly, two countries with low total instability – the Czech Republic and Norway – have low levels of infra-instability but differ in terms of inter-annual income instability.

Figure 1.2 Infra-annual income instability contributes to a substantial fraction of total instability

Average squared coefficient of variation of market income, averaged over 48 months ending in 2016-18
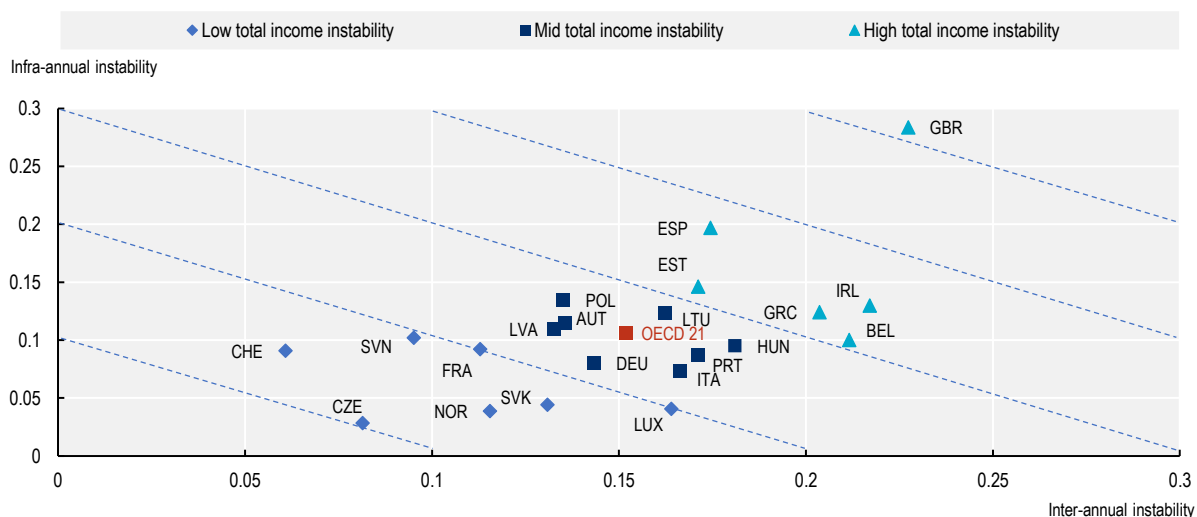
Note: Instability is measured by the average squared coefficient of variation of monthly household equivalised market income over 48 months. Infra-annual instability refers to deviations of monthly income from each year's household average; inter-annual instability refers to deviations of household annual average income from the average across the entire period of observation. Dotted "iso-instability" lines mark similar levels of total instability. The analysis is carried out only on households with stable composition over 48 months and whose main employment income earner is aged between 18 and 59.
Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

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Income instability is not necessarily detrimental to households. Over time, individuals might experience upward mobility – for example, as a result of career progressions, work experience and tenure – that has positive consequences for well-being. In addition, periods of economic recovery can improve upward income mobility (Box 1.2). However, only one-fifth of individuals in European OECD working-age households experienced upward income mobility over the 48-month period of analysis, as defined in this chapter. As a result, upward mobility makes a small contribution to total income instability in most European OECD countries – although its contribution is sizeable in the Slovak Republic (one-third of total instability is derived from upward mobility), Czech Republic, Ireland, Latvia and Portugal (about a quarter of total instability in each of these countries (Figure 1.4).

Box 1.2. Periods of economic recovery are an opportunity for upward income mobility

The experience of many European OECD countries during and after the Global Financial Crisis (GFC) demonstrates the potential for upward income mobility. During the GFC, the level of income instability rose and then returned to pre-crisis levels for all but a handful all European OECD countries. As economies recovered and unemployment fell, incomes grew and the proportion of people experiencing episodic poverty (of at least two months) declined in many countries.

Meanwhile, upward mobility became more common. For instance, upward mobility accounted for 10% of total income instability in 2009 and grew to 15% by 2017 in European OECD countries (Figure 1.3). The growth in upward income mobility was relatively strong and persistent in Portugal and Spain, and clearly linked to the recovery phase – as these countries overcame the falls in upward income instability, they

experienced in the years following the GFC as unemployment surged. For other countries, such as the United Kingdom, the rise in upward income mobility during the recovery phase was temporary, and upward income mobility has returned to its pre-GFC levels.

Figure 1.3. Upward mobility increased in many European OECD countries after the GFC

Average squared coefficient of variation of market income for selected European OECD countries, 48-month average
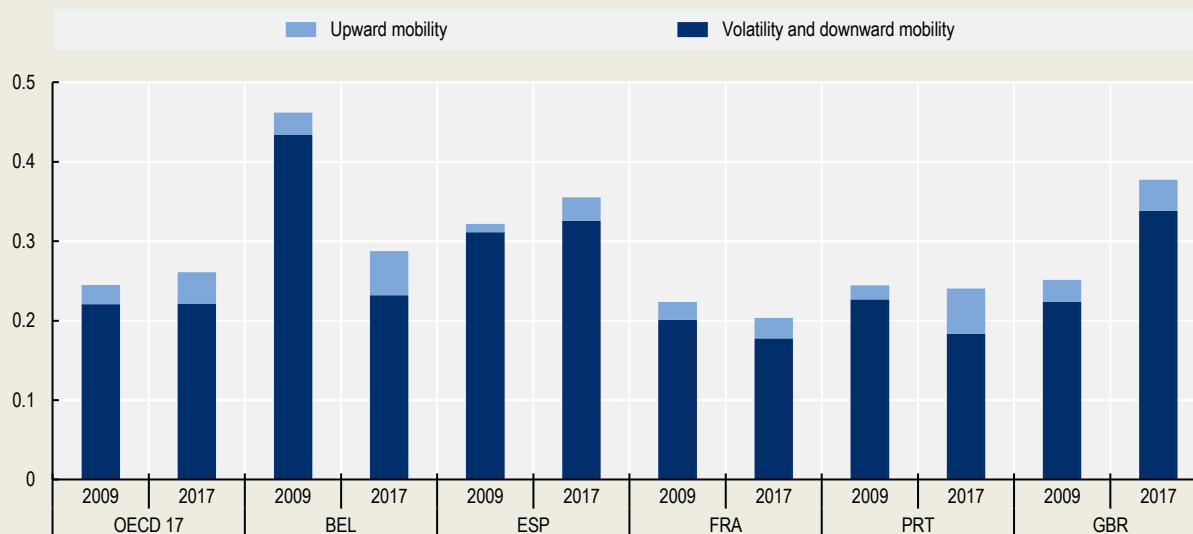
Note: Upwardly mobile households are those that experienced overall income growth of at least 25%, no major income drops (greater than 25%) and no more than two minor drops (less than 25%) in 48 months. All other households experienced volatility or downward income mobility. The year refers to the last year of the 4-year panel over which the dynamic of household income is observed. The time series in this figure is smoothed further by averaging between t and t+1 (e.g. 2009 refers to the average instability observed in the 4-year panels ending in 2009 and 2010).
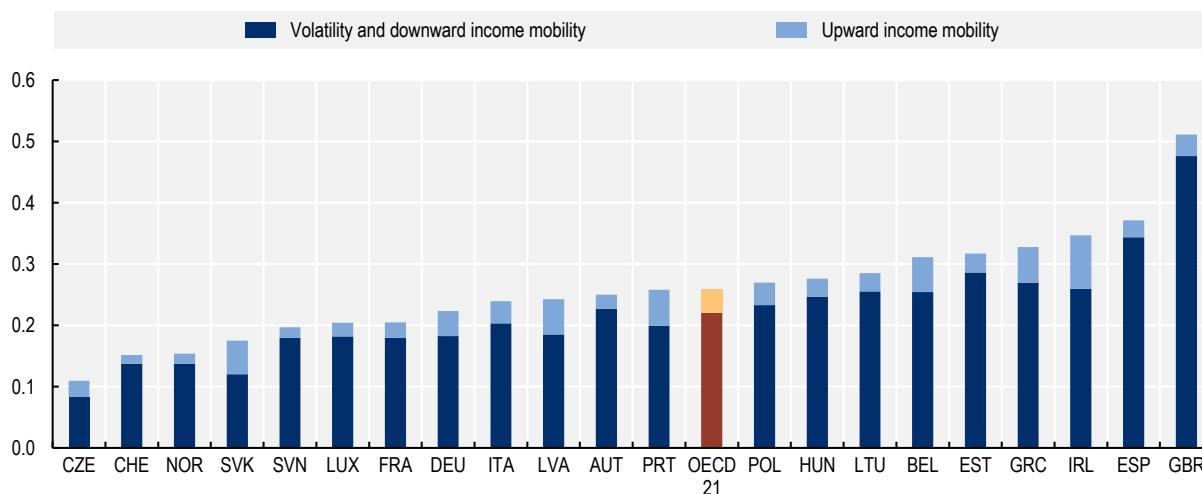Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

StatLink 🔗 https://stat.link/mbqzdh

Despite the positive movements in upwards income mobility across European OECD countries on average, it continues to comprise only a small proportion of income instability a decade after the GFC. In addition, a growing share of people experienced chronic poverty (spending at least three of the past four years in poverty) during the recovery phases. The average share of chronic poverty across the European OECD countries was about 11% at the onset of the GFC, which increased to 14% a decade later. In Spain, the United Kingdom, Italy and Luxembourg, episodic poverty increased along with chronic poverty.

These outcomes suggest that economic recoveries can provide an impetus for lifting people out of poverty and promoting upward mobility, although they need to be supported by governments to ensure the benefits are shared broadly. Alongside measures to financially support vulnerable and disadvantaged groups, governments should design policy packages that "build back better" by investing in opportunities with enduring payoffs (OECD, 2020[36]; 2022[6]). A range of policy options is considered in Chapter 3.

Figure 1.4. Upward mobility makes a small contribution to total income instability in most European OECD countries

Average squared coefficient of variation of market income, averaged over 48 months ending in 2016-18

Note: Upwardly mobile households are those that experienced overall income growth of at least 25%, no major income drops (greater than 25%) and no more than two minor drops (less than 25%) in 48 months. All other households experienced volatility or downward income mobility.
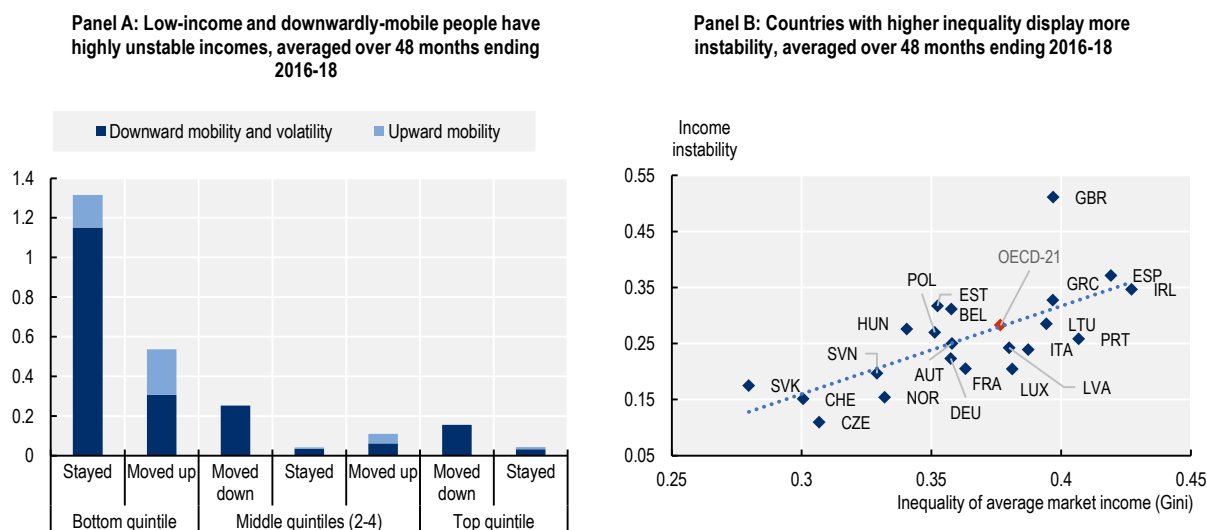Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

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In addition, upward mobility is not evenly spread across the income distribution. People in the bottom income quintile who move into higher quintiles by the end of the 48-month reference period are the most likely to experience upward mobility. Upward mobility is also relatively high for people who stay in the bottom quintile for the entire 48-month period, but it is insufficient to move them into a higher income quintile. Further, people who remain in the bottom quintile are much more likely to have downward or volatile incomes than experience upward mobility – and indeed, their incomes are the most unstable of any quintile (Figure 1.5, Panel A). Total instability decreases across the income distribution, although people who move down the distribution after 48-months experience more instability than people who stay in their quintile or move up. Taken together, these dynamics contribute to higher levels of income inequality and dampen upward social mobility, as people on low incomes see their incomes go backward or bounce around erratically, while people on higher incomes are largely unaffected. In general, countries with higher income inequality (as measured by the Gini Index) display more income instability, although there are some differences in the degree of income instability for countries with similar levels of inequality – especially for high-inequality countries (Figure 1.5, Panel B).[6] For instance, the United Kingdom has a markedly higher level of income instability than other comparable high-inequality countries such as Ireland. The differences are less pronounced among low-inequality countries, as they have similarly low levels of income instability.

Figure 1.5. Income instability is associated with higher levels of downward mobility and inequality in European OECD countries

Average squared coefficient of variation of market income, averaged over 48 months ending in 2016-18

Panel A: Low-income and downwardly-mobile people have highly unstable incomes, averaged over 48 months ending 2016-18

Panel B: Countries with higher inequality display more instability, averaged over 48 months ending 2016-18

Note: Income instability is measured by the average squared coefficient of variation of monthly household equivalised market income over 48 months. In Panel A, quintiles are based on annual market household income in the first 12 months of the time series, and then compared with the annual market household income distribution in the last 12 months of the period. Households are split into groups depending on whether their income quintile in the last 12 months (fourth year) of the series is higher ("Moved up"), lower ("Moved down") or the same ("Stayed"), compared to the first 12 months. In Panel B, the Gini index is calculated over the average of monthly household equivalised market income over the same period. The unit of reference is the individual. The analysis is carried out only on households with stable composition over 48 months and whose main employment income earner is aged between 18 and 59.

Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

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1.4. The experience of income instability for at-risk groups

People with characteristics that are correlated with low income are most likely to experience income instability, such as those who are unemployed or lack job security (i.e. on temporary or no contracts) (Figure 1.6). Those who are unemployed experience the largest amount of infra-annual instability in absolute terms, and as a share of total instability. Women have a 0.7 percentage point higher unemployment rate than men, indicating that they are more likely to experience income instability. Further, people who are unemployed experience frequent income changes, as about two-thirds of the total income instability experienced by unemployed people is generated by infra-annual income changes.

High rates of chronic poverty – defined as spending at least 36 out of 48 months below the OECD income poverty line – are coincident with high income instability for people who are unemployed. In contrast, insecure workers have the highest rates of episodic poverty (lasting 2-11 months). These employment effects contribute to instability in most European OECD countries, as countries with higher employment rates and lower rates of insecure work tend to have lower levels of instability, and vice versa (Box 1.3).

Single-income households, lacking the security of a second income source, are also more exposed to income instability and chronic poverty than households with two income earners. Women are more likely than men to head up single-income households, as they comprise the majority of single parents and tend

to face more career disruptions – such as dropping out of the labour market or switching from full-time to part-time employment to care for children or other family members (OECD, 2017[37]).

People with low educational attainment and young households, where the main income earner is under age 35, are also more at risk of income instability than older and more educated households. In part, the higher income instability among younger households reflects their status as new entrants to the labour market – a time when career progression is more rapid. Indeed, upward income mobility accounts for about half of the total income instability for young households. However, income instability is not unanimously positive for young households. When young households see their incomes trend downward, they are more likely to experience poverty than older households with similar income dynamics.[7]

Figure 1.6. Household market income instability is lower when more household members have job security

Increase in the squared coefficient of variation (SCV) or in the probability of being in poverty before taxes and transfers associated with one unit increase in the explanatory variables, averaged over 48 months ending in 2016-18
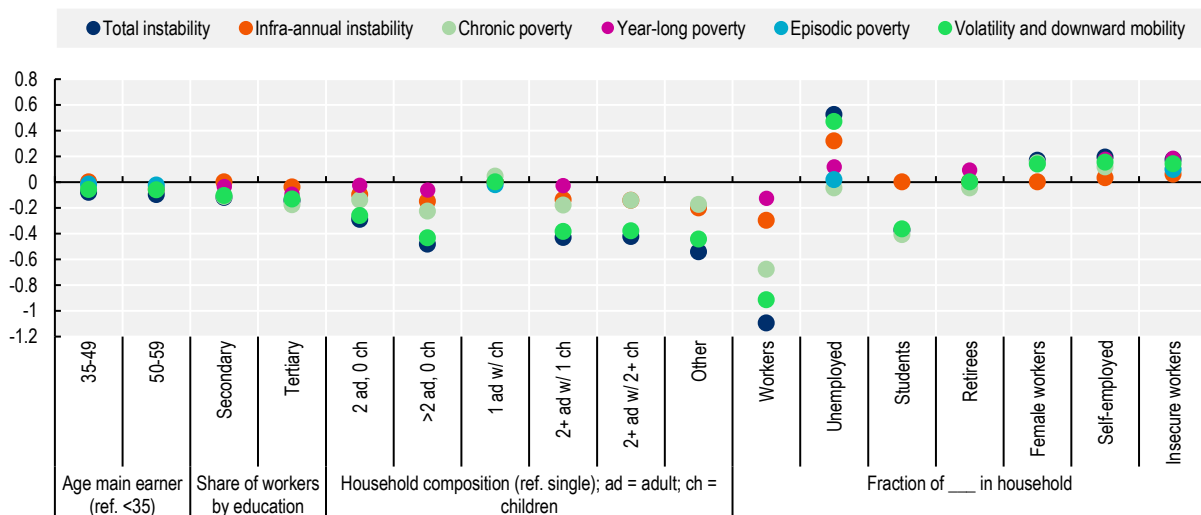
Note: Results based on OLS regressions (Annex 1.C), with standard errors clustered at the household level in brackets. Weights have been rescaled to sum to 1 in each country. Instability and poverty are evaluated over 48 months, and estimates are pooled over the period 2016-18. Insecure workers are people who are employed on temporary or no contracts. Chronic poverty is defined as consecutive spells of poverty lasting at least 36 months (out of 48); year-long poverty spells last between 12 and 35 months; episodic poverty spells last between 2 and 11 months.
Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

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Box 1.3. Employment factors are important contributors to instability in most countries

The size of the effects of family composition, employment and education on income instability differ across countries – although there are broad similarities (Figure 1.7). In southern European countries and Ireland, higher unemployment levels contribute to their higher levels of instability, while their larger family sizes act as a partially countervailing factor. In addition, higher shares of self-employed and insecure workers make a non-negligible contribution to instability in Italy, Portugal, Greece and Spain.

In contrast, good employment prospects in Switzerland, Norway, Luxembourg, Germany and Austria reduce the size of instability in these countries, and therefore instability is driven mainly by family composition – particularly small and single-income-earning households. Nevertheless, the high employment rates more than compensate for the effects of family composition on income instability, and thus total income instability is lower than average in these countries.

Employment, educational and family-level factors do not, however, explain all (or even the bulk) of instability in all European OECD countries. In several countries, a large fraction of the instability is due instead to other contextual and institutional factors – such as the strength of employment protection legislation and collective bargaining. In Estonia, Ireland and the United Kingdom, these broader contextual and institutional factors add to the level of instability, while they reduce instability in some southern European countries (Greece, Italy and Portugal). The role and design of institutional factors are considered in Chapter 3.

Figure 1.7. Household composition and employment levels explain an important fraction of country differences

Differences in total income instability (squared coefficient of variation) with respect to the OECD 21 average, decomposed by factors
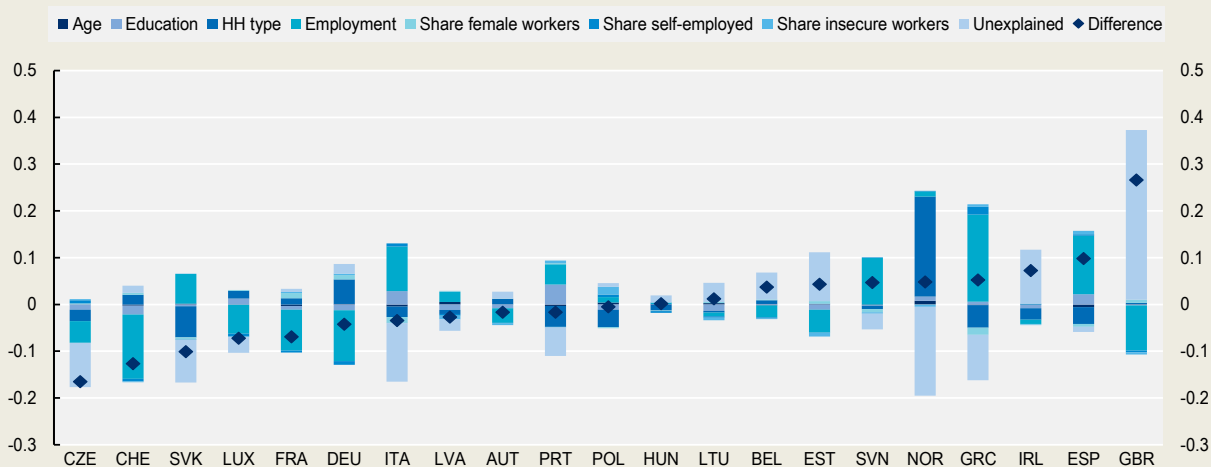
Note: The decomposition uses the coefficients from Table 1.C.1 and accounts for differences in each factor from the pooled mean across all countries (weighting each country equally). Age, education and employment refer to the household head's characteristics, while shares of female workers, self-employed and insecure workers are based on each household's share of adults with these characteristics. Insecure workers are on temporary or no contracts. HH type refers to household type.
Source: OECD calculations are based on the the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

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Where there is a high prevalence of income instability, the experience of poverty expands beyond those groups who are most at risk, such as the unemployed. Almost one-third of people in working-age households experienced income falls so large that their market income fell below the poverty line for at least part of the year (Figure 1.8).[8] Of these people, 43% were chronically in poverty (spending at least three years of the four-year period of analysis in poverty – dark blue bars in Figure 1.8), 31% spent between a 12 and 35 months in poverty (light blue bars), and the remaining 26% (medium blue bars) had short spells of income drops. Episodic poverty ranged between one-fifth of all poverty spells in Italy and the United Kingdom to a third in Austria and almost half in Switzerland. These results mirror the findings in the American poverty literature, which have revealed that the traditional picture of poverty as a persistent state is not true for most (Morduch and Siwicki, 2017[4]).[9] The prevalence and impact of episodic poverty thus has policy implications (Chapter 3).

Figure 1.8. One-third of individuals in working-age households spend at least a few months in poverty

Percentage of the population, only households whose main earner is aged 18-59, averaged over 48 months ending in 2016-18
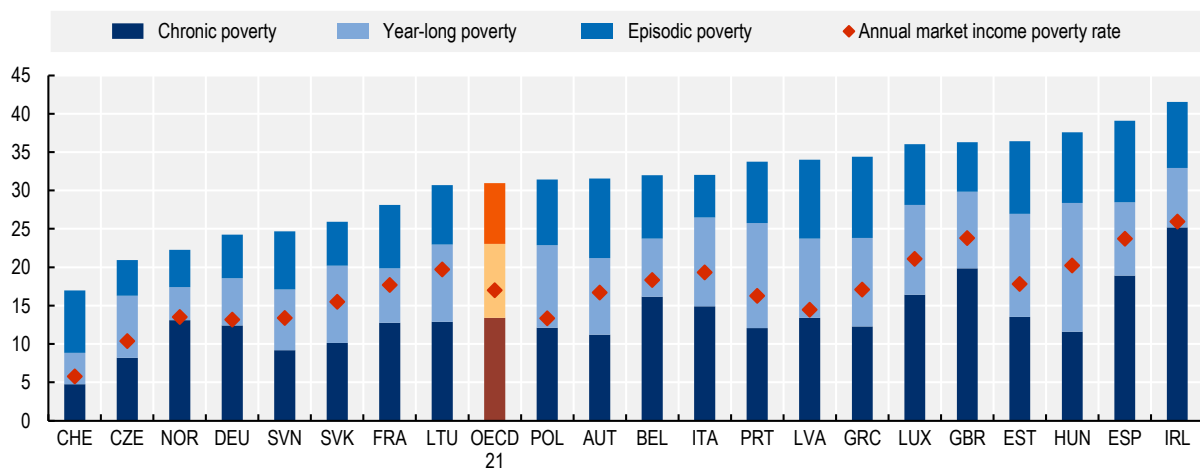
Note: Poverty is measured as a headcount of households whose market income falls below 50% of median disposable income. Market income includes employment earnings and income from financial assets. Chronic poverty is defined as consecutive spells of poverty lasting at least 36 months (out of 48); year-long poverty spells last between 12 and 35 months; episodic poverty spells last between 2 and 11 months.
Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

StatLink 🔗 https://stat.link/hzk7qe

While these results suggest that vulnerable and disadvantaged groups are most exposed to income instability and poverty, they do not give any indication of people's ability to cope. Some households may be less vulnerable to income shocks because they can draw on their savings, take out loans, reduce discretionary consumption and/or rely on friends and family for support. The next chapter examines the sufficiency of households' financial buffers to manage income instability, and then assesses economic insecurity as the intersection of people's exposure and vulnerability to income instability.

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Annex 1.A. Research literature on income instability

Annex Table 1.A.1. Studies on income instability

Study	Country	Data	Method	Main results
Methods that decompose permanent and transitory components				
Gottschalk et al. (1994[38])	United States	Panel Study of Income Dynamics (PSID); 1970-1987; white male household heads aged 20-59; earnings	Window averaging method to annual changes with unit root permanent effect and ARMA transitory effect	Increase (both permanent and transitory components) in earnings volatility between 1970s and 1980s
Moffitt and Gottschalk (2010[11])	United States	PSID; 1970-1987; white male household heads aged 20-59; earnings	Error component model to annual changes	Increase (both permanent and transitory components) in earnings volatility between 1970s and 1980s
Gittleman and Joyce (1999[39])	United States	PSID; 1968-1991; families; equivalised gross income	Window averaging method to annual changes	Increase in income volatility
Haider (2001[14])	United States	PSID; 1967 – 1991; white male household heads aged 25-60; labor earnings	Error component model to annual changes with heterogeneous growth component	Increase in earnings volatility between early 1970s and late 1980s
Hyslop (2001[13])	United States	PSID; 1979-1985; men and women aged 18-60; labour earnings	Error component model to annual changes allowing husband and wife permanent and transitory components to be correlated	Increase in earnings volatility in 1980s
Moffitt and Gottschalk (2002[12])	United States	PSID; 1970-1996; men household heads; aged 20-59; wages and salaries	Error component model to annual changes	Increase of earnings volatility in early 1980s and early 1990s
Baker and Solon (2003[40])	Canada	Income tax records; 1976-1992; men; earnings	Error component model to annual changes	Growth in earnings inequality reflect an increase in long-run inequality and earnings instability
Ramos (2003[31])	United Kingdom	British Household Panel Study (BHPS) 1991-1999; males' earnings	Error component model to annual changes	Increase in earnings dispersion. During the 1990s the persistent component played a larger role. Then, earnings dispersion became more transitory and less persistent.
Kalwij and Alessie (2007[33])	United Kingdom	New Earnings Survey (NES); 1975-2001; men; earnings	Error component model to annual changes	Strong increase in transitory wage inequality
Keys (2008[41])	United States	PSID; 1970-2000; men and women household heads and families; earnings and family income	Window averaging method to annual changes	Increase in family income volatility and male earnings between 1970 to 1990, then flattened in the 2000s. Permanent variance for female heads fell and transitory rose.

Study	Country	Data	Method	Main results
Daly and Valleta (2008[30])	United States, Germany and United Kingdom	Cross-National Equivalent Files (CNEF); 1979-1996 for US, 1983-1997 for Germany and 1990-1997 for United Kingdom; male households head aged 25 and 61; earnings	Window averaging method to annual changes and error component model	Despite the differences in overall cross-sectional inequality across these countries, the persistent component of earnings inequality was similar in the 1990s
Gottschalk and Moffitt (2009[42])	United States	PSID;1974-2000 working males, aged 30-59. earnings, family income	Window averaging and percentage point methods to annual changes	Transitory variance for males increased from the 1970s to the late 1980s
Heathcote et al. (2010[15])	United States	PSID; 1967-2006; household heads and spouses, earnings	Error component model to annual changes with unit root in permanent component	Increase of earnings volatility
Cervivni-Plá and Ramos (2011[29])	Spain	European Community Household Panel;1993-2000; males aged 21-61; earnings	Error component model to annual earnings	Decline in earnings instability
Myck, Ochmann and Qari (2011[26])	Germany	German micro panel data (SOEP); 1994-2001; male wages	Error component model to annual wages	Increase in cross-sectional inequality due to transitory component
Moffitt and Gottschalk (2012[16])	United States	PSID; 1970-2005; men household heads; earnings	Error component model with window averaging and non-parametric method to annual changes	Transitory variance increased between 1970s to mid-1980s, then remained at this level until 2005
DeBacker et al. (2012[43])	United States	Male primary or secondary earner W-2 data merged with IRS tax return data; 1987-2009; earnings and household income	Two window averaging methods and error component model	Permanent variance of male earnings increased but transitory component was stable. Transitory variance of household income increased
Jensen and Shore (2015[44])	United States	PSID; 1968-2009; men household heads; earnings	Error component model with evolving permanent effect and correlated transitory effect that captures heterogeneity in permanent and transitory variances to annual changes	Variances have not risen for most of the population but have risen strongly for those with high past volatility levels
Sologon and Van Kerm (2017[28])	Luxembourg	Administrative data; 1988-2009; men aged 20 to 57; earnings	Window averaging method	Earnings instability declined
Hryshko et al. (2017[45])	United States	Married couples in matched SSA-SIPP data; 1987-2009; earnings	Window averaging method to annual changes	Husband volatility fell between 1980 – 2000 then rose. Couple earnings volatility fell
Aggregate methods or non-parametric methods				
Dynarski and Gruber (1997[46])	United States	PSID; 1970-1991; men household heads; earnings	Variance of residuals from a first-difference regression of earnings	Increase in earnings stability which is countercyclical

Study	Country	Data	Method	Main results
Van Kerm, (2004[47])	16 EU countries (including Poland and Hungary, which were not yet members in the 1990s)	Consortium of Household Panels for European Socio-Economic Research (CHER) Households with positive incomes. 1990s household income	Change in the natural logarithm and absolute value of the change in log-income (Percentile ranks)	High levels of income volatility in southern and central European countries, followed by Ireland and United Kingdom during the 1990s
Hills, McKnight and Smithies (2006[48])	United Kingdom	Survey collecting weekly income from 93 households in the financial year 2003-04	Standard deviation and coefficient of variation of weekly income	Increase in monthly income variation without a clear pattern
Bania and Leete (2009[49])	United States	Survey of Income and Program Participation (SIPP); Households; 1991-1992 and 2001 panels	Coefficient of variation of monthly household income over 12-month period	Increase in income volatility, especially for low-income households
Sabelhaus and Song (2010[50])	United States	Social Security; 1980-2005; individuals; earnings	Permanent variance identified change in variance of change in log earnings by lag length	Earnings volatility declined
OECD (2011[51])	OECD countries	Panel Data; Workers aged between 25 and 59 years. Mid 2000s; earnings	Increase in the gross annual labour earnings by 20% or decrease by 20% in real terms	Nordic countries and the Netherlands have less earnings volatility compared with eastern European countries, Spain, Portugal, Austria and Korea
Rohde, Tang and Rao (2011[52])	Germany, United States and United Kingdom	CNEF; 1991-2005; household income	Standard deviation of two-year arc percent change	Britain had the highest level of income insecurity, followed by Germany, then United States, when measuring with pre-government income (income of household members before tax). When using post-government income (income of households after taxes and transfers) United States had the highest insecurity estimate, followed by Britain and Germany
Shin and Solon (2011[53])	United States	PSID; male head of the household aged 25 to 59; 1969-2004; earnings	Standard deviation measures of year to year	Men´s earnings volatility increased during the 1970s but did not show a clear trend afterwards
Ziliak, Hardy and Bollinger (2011[54])	United States	Current Population Survey (CPS); Individuals between ages of 16 and 60; 1973-2009 earnings and income	Standard deviation of the arc percentage change	Male volatility rose from the early 1970s to the mid-1980s, was at same level by 2009; female volatility declined
Dahl et al. (2011[55])	United States	Social Security; 1984-2005; individuals; earnings	Dispersion of arc earnings changes greater than 50 percent between years	Decline in volatility in late 1980s and then through 2005
Amuedo-Dorantes and Pozo (2011[56])	Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares; 2000-2008; households; income	Standard deviation of month-to-month percentage change in income flows	Female-headed households and larger households appear more prone to experiencing greater income instability, as well as households in rural areas

Study	Country	Data	Method	Main results
Dynan et al. (2012[57])	United States	PSID; men and women household heads, and spoused, households; 1967-2008; labor earnings	Standard deviation of two-year arc percent change	Increase in volatility through the 1970s, 1980s and 1990s. Households´ labor earnings and transfer payments have both become more volatile over time
Celik et al. (2012[58])	United States	Longitudinal Employer-Household Dynamics (LEHD - UI earnings records) in 12 states; 1992-2008, men earnings compare to CPS, SIPP and PSID	Standard deviation of change in log earnings residuals	LEHD shows little or no change in volatility during the entire period; PSID and CPS show rising volatility from 1970s to 1980s, then decline and increase in early 2000s; SIPP shows a decline between 1984 and 2006
DeBacker et al. (2012[43])	United States	Tax returns merged with male primary or secondary earner W-2 data; 1987-2009; earnings	Standard deviation of percent change in earnings one year and two years	No clear trend in earnings volatility
Hardy and Ziliak (2013[18])	United States	Matched CPS data, 1980-2009; household income	Variance of arc percentage change	Volatility doubled over the entire period, most pronounced among the top incomes
Cappellari and Jenkins (2014[34])	United Kingdom	BHPS Individuals between ages of 16 and 59 (drop self-employed individuals) 1992-2008 Earnings	Standard deviation of the arc percentage change, two years	Fall in labour market volatility
Hannagan and Morduch (2015[59])	United States	United States financial diaries; income and spending	Average coefficient of variation on monthly income	High volatility within a year in income and spending. Poorest households face greater volatility and better-off families experience substantial swings
Edwards (2015[60])	United States	SIPP Individuals; January 2009 to December 2012; income	Arc percentage change in monthly income	Population that is chronically poor experience small fluctuations, pushing them into or out of poverty
Moffit and Zhang (2018[61])	United States	PSID; 1970-2014; male aged 30-59; earnings	Variance of the two-year change in log earnings regression residuals	Volatility increases from the 1970s to the mid-1980s; stable trend from mid-1980s to the mid-2000s, and rising thereafter
Menta, Wolff and D'Ambrosio (2021[27])	Italy and United States	Panel Data (PSID and Survey on Household Income and Wealth – SHIW) Men and women older than 15. 1998-2016 Household income and wealth	Standard deviation of the two-year percentage changes	Higher wealth volatility in both countries than income volatility. Increased income and wealth volatility over time for both countries
Avram et al. (2021[32])	United Kingdom	UK Household Longitudinal Study (UKHLS) Households and individuals aged 25 and over (they include self-employed workers). 2009-2017; earnings and income	Standard deviation of the arc percentage change in annual earnings and income	Volatility of individual earnings declined as well as household income

Study	Country	Data	Method	Main results
Chauvel and Hartung, (2014[62])	United States and Europe	PSID and EU-SILC Households with head of the household between 25 and 59 1970-2007 household income	Percentile ranks changes using continuum of ranks	Volatility is lower in Nordic countries, Portugal and Italy compared to the United States, higher in the United Kingdom, Austria and Spain
Egbom et al. (2022[63])	Brazil	Administrative (*Relação Anual de Informações Sociais* (RAIS)) and survey (*Pesquisa Mensal de Emprego* (PME)) data; 1985-2018; workers aged 25-55; earnings	One-year residual log earnings changes	Since mid-1990s, instability of earnings declined for formal sector, while informal workers have experienced higher earnings instability between 2002 and 2015
Larrimore, Mortenson and Splinter (2022[64])	United States	Administrative tax data. Form W-2 and 1099-G; 2003-2020, individuals aged 25 and older; earnings	Increase in labour earnings by 10% or decrease by 10%	In 2020, workers with earnings in the bottom two quintiles were more likely to have experienced large earnings declines than in the Great Financial Crisis, while workers in the top quintile were less likely to have experienced large earnings declines than in the Great Financial Crisis.

Annex 1.B. Methodological details

Decomposing monthly income instability into infra- and inter-annual components

Income instability is measured as the average individual squared coefficient of variation of household monthly equivalised incomes. In the population, it is defined as:

$$E(CV^2) = \frac{1}{n} \sum_{i=1}^{n} CV_i^2$$

where n is the population size and the CV_i^2 for each individual-household is given by:

$$CV_i^2 = \frac{1}{T} \sum_{t=1}^{T} \left(\frac{x_{it} - x_{i.}}{x_{i.}} \right)^2$$

with T standing for temporal horizon (usually $T = 48$) and $x_{i.}$ for the mean of individual monthly incomes.

$E(CV^2)$ can be decomposed into infra-annual and inter-annual components of instability. At the individual level, the variations with respect to the average can be decomposed as:

$$\sum_{t=1}^{T}(x_{it} - x_{i..})^2 = \sum_{y=1}^{Y}\sum_{m=1}^{M}(x_{iym} - x_{i..})^2 = \sum_{y=1}^{Y}\sum_{m=1}^{M}(x_{iym} - x_{iy.})^2 + M \cdot \sum_{y=1}^{Y}(x_{iy.} - x_{i..})^2$$

where M is the number of sub-periods in a year (such as months) and x_{ym} is income in month m of year y. Overall infra-annual instability arises from averaging the first addenda, which compares monthly income with the average of its year, over the population:

$$E(CV_m^2) = \frac{1}{n} \sum_{i=1}^{n} \frac{1}{T \cdot x_{i..}^2} \sum_{y=1}^{Y}\sum_{m=1}^{M}(x_{iym} - x_{iy.})^2$$

while the income instability between years comes from averaging the second addenda, which compares yearly averages with the overall mean:

$$E(CV_y^2) = \frac{1}{n} \sum_{i=1}^{n} \frac{1}{Y \cdot x_{i..}^2} \sum_{y=1}^{Y}(x_{iy.} - x_{i..})^2$$

With the same approach, $E(CV_m^2)$ can be further decomposed to account for the contribution of seasonality to instability by observing that:

$$\sum_{y=1}^{Y}\sum_{m=1}^{M}(x_{iym} - x_{iy.})^2 = \sum_{y=1}^{Y}\sum_{m=1}^{M}(x_{iym} - x_{iy.} + x_{i..} - x_{i.m})^2 + Y \cdot \sum_{m=1}^{M}(x_{i.m} - x_{i..})^2$$

where the first sum considers the income of each month and year and adds up (the square of) its deviation from the year average, after correcting for the peculiarity of its month (i.e. the difference between the overall mean and the month average across years); the second sum compares each month average across years with the overall mean. Hence:

$$E(CV_{infra}^2) = \frac{1}{n} \sum_{i=1}^{n} \frac{1}{T \cdot x_{..}^2} \sum_{y=1}^{Y}\sum_{m=1}^{M}(x_{iym} - x_{iy.} + x_{i..} - x_{i.m})^2$$

is the infra-annual component of instability net of seasonality, and

$$E(CV_s^2) = \frac{1}{n} \sum_{i=1}^{n} \frac{1}{M \cdot x_{i..}^2} \sum_{m=1}^{M}(x_{i.m} - x_{i..})^2$$

is the contribution of seasonality to overall instability. Summing up, the squared coefficient of variation is decomposable as follows:

$$E(CV^2) = E(CV_{infra}^2) + E(CV_s^2) + E(CV_y^2)$$

Annex 1.C. Determinants of income instability and poverty

Annex Table 1.C.1. Factors associated with measures of income instability and poverty

	(1)	(2)	(3)	(4)	(5)	(6)
	Total income instability (SCV)	Infra-annual income instability (SCV)	Chronic market income poverty	Episodic market income poverty	Upward income mobility (SCV)	Downward income mobility (SCV)
Age main earner 35-49 (ref. aged < 35)	-0.081***	-0.036*	-0.027***	-0.059***	-0.023***	-0.058**
	(0.029)	(0.020)	(0.008)	(0.008)	(0.004)	(0.029)
Age main earner 50-64	-0.099***	-0.056***	-0.035***	-0.073***	-0.037***	-0.061**
	(0.027)	(0.017)	(0.007)	(0.008)	(0.004)	(0.026)
Fraction adults with secondary schooling degree	-0.119***	-0.026	-0.114***	-0.027**	-0.013**	-0.106***
	(0.033)	(0.020)	(0.010)	(0.011)	(0.006)	(0.032)
Fraction adults with tertiary degree	-0.145***	-0.039**	-0.177***	-0.096***	-0.013***	-0.132***
	(0.030)	(0.019)	(0.009)	(0.011)	(0.005)	(0.029)
2 adults without dependent children (ref. single)	-0.291***	-0.098***	-0.140***	-0.035***	-0.031***	-0.260***
	(0.030)	(0.018)	(0.008)	(0.009)	(0.004)	(0.029)
2+ adults without dependent children	-0.483***	-0.149***	-0.226***	-0.062***	-0.049***	-0.433***
	(0.036)	(0.023)	(0.008)	(0.010)	(0.005)	(0.035)
Single parent hh with dependent children	-0.082	0.024	0.046***	-0.015	-0.013	-0.069
	(0.124)	(0.088)	(0.018)	(0.015)	(0.010)	(0.121)
2 (or 2+) adults with 1 dependent child	-0.432***	-0.137***	-0.179***	-0.034***	-0.047***	-0.385***
	(0.032)	(0.021)	(0.008)	(0.010)	(0.004)	(0.032)
2 (or 2+) adults with 2 (or 2+) dependent children	-0.423***	-0.143***	-0.143***	-0.025***	-0.044***	-0.379***
	(0.031)	(0.019)	(0.008)	(0.010)	(0.005)	(0.030)
Other family composition	-0.542***	-0.202***	-0.174***	0.165	-0.098***	-0.444***
	(0.078)	(0.032)	(0.060)	(0.114)	(0.012)	(0.072)
Fraction of workers among adults (at the beginning of the period)	-1.095***	-0.298***	-0.678***	-0.128***	-0.181***	-0.915***
	(0.060)	(0.036)	(0.014)	(0.017)	(0.011)	(0.058)
Fraction of unemployed among adults (at the beginning of the period)	0.525***	0.320***	-0.045**	0.135***	0.056***	0.469***
	(0.100)	(0.066)	(0.017)	(0.020)	(0.015)	(0.097)
Fraction of students among adults (at the beginning of the period)	-0.375***	-0.049	-0.410***	-0.002	-0.010	-0.365***
	(0.070)	(0.041)	(0.021)	(0.023)	(0.015)	(0.066)
Fraction of retirees among adults (at the beginning of the period)	-0.008	0.049	-0.046**	0.082***	-0.044***	0.036
	(0.082)	(0.051)	(0.019)	(0.021)	(0.012)	(0.079)
Fraction of female workers among adults (at the beginning of the period)	0.170***	0.036	0.149***	0.018	0.030***	0.139***
	(0.037)	(0.025)	(0.010)	(0.013)	(0.005)	(0.036)
Fraction of self-employed among adults (at the beginning of the period)	0.193***	0.034***	0.118***	0.182***	0.040***	0.153***
	(0.018)	(0.011)	(0.010)	(0.014)	(0.004)	(0.017)
Fraction of insecure workers among adults (temporary or no contract; at beg. of period)	0.174***	0.059***	0.104***	0.283***	0.032***	0.142***
	(0.024)	(0.014)	(0.012)	(0.017)	(0.005)	(0.023)
Country dummies	X	X	X	X	X	X
Year dummies	X	X	X	X	X	X
N	124460	124460	125698	125698	124460	124460
R2	0.103	0.034	0.366	0.068	0.124	0.082

Note: *** statistically significant at the 1% level, ** at the 5% level, * at the 10% level. Results based on OLS regressions, with standard errors clustered at the household level in brackets. Weights have been rescaled to sum to 1 in each country. Instability and poverty are evaluated over 48 months, and estimates are pooled over the period 2016-18.

Source: OECD calculations based on the European Union Statistics on Income and Living Conditions (EU-SILC), https://ec.europa.eu/eurostat/web/income-and-living-conditions.

Notes

[1] One exception is a small-scale study in the United Kingdom, in which 93 families were surveyed about their weekly income in the 2003-04 financial year. The study found that only seven families had stable incomes (varying less than 10% from their average annual income). Low-income and single-parent families, renters, and those with periods of unemployment were less likely to have stable incomes than other family types – the very families that have to carefully budget week-to-week because they have fewer resources to buffer income shocks, even though they are much more likely to experience income shocks (Hills, Mcknight and Smithies, 2006[48]).

[2] The squared coefficient of variation captures the average (squared) variations of monthly income with respect to the average over the entire period, rescaled (i.e. normalised) by average income. This measure is used in other studies of infra-annual instability because it enables total income instability to be decomposed into its infra-annual, inter-annual and seasonal parts (Bania and Leete, 2009[49]; Hannagan and Morduch, 2015[59]); Annex 1.B. The advantage of decomposing income instability in this way is that that it captures the effect of many important changes in work patterns. Further, the instability levels can be averaged across households to estimate the overall level of income instability in each country. The average squared coefficient of variation method is also consistent with other approaches, such as "window averaging" and "arc percentage change". See Annex 1.A for more information on these methods.

[3] In theory, there are also households that have completely stable incomes that do not change at all during the 48-month period. However, none were identified in the sample, which means all households that do not experience upward mobility either have volatile incomes or incomes that exhibit a downward trend.

[4] An alternative way to measure income mobility is to estimate a linear trend in income over 48 months, and then decompose each household's instability into two components: the combined downward trend and associated volatility around the trend (termed "bad instability") and the upward income trend ("good instability") (Raitano and Subioli, 2021[65]). The results obtained using this method are similar to those presented in this chapter, which are estimated by designating households as being upwardly mobile or not depending on their overall income dynamics over the entire period.

[5] All further analysis in this report is for households with employment income for at least part of the 48-month reference period and a reference person who is aged between 18 and 59 at the beginning of the period. Prime working-age households and working-age households are used interchangeably to refer to this group. The analysis excludes workers aged 60 and over so as to focus on employment changes that are more likely to be shocks rather than transitions to retirement.

[6] The Gini Index reported in this chapter differs from that published in the OECD's Income Distribution Database (IDD) due to differences in age groups (IDD calculates the Gini Index for the working-age population aged 15 to 64, whereas this chapter uses prime-age workers aged 18 to 59), time periods (this chapter uses monthly income over 48 months instead of one year used by the IDD), and different data

sources for some country (e.g. the IDD uses administrative data sources for France and Germany and a different survey for the United Kingdom).

[7] Households with downwardly trending incomes are those which experience at least one large income drop (of at least 25%) or three minor monthly income drops (less than 25%) in the 48-month reference period.

[8] The poverty line is measured as having a household market income that is less than 50% of the national median disposable income.

[9] For example, almost one-third of Americans experienced episodic poverty (lasting 2-12 months) in 2009-11, more than double the annual poverty rate of 14% (Edwards, 2014[66]).