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Rent control reduces economic inequality at a price

- Rent control can contribute to the development of economic inequality
- Rent control benefits low-income earners, while the wealthy lose revenue
- However, rent control has undesirable side effects such as reduced supply
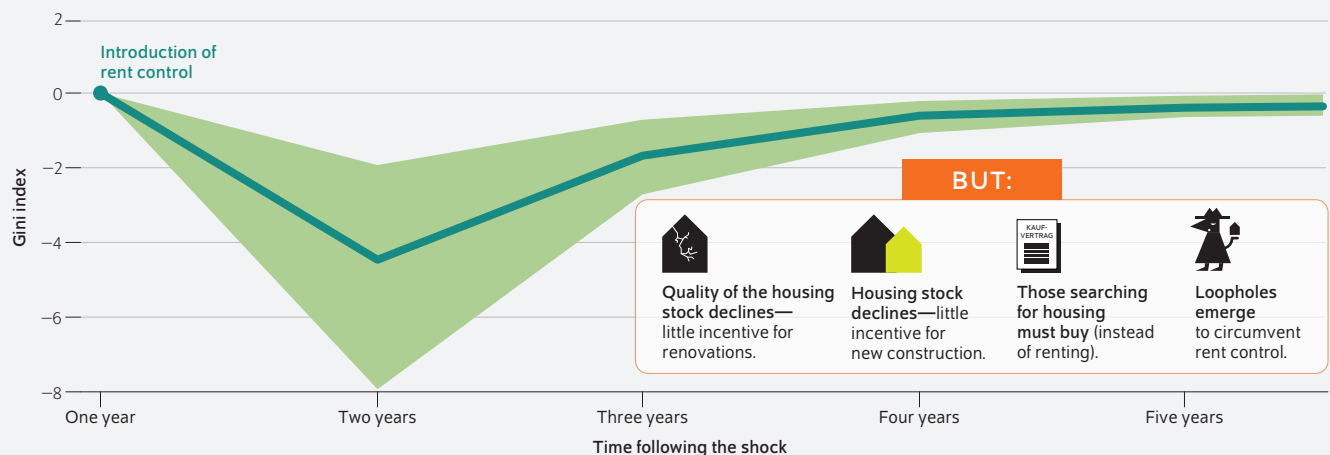
AT A GLANCE

Rent control reduces economic inequality at a price

By Konstantin A. Kholodilin and Sebastian Kohl

- Rental income and expenditure are distributed differently: low-income earners spend relatively more on rent, while high-income earners have more rental income

- A 100-year time series and recent micro data show that rent control can help explain the development of economic inequality

- Rent control can impact income inequality and the wealth-to-income ratio in the short and medium terms

- Disposable income of the lower-income groups increases due to rent control, while the revenue of upper income groups decreases

- However, rent control can have undesired effects such as reduced mobility and a decreasing housing supply

Rent control reduces economic inequality in the short run but has undesirable side effects

Gini index

Introduction of rent control

BUT:

Quality of the housing stock declines—little incentive for renovations.

Housing stock declines—little incentive for new construction.

Those searching for housing **must buy** (instead of renting).

Loopholes emerge to circumvent rent control.

One year   Two years   Three years   Four years   Five years

Time following the shock

Source: Authors' own calculations.

Note: The light green area indicates the 90-percent confidence interval.

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FROM THE AUTHORS

"Rent control has been historically, and can still be today, an instrument for reducing social inequality. However, side effects such as a declining housing stock and a lack of incentives for maintenance can limit its effectiveness."

— *Konstantin A. Kholodilin* —

MEDIA

Audio Interview with K. Kholodilin (in German)
www.diw.de/mediathek

Rent control reduces economic inequality at a price

By Konstantin A. Kholodilin and Sebastian Kohl

ABSTRACT

Over the course of the 20th century, governments have frequently used rent control to keep rents affordable, especially in times of crisis when housing is scarce. Existing research shows that rent control has undesirable side effects, such as overall societal welfare losses, market misallocation, a declining housing supply, and lower mobility. However, there has been little research examining the effect of rent control on economic inequality. Income inequality has been rising worldwide since the 1980s. While previous explanations of this development focused on the relationship between the growth of capital and wages and social policy measures, this paper argues a housing dimension should be considered as well. Using a time series analysis, we investigate what impact rent control has on income inequality. The analysis shows that rent control significantly reduces the social inequality as measured by the Gini index and reduces the wealth-to-income ratio. The stricter the measures taken, the stronger the effects. Existing data suggest that lower income groups spend a larger share of their income on rent, while rental income makes up a large share of the income of higher income groups. When rent-reducing measures are taken, the disposable income of the lower-income groups will rise and the income share of the top ten percent will decrease in the short run. Policymakers must decide how to weigh the effects and the impact of rent control on overall social welfare and the rental housing market.

Although the German economy has been suffering a downturn as a result of the coronavirus pandemic, the situation on the housing market has not eased. Thus, housing remains a topic on the political agenda. Over the past years, there have been heated debates on rent prices: Can they be regulated? If yes, how? While past academic discussions of rent control seem to suggest it caps rents effectively, it comes with other serious, undesirable side effects. For example, strict rent control often leads to a reduction in the supply of rental housing and less residential mobility. In the long run, it can even lead to a loss of wealth and a decline in the quality of the housing stock. However, the discussion so far has failed to consider the impact that rent control regulations can have on economic inequality beyond the housing market.[1]

Following the publication of Thomas Piketty's "Capital in the 21st Century" in 2014, the housing dimension has remained neglected in the international discussion on inequality. In his work, Piketty shows that the income and asset shares of the top ten percent roughly follow a U-shaped curve. After a significant decline from a high in the mid-1900s, they have been rising again since the 1980s.

The literature points to several factors that have contributed to this development.[2] Historically, wars, revolutions, and other disasters—"great levelers"—have significantly reduced economic disparities. In the 20th century, for example, societal solidarity during times of crises and fears of potential revolution led to the introduction of progressive asset and income taxation in Western Europe and North America following the two world wars. The revenue from these taxes was then used to fund generously redistributive welfare states with social security and democratized access to education. For a long time, the economy and labor income also grew faster than capital income. However, beginning in the 1980s,

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2 See Thomas Piketty, *Capital in the Twentieth-First Century* (Cambridge: 2014); Walter Scheidel, *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-first Century* (Vol. 74) (Princeton: 2018); Kenneth Scheve and David Stasavage, *Taxing the Rich: A History of Fiscal Fairness in the United States and Europe* (Princeton: 2016).

these trends stagnated or reversed. Inequality began to rise again, partially due to distributional effects resulting from increasing globalization and technological development, declining union power, and the growing importance of multinational corporations and the financial industry.[3]

Housing remains a neglected dimension in the inequality discussion despite the fact that the history of rent control is closely intertwined with the development of capital income and disposable household income.[4] In fact, rent controls have almost mirrored the development of inequality over time: Strict rent controls were introduced and expanded in the war and postwar years and then liberalized starting in the 1960s, especially in Anglo-Saxon countries. Thus, at first glance, rent controls and inequality appear to be negatively correlated at the macro level: In periods and countries with (stricter) rent control, the level of inequality is lower (Figure 1).

High income groups earn relatively more rental income, lower income groups pay relatively more rent

One relevant factor for societal inequality is the unequal distribution of rental income and the rent burden in the population (Table 1).[5] The higher a household's income per capita, the larger the share of rental income.[6] For example, the share of rental income of private households in the bottom (first) quintile is less than one percent on average. In contrast, the share is more than three percent for households in the fifth quintile—the top 20 percent of the income distribution—where total income is also much higher. This means that in this case, a share of three percent represents a higher absolute amount. A similar situation can be observed for other countries in the Luxembourg Income Study (LIS) in recent years. The LIS harmonizes national survey data, such as the Socio-Economic Panel (SOEP) for Germany, retroactively and thus with a time lag, to make the income and wealth situations of private households in different countries comparable. Thus, tenant households from the bottom income

Figure 1

Relationship between the development of inequality and rent prices

Share in percent (left axis); index (right axis)

Notes: The rent control index is 0 when the rental market is completely free and there is a general freeze in rent prices. Calculated based on data from the following 21 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the USA.

Sources: World Inequality Database; authors' own calculations.

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Historically, strict rent control has been associated with a decline in the income share of the highest-earning households of total income.

quintile spend disproportionately more on housing than tenant households from higher quintiles do. Since the LIS does not distinguish between private and social tenants, the situation may differ in countries with small private rental markets. The inverse relationship between income and the share of housing expenditure is known as Schwabe's Law.[7] The more tenant households are subject to these rent burdens and the more concentrated landlord households are, the more relevant these uneven distributions become for overall economic inequality.

For socio-political reasons, states have not let the market determine rent prices since World War I due to the heavy budgetary strain caused by housing costs. In this context, rent control can limit both the price level and rent increases. When rent control is introduced or strengthened, rents generally decrease. Because rent control operates relatively roughly at the housing unit level rather than at the level of the occupying household, rental income decreases for all landlord households, whereas rental expenditure declines for tenant households.[8] The top income quintiles are especially affected by the loss of rental income, while households with lower per capita incomes in particular benefit relatively more

3 Olivier Godechot, "Financialization and the Increase in Inequality," in *The Routledge International Handbook of Financialization*, eds. Philip Mader, Daniel Mertens, and Natascha van der Zwan (Milton Park: 2020); Matthew C. Klein and Michael Pettis, *Trade Wars are Class Wars: How Rising Inequality Distorts the Global Economy and Threatens International Peace* (New Haven: 2020); Anna Stansbury and Lawrence H. Summers, "The Declining Worker Power Hypothesis: An Explanation for the Recent Evolution of the American Economy," *Brookings Papers on Economic Activity Spring 2020* (2020).

4 Odran Bonnet, Bono Pierre-Henri, Chapelle Guillaume, und Wasmer Etienne, "Does Housing Capital Contribute to Inequality? A Comment on Thomas Piketty's Capital in the 21st Century," *Sciences Po Economics Discussion Paper 7* (2014); Matthew Rognlie, "A Note on Piketty and Diminishing Returns to Capital," (MIT: 2014), unpublished; Charlotte Bartels and Carsten Schroeder, "The Role of Rental Income, Real Estate and Rents for Inequality in Germany," *Forum New Economy Working Papers* (2020); Christian Dustmann, Bernd Fitzenberger, and Markus Zimmermann, "Housing Expenditures and Income Inequality," *CReAM Discussion Paper Series*, no. 1816 (2018).
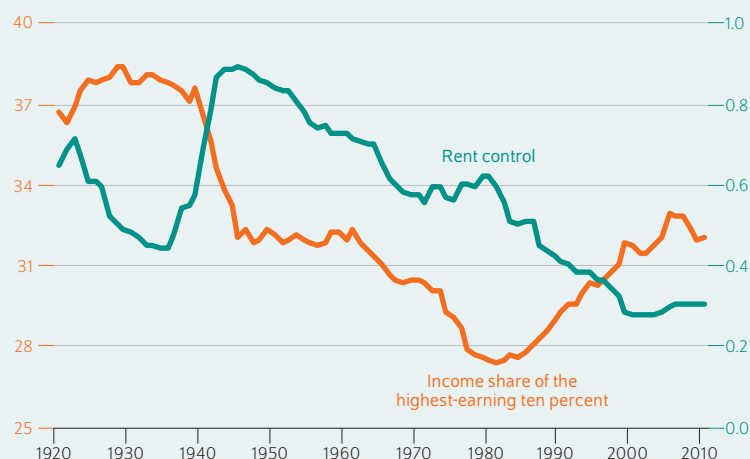
5 Due to cost data availability, gross figures are used here. Moreover, rent expenditure is not further differentiated by different landlords, so that the inequality distributions found tend to be smaller than actual market inequalities. Only households for which either rent as expenditure or as income differs from zero are considered. The descriptive statistics (e.g., quintiles) are calculated using sample weights. The use of such household weights allows the complex sampling to be properly accounted for in the analyses.

6 LIS defines household income as the total sum of income from labor, public transfers, private transfers, investment income, and the total value of non-monetary goods and services derived from labor and transfers.

7 Hermann Schwabe, "Das Verhältnis von Miete und Einkommen in Berlin," in *Berlin und seine Entwicklung. Gemeindekalender und städtisches Jahrbuch* 2 (1868): 264–267 (in German).

8 Moreover, if house prices and thus housing assets are viewed as the present value of future rental income, rent control has an indirect negative impact on assets.

Table 1

International comparison of rental income and expenditure
By income quintile

Country	Year	Share of rental income of total income, percent				
		1	2	3	4	5
Austria	2014	1.1	0.5	0.8	0.8	1.1
Belgium	2016	0.9	0.9	1.4	2.1	2.5
France	2010	0.4	0.6	1.0	1.3	2.9
Germany	2016	0.9	1.0	1.4	2.0	3.2
Great Britain	2016	0.6	0.4	0.5	0.8	1.2
Greece	2016	1.7	1.6	2.0	2.8	4.4
Ireland	2016	0.2	0.3	0.8	0.9	1.8
Israel	2016	0.8	1.1	1.9	3.0	4.2
Italy	2016	0.3	0.3	0.5	1.1	1.2
Netherlands	2013	0.3	0.5	0.3	0.6	0.8
Spain	2016	1.2	1.0	1.4	1.6	2.2
Switzerland	2016	0.5	1.3	1.5	1.8	3.5

Country	Year	Rent burden, percent				
		1	2	3	4	5
Austria	2014	26.7	28.4	27.4	25.0	18.7
Belgium	2016	30.3	27.9	26.7	24.6	20.0
France	2010	5.7	11.2	13.2	14.3	14.6
Germany	2016	30.5	27.9	26.5	24.3	19.9
Great Britain	2016	19.3	19.6	17.9	17.8	18.6
Greece	2016	10.1	3.3	2.7	2.2	1.5
Ireland	2016	21.9	21.3	20.3	17.8	17.8
Israel	2016	33.7	28.2	26.0	23.5	21.4
Italy	2016	23.9	22.3	21.8	21.1	19.5
Netherlands	2013	27.5	25.7	24.6	25.6	24.7
Spain	2016	36.4	32.2	30.2	27.5	23.7
Switzerland	2016	19.3	17.4	16.8	15.6	12.0

Notes: The rent burden refers exclusively to tenant households. Rental income is compared to the income of all households. In Germany, the number of households that earn income from renting is around 11 percent.

Sources: Luxembourg Income Study; authors' own calculations.

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The lowest income quintiles have disproportionately high rental expenditure, while the upper income quintiles generate a relatively large share of rental income.

from the lower rent burden. Although rents may fall to a similar extent in absolute terms for richer tenant households, such households are less likely to rent and rent reductions have a smaller effect for them relative to income. For example, 70 percent of households in the bottom income quintile were tenant households in Germany in 2016. In contrast, only 42 percent of the top quintile are tenants.

Strict rent control reduces inequality

To explore the inequality-reducing impact of rent control in a detailed, historical context, we used a time series analysis to examine a panel of 16 OECD countries[9] beginning in 1900 (Box 1). This method estimates the impact of rent control on different inequality measures while also controlling for other potential factors (e.g., demographic and macroeconomic factors, tax system, and public expenditure).

For the landlord side, the wealth-to-income ratio, the income shares of the top one and ten percent, and the Gini index for market and post-transfer income are used as inequality measures to trace the impact of rent prices on the capital income of landlords. The wealth-to-income ratio is a measure of inequality because it compares macroeconomic wealth to national income. Real rent prices and the share of housing expenditure of national income are used to test the effect of rent controls on the tenant side. While real rent prices affect all households, they do not affect them to the same degree and thus serve indirectly as a measure of inequality.

As a measure of rent control, qualitative strict rent control is distinguished from soft rent control. Under strict rent control, rents are frozen at a certain level and all price increases are prohibited. Such measures were introduced in Germany between the two world wars. Under soft rent control, the initial rent is set at the market level in a free negotiation between the landlord and the tenant. While rent increases are generally possible during the rental contract, the rent price may not increase more strongly than the increase in the general cost of living. One example of soft rent control is the rent cap in Catalonia, Spain, which was introduced by the regional government in September 2020 and repealed by the Constitutional Court of Spain in March 2022. When all other prices can rise without restriction, strict rent control can lead to a sharp decline in real rents and the rent burden. Various characteristics of rent control are coded into a quantitative index of measures that measures the intensity on a scale from 0 (no rent control) to 1 (very strict control) (Box 2). Many countries have used such measures since first rent controls were introduced at the beginning of the 20th century.

In addition to rent control, this paper also considers other political interventions using three variables. Such interventions are often used simultaneously with rent control and can influence its impact on inequality. The first measure is the income tax rate for the top earners. The second measure is the social expenditure-to-GDP ratio, which reflects the extent of accompanying social benefits (for example, housing subsidies to support particularly disadvantaged tenant households). The third measure used is the average total years of schooling for adults: the higher this measure, the higher the social mobility due to better education for broad sections of the population.[10]

Furthermore, a series of control variables are used. They are considered explanatory variables for inequality and living costs in the literature, including economic (GDP, trade openness, real wages, and mortgage indebtedness compared to GDP) and demographic variables (share of population above 64, population growth, and marriage rate), but also the relationship between economic growth and interest rates (in this case, interest rates on long-term government bonds). GDP per capita and real wages are characterized by the level of macroeconomic development and the population's purchasing

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9 Australia, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, and the USA.

10 Kenneth Scheye and David Stasavage, "Institutions, Partisanship, and Inequality in the Long Run," *World Politics* 61, no. 2 (2009): 215-253.

Box 1

Methodology

The estimations are conducted using panel vector autoregression models. The data used have several specific characteristics that must be considered: First, the focus is on longitudinal data, which suggest the use of a panel data model. Second, most dependent variables persist over time. Thus, dynamic models are needed to capture the temporal autocorrelation and to investigate the relationships of interest. Third, there could be endogeneity issues, meaning that rent control itself could be correlated with disturbance variables. In particular, one can argue that it is not only stricter rent control that leads to less income inequality; less income inequality also leads to stricter rent control, because, for example, more equal societies will vote for rent-control friendly governments. Or inversely, higher inequality gives the top income groups more power to obstruct rent control legislation. To fit the data format, a panel vector autoregressive model with country fixed effects is estimated:

$$y_{it} = A_1 y_{it-1} + A_2 y_{it-2} + \ldots + A_p y_{it-p} + \eta_i + \epsilon_{it}$$

where y_{it} is a vector of all variables (including the dependent variables, rent control index, and control variables) for country i in year t; η_i is a vector of the country fixed effects; ϵ_{it} is the random disturbance; and $A_1, A_2, \ldots, A_p$ are the coefficient matrices to be estimated. A panel unit root test[1] is used in order to identify the non-stationary variables (e.g., GDP per capita or old-age-dependency ratio). Such variables are then converted into growth rates or first differences. The optimal delay length is selected based on the Schwarz information criterion. The first lag of the control variables and regulation indices are used to avoid possible endogeneity. Moreover, if an endogeneity bias remains, it will more likely underestimate the effect. The model is identified using the Choleski decomposition.

1 Kyung So Im, M. Hashem Pesaran, and Yongcheol Shin, "Testing for Unit Roots in Heterogeneous Panels," *Journal of Econometrics* 115, no. 1 (2003): 53–74.

Table 2

Overview of data used

Variable	Average of all countries analyzed	Source
Wealth-to-income ratio	4.2	World Inequality Database (available online)
Income share of top one percent, in percent	10.6	World Inequality Database
Income share of top ten percent, in percent	33.7	World Inequality Database
Gini index of market income, in percent	45.8	Frederick Solt, "Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database," *Social Science Quarterly*, SWIID Version 9.0 (October 2020).
Gini index of disposable income, in percent	32	Solt, "Measuring Income Inequality Across Countries and Over Time."
Growth rate of real rents, in percent	0.7	K. Knoll, M. Schularick, & T. Steger, T., "No Price Like Home: Global House Prices, 1870–2012," *Centre for Economic Policy Research Discussion Paper* 10166 (2015).
Housing costs according to OECD	0.2	OECD (available online)
Housing costs (long-term data)	0.2	OECD and Macrohistory (available online)
Intensity of rent control	0.5	Authors' own calculations
Share of population over 64, in percent	10.4	World Development Indicators from the World Bank (available online)
Raw marriage rate, per thousand	7	B. Mitchell (ed.), *International historical statistics*, 1750–2010 (Palgrave/Macmillan: 2013) and OECD Vital Statistics.
Population, in millions	30.3	Maddison Project Database (available online)
GDP per capita, in percent	2.0	Maddison Project Database (available online)
Real wage growth rate, in percent	1.5	R. D. Gabriel,"Monetary Policy and the Wage Inflation-Unemployment Tradeoff," 2013. Available at SSRN 3689791.
Top income tax rate, in percent	44.7	Comparative Income Taxation Database (available online)
Government bond growth to real GDP growth ratio, in percent	−2.3	Macrohistory
Average years of schooling for adults, in years	6.8	Barro-Lee Educational Attainment Data (available online)
Trade openness (trade-to-GDP ratio), in percent	45.2	Giovanni Federico, Antonio Tena Junguito, "Federico-Tena World Trade Historical Database: Openness" (2018) (available online).
Debt-to-GDP ratio, in percent	61.6	Macrohistory and authors' own calculations
Share of social expenditure of GDP, in percent	10.2	OECD

Source: Authors' own calculations.

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power. Trade openness reflects the degree of globalization, which is often viewed as a cause for rising economic inequality. Mortgage indebtedness can exacerbate inequality in two ways: First, low-income households can become insolvent as a result of excessive debt. Second, high-income households have better access to cheaper financing and can thus expand their assets. The expected effects of the old-age-dependency ratio on inequality are ambivalent: On the one hand, higher wages for the scarcer, young labor force might reduce inequality. On the other hand, studies show that inequality in age cohorts accumulates over time.[11] The growing population and high marriage rate represent an increase in demand for housing and thus should increase housing costs.

11 See for example Angus S. Deaton and Christina H. Paxson, "Aging and Inequality in Income and Health," *American Economic Review* 88, no. 2 (1998): 248-253.

The estimates show a significantly negative impact of rent control on the wealth-to-income ratio and on the Gini index of disposable income in the short run (Table 3). If the intensity of the rent control increases by one point, the wealth-to-income ratio decreases by 0.203 points, which is a reduction of about five percent of the mean. Rent control decreases the expected rental income and thus housing prices and wealth relative to income, and reduces the rental income of the usually richer landlord households. The income of the top one percent, on the other hand, is not significantly affected because rental income is less relevant to the super rich as opposed to the upper middle class. In contrast, the income of the top ten percent decreases when rent control is stricter because this group has relatively more real estate in its portfolio compared to the super rich. In addition, a sample breakdown shows that stricter rent control in the wartime and postwar periods had the strongest overall effect. The regression also confirms the inequality-decreasing effects of progressive income taxation and of periods in which the interest rate is lower than economic growth and

Table 3

Impact of rent control on inequality

Explanatory variables	Dependent variables				
	Wealth-to-income ratio	Top one percent	Top ten percent	Gini index market income	Gini index disposable income
Lag of income-to-wealth ratio	0.373***				
	(0.034)				
Lag of top one percent		−0.045			
		(0.034)			
Lag of top ten percent			−0.007		
			(0.026)		
Lag of Gini index market income				0.563***	
				(0.030)	
Lag of Gini index disposable income					0.089***
					(0.026)
Rent control intensity	−0.203**	−0.004	−0.006*	0.008	−0.396
	(0.090)	(0.004)	(0.003)	(0.142)	(0.254)
Old-age-dependency ratio	0.030	−0.0004	−0.001	−0.212**	−0.315
	(0.061)	(0.002)	(0.002)	(0.084)	(0.208)
GDP per capita	0.800***	0.021**	0.005	−1.144*	0.467
	(0.246)	(0.009)	(0.008)	(0.616)	(0.677)
Top income tax rate	−0.194	−0.009	−0.012*	0.842**	0.086
	(0.171)	(0.006)	(0.006)	(0.382)	(0.514)
r>g	0.013	0.012***	0.005***	0.160	0.345**
	(0.077)	(0.003)	(0.002)	(0.123)	(0.141)
Total years of schooling	0.036	0.258	0.189	6.732	3.076
	(4.007)	(0.165)	(0.155)	(4.915)	(12.474)
Trade openness	0.220	−0.023**	−0.008	−0.467	0.219
	(0.236)	(0.010)	(0.008)	(0.314)	(0.614)
Debt-to-GDP ratio	3.860	0.232*	0.270**	14.634***	21.145**
	(3.079)	(0.124)	(0.122)	(4.981)	(9.516)
Share of social expenditure of GDP	−0.068***	−0.001*	−0.002**	0.015	−0.104*
	(0.020)	(0.001)	(0.001)	(0.025)	(0.060)
Constants	0.003	0.001	0.002	0.006	0.126
	(0.745)	(0.031)	(0.030)	(1.070)	(2.384)
Number of observations	841	905	1,499	759	1547
Adjusted R²	0.182	0.033	0.016	0.401	0.019

Notes: The table shows a panel regression of various inequality variables on rent control and control variables. The asterisks denote the statistical significance level. The more asterisks, the lower the probability of error: ***, **, and * indicate significance at the one-, five-, and ten-percent levels, respectively.

Legend: When rent control intensity (measured between 0 and 1) increases by 0.1, the wealth-to-income ratio decreases by 2.03 percent.

Source: Authors' own calculations.

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Table 4

Impact of rent control on rent prices

Explanatory variables	Dependent variables		
	Real rent	Housing cost according to OECD	Housing cost (long-duration data)
Lag of real rents	0.367***		
	(0.024)		
Lag of housing costs according to OECD		0.147***	
		(0.052)	
Lag of housing costs (long-run data)			0.234***
			(0.032)
Rent control intensity	−0.047**	−0.005*	−0.004
	(0.019)	(0.003)	(0.003)
Old-age-dependency ratio	−0.004	−0.0005	0.004**
	(0.016)	(0.004)	(0.002)
Marriage rate	0.168	−0.093*	−0.027
	(0.126)	(0.051)	(0.017)
Population growth	−0.18	0.141	0.105**
	(0.359)	(0.108)	(0.053)
Real wages	0.151***	−0.028**	0.004
	(0.031)	(0.013)	(0.005)
Constants	0.005	−0.0001	0.001
	(0.173)	(0.018)	(0.021)
Number of observations	1.604	412	947
Adjusted R²	0.189	0.074	0.069

Notes: The table shows the effects of rent control on the rent and housing prices of households. The asterisks denote the statistical significance level. The more asterisks, the lower the probability of error: ***, **, and * indicate significance at the one-, five-, and ten-percent levels, respectively.

Legend: When rent control intensity (measured between 0 and 1) increases by 0.1, rent prices decrease by 0.47 percent.

Source: Authors' own calculations.

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wage income. Thus, if capital income grows more slowly than wage income and wage income is taxed at higher rates for higher-income households, income inequality is effectively reduced. However, the impact of rent control is not just limited to immediate effects; it can also influence inequality over the long run: Market participants require time to adjust to the new conditions and further side effects of rent control can affect the decline in landlords' rental income and in tenants' housing costs. For example, in non-rent-controlled apartments, which are often rented by high-income households, rent increases or the stability of the rental relationship

increases, which has a positive impact on tenant households in rent-controlled apartments.

The long-run effects of rent control can also be measured via an impulse response function (Figure 2). The effects of a one-time, shock-like introduction of strict rent control persist for three to five years, with the effect especially noticeable two years after rent control is made stricter. Such medium-run effects can be observed in the wealth-to-income ratio, the income share of the top ten percent, and the Gini index of disposable income. The Gini index of market income and of the income share of the top one percent seem to be unaffected by rent control, perhaps because rental income is less relevant to the super rich. Although rent control lasts for many years in practice, the impulse-response function shows that shock-type regulations can also have effects over many years.

On the tenant side, in contrast, the introduction of rent control significantly decreases real rent prices and the rent burden in the short run. There is a medium-run effect of up to three years, which is strongest in the second year following the introduction of strict rent control (Figure 2).

Currently, the intensity of rent control in Germany according to the index method used is 0.5. If, for example, a stricter rent control were introduced, the intensity could increase to 0.9 to 1. This could decrease the wealth-to-income ratio by eight to ten percent, the income shares of the top ten percent by up to 0.33 percent, and real rents by two percent, as long as all other factors remain constant. This shows that rent control must be very strict to have a relevant impact on the inequality variables.

Other social measures have a moderate impact on inequality. Years of schooling as a measure of educational opportunities are insignificant. Social spending mostly has a negative effect on inequality measures except in the case of the Gini index for market income. In contrast, tax progressivity as measured by the top income tax rate leads to large declines in inequality as measured by the income share of the top ten percent and the Gini index for market income.

The extent to which the different policies decrease inequality can be calculated by multiplying the corresponding estimation coefficient by the standard deviation of each variable. This is 4.5 percentage points for rent control, 3.4 percentage points for the top income tax rate, and 9.6 percentage points for social spending when considering the Gini index for market income.

Conclusion: rent control curbs inequality in the short run, but has undesirable side effects

Rent control, especially when it is strict and comprehensive, curbs inequality in the short and medium runs. Historically, it has been part of solidarity-based welfare state policies that helped reduce inequality in the 20th century. In turn, housing market liberalization contributed to the resurgence of inequality beginning in the 1980s. However, whether or not rent control is actually suitable as a socio-political measure is a more complex question, as the majority of studies suggest that such price regulation leads to misallocations in the housing market in the long run and can result in overall welfare loss.[12]

Studies show, for example, that rent control decreases mobility in the housing stock and reduces the housing supply in the long run, for example, by converting rental housing to owner-occupied housing and reducing new construction.[13] It can also contain hidden costs (e.g., in the form of key money) or rising rents for unregulated housing and ultimately lead to maintenance neglect.[14] While sitting tenants benefit from reduced rent in the short run, the remaining, more mobile

Box 2

Measuring rent control intensity

A numerical index is constructed to measure the intensity of rent control.[1] It contains six binary variables, each of which is based on a careful analysis of historical legal texts, or secondary literature on the history of rent control if such legal texts do not exist. Each variable considers one aspect of rent control:

1. Rent level control: The index is equal to 1 when the landlord may not increase rent above a certain level (rent is, for example, fixed at the level it was paid on a certain date) and otherwise 0.

2. Nominal rent control: The index is equal to 1 when rents are set exclusively by the government or other institutions.

3. Real rent control: The index is equal to 1 when the landlord may not increase rent by more than the increase in the official cost of living or in another price or cost index.

4. Vacancy decontrol: The index is equal to 1 when rent control applies at the beginning of and during the length of the contract.

5. Other special deregulations: The index is equal to 1 if certain types of housing, such as new construction, vacant housing, or luxury housing, which are typically deregulated, are also regulated.

6. Special tightening of rent control: The index is equal to 1 if housing is subject to stricter rent control under special circumstances (for example, low-cost housing or housing in a tight market).

The rent control index is calculated as an unweighted average from these six binary variables and thus ranges between 0 (no rent control) and 1 (very strong rent control). By using such variables, it is possible to compare both the spatial (between different countries in one year) variation of rent control as well as temporal changes in rent control intensity. Moreover, qualitatively, rent control is coded as weak when it only applies to real rents and as strong when it sets nominal price levels.

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households lose.[15] They stand in long lines, pay high rents, and are frequently forced to buy housing even when their financial means barely allow it.[16] In the long run, sitting ten-
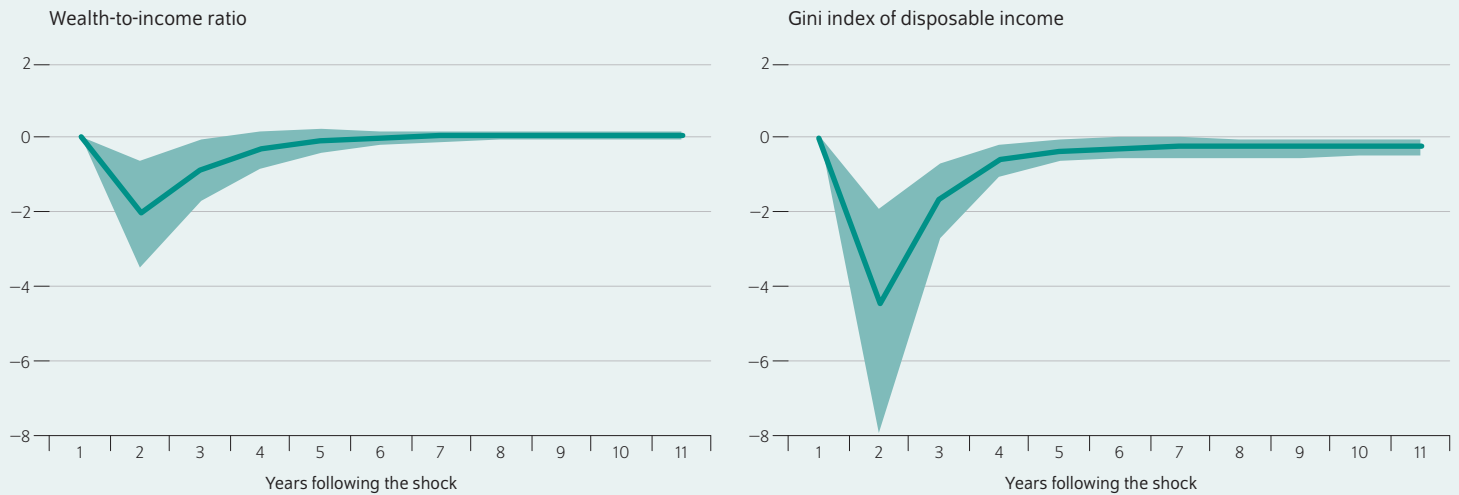
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Figure 2

Rent control reduces economic inequality in the short run
Change in percent (left side), index (right)

Wealth-to-income ratio

Gini index of disposable income

Years following the shock

Years following the shock

Notes: Calculated based on data from 12 countries: Austria, Belgium, France, Germany, Great Britain, Greece, Ireland, Israel, Italy, the Netherlands, Switzerland, and Spain. The light-green areas indicate the 90-percent confidence interval.

Source: Authors' own calculations.

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Following the introduction of strict rent control, economic inequality decreases in the short run but returns to its original level over the long run.

ants lose too, as residential buildings and houses decline in value and quality when they are not maintained.[17] Thus, a comprehensive rent control system runs the risk of having little effect[18] and, without additional interventions, being counterproductive over the long run.

The impact of rent control on inequality differs in intensity in the short, medium, and long runs. The effects are strongest in the short run and decrease over the long run, primarily due to the fact that market actors adjust to the new conditions. When rent control is first introduced, the markets experience an unexpected shock. Over time, however, they modify their behavior so that rent control loses effect.[19] Generally, rent control effectively caps rent prices. However, there are exceptions frequently, such as for new construction and luxury housing. This means that the rental market is divided into two segments: regulated housing with decreasing rents and an unregulated segment for housing at free market prices, where rents increase more than without rent control. Because such housing is rented or purchased

primarily by wealthier households, incomes are distributed even more broadly. In the short run, unregulated housing represents only a small fraction of the housing stock, so the effects of reduced rents far outweigh the benefits. However, the amount of unregulated housing is increasing over time. Thus, the share of regulated housing decreases, with frozen rents also losing real value, and the effect of rising rents for unregulated housing on spending by the broader strata of households becomes stronger. The exact size of these effects, however, has not yet been estimated. Furthermore, strict rent control forces a share of tenants who cannot find rental housing to become homeowners, despite this causing them excessive financial stress. In many countries, this has resulted in the rental market shrinking, while the purchase market has expanded strongly at the cost of the rental market, making homeowners the dominant group.[20] The resulting reduction in available housing stock is likely to increase scarcity and create pressure on prices. This, in turn, can only result in higher rents in the unregulated market segment. In many cases, newly built and high-end redevelopments are exempt from regulations: rents rise there, which tends to burden the higher income strata[21] and can thus reduce inequality. However, it is also possible that the lower supply

17 Joseph Gyourko and Peter Linneman, "Rent Controls and Rental Housing Quality: A Note on the Effects of New York City's Old Controls," *Journal of Urban Economics* 27, no 3 (1990): 398–409; Choon-Geo Moon and Janet G. Stotsky, "The Effect of Rent Control on Housing Quality Change: a Longitudinal Analysis," *Journal of Political Economy* 101, no. 6 (1993): 1114–1148.

18 Philipp Deschermeier, Björn Seipelt, and Michael Voigtländer, "Evaluation der Mietpreisbremse," *IW Köln Policy Paper* 5 (2017) (in German); Ralph Henger et al., "How Effective is the German 'Mietpreisbremse'?" Paper presented at the European Real Estate Society Industry Seminar, Berlin, Germany, March 31, 2017.

19 Alejandro D. Jacobo and Konstantin A. Kholodilin, "One Hundred Years of Rent Control in Argentina: Much Ado About Nothing," *Journal of Housing and the Built Environment* (2022): 1–48.

20 Konstantin A. Kholodilin and Sebastian Kohl, "Social Policy or Crowding-out? Tenant Protection in Comparative Long-Run Perspective," *Housing Studies* (2021): 1–24.

21 Andreas Mense, Claus Michelsen, and Konstantin A. Kholodilin, "Rent Control, Market Segmentation, and Misallocation: Causal Evidence from a Large-Scale Policy Intervention," *DIW Berlin Discussion Paper* 1832 (2019) (available online).

affects low-income households (e.g., families and those just entering the workforce).

Other distributional policy instruments, such as progressive income and wealth taxation, may also be more effective in reducing inequality in a society in the long run without having strong effects on the housing market, albeit possibly different ones. Instruments such as the progressive income tax, too, significantly reduce inequality. Housing-related social expenditure can also decrease inequality, including benefits such as housing benefits and social housing, which are used as an alternative to or complement rent control to make appropriate quality housing affordable for lower-income households and to reduce the burden on home-owners' incomes. At the same time, inequality dynamics are not only determined by labor income and wealth, but also on the consumption side by rents or other unequally distributed household expenditure. Rent interventions could, depending on the instrument, target housing-specific inequalities more specifically than other instruments. They could be a part of a broader set to compensate for housing market-specific inequalities, such as in combination with subject-related transfers such as housing benefits, which have more targeted effects than object-focused rent control. However, policymakers must make a political trade-off when deciding on the ultimate weighting of the diverse effects of rent control.

Figure 3

Rent control reduces rents in the short run
Real rents, change in percent
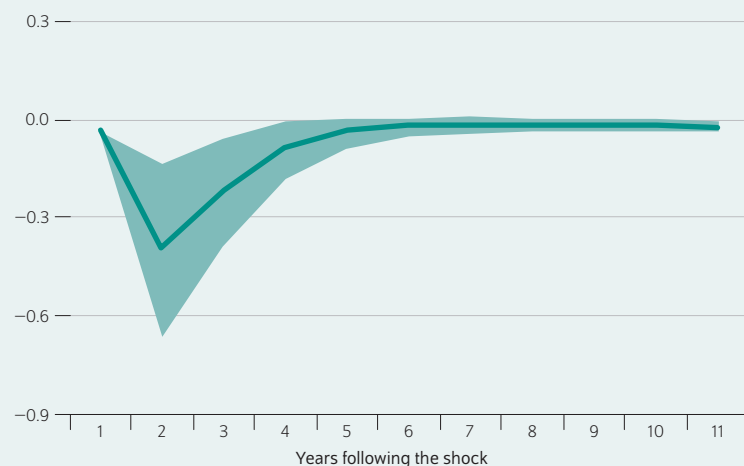
Notes: Calculated based on data from 12 countries: Austria, Belgium, France, Germany, Great Britain, Greece, Ireland, Israel, Italy, the Netherlands, Switzerland, and Spain. The light-green areas indicate the 90-percent confidence interval.

Source: Authors' own calculations.

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When strict rent control is introduced, rents decrease in the short run. However, they return to their original level over the long run.

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