



Future Social Market Economy

Impulse # 2015/05

The Impact of Income Inequality on Economic Growth

Increases in income inequality have both growth-promoting effects (stronger performance incentives, as well as incentives to invest in one's own human capital, to take risks, and to make investments) and growth-dampening effects (demotivating incentives, social tensions and political unrest, declines in demand as a brake on growth). While increases in income inequality in the 1950s and the 1960s still led to growth-promoting effects, current studies increasingly identify growth-dampening effects. Particularly in highly developed economies such as Germany, Japan and the United States, these studies indicate that increasing income inequality has reached a level that is becoming a brake on growth. For this reason, there is no fundamental contradiction between state-led income redistribution and economic growth. The reduction of income inequality should not be limited to a pure redistribution through the tax-transfer system, but should also include a rebalancing of the supply-side policies of the past 30 years.

Dr. Thieß Petersen
Program
Shaping Sustainable
Economies

Phone:
+49 5241 8181 218
E-Mail:
thiess.petersen@
bertelsmann-
stiftung.de

Dr. Ulrich Schoof
Program
Shaping Sustainable
Economies

Phone:
+49 5241 81-81384
Email:
ulrich.schoof@
bertelsmann-
stiftung.de

1. Growth effects of income inequality according to theory

The influence of income inequality on the development of real gross domestic product is transmitted through a number of mechanisms, and is not unambiguous. An increase in income inequality can have both growth-promoting and growth-dampening effects (see Fig. 1).

Fig. 1: Growth-promoting and growth-dampening effects of income inequality

Growth-promoting effects of income inequality	Growth-dampening effects of income inequality
Prospect of higher income than others as incentive for more effort and higher labour input	Demotivating effects such as reduced effort, lack of investment in one's own education, no risk-taking (effort isn't worth it)
Prospect of higher income than others as incentive for more investment in one's own education (increase in productivity)	Social tensions, such as increases in strike days, increases in property crimes, and protests, or even economic chaos and political unrest. Because these disturbances unsettle investors, investment declines and production potential grows more slowly.
Prospect of higher income than others as incentive for risk-taking (e.g., innovations and entrepreneurial activities)	Essential state redistribution measures lead to welfare and growth losses, while high taxes present a negative incentive to performance
High-income people accumulate savings that can be used for investments. With a higher capital stock, a higher gross domestic product can be produced.	If income inequality is significant, with a large share of the national income going to households with high incomes and a high propensity to save, a demand deficit or demand-related restraint on growth can result.

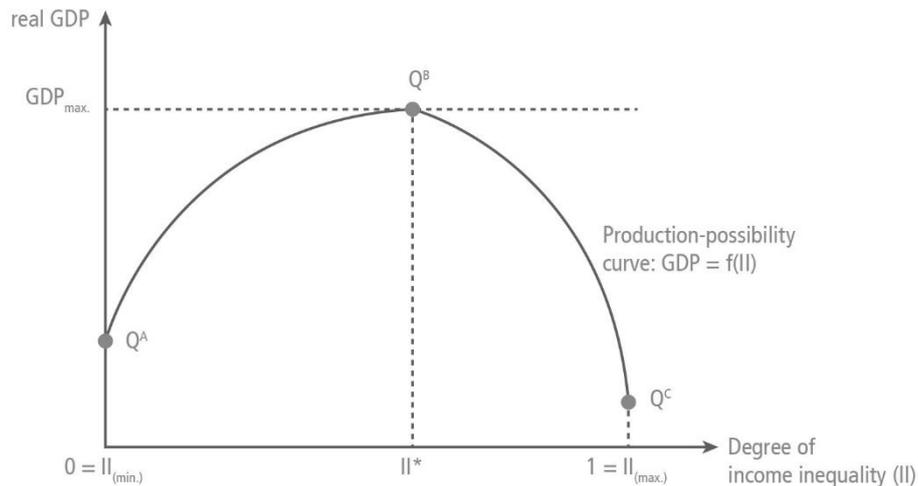
Source: Authors, based on the work of Knell 1998: 452–462; Cornia and Court 2004: 23 f.; Ostry, Berg and Tsangarides 2014: 7–11; OECD 2014: 78; Brenke and Wagner 2014; and Petersen 2014.

| BertelsmannStiftung

The question of which of these effects are predominant depends strongly on the degree of income inequality already reached.

- If the total societal income is perfectly equal (Q^A in Fig. 2), there is little incentive for an intensification of work effort. With an increase in income inequality, it can be expected that growth-promoting incentives predominate, and that the gross domestic product (GDP) increases.
- However, if income is very unequally distributed – in the most extreme case, only a single person has all the income, while the income of all other members of society is equal to zero (Q^C in Fig. 2) – people have no great incentive to work. In this case, an increase in gross domestic product can be expected from a reduction in income inequality.
- As a result, it can thus be assumed that the relationship between economic growth – measured on the basis of real gross domestic product – and the degree of income inequality assumes an inverted-U trajectory, and that an optimal level of income inequality can be found simply through consideration of the prevailing GDP level. This trajectory can be found, for example, in Knell 1998: 466, Cornia et al 2004, and Cornia and Court 2001: 24.

Fig. 2: Total societal production-possibility curve as a function of the society's income inequality (II), stylised representation. Income inequality is measured here using the Gini coefficient.



Source: Authors.

| BertelsmannStiftung

2. Empirical growth effects of income inequality

The forgoing shows that the relationship between the degree of income inequality and economic growth is not linear. As a consequence, empirical studies produce very different results.

- For a long time, it was considered to be relatively certain that the increase of income inequality had a growth-promoting effect, through production of the above-noted incentives. Especially in the 1950s and 1960s, it was believed that income inequality, thanks to the higher savings propensity of high-income persons, leads to higher investment levels, and thus has a positive effect on economic growth (see Benhabib 2003: 329). Looking at 45 countries across the 1966 - 1995 time period, for example, Forbes calculated a positive relationship between a country's degree of income inequality and its economic growth (see Forbes 2000: 885).
- However, even by the 1990s, there were also empirical studies that offered a contrary assessment. For example, using his own and others' empirical studies as a basis, Knell examined the relationship between the per capita GDP growth rate and income distribution as measured by the Gini coefficient, finding that for the period between 1960 and 1985, an increase in the Gini coefficient by 10 percentage points reduced the long-term annual growth rate by 0.3% to 0.6% (Knell 1998: 449).
- In an examination of the influence of income inequality on per capita GDP in 46 countries in the period from 1970 to 1995, Herzer and Vollmer also come to the conclusion that an increase in income inequality has a negative influence on GDP growth. This result is independent of whether the country under consideration is

a developed economy or a developing country. It is also independent of whether the country is democratic or non-democratic (see Herzer and Vollmer 2012: 489, 501). However, in their review of the literature, the two note a number of studies in which the relationship between income inequality and economic growth is positive (see Herzer and Vollmer 2012: 490–492).

- In his analysis of 84 countries between 1965 and 1995, Barro finds no relationship between income inequality and economic inequality. The results change with a division of the full country sample into rich and poor economies: for poor countries (those with a real per capita GDP of less than \$2,070, measured in 1985 dollars), a negative relationship between income inequality and economic growth is calculated, while a positive relationship emerges for rich economies (see Barro 2000).
- In an International Monetary Fund discussion paper, Ostry, Berg and Tsangarides indicate in the context of an overview of current work on this topic that most empirical studies show income inequality to have a growth-dampening effect. Their own calculations (173 countries, over a time period of 1960 to 2010) also show a negative relationship between income inequality and economic growth. Nevertheless, they also note that there are indeed studies that come to a contrary conclusion (see Ostry, Berg and Tsangarides 2014: 8 f., 17; also Benhabib 2003: 329 f.).
- Negative effects associated with increasing income inequality are shown by an OECD study (Cingano 2014), an August 2014 Standard & Poor's study, as well as an earlier IMF study (Berg and Ostry 2011a), among others. Further evidence of growth-dampening effects can be found in United Nations studies and reports (United Nations 2013: 63–65; United Nations Development Programme 2013: Chapter Two).

This ambivalent picture is compatible with the relationships depicted in Fig. 2, and can be simplistically explained as follows: If a positive relationship between income inequality and economic growth is found for a country or group of countries, it suggests that the level of income inequality lies between the values Π_{\min} and Π^* (Fig. 2). In the case of a negative relationship between these two factors, the level of income inequality by contrast lies between Π^* and Π_{\max} . And if the group of countries considered contains economies whose income inequality lies in both areas, it is possible that no statistical correlation at all between income inequality and economic growth will be found.

There is no clear empirical evidence regarding the question of when the growth-promoting and growth-dampening effects shift direction. In their calculations, using data from 73 countries, Cornia et al. come to the following conclusions: Up to a Gini-coefficient value of 0.3, an increase in income inequality has a growth-promoting effect. At a Gini-coefficient value of 0.45 and above, however, an increase in income inequality has a growth-dampening effect (see United Nations Development Programme 2013: 51). In a 2001 policy brief, Cornia and Court come to the conclusion that a Gini coefficient value between 0.25 and 0.4 has a growth-promoting effect (see Cornia and Court 2001: 24). By contrast, a calculation by the Korea Institute for International Economic Policy (KIEP), encompassing 77 countries between the period of 1980 and

2007, arrives at a substantially lower value for the point at which the growth-dampening effects of income inequality begin to predominate. According to these estimates, the change-over point lies at a Gini-coefficient value of 0.245 (see Cho, Kim and Rhee 2014: 10, 17).

Ultimately, these findings suggest that income inequality has a negative effect on economic growth at least from a Gini coefficient value of 0.45 (see Standard & Poor's 2014: 19). However, it should be noted that this is an average value derived from data of countries at different levels of economic development. There is some evidence that the threshold of income inequality at which the growth-promoting effects give way to growth-dampening effects depends on the economy's economic-development status. We address this issue in the following section.

3. Long-term effects of income inequality on the growth trajectory

The discussion above refers primarily to a comparative static analysis – that is, to the comparison of various degrees of income inequality to the level of GDP in a number of countries at a given time. The following addresses the possible long-term effects of a high degree of income equality on an economy's growth potential. Effects impacting both the supply and demand sides of GDP are considered here, along with the resulting interactions.

- On the supply side, a high level of income equality can weaken an economy's production potential, particularly with regard to human capital. If citizens have the feeling that vigorous effort will not pay off, because the largest share of the national income accrues to a small part of the population in any case, then investments in their own human capital in the form of education are not worthwhile. However, a qualitative improvement in human capital is a key prerequisite for economic growth. High levels of income inequality become particularly serious when citizens' dissatisfaction is broad enough that they leave their country. From an empirical perspective, young and well-qualified people have the highest degree of cross-border mobility; consequently, this effect threatens the society with a brain drain that reduces the potential for growth. The weakening of human capital as a reaction to a high and rising income inequality in this way reduces an economy's long-term growth potential (see Bernstein 2013: 6). A high level of income inequality can also impair an economy's human capital insofar as low-income people do not have sufficient access to the health care system. Overall, a lack of investment in education and health care lead by this means to a slowdown in human-capital formation, which then also slows economic growth (see Baur, Colombier and Daguet 2015: 11).
- Another supply-side growth weakness can arise when a high level of income concentration additionally leads to a situation in which this economic power is used

to exert political influence. In this regard, it can be expected that high-income people advocate a reduction in taxes. The associated declines in state revenues have the consequence that the state must reduce its expenditure on investments such as infrastructure and education. The resulting undersupply of public services weakens the society's productive apparatus, thus dampening economic growth (through a lack of public infrastructure and low productivity as a consequence of low education expenditures; see Bernstein 2013: 6).

- Finally, a high degree of inequality of market incomes can additionally lead to a situation in which extensive state redistribution of income becomes necessary. This requires a high level of state revenue. Growing income inequality in this regard necessitates tax increases or an expanded public debt. Tax increases reduce the performance incentives for taxpayers, and can lead to capital flight. This results in lower volumes of investment, and thus diminished growth in the economy's capital stock, as well as a lower level of economic growth. The same effect appears if a high level of state borrowing raises interest rates and thus suppresses private investment (Keynes' so-called crowding-out effect; see Petersen 2013: 86–87).
- On the demand side, a high degree of income inequality weakens the demand for goods and services. If, under a condition of high income inequality, a steadily increasing share of income goes to high-income households, the consequent savings will lead to a drop in demand, because the consumption ratio (defined as consumption expenditure as a share of disposable income) of those people with rising disposable net incomes declines. This relationship is depicted in Fig. 3, using Germany as an example.

Fig. 3: Consumer spending as a function of disposable income

Income and private-household consumption expenditure in Germany in 2012						
	All households	with a monthly net household income of € ... to under €...				
		under €1,300	€1,300 to €2,599	€2,600 to €3,599	€3,600 to €4,999 Euro	€5,000 to €18,000 Euro
Average household income per household and month, in €	3,069	917	1,937	3,067	4,249	6,818
Average household income per household and month, in €	2,310	976	1,683	2,405	3,111	4,287
Private consumption expenditure as % of net household income	75.3%	106.4%	86.9%	78.4%	73.2%	62.9%

Source: Federal Statistical Office 2014: 29–30 and own calculations.

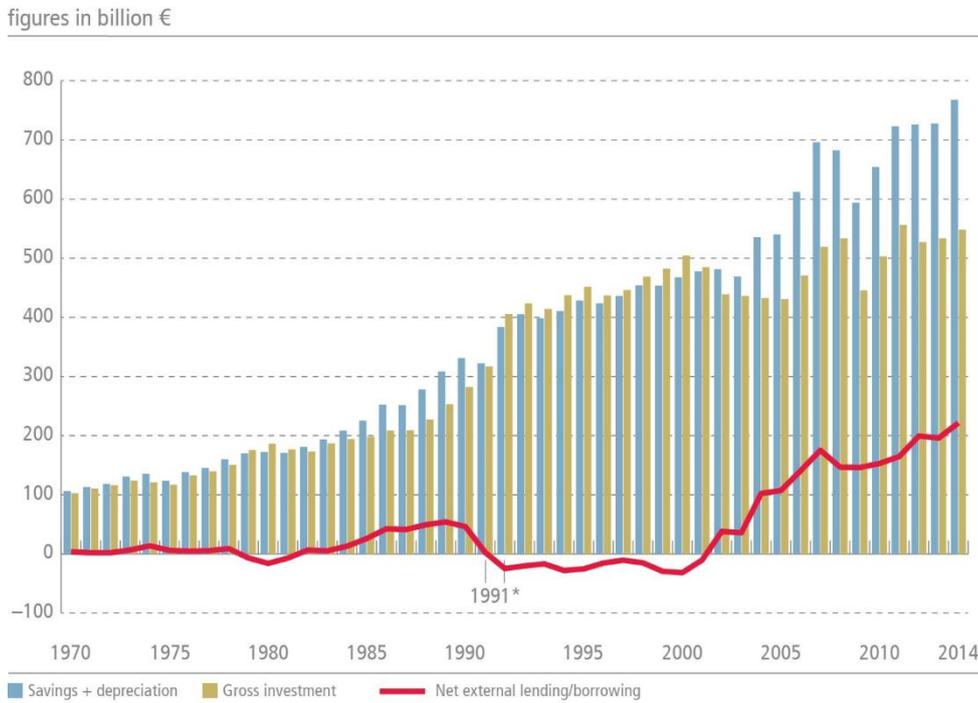
| BertelsmannStiftung

In less developed economies, these savings are available for investment – that is, the drop in consumer demand is offset through business investment. In highly developed economies, however, the level of capital stock is already very high. If there is then a decline in consumer demand, there is no incentive for additional investment. Consequently, investment does not compensate for the shortfall in consumer demand. This

relationship can also be illustrated using Germany as an example: There, the downward trend in consumer demand and the resulting decline in net investment have in sum resulted in an excess supply of savings. This has been true of Germany since about 2002, and also applied to the former West Germany in the middle to late 1980s (see Fig. 4). An oversupply of savings of this kind corresponds to weak consumption of domestically produced goods and services. However, if domestic businesses find that not all their produced goods and services are demanded, this reduces the incentive to increase production capabilities through further investment. Consequently, investment declines as a result of the weak domestic demand for goods. Thus growth in the economy's overall capital stock also weakens, along with long-term growth potential. In the medium term, this trend leads to stagnation or even economic contraction.

Countries such as Germany and Japan are currently counteracting this fundamental tendency toward stagnation primarily through export surpluses (the German financial surplus in Fig. 4, or net external lending/borrowing, corresponds to a German current-account surplus). However, this is not a sustainable solution, because if all developed economies pursued this strategy, a serious question arises with regard to who could receive the export surpluses.

Fig. 4: Savings, depreciation and gross capital formation in Germany 1970 - 2014



* Data from 1970 to 1991: former West Germany, data from 1991 to 2014: Germany.
 Source: Federal Statistical Office 2015: 24. BertelsmannStiftung

As a result, it can be stated that a high or increasing level of income inequality dampens future economic growth, weakening both the supply side (human capital and real capital) and the demand side.

The question of when this weakening – particularly the lack of demand for goods – leads to stagnation, in our opinion depends largely on the economy's GDP level.

- In less developed economies with a relatively small overall capital stock, a decline in consumer demand can be compensated for by companies' investment needs – thus, a stagnation with roots on the demand side is not a serious risk.
- In highly developed economies with a relatively large overall capital stock, a decline in consumer demand can no longer be compensated for through companies' investment needs. If the high savings rate then occurs in an aging and shrinking society such as Germany or Japan, there is a risk of demand-driven stagnation. Even in the United States, there is some evidence that the high degree of income inequality has reached the point at which growth-dampening effects have become predominant (as noted in the assessment by Standard & Poor's 2014: 4).

4. Assessment of the growth effects of income inequality in Germany

In light of the foregoing analysis and the literature, we conclude that the extent of income inequality in Germany has become a brake on growth, because the growth-dampening effects are greater than the growth-promoting effects. The primary indicator for this thesis is the fact that savings have exceeded net investment for a number of years.

There is support for this assessment in the literature. For example, Brenke and Wagner are of the opinion that the unequal distribution of income has slowed economic growth in Germany since the early 2000s (see Brenke and Wagner 2013: 110). Calculations by the OECD also indicate a growth-dampening effect associated with income inequality in Germany. According to these calculations, the real per capita GDP in Germany grew by about 26 percent in Germany between 1990 and 2010. Had income inequality not increased during this period, the growth in real per capita GDP would have been six percentage points higher (see Cingano 2014: 18).

5. Economic-policy implications

Increases in income inequality, at a moderate level of income inequality, have a positive effect on economic growth. However, if a certain degree of income inequality is exceeded, income inequality has a negative impact on economic growth. The fact that a significant majority of recent studies conclude that an unequal distribution in the long run has perceptibly negative effects on economic growth (Baur, Colomlier and Daguet 2015: 11) suggests that an increasing number of economies have reached a

level of inequality at which the wealth-dampening effects of inequality have begun to predominate. In this case, there is no fundamental contradiction between a state redistribution of income and economic growth.

Those designing any income redistribution policy, however, must bear in mind that the collection of state income can also have negative effects on economic growth, by reducing performance incentives for taxpayers (which affects labour and capital supply), and through the welfare and growth losses associated with tax collection (see Petersen 2010). In the specific design of state income-redistribution measures, it is therefore important to ensure that the negative growth effects of redistribution are not larger than the positive growth effects of the income redistribution (Berg and Ostry 2011a: 3, Berg and Ostry 2011b: 15).

In this regard, a reduction in income inequality should not be limited solely to pure redistribution through the tax-transfer system. A realignment of the supply-side policies of the last 30 years is also necessary. In many developed nations, demand-oriented economic policies were replaced in the late 1970s by a supply-side economics policy. At the heart of this economic policy orientation is an improvement in supply-side conditions for businesses through cost and tax reductions, an increase in flexibility within goods and labour markets, and the restriction of government activities to a few core tasks (see Adam 2014: 107).

Within the framework of this economic policy orientation, a redistribution of income to favor income from business activities is not an undesirable side effect, but rather an intended consequence, as an improvement in companies' income conditions is considered to be a prerequisite for increasing economic growth and creating new jobs (Adam 2014: 107). However, if the wealth-promoting effects of this income redistribution are no longer evident, there is also no longer any economic justification for the resulting differences in income. A modified supply-side policy then becomes necessary, in which a stronger and more capable state strengthens the forces of growth by expanding access to education, health care and other state infrastructural offerings for people with low incomes. This assumes a stable revenue base, in order that the expansion of state offerings does not lead to an increase in public debt.

References

- Adam, H. “Die politische Ökonomie wachsender Ungleichverteilung der Einkommen.” *Wirtschaftsdienst* 94 2014. 104–111.
- Barro, R. J. “Inequality and Growth in a Panel of Countries.” *Journal of Economic Growth* 5 2000. 5–32.
- Baur, M., C. Colombier and S. Daguet. “Ungleiche Einkommensverteilung hemmt Wirtschaftswachstum.” *Die Volkswirtschaft – Das Magazin der Wirtschaftspolitik* 1-2/2015. 8–11.
- Benhabib, J. “The Tradeoff Between Inequality and Growth.” *Annals of Economics and Finance* 4 2003. 329–345.
- Berg, A. and J. D. Ostry. “Inequality and Unsustainable Growth: Two Sides of the same Coin?” *IMF Staff Discussion Note* 11/08. Washington, DC 2011a.
- Berg, A. and J. D. Ostry. “Equality and Efficiency – is there a trade-off between the two or do they go hand in hand?” *Finance and Development* September 2011b. 12–15.
- Bernstein, J. *The Impact of Inequality on Growth*. Washington, DC 2013.
- Brenke, K. and G. G. Wagner. “Ungleiche Verteilung der Einkommen bremst das Wirtschaftswachstum.” *Wirtschaftsdienst* 93 2013. 110–116.
- Cho, D., B. M. Kim and D.-E. Rhee. “Inequality and Growth: Nonlinear Evidence from Heterogeneous Panel Data.” *Korea Institute for International Economic Policy (KIEP) Working Paper* 14-01. Seoul 2014.
- Cingano, F. “Trends in income inequality and its impact on economic growth.” *OECD Social, Employment and Migration Working Paper* 163. Paris 2014.
- Cornia, G. A. and J. Court. “Inequality, Growth and Poverty in the Era of Liberalization and Globalization.” *Policy Brief 4 of the UNU World Institute for Development Economics Research (UNU/WIDER)*. Helsinki 2001.
- Forbes, K. J. “A Reassessment of the Relationship Between Inequality and Growth.” *The American Economic Review* 90 2000. 869–887.
- Herzer, D. and S. Vollmer. “Inequality and growth: evidence from panel cointegration.” *Journal of Economic Inequality* 10 2012. 489–503.
- Knell, M. “Einkommensungleichheit und Wachstum.” *Wirtschaft und Gesellschaft* 24 1998. 443–474.
- Petersen, T. “Preis-, Mengen- und Wohlfahrtseffekte von Steuern und Subventionen.” *Das Wirtschaftsstudium* 39 2010. 1606–1610.
- Petersen, T. *Fit für die Prüfung: Makroökonomie – Lernbuch*. Konstanz/München 2013.
- Petersen, T. “Einkommensungleichheit und Wirtschaftswachstum.” *Das Wirtschaftsstudium* 43 2014. 1194–1198.
- OECD. *All on Board – Making Inclusive Growth Happen*. Paris 2014.
- Ostry, J. D., A. Berg, A. and C. G. Tsangarides. “Redistribution, Inequality, and Growth.” *IMF Staff Discussion Note* 14/02. Washington 2014.
- Standard & Poor’s. *Economic Research: How Increasing Income Inequality Is Dampening U. S. Economic Growth, And Possible Ways To Change The Tide*. New York 2014.

- Statistisches Bundesamt. Fachserie 15 Reihe 1: Wirtschaftsrechnungen, laufende Wirtschaftsrechnungen: Einnahmen und Ausgaben privater Haushalte (2012). Wiesbaden 2014.
- Statistisches Bundesamt. Fachserie 18 Reihe 1.5: Volkswirtschaftliche Gesamtrechnung: Inlandsproduktberechnung - Lange Reihen ab 1970 (2013). Wiesbaden 2015.
- United Nations (UN). Inequality Matters - Report of the World Social Situation 2013. New York 2013.
- United Nations Development Programme (UNDP). Humanity Divided: Confronting Inequality in Developing Countries. New York 2013.

Policy Briefs Future Social Market Economy:

- 2010/01: Global imbalances – China-Bashing is no solution; Dr. Thieß Petersen
- 2011/01: The „social“ in the social market economy – Justice in Europe; Dr. Stefan Empter
- 2012/03: Shaping Sustainable Economies – Holistic Strategies and Principles; Dr. Thieß Petersen
- 2012/04: Measuring the Modern Social Market Economy; Cortnie Shupe
- 2012/05: Maastricht 2.0 – Proposed reform of EU sovereign debt rules; Dr. Thieß Petersen, Dr. Michael Böhmer, Dr. Johannes Weisser
- 2012/06: Economic impact of Southern European member states exiting the eurozone; Dr. Thieß Petersen, Dr. Michael Böhmer
- 2012/07: Sustainability and solidarity – Basic ideas of new financial structures; Dr. René Geißler
- 2013/01: How Germany Benefits from the Euro in Economic Terms; Dr. Thieß Petersen, Dr. Michael Böhmer, Henning vom Stein
- 2013/02: Green and Fair Economy – A holistic concept for a sustainable economy; Céline Diebold, Armando Garcia Schmidt, Dr. Thieß Petersen, Birgit Riess, Dr. Daniel Schraad-Tischler, Henrik Riedel
- 2013/03: A European Social Market Economy? – Index Results; Cortnie Shupe
- 2013/04: Who Benefits from a Transatlantic Free Trade Agreement?; Dr. Ulrich Schoof, Dr. Thieß Petersen, Prof. Gabriel Felbermayr, Ph.D.
- 2013/05: Federal States, Industries and Education Level – Effects of TTIP in Germany; Dr. Ulrich Schoof, Mirco Ronge, Prof. Gabriel Felbermayr, Ph.D.
- 2013/06: Europe’s Sustainability Strategy – A Casualty of the Euro Crisis or an Ambitious Restart?; Céline Diebold, Thomas Fischer, Benjamin Dierks
- 2014/01: Who profits most from globalization?; Dr. Thieß Petersen, Dr. Michael Böhmer, Dr. Johannes Weisser
- 2014/02: 20 years of the European single market: Growth effects of EU integration; Dr. Thieß Petersen, Dr. Michael Böhmer, Dr. Johannes Weisser
- 2015/03: Wage Inequality in Germany – What role does global trade play?; Dr. Ulrich Schoof, Dr. Thieß Petersen, Prof. Gabriel Felbermayr, Ph.D.
- 2015/04: Labour Mobility in Europe – An untapped resource?; Mikkel Barslund, Matthias Busse, Joscha Schwarzwälder
- 2015/05: Brexit – potential economic consequences if the UK exits the EU; Dr. Ulrich Schoof, Dr. Thieß Petersen, Dr. Rahel Aichele, Prof. Gabriel Felbermayr

V.i.S.d.P

Bertelsmann Stiftung
 Carl-Bertelsmann-Straße 256
 D-33311 Gütersloh

Dr. Thieß Petersen
 Phone: +49 5241 81-81218
thiess.petersen@bertelsmann-stiftung.de

Eric Thode
 Phone: +49 5241 81-81581
eric.thode@bertelsmann-stiftung.de