

Online Appendix (Not for Publication)

A. Data Sources

A.1. Sovereign Debt Maturity

Numerous sources of data on the maturity of government debt are in existence. These sources differ in significant ways with respect to issuer coverage (central government versus general government debt), debt type coverage (government bonds and/or government bills and/or other nonmarketable debts), and measurement (residual versus initial maturity versus duration). Based on data availability, we have attempted to assemble data series on the weighted-average residual maturity of total marketable central government debt. In some cases, we have had to interpolate gaps in the data using other data sources (for example, weighted-average residual maturity of government bond debt, or of total debt), although our analysis of periods where there is overlapping data suggests that this is not a significant concern. Our data is annual and corresponds to the stock of debt at the end of a calendar year whenever possible.

Bearing these issues in mind, there are six main sources of cross-country data on the maturity of a government's debt. The first source is Bloomberg, which measures the weighted-average residual maturity of debts in their database issued by the central government of a country. The debts include both bonds and bills and thus would seem to best approximate the marketable stock of debt. These data have only been available since 2010.

A second source is the International Monetary Fund's *Fiscal Monitor* publication, which contains data on the residual maturity of a country's debt since 2010. The IMF list their source as Bloomberg "for most countries". A comparison with data downloaded from Bloomberg reveals small but significant differences in the data, with Bloomberg data tending to show a slightly lower maturity. [Corsetti et al. \(2013\)](#) suggest that this may be due to the inclusion of bank loans and other nonmarketable debts in the IMF data that are not counted by Bloomberg, a broader coverage of the government sector in the IMF's data, and different accounting treatments. As a result, we treat this data source as separate from Bloomberg.

The third source is the OECD's now discontinued *Central Government Debt Database*

which contains data from 1990 to 2010 on the weighted-average residual term to maturity for domestic, foreign and total debt owed by a country's central government. Data is also available for the central government's marketable debt, which is defined by excluding savings bonds, loans from some international institutions, other direct loans, and private bond placements. In many cases, the total and marketable debt data series are identically or approximately equal and are available for the same time periods. For some countries and some time periods, the online database is missing data or contains data that is rounded to zero decimal places. Where available, we have used data from the printed version of the OECD's *Central Government Debt Statistics* yearbook instead.

The fourth source is the ECB's *Debt Securities Issuance and Service by EU Governments* report which contains data on average residual maturity for total central government debt and for debt subject to the Maastricht treaty for European countries. The database is restricted to government debt securities issued with an International Securities Identification Number (ISIN) which may exclude some domestic and short term debt. We collect data on total central government debt and take the figures for the month of December each year (using the annual option in the database gives an average for the entire year). Some of the ECB data is rounded to integer numbers; we use these data only when all other options have been exhausted.

The fifth source is the BIS's *Debt Securities Statistics* which presents data on the average residual term to maturity for marketable central government debt. These data start for some countries as early as 1995 and are annual.

The sixth source of cross-country data is [Missale \(1999\)](#) , who assembled data from a range of country-specific sources for the period 1960 to 1995. Although there are some differences across countries resulting from differences in data availability, the series of [Missale \(1999\)](#) on average maturity are typically constructed for debt in the hands of the public (excluding central bank holdings) owed by the central government. Different measures are available for different countries. We typically focus on measures of conventional maturity, filling gaps with series on the maturity of fixed-rate debt when available. We typically do not use data on effective maturity (in which [Missale \(1999\)](#) sets the maturity of indexed and foreign currency debts to zero).

In addition to the cross country sources, there are numerous country-specific sources available, especially for later periods.

As a general rule, given that many data series are restricted to marketable securities, we started with OECD data on the weighted-average residual maturity of marketable government debt, and extrapolated forward in time using a mixture of ECB, BIS, IMF, and Bloomberg data. We always chose the data series closest in conception to the OECD series. We use data in [Missale \(1999\)](#) to extrapolate backwards in time. There were many exceptions to this general rule. Each of these exceptions, along with uses of country-specific data, is detailed in the country notes below.

As a general rule, we use data in the following order of priority (although there are numerous exceptions):

1. OECD data on marketable central government debt
2. OECD data on total central government debt
3. ECB total central government debt
4. ECB Maastricht debt
5. BIS data
6. Bloomberg
7. IMF Fiscal Monitor
8. Missale CON.MAT, then CON.TOT, CON.BOND, CON.GP, FIX.MAT, FIX.BOND
in order
9. Country-specific sources on maturity
10. [Missale \(1999\)](#) EF.MAT
11. Country-specific sources on duration
12. [Missale \(1999\)](#) TOT.DUR, then FIX.DUR

Australia

OECD data on marketable central government debt was used for 1980 to 2010. This was extended back to 1974 using the conventional maturity series from [Missale \(1999\)](#) and extended forward to 2019 using data from Bloomberg.

Austria

OECD data on marketable central government debt is rounded to zero decimal places prior to 2003. Hence, OECD marketable debt series was used for 2003 to 2010. Data from the printed publication is not rounded and so is used from 1981 to 1998 (the entry for 1980 was zero maturity and was discarded). The years between come from the OECD series for total debt from 1998 to 2003. Lastly, the data were extended forward to 2019 using the end-of-year data provided by the ECB.

Data from the Austrian Fiskal Advisory Council (FiskalRat) on the residual maturity of federal debt from 1998 to 2015 from their *Statistical Annex of the Austrian Report on Public Finances 2015-2017* coincided with the other sources and was not directly used (<https://www.fiskalrat.at/dam/Annex-2018>).

Belgium

OECD data on marketable debt is not available, and so the series for total debt was used from 1999 to 2010. This was extrapolated forward to 2019 using ECB data on total marketable debt. The data were extrapolated backward to 1995 using the ECB series on Maastricht debt and then further to 1990 using the ECB series on total debt calculated as a year average (these data are missing between 1995 and 1997). Lastly, the data were extrapolated backward to 1977 using the series on conventional maturity of total debt from [Missale \(1999\)](#).

The National Bank of Belgium also produces a series on the average maturity of the consolidated gross debt of the general government from 1995 to the present (<https://stat.nbb.be/Index.aspx?DataSetCode=CGDHCM#>). As this does not line up with the rest of our data which refers to the central government, these data were not incorporated.

Canada

The OECD data on marketable debt before 1993 for Canada is rounded to zero decimal places. The Bank of Canada reports data on the average residual term to maturity of government of Canada direct securities in its *Banking and Financial Statistics* publication Table G.6 (see <http://www.bankofcanada.ca/publications/bfs/>) from 1994 to the

present online. These data appear to line up exactly with the OECD data but are less rounded. As a result, we use the Bank of Canada data from 1994 to the present, extrapolating back to 1981 using the OECD series on marketable debt from the printed publication, and then back to 1960 using data on conventional maturity from [Missale \(1999\)](#).

Denmark

OECD data on marketable debt was used from 1990 to 2010. This was extrapolated forward to 2019 using data from the ECB on using end-of-the-year data from the ECB. The data were then extrapolated back to 1978 using data on conventional maturity from [Missale \(1999\)](#).

Finland

OECD data on marketable debt was only available from 2002 to 2010. This was extended back to 1990 using data on total debt, and then further extended back to 1985 using the maturity of fixed rate debt series from [Missale \(1999\)](#). These data were then extrapolated forward to the present using the ECB's year-end series.

France

OECD data on marketable debt before 1995 is rounded to zero decimal places. Hence we use the marketable debt series for 1995 to 2010, and extrapolate back to 1992 using the OECD series on total debt and to 1990 using the conventional maturity data from [Missale \(1999\)](#). This was extrapolated forward to 2019 using the ECB end-of-year series

Germany

OECD data on marketable debt is rounded to zero decimal places prior to 2002, and so we use the marketable debt series only from 2002 to 2010. This is extrapolated back to 1990 using the OECD series on total debt, and then further back to 1967 using the [Missale \(1999\)](#) data on conventional maturity of long-term debt. These data were then extrapolated forward to 2019 using the ECB end-of-year series.

Greece

OECD data on marketable debt is missing, and so we use the OECD series on total debt from 2003 to 2010. This is extrapolated back to 1999 using data from the Greek Public Debt Management Agency (<http://www.pdma.gr/en/public-debt-strategy/public-debt/historical-characteristics/weighted-average-maturity>). These data are then extrapolated forward to 2019 using the ECB end-of-year series. Note that the Bloomberg series, the PDMA series, and the ECB Maastricht series, all show much larger increases in maturity in recent years because they include official debt restructurings in which maturities were lengthened significantly. We exclude these debts as many are not marketable. The fact that the different series disagree wildly, and the fact that the maturity extensions were the result of a restructuring and not the result of issuance into the market lead us to drop Greek data in most cases after 2011.

Iceland

We use the OECD data on marketable debt from 1993 to 2010, noting that data prior to 2002 are rounded to zero decimal places. For the period 1993 to 1999, unrounded data is available from the printed publication and is used instead. In extrapolating forward to 2019, there are extremely large differences between the IMF data (which shows a dramatic rise in maturities in the most recent 3 years) and data from Bloomberg (which shows no such increase). We use the Bloomberg data since it appears more closely aligned with overall data on marketable debt, but typically omit data for Iceland for this period from the analysis as the maturity extensions are not associated with issuance in normal market conditions.

Ireland

We use OECD data on marketable debt from 1998 to 2010 and extrapolate forward to 2019 using end-of-year data from the ECB. No data is available for 1996 and 1997. Data from 1960 to 1995 is taken from [Missale \(1999\)](#) conventional maturity series. In 1974 [Missale \(1999\)](#) data switches from being a start-of-year series (up to and including 1974) to an end-of-year series (starting with and including 1974). Prior to 1974, we treat the start of 1974

as representing the end of 1973 and so on, giving us a data series that begins in 1959.⁹

To fill the gap for 1996 and 1997, we computed estimates of the maturity structure of Irish domestic debt (roughly 60 percent of outstanding debt) using data on the maturity profile of debts depicted in various issues of the *Annual Report of the National Treasury Management Agency* (<http://www.ntma.ie/>).

Italy

We use OECD data on marketable debt from 1980 to 2010. This is extrapolated back to 1960 using the conventional maturity series from [Missale \(1999\)](#). The data were then extended forward to 2019 using the end-of-year series from the ECB.

Japan

We use OECD data on marketable debt from 1998 to 2009 and extrapolate back to 1990 using OECD data on total debt. Note that the data on total debt in the OECD database appear to have been mistakenly lagged one period, and we correct for this in our calculations (that is, the data reported for 1989 should be for 1990). These data are then extrapolated forward to 2019 using data from Bloomberg.

Luxembourg

The OECD data on marketable and total debt coincide from 1997 to 2005 and differ significantly in 2006-2007, with the marketable debt series stopping in 2007. As a result, we focus on the larger category of total debt which is also available the longest from 1997 to 2010, even though it is rounded to zero decimal places prior to 2002. From 2009 to 2019 we use data from the ECB end-of-year series.

OECD data from the printed publication that is less rounded is available for 1997 and 1998, although it seems to disagree with the rounded data in the database. As a result, it is not incorporated.

⁹We use the observations starting from 1960.

Netherlands

The OECD data on marketable debt between 1991 and 2003 is rounded to zero decimal places. Hence, we use it for 2004 to 2010 and use the series for total debt to extrapolate back to 1992. These data are then extrapolated back to 1960 using the conventional maturity series from [Missale \(1999\)](#). The data are extrapolated forward to 2019 using data from the ECB. We first use year-average data to 2013, as this lines up exactly with the OECD data and then use end-of-year data until 2019.

New Zealand

OECD data on marketable central government debt was used for 1992 to 2010. This was extended forward to 2019 using data from Bloomberg.

A series on the residual maturity of government bonds (but excluding bills) from the New Zealand Debt Management Office was also available from 2000 to the present but was not used.

Norway

We use OECD data on marketable debt from 1982 to 1992 and again from 1997 to 2010. Data between 1993 and 1996 inclusive are missing from the online database and are replaced with data from the printed publication. These data are extrapolated forward to 2019 using data from Bloomberg. The data are then extrapolated back to 1978 using data on the average residual maturity of government bonds (but not bills) provided by the Debt Management Office of the Norges Bank.

Portugal

OECD data on marketable debt is not available, and so we use the OECD series on total debt from 1996 to 2010. This is extrapolated forward to 2019 using the end-of-year series from the ECB. The ECB series for Maastricht debt goes back to 1995, and so we use it to extrapolate the data back to 1995. The Bloomberg data for Portugal differs significantly from the ECB and IMF series, and so we experiment with dropping Portuguese data in some cases.

Spain

OECD data on marketable debt are used from 1980 to 2010. These are extrapolated forward to 2019 using the end-of-year data from the ECB, and are extrapolated back to 1962 using the maturity of fixed rate series from [Missale \(1999\)](#).

Sweden

OECD data on the maturity of marketable debt is missing, while data on total debt is missing between 2000 and 2005 inclusive. As a result, we use the OECD series on total debt for 1990 to 1999 and from 2006 to 2010. The data are extrapolated backwards to 1976 using the [Missale \(1999\)](#) series on conventional maturity. The data are extrapolated forward to 2019 using the ECB end of year series.

The Riksgalds Kontornet (Swedish National Debt Office) makes available data on the maturity of subcomponents of Swedish debt on a monthly basis from 2001 to the present (see <https://www.riksdagen.se/fi/For-investors/Borrowing-and-the-government-debt/Central-government-debt-details/Maturity-measures/>). The series for government bonds suggests a consistency higher maturity than the sources from OECD, ECB, IMF and Bloomberg (although closer in magnitude to the data from [Missale \(1999\)](#)). As a result, we de-emphasize these data using them only to extrapolate between 2001 and 2006. There is no data available for 2000.

To fill in data for 2000, we use movements in the duration of central government debt from the 2003 Annual Report of the Swedish National Debt Office (see page 7 at https://www.riksdagen.se/Dokument_eng/press/reports/annual-reports/).

United Kingdom

OECD data on marketable central government debt was used for 1998 to 2010. This was extended forward to 2019 using the end-of-year data from ECB. Data on conventional maturity from [Missale \(1999\)](#) was used for 1963 to 1996. Data for 1997 came from the UK Debt Management Office Gilt Review for 1997-98 (http://www.dmo.gov.uk/documentview.aspx?docname=publications/annualreviews/gar9798.pdf&page=Gilt_Review) where we used the geometric average of the growth between 1996 and 1997, and between

1997 and 1998, to interpolate the value for 1997.

United States

OECD data on marketable central government debt was used for 1980 to 2010. This was extended back to 1960 using the maturity of fixed rate debt series (the only series available) from [Missale \(1999\)](#) and extended forward to 2019 using data from Bloomberg.

A.2. Spread Data

We use two sets of data in our analysis. The first set of data consists of spread between the 10-year and 3-month government bonds using the OECD website. This dataset is more extensive prior to 1998 so that we can use it for our main panel and rolling-window regressions.

The second dataset is created by calculating the spread between 30-year and 10-year government bonds and is used to replicate [Guibaud et al. \(2013\)](#). Following [Guibaud et al. \(2013\)](#), we use Global Financial Data (GFD) to obtain the spreads between 30-year and 10-year bonds. We extend the data forward to 2019. Even though we use the same sources, there are still some discrepancies between our data and [Guibaud et al. \(2013\)](#). [Table A1](#) summarizes the data availability and the comparison of 30-year and 10-year bond yields with those of [Guibaud et al. \(2013\)](#). Based on this data, we obtain spreads for the countries listed in [Table A1](#). Summary statistics are shown in [Table A2](#)

Table A1: AVAILABILITY OF 30-YEAR AND 10-YEAR BOND YIELD DATA

| Country Code | 30-year Bond Data Availability | 30-year Bond Comparison w/ Guibaud et al. (2013) | 30-year Bond Data Source | 10-year Bond Data Availability | 10-year Bond Comparison w/ Guibaud et al. (2013) | 10-year Bond Data Source |
|--------------|--------------------------------|--|--------------------------|--------------------------------|--|--------------------------|
| AUS | 2016-2019 | Missing in Guibaud et al. (2013) | Bloomberg | 1999-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| AUT | 1999-2019 | Missing in Guibaud et al. (2013) | Bloomberg | 1999-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| BEL | 1998-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| CAN | 1976-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| DNK | 2008-2019 | Missing in Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| FIN | 2013-2019 | Missing in Guibaud et al. (2013) | Bloomberg | 1993-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| FRA | 1990-2019 | Matches with Guibaud et al. (2013) | Bloomberg | 1990-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| DEU | 1988-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| GRC | 2005-2012, 2015-2016 | Missing in Guibaud et al. (2013) | GFD | 1981-2019 | Matches with Guibaud et al. (2013) | GFD |
| IRL | 2015-2019 | Missing in Guibaud et al. (2013) | Bloomberg | 1960-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| ITA | 1993-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| JPN | 1999-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| MEX | 2006-2019 | Matches with Guibaud et al. (2013) | GFD | 2001-2019 | Matches with Guibaud et al. (2013) | GFD |
| NLD | 1999-2019 | Missing in Guibaud et al. (2013) | Bloomberg | 1999-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| PRT | 2006-2019 | Missing in Guibaud et al. (2013) | Bloomberg | 1999-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| ESP | 1998-2019 | Matches with Guibaud et al. (2013) | Bloomberg | 1998-2019 | Matches with Guibaud et al. (2013) | Bloomberg |
| SWE | 2009-2016 | Missing in Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| CHE | 1998-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |
| GBR | 1960-2016 | Matches with Guibaud et al. (2013) | GFD | 1960-2016 | Matches with Guibaud et al. (2013) | GFD |
| USA | 1960-2019 | Matches with Guibaud et al. (2013) | GFD | 1960-2019 | Matches with Guibaud et al. (2013) | GFD |

This table summarizes the data availability of 30-year and 10-year bond yields in our sample obtained from the Global Financial Data and Bloomberg. The second and the fifth columns report the time interval for which yield data is available for each country. The third and the sixth columns compare our dataset with Guibaud et. al (2013).

Table A2: SUMMARY STATISTICS

| Summary Statistics for Spread | | | | |
|-------------------------------|--------------|---------------|-------------------|-----|
| Country Name | Country Code | Spread (mean) | Spread (std.dev.) | Obs |
| Australia | AUS | 0.71 | 0.23 | 4 |
| Austria | AUT | 0.57 | 0.27 | 21 |
| Belgium | BEL | 0.63 | 0.30 | 22 |
| Canada | CAN | 0.37 | 0.24 | 44 |
| Switzerland | CHE | 0.63 | 0.58 | 22 |
| Germany | DEU | 0.50 | 0.37 | 32 |
| Denmark | DNK | 0.49 | 0.41 | 12 |
| Spain | ESP | 0.71 | 0.36 | 22 |
| Finland | FIN | 0.67 | 0.09 | 8 |
| France | FRA | 0.60 | 0.31 | 30 |
| United Kingdom | GBR | -0.10 | 0.83 | 57 |
| Greece | GRC | -1.06 | 7.14 | 10 |
| Ireland | IRL | 0.95 | 0.12 | 5 |
| Italy | ITA | 0.53 | 0.54 | 27 |
| Japan | JPN | 0.69 | 0.77 | 21 |
| Mexico | MEX | 0.67 | 0.41 | 14 |
| Netherlands | NLD | 0.51 | 0.21 | 21 |
| Portugal | PRT | 0.49 | 1.35 | 14 |
| Sweden | SWE | 0.66 | 0.22 | 8 |
| United States | USA | 0.25 | 0.47 | 60 |
| Total | TOTAL | 0.40 | 1.18 | 454 |

This table illustrates the summary statistics of the spread between 30-year and 10-year bonds of the OECD countries. In the sample, there are 20 countries with spread data.

A.3. Sovereign Debt Holdings Share for the Nonresidents

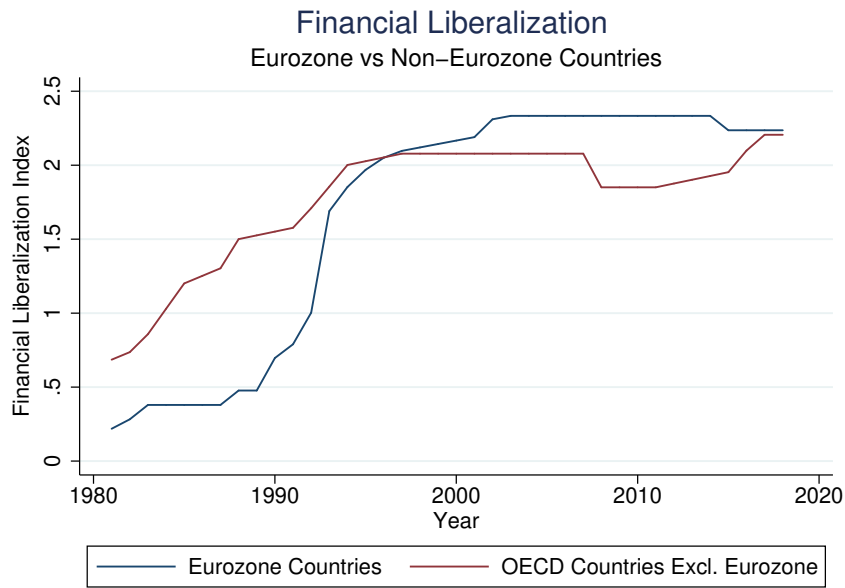
We use Bruegel database of sovereign bond holdings developed in [Merler and Pisani-Ferry \(2012\)](#) in order to create a measure for financial integration. Specifically, we calculate the share of nonresidents' holdings in the sovereign bond market. The data is available for Belgium, Finland, France, Germany, Greece, Ireland, Italy, Spain, Portugal, Netherlands, UK, and US. Moreover, the nonresident debt holdings data starts in late 1990s and is available till 2019 for all countries except Belgium where the most recent data for Belgium is 2017. In order to calculate the share of nonresident debt holdings we divide the nonresident debt investment by the total sovereign debt debt and calculate the percentage of nonresident investment in the sovereign bond market.

A.4. Financial Liberalization

We use unweighted average of Chinn-Ito Index for eurozone countries and non-eurozone OECD countries for which the index data is available. [Figure A1](#) illustrates that the financial liberalization was more rapid in the eurozone countries between years 1990-2000 and the disparity stayed constant till the 2008 financial crisis. After 2008, non-eurozone OECD countries experienced a decline in financial openness which is followed by a rebound after 2015. However, in the eurozone, financial openness declined after the eurozone debt crisis and stayed at the lower levels in the years following 2015.¹⁰

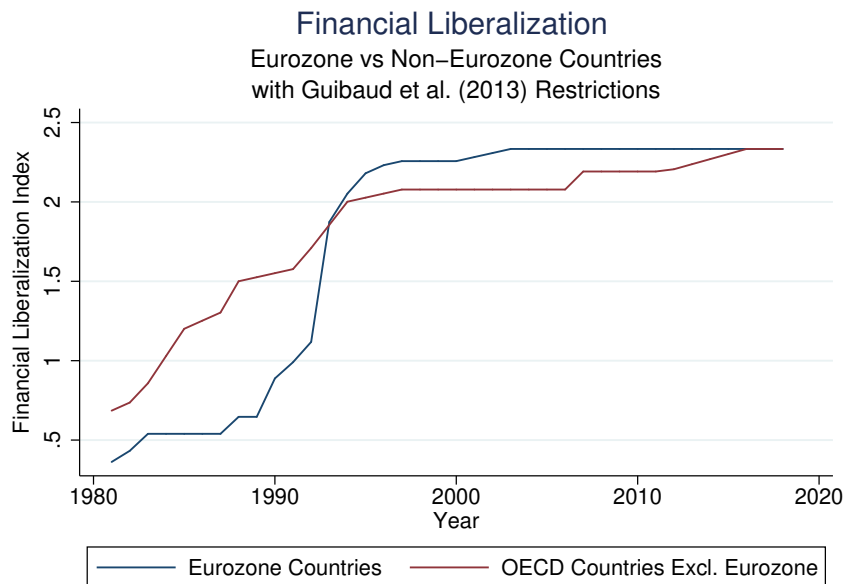
¹⁰Note that in [Figure A2](#), the financial openness does not change after the 2008 financial crisis and eurozone debt crisis, which is due to the exclusion of Ireland, Italy, Portugal, Spain and Japn.

Figure A1: FINANCIAL LIBERALIZATION



This graph shows the unweighted average Chinn-Ito Index for eurozone countries and non-eurozone OECD countries.

Figure A2: FINANCIAL LIBERALIZATION WITH GUIBAUD ET AL. (2013) RESTRICTIONS



This graph shows the unweighted average Chinn-Ito Index for eurozone countries and other OECD countries using Guibaud et al. (2013) restrictions. In this case Greece is excluded, together with some observations of Ireland (2010-2019), Italy (2006-2019), Portugal (2009-2019), Spain (2012-2019), and Japan (2012-2019).

B. Comparison with [Guibaud et al. \(2013\)](#)

In order to compare our results with those of [Guibaud et al. \(2013\)](#), we first create maturity and spread datasets to use as benchmarks that replicate the descriptive statistics and number of observations of [Guibaud et al. \(2013\)](#) as closely as possible and call it “[Guibaud et al. \(2013\)](#) Data”. Moreover, we also apply the restrictions used in [Guibaud et al. \(2013\)](#).¹¹ Since [Guibaud et al. \(2013\)](#) includes observations between the years 1960 and 2009, we rerun our regressions within this time frame.

B.1. Maturity

Panel A of [Table A3](#) shows the results using “[Guibaud et al. \(2013\)](#) Data”, while Panel B shows the results using our extended dataset.

Comparing Panel A of [Table A3](#) with Panel B of [Table 3](#) in [Guibaud et al. \(2013\)](#), it can be seen that the results are very close to each other, implying that the “[Guibaud et al. \(2013\)](#) Data” does a good job in replicating the original dataset. Next, comparing Panel B of [Table A3](#), with Panel A of [Table A3](#), we see that with the extended data, the coefficient of the OLS regression becomes less significant but has the same sign. In contrast, the significance of other regression results does not change.

We continue our analysis with the eurozone subsample. [Guibaud et al. \(2013\)](#) does not consider the eurozone subsample; however, to understand the underlying sources of segmentation, it is essential to examine how regression coefficient change when we restrict the sample to the eurozone countries. Panel A and Panel B of [Table A4](#) show that the coefficient of median age is larger in absolute value and more significant for both the ‘[Guibaud et al. \(2013\)](#) Data’ and our data with [Guibaud et al. \(2013\)](#) restrictions. This implies that the regression results in [Table A3](#) are mainly driven by the eurozone countries.

¹¹Specifically, they exclude any country-year observation after 2007 when that country is rated below AA- by Standard and Poors (S&P).

Table A3: REGRESSION RESULTS FOR MATURITY AND MEDIAN AGE
OECD COUNTRIES (1960-2009)

| Panel A: Regression Results: OECD Countries (1960-2009) (Guibaud et al. (2013) Data) | | | | |
|--|---------------------|-------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.175** (-2.27) | -0.180 (-1.38) | -0.153*** (-6.44) | -0.154*** (-6.59) |
| Constant | 12.02*** (4.56) | 11.87** (2.54) | 11.27*** (13.64) | 10.95*** (11.90) |
| Number of observations | 649 | 649 | 649 | 649 |
| R^2 | 0.074 | 0.091 | 0.062 | |
| Panel B: Regression Results : OECD Countries (1960-2009) (Our Data with Guibaud et al. (2013) Restrictions) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.161* (-1.97) | -0.181 (-1.37) | -0.108*** (-4.74) | -0.110*** (-4.91) |
| Constant | 11.50*** (3.93) | 12.01** (2.56) | 9.662*** (12.12) | 9.504*** (10.71) |
| Number of observations | 703 | 703 | 703 | 703 |
| R^2 | 0.064 | 0.090 | 0.032 | |

This table shows the relationship between median age and average maturity in the OECD countries. In Panel A, we create a new dataset that has the same summary statistics with those of Guibaud et al. In Panel B, we use our data with the data restrictions of Guibaud et al. (2013). In this case, Greece is excluded, together with some observations of Iceland (2007-2009), Italy (2006-2009), and Portugal (2009). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: REGRESSION RESULTS FOR MATURITY AND MEDIAN AGE
EUROZONE COUNTRIES (1960-2009)

| Panel A: Regression Results: Eurozone Countries (1960-2009) (Guibaud et al. (2013) Data) | | | | |
|---|----------------------|---------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.285*** (-4.34) | -0.376** (-3.03) | -0.192*** (-5.25) | -0.206*** (-5.90) |
| Constant | 15.76*** (6.84) | 18.78*** (4.21) | 12.51*** (9.82) | 12.77*** (9.83) |
| Number of observations | 347 | 347 | 347 | 347 |
| R^2 | 0.241 | 0.504 | 0.076 | |

| Panel B: Regression Results : Eurozone Countries (1960-2009) (Our Data with Guibaud et al. (2013) Restrictions) | | | | |
|--|---------------------|---------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.270** (-3.11) | -0.352** (-3.20) | -0.159*** (-4.49) | -0.178*** (-5.26) |
| Constant | 15.40*** (4.59) | 18.33*** (4.62) | 11.52*** (9.20) | 12.08*** (9.62) |
| Number of observations | 370 | 370 | 370 | 370 |
| R^2 | 0.209 | 0.532 | 0.053 | |

This table shows the relationship between median age and average maturity in the eurozone countries. In Panel A, we create a new dataset that has the same summary statistics with those of Guibaud et al. In Panel B, we use our data with the data restrictions of Guibaud et al. (2013). In this case, Greece is excluded, together with some observations of Italy (2006-2009), and Portugal (2009). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

B.2. Spread

Panel A of [Table A5](#) shows the results using “Guibaud et al. (2013) Data” with 30-year and 10-year spreads, Panel B shows the results using our extended dataset with 30-year and 10-year spreads, and Panel C includes the results using our dataset with 10-year and 3-month spreads.

Comparing Panel A of [Table A3](#) with Panel A of Table 3 in [Guibaud et al. \(2013\)](#), it can be seen that the results are very close to each other, implying that the “Guibaud et al. (2013) Data” does a good job in replicating the original dataset. Next, Panel B of [Table A5](#) illustrates that the coefficient of all the regression has the same significance and sign with

Panel A.

In Panel C of [Table A5](#), we use the spread between 10-year and 3-month bonds. In this case, the coefficient for median age is larger than Panel B and Panel A, and has the same significance. However, the coefficient of determination is lower implying that the explanatory power of the median age is smaller.

We continue our analysis with the eurozone subsample. In Panel A and Panel B of [Table A6](#), when we use the spread between 30-year and 10-year bonds, the coefficient of median age is insignificant and smaller. However, in Panel C, when we use the spread between 10-year and 3-month bonds, the coefficient is larger and becomes significant at the 5%. This implies that in Panel A and Panel B, the lack of spread data in the eurozone prior to 1998 creates insignificant results. Moreover, this finding justifies the use of spread between 10-year and 3-month bonds in our analysis.

Table A5: REGRESSION RESULTS FOR SPREAD AND MEDIAN AGE -
OECD COUNTRIES

| Panel A: Regression Results : OECD Countries (1960 - 2009) (Guibaud et al. (2013) Data) | | | | |
|---|----------------------|--------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0507*** (3.41) | 0.0654** (2.45) | 0.0452*** (3.59) | 0.0488*** (4.30) |
| Constant | -1.588** (-2.56) | -2.063* (-2.03) | -1.389*** (-3.03) | -1.443*** (-3.31) |
| Number of observations | 236 | 236 | 236 | 236 |
| R^2 | 0.132 | 0.428 | 0.054 | |
| Panel B: Regression Results : OECD Countries (1960 - 2009) (Our Data (30-year and 10-year spread) with Guibaud et al. (2013) Restrictions) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0497*** (3.33) | 0.0575** (2.64) | 0.0429*** (3.56) | 0.0481*** (4.83) |
| Constant | -1.553** (-2.47) | -1.798* (-2.13) | -1.304*** (-2.95) | -1.442*** (-3.78) |
| Number of observations | 264 | 264 | 264 | 264 |
| R^2 | 0.134 | 0.348 | 0.049 | |
| Panel C: Regression Results : OECD Countries (1960 - 2009) (Our Data (10-year and 3-month spread) with Guibaud et al. (2013) Restrictions) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0718*** (6.37) | 0.0530** (2.18) | 0.0984*** (3.82) | 0.0721*** (4.12) |
| Constant | -1.877*** (-4.57) | -1.237 (-1.39) | -2.824*** (-3.07) | -1.889*** (-3.01) |
| Number of observations | 548 | 548 | 548 | 548 |
| R^2 | 0.030 | 0.229 | 0.027 | |

This table shows the relationship between median age and spread in the OECD countries. In the first panel, we use Guibaud et al. (2013) data between years 1960 and 2009. In this case, we only include Belgium, Canada, France, Germany, Italy, Japan, Spain, Switzerland, United Kingdom and USA. In the second panel, we use our data (30-year and 10-year spread) with Guibaud et al. (2013) restrictions between years 1960 and 2009. In the third panel, we use our data (10-year and 3-month spread) with Guibaud et al. (2013) restrictions between 1960 and 2009. The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: REGRESSION RESULTS FOR SPREAD AND MEDIAN AGE
EUROZONE COUNTRIES

| Panel A: Regression Results: Eurozone Countries (1960-2009) (Guibaud et al (2013) Data) | | | | |
|--|--------------------|--------------------|--------------------|---------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0224 (1.19) | -0.0156 (-0.92) | 0.0435* (1.93) | 0.0224 (1.23) |
| Constant | -0.421 (-0.55) | 1.070 (1.61) | -1.247 (-1.41) | -0.421 (-0.59) |
| Number of observations | 79 | 79 | 79 | 79 |
| R^2 | 0.019 | 0.219 | 0.048 | |
| Panel B: Regression Results: Eurozone Countries (1960-2009) (Our Data (30-year and 10-year spread) with Guibaud et al. (2013) Restrictions) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0116 (0.57) | -0.0497 (-1.48) | 0.0301 (1.49) | 0.0116 (0.71) |
| Constant | -0.0153 (-0.02) | 2.374 (1.79) | -0.738 (-0.93) | -0.0153 (-0.02) |
| Number of observations | 104 | 104 | 104 | 104 |
| R^2 | 0.005 | 0.267 | 0.023 | |
| Panel B: Regression Results: Eurozone Countries (1960-2009) (Our Data (10-year and 3-month spread) with Guibaud et al. (2013) Restrictions) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0883** (2.95) | 0.0809** (3.17) | 0.0938** (2.38) | 0.0883*** (3.08) |
| Constant | -2.370* (-2.09) | -2.127* (-2.27) | -2.573* (-1.79) | -2.370** (-2.27) |
| Number of observations | 297 | 297 | 297 | 297 |
| R^2 | 0.031 | 0.556 | 0.019 | |

This table shows the relationship between median age and spread in the eurozone countries. In the first panel, we use Guibaud et al. (2013) data between years 1960 and 2009. In this case, we only include Belgium, France, Germany, Italy, and Spain. In the second panel, we use our data (30-year and 10-year spread) with Guibaud et al. (2013) restrictions between years 1960 and 2009. In the third panel, we use our data (10-year and 3-month spread) with Guibaud et al. (2013) restrictions between 1960 and 2009. The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

C. Robustness Checks

C.1. Country Ratings

In this section, we consider all country-year observations with ratings BBB and above. Accordingly, we exclude some observations for Greece (2010-2019), Mexico (1990-2004), Iceland (2008-2014), Italy (2014-2016), Portugal (2011-2018), and Spain (2012-2013).

Table A7: REGRESSION RESULTS FOR MATURITY AND MEDIAN AGE
OECD COUNTRIES

| Panel A: Regression Results: OECD Countries (1960-1998) | | | | |
|---|---------------------|-------------------|-----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.283** (-2.52) | -0.197 (-1.39) | -0.367*** (-9.53) | -0.356*** (-9.58) |
| Constant | 15.43*** (4.08) | 12.37** (2.54) | 18.21*** (14.17) | 17.81*** (13.31) |
| Number of observations | 480 | 480 | 480 | 480 |
| R^2 | 0.136 | 0.092 | 0.166 | |
| Panel B: Regression Results: OECD Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.177** (-2.11) | -0.184 (-1.47) | -0.118*** (-4.91) | -0.121*** (-5.11) |
| Constant | 12.04*** (3.99) | 12.12** (2.71) | 10.00*** (11.90) | 9.889*** (10.75) |
| Number of observations | 678 | 678 | 678 | 678 |
| R^2 | 0.076 | 0.097 | 0.036 | |
| Panel C: Regression Results : OECD Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.0273 (-0.40) | -0.106 (-0.81) | 0.0623*** (3.71) | 0.0595*** (3.58) |
| Constant | 7.173** (2.77) | 9.888* (2.06) | 3.925*** (6.42) | 3.809*** (5.28) |
| Number of observations | 912 | 912 | 912 | 912 |
| R^2 | 0.002 | 0.032 | 0.015 | |
| Panel D: Regression Results : OECD Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.191** (2.63) | 0.0962 (0.58) | 0.513*** (15.41) | 0.497*** (15.14) |
| Constant | -1.121 (-0.37) | 2.564 (0.39) | -13.86*** (-10.53) | -13.25*** (-9.73) |
| Number of observations | 432 | 432 | 432 | 432 |
| R^2 | 0.058 | 0.016 | 0.367 | |

This table shows the relationship between median age and average maturity in the OECD countries. In all panels, we exclude some observations for Greece (2010-2019), Mexico (1990-2004), Iceland (2008-2014), Italy (2014-2016), Portugal (2011-2018), and Spain (2012-2013). The t- and z-statistics are reported in parentheses. Errors are clustered by country.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: REGRESSION RESULTS FOR MATURITY AND MEDIAN AGE
EUROZONE COUNTRIES

| Panel A: Regression Results: Eurozone Countries (1960-1998) | | | | |
|---|----------------------|---------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.489*** (-5.33) | -0.388** (-2.39) | -0.514*** (-8.51) | -0.501*** (-8.91) |
| Constant | 22.30*** (6.65) | 19.18*** (3.41) | 23.14*** (11.46) | 22.98*** (11.56) |
| Number of observations | 254 | 254 | 254 | 254 |
| R^2 | 0.395 | 0.389 | 0.230 | |
| Panel B: Regression Results: Eurozone Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.283*** (-3.16) | -0.333** (-3.09) | -0.160*** (-4.19) | -0.180*** (-5.02) |
| Constant | 15.83*** (4.59) | 17.70*** (4.54) | 11.51*** (8.62) | 12.19*** (9.20) |
| Number of observations | 362 | 362 | 362 | 362 |
| R^2 | 0.219 | 0.488 | 0.048 | |
| Panel C: Regression Results : Eurozone Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.0979 (-1.10) | -0.291** (-2.75) | 0.0476* (1.93) | 0.0293 (1.21) |
| Constant | 9.842** (2.75) | 16.98*** (4.28) | 4.513*** (4.97) | 5.041*** (5.31) |
| Number of observations | 483 | 483 | 483 | 483 |
| R^2 | 0.038 | 0.430 | 0.008 | |
| Panel D: Regression Results : Eurozone Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0922 (0.94) | -0.103 (-0.84) | 0.456*** (9.96) | 0.387*** (8.70) |
| Constant | 2.846 (0.70) | 10.63* (2.15) | -11.79*** (-6.40) | -9.055*** (-5.00) |
| Number of observations | 229 | 229 | 229 | 229 |
| R^2 | 0.026 | 0.065 | 0.315 | |

This table shows the relationship between median age and average maturity in the eurozone countries. In all panels, we exclude some observations for Greece (2010-2019), Mexico (1990-2004), Iceland (2008-2014), Italy (2014-2016), Portugal (2011-2018), and Spain (2012-2013). The t- and z-statistics are reported in parentheses. Errors are clustered by country.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: REGRESSION RESULTS FOR SPREAD AND MEDIAN AGE
OECD COUNTRIES

| Panel A: Regression Results: OECD Countries (1960-1998) | | | | |
|---|----------------------|--------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0520** (2.20) | -0.0497 (-0.40) | 0.102** (1.97) | 0.0843* (1.77) |
| Constant | -1.310 (-1.70) | 1.811 (0.41) | -3.004* (-1.71) | -2.715 (-1.61) |
| Number of observations | 360 | 360 | 360 | 360 |
| R^2 | 0.009 | 0.010 | 0.011 | |
| Panel B: Regression Results: OECD Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0641*** (5.36) | 0.0470* (1.78) | 0.0931*** (3.26) | 0.0688*** (3.39) |
| Constant | -1.658*** (-3.93) | -1.117 (-1.18) | -2.683*** (-2.65) | -1.849** (-2.55) |
| Number of observations | 531 | 531 | 531 | 531 |
| R^2 | 0.023 | 0.150 | 0.020 | |
| Panel C: Regression Results : OECD Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0594*** (3.73) | 0.0101 (0.44) | 0.0959*** (5.47) | 0.0699*** (4.87) |
| Constant | -1.381** (-2.40) | 0.425 (0.49) | -2.727*** (-4.21) | -1.782*** (-3.30) |
| Number of observations | 747 | 747 | 747 | 747 |
| R^2 | 0.030 | 0.010 | 0.040 | |
| Panel D: Regression Results : OECD Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.00352 (-0.11) | 0.00307 (0.11) | -0.0115 (-0.31) | -0.00325 (-0.14) |
| Constant | 1.275 (1.03) | 1.018 (0.93) | 1.589 (1.07) | 1.266 (1.41) |
| Number of observations | 387 | 387 | 387 | 387 |
| R^2 | 0.000 | 0.001 | 0.000 | |

This table shows the relationship between median age and spread in the OECD countries. In all panels, we exclude some observations for Greece (2010-2019), Mexico (1990-2004), Iceland (2008-2014), Italy (2014-2016), Portugal (2011-2018), and Spain (2012-2013). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * p < 0.1, ** p < 0.05, *** p < 0.01.

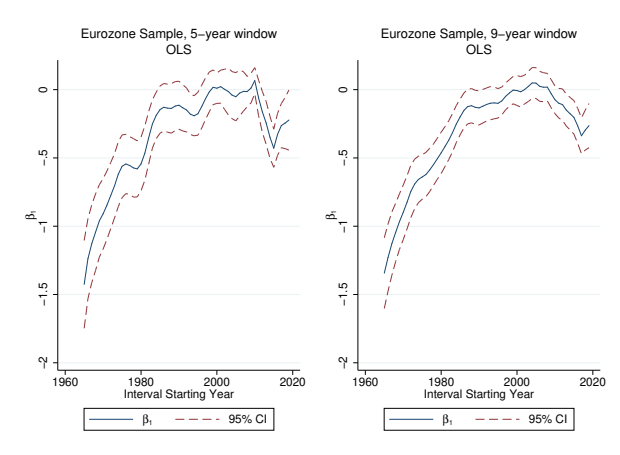
Table A10: REGRESSION RESULTS FOR SPREAD AND MEDIAN AGE
EUROZONE COUNTRIES

| Panel A: Regression Results: Eurozone Countries (1960-1998) | | | | |
|---|--------------------|--------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.104* (1.91) | -0.0620 (-0.25) | 0.0929 (1.00) | 0.0787 (0.91) |
| Constant | -3.032 (-1.56) | 2.180 (0.25) | -2.645 (-0.81) | -2.631 (-0.85) |
| Number of observations | 194 | 194 | 194 | 194 |
| R^2 | 0.019 | 0.007 | 0.005 | |
| Panel B: Regression Results: Eurozone Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0790** (2.50) | 0.0417 (0.64) | 0.0970** (2.15) | 0.0829** (2.25) |
| Constant | -2.114 (-1.77) | -0.864 (-0.36) | -2.766* (-1.69) | -2.312* (-1.71) |
| Number of observations | 293 | 293 | 293 | 293 |
| R^2 | 0.021 | 0.044 | 0.016 | |
| Panel C: Regression Results : Eurozone Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0822** (2.75) | 0.0321 (0.56) | 0.109*** (4.17) | 0.0952*** (4.04) |
| Constant | -2.111* (-1.89) | -0.265 (-0.12) | -3.107*** (-3.15) | -2.620*** (-2.91) |
| Number of observations | 402 | 402 | 402 | 402 |
| R^2 | 0.036 | 0.034 | 0.043 | |
| Panel D: Regression Results : Eurozone Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.0320 (-0.57) | -0.0563 (-0.97) | 0.0321 (0.65) | -0.00812 (-0.22) |
| Constant | 2.645 (1.19) | 3.627 (1.54) | 0.0615 (0.03) | 1.685 (1.12) |
| Number of observations | 208 | 208 | 208 | 208 |
| R^2 | 0.005 | 0.094 | 0.002 | |

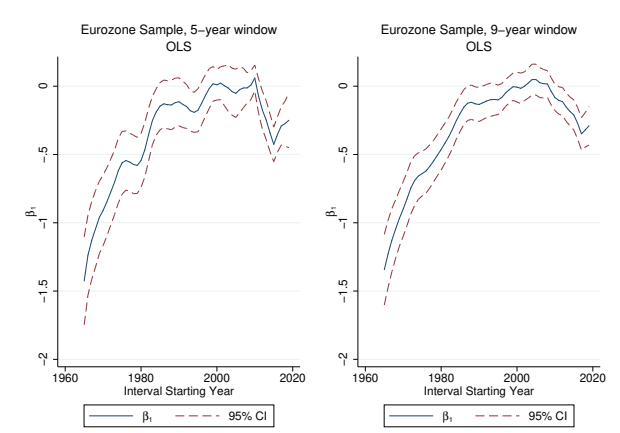
This table shows the relationship between median age and spread in the eurozone countries. In all panels, we exclude some observations for Greece (2010-2019), Mexico (1990-2004), Iceland (2008-2014), Italy (2014-2016), Portugal (2011-2018), and Spain (2012-2013). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Rolling Window Regressions

Figure A3: EVOLUTION OF REGRESSION COEFFICIENT β_1
 OLS REGRESSION RESULTS FOR AVERAGE MATURITY
 (EUROZONE COUNTRIES)



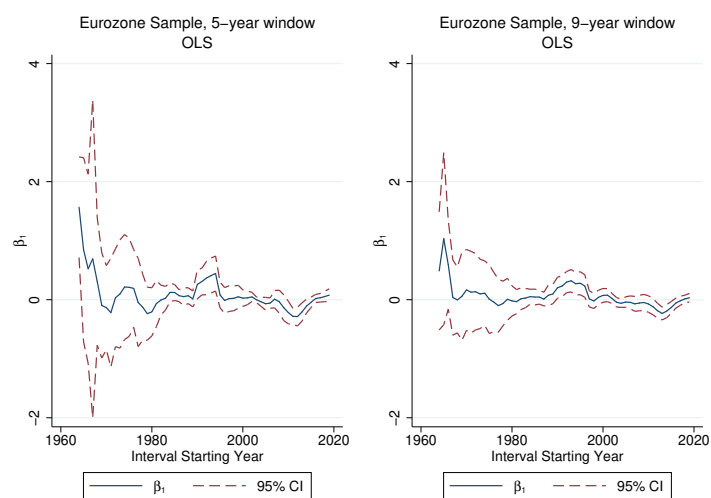
(a) EUROZONE COUNTRIES
 (EXCLUDING HIGH-RISK COUNTRY-YEAR OBSERVATIONS)



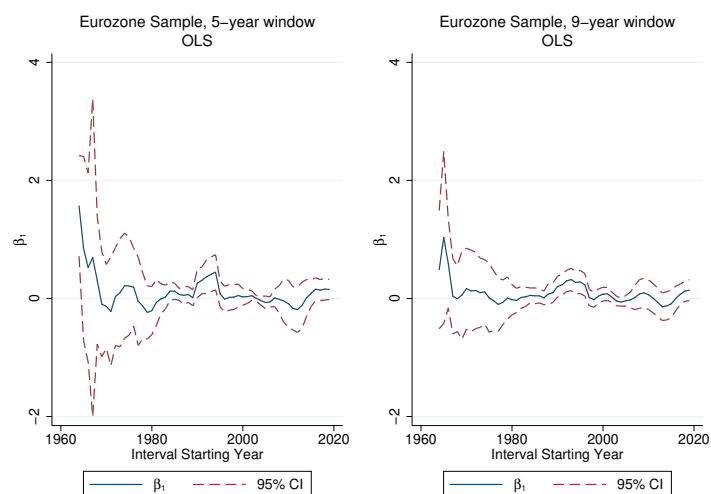
(b) EUROZONE COUNTRIES
 (WHOLE SAMPLE)

Notes: This graph shows the evolution of the coefficient β_1 for rolling-window regressions of maturity on median age for the eurozone countries. The blue line displays the point estimate of the coefficient while the red lines illustrate the 5% coefficient interval. The left panel is with respect to the regressions on a 5-year rolling window while the right panel is with respect to a 9-year rolling window.

Figure A4: EVOLUTION OF REGRESSION COEFFICIENT β_1
 OLS REGRESSION RESULTS FOR SPREAD (EUROZONE COUNTRIES)



(a) EUROZONE COUNTRIES
 (EXCLUDING HIGH-RISK COUNTRY-YEAR OBSERVATIONS)



EUROZONE COUNTRIES
 (b) (WHOLE SAMPLE)

Notes: This graph shows the evolution of the coefficient β_1 for rolling-window regressions of spread on median age for the eurozone countries. The blue line displays the point estimate of the coefficient while the red lines illustrate the 5% coefficient interval. The left panel is with respect to the regressions on a 5-year rolling window while the right panel is with respect to a 9-year rolling window.

C.2. Life Expectancy

In this section, we include life expectancy at the age of 40 as an additional explanatory variable collected from OECD Health Statistics database.

Table A11: REGRESSION RESULTS FOR MATURITY AND MEDIAN AGE
OECD COUNTRIES

| Panel A: Regression Results: OECD Countries (1960-1998) | | | | |
|---|-------------------|-------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.231 (-1.49) | -0.127 (-0.81) | -0.407*** (-4.86) | -0.337*** (-4.66) |
| Life Expectancy | -0.108 (-0.48) | -0.209 (-0.64) | 0.161 (1.33) | 0.0651 (0.61) |
| Constant | 17.17** (2.20) | 17.19 (1.45) | 13.75*** (6.44) | 14.74*** (7.00) |
| Number of observations | 406 | 406 | 406 | 406 |
| R^2 | 0.121 | 0.067 | 0.146 | |

| Panel B: Regression Results: OECD Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
|--|-------------------|-------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.140 (-1.11) | -0.132 (-0.90) | -0.231*** (-3.52) | -0.198*** (-3.36) |
| Life Expectancy | 0.0200 (0.14) | -0.258 (-0.88) | 0.245*** (2.72) | 0.196** (2.42) |
| Constant | 9.774* (1.96) | 19.45* (1.78) | 4.944*** (3.55) | 5.357*** (3.81) |
| Number of observations | 592 | 592 | 592 | 592 |
| R^2 | 0.042 | 0.098 | 0.025 | |

| Panel C: Regression Results : OECD Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|--------------------|--------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.0578 (-0.53) | -0.0184 (-0.12) | -0.321*** (-6.29) | -0.284*** (-5.87) |
| Life Expectancy | 0.152 (1.39) | -0.151 (-0.47) | 0.523*** (8.22) | 0.477*** (7.87) |
| Constant | 2.372 (0.64) | 12.01 (1.00) | -1.684* (-1.88) | -1.573 (-1.59) |
| Number of observations | 782 | 782 | 782 | 782 |
| R^2 | 0.015 | 0.015 | 0.099 | |

| Panel D: Regression Results : OECD Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|--------------------|-------------------|-----------------------|-----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.186** (2.21) | 0.147 (0.86) | -0.119 (-1.33) | -0.0407 (-0.52) |
| Life Expectancy | 0.221 (1.52) | -0.111 (-0.24) | 0.680*** (7.93) | 0.607*** (7.91) |
| Constant | -9.693* (-1.85) | 4.775 (0.25) | -15.71*** (-10.47) | -16.02*** (-10.33) |
| Number of observations | 376 | 376 | 376 | 376 |
| R^2 | 0.084 | 0.043 | 0.417 | |

This table shows the relationship between median age and average maturity in the OECD countries. In all panels, Greece and Mexico are excluded, together with some observations of Ireland (2010-2019), Italy (2006-2019), Portugal (2009-2019), Spain (2012-2019), and Japan (2012-2019). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: REGRESSION RESULTS FOR MATURITY AND MEDIAN AGE
EUROZONE COUNTRIES

| Panel A: Regression Results: Eurozone Countries (1960-1998) | | | | |
|---|--------------------|-------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.438* (-1.95) | -0.315 (-1.45) | -0.872*** (-7.93) | -0.754*** (-7.67) |
| Life Expectancy | 0.00723 (0.02) | 0.0581 (0.09) | 0.828*** (4.84) | 0.662*** (4.23) |
| Constant | 20.26* (1.99) | 14.39 (0.64) | 6.762** (2.12) | 8.604*** (2.71) |
| Number of observations | 212 | 212 | 212 | 212 |
| R^2 | 0.309 | 0.217 | 0.291 | |

| Panel B: Regression Results: Eurozone Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
|--|-------------------|--------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.349 (-1.68) | -0.325* (-2.16) | -0.587*** (-6.11) | -0.501*** (-6.19) |
| Life Expectancy | 0.343 (1.42) | -0.127 (-0.28) | 0.801*** (5.68) | 0.676*** (5.55) |
| Constant | 5.839 (1.05) | 21.63 (1.39) | -1.961 (-0.87) | -0.673 (-0.31) |
| Number of observations | 309 | 309 | 309 | 309 |
| R^2 | 0.188 | 0.415 | 0.112 | |

| Panel C: Regression Results : Eurozone Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|-------------------|-------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.278 (-1.41) | -0.219 (-1.30) | -0.613*** (-8.21) | -0.547*** (-8.00) |
| Life Expectancy | 0.508** (2.58) | 0.337 (0.77) | 0.966*** (9.47) | 0.880*** (9.32) |
| Constant | -2.349 (-0.60) | 1.468 (0.10) | -6.677*** (-4.61) | -6.238*** (-4.21) |
| Number of observations | 400 | 400 | 400 | 400 |
| R^2 | 0.149 | 0.177 | 0.196 | |

| Panel D: Regression Results : Eurozone Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|----------------------|--------------------|----------------------|----------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.00110 (0.01) | -0.0158 (-0.15) | -0.229** (-2.03) | -0.110 (-1.45) |
| Life Expectancy | 0.636*** (6.38) | 0.708* (1.99) | 0.830*** (7.04) | 0.722*** (8.11) |
| Constant | -18.31*** (-5.45) | -20.43 (-1.60) | -16.63*** (-7.96) | -17.23*** (-8.42) |
| Number of observations | 188 | 188 | 188 | 188 |
| R^2 | 0.380 | 0.353 | 0.445 | |

This table shows the relationship between median age and average maturity in the eurozone countries. In all panels, Greece and Mexico are excluded, together with some observations of Ireland (2010-2019), Italy (2006-2019), Portugal (2009-2019), Spain (2012-2019), and Japan (2012-2019). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: REGRESSION RESULTS FOR SPREAD AND MEDIAN AGE
OECD COUNTRIES

| Panel A: Regression Results: OECD Countries (1960-1998) | | | | |
|---|--------------------|-------------------|--------------------|--------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0823** (2.49) | 0.0710 (1.61) | 0.125 (0.86) | 0.0823** (2.28) |
| Life Expectancy | -0.0581 (-1.10) | -0.133 (-1.25) | -0.0198 (-0.11) | -0.0581 (-0.92) |
| Constant | -0.291 (-0.22) | 2.633 (0.76) | -3.069 (-1.15) | -0.291 (-0.15) |
| Number of observations | 340 | 340 | 340 | 340 |
| R^2 | 0.015 | 0.182 | 0.011 | |

| Panel B: Regression Results: OECD Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
|--|---------------------|--------------------|--------------------|---------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0883*** (4.14) | 0.0806** (2.28) | 0.161* (1.71) | 0.0894*** (3.03) |
| Life Expectancy | -0.0368 (-1.13) | -0.0538 (-0.73) | -0.0963 (-0.81) | -0.0342 (-0.75) |
| Constant | -1.167 (-1.44) | -0.299 (-0.14) | -1.637 (-1.06) | -1.306 (-1.11) |
| Number of observations | 497 | 497 | 497 | 497 |
| R^2 | 0.026 | 0.275 | 0.019 | |

| Panel C: Regression Results : OECD Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|---------------------|--------------------|---------------------|---------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0700*** (3.47) | 0.0690** (2.86) | 0.0677 (1.02) | 0.0700*** (3.19) |
| Life Expectancy | -0.00814 (-0.30) | -0.0656 (-1.24) | 0.0133 (0.17) | -0.00814 (-0.26) |
| Constant | -1.511* (-2.09) | 0.635 (0.39) | -2.219** (-2.42) | -1.511** (-2.00) |
| Number of observations | 663 | 663 | 663 | 663 |
| R^2 | 0.031 | 0.360 | 0.025 | |

| Panel D: Regression Results : OECD Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|---------------------|--------------------|--------------------|---------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.00697 (0.19) | 0.00669 (0.22) | -0.1000 (-0.92) | 0.00195 (0.07) |
| Life Expectancy | -0.0841* (-1.75) | -0.0981 (-1.43) | 0.0293 (0.26) | -0.0767* (-1.79) |
| Constant | 4.076*** (3.69) | 4.660* (1.77) | 3.889** (2.33) | 3.994*** (2.82) |
| Number of observations | 323 | 323 | 323 | 323 |
| R^2 | 0.018 | 0.121 | 0.011 | |

This table shows the relationship between median age and spread in the OECD countries. In all panels, Greece and Mexico are excluded, together with some observations of Ireland (2010-2019), Italy (2006-2019), Portugal (2009-2019), Spain (2012-2019), and Japan (2012-2019). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A14: REGRESSION RESULTS FOR SPREAD AND MEDIAN AGE
EUROZONE COUNTRIES

| Panel A: Regression Results: Eurozone Countries (1960-1998) | | | | |
|---|---------------------|-------------------|-------------------|--------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.161*** (3.82) | 0.149** (3.04) | 0.345* (1.71) | 0.161*** (2.95) |
| Life Expectancy | -0.126** (-2.38) | -0.150 (-1.41) | -0.321 (-1.37) | -0.126 (-1.53) |
| Constant | -0.640 (-0.32) | 0.553 (0.15) | -0.342 (-0.09) | -0.640 (-0.22) |
| Number of observations | 191 | 191 | 191 | 191 |
| R^2 | 0.046 | 0.585 | 0.017 | |

| Panel B: Regression Results: Eurozone Countries (1960-2007) (Excluding High-Risk Country-Year Observations) | | | | |
|--|----------------------|--------------------|---------------------|--------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.128*** (4.06) | 0.108*** (3.69) | 0.369*** (2.90) | 0.128*** (3.34) |
| Life Expectancy | -0.0814** (-2.59) | -0.0649 (-1.03) | -0.373** (-2.34) | -0.0814 (-1.46) |
| Constant | -0.927 (-0.81) | -0.814 (-0.36) | 0.681 (0.33) | -0.927 (-0.57) |
| Number of observations | 279 | 279 | 279 | 279 |
| R^2 | 0.040 | 0.660 | 0.035 | |

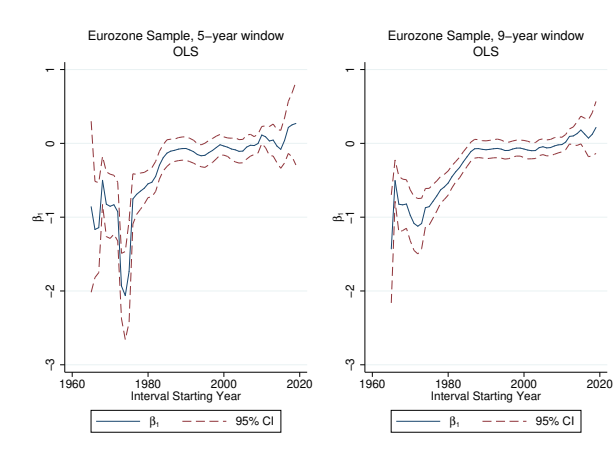
| Panel C: Regression Results : Eurozone Countries (1960-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|---------------------|---------------------|--------------------|---------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | 0.0897** (2.58) | 0.0820*** (4.01) | 0.236** (2.45) | 0.0897*** (2.82) |
| Life Expectancy | -0.0362* (-2.20) | 0.00181 (0.03) | -0.215* (-1.82) | -0.0362 (-0.80) |
| Constant | -1.136 (-1.16) | -2.256 (-1.24) | -0.110 (-0.08) | -1.136 (-1.04) |
| Number of observations | 358 | 358 | 358 | 358 |
| R^2 | 0.032 | 0.726 | 0.027 | |

| Panel D: Regression Results : Eurozone Countries (1999-2019) (Excluding High-Risk Country-Year Observations) | | | | |
|---|--------------------|--------------------|--------------------|--------------------|
| | OLS | Between Effects | Fixed Effects | Random Effects |
| Median Age | -0.0425 (-1.51) | -0.0386 (-1.28) | 0.00478 (0.04) | -0.0425 (-1.36) |
| Life Expectancy | -0.0163 (-0.35) | 0.0926 (0.89) | -0.0896 (-0.59) | -0.0163 (-0.27) |
| Constant | 3.526** (2.77) | -0.812 (-0.22) | 4.457** (2.03) | 3.526* (1.84) |
| Number of observations | 167 | 167 | 167 | 167 |
| R^2 | 0.021 | 0.204 | 0.014 | |

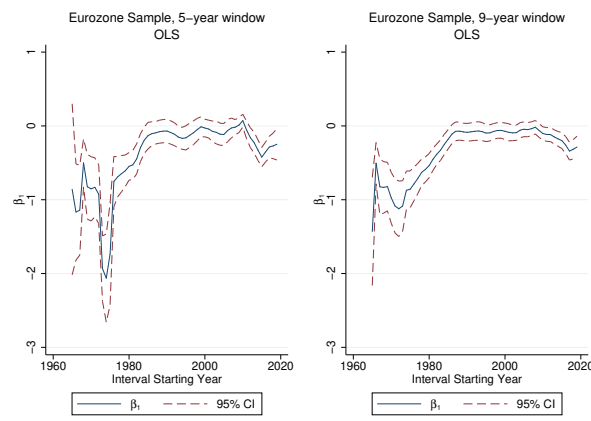
This table shows the relationship between median age and spread in the eurozone countries. In all panels, Greece and Mexico are excluded, together with some observations of Ireland (2010-2019), Italy (2006-2019), Portugal (2009-2019), Spain (2012-2019), and Japan (2012-2019). The t- and z-statistics are reported in parentheses. Errors are clustered by country. * p < 0.1, ** p < 0.05, *** p < 0.01.

Rolling Window Regressions

Figure A5: EVOLUTION OF REGRESSION COEFFICIENT β_1
 OLS REGRESSION RESULTS FOR AVERAGE MATURITY
 (EUROZONE COUNTRIES)



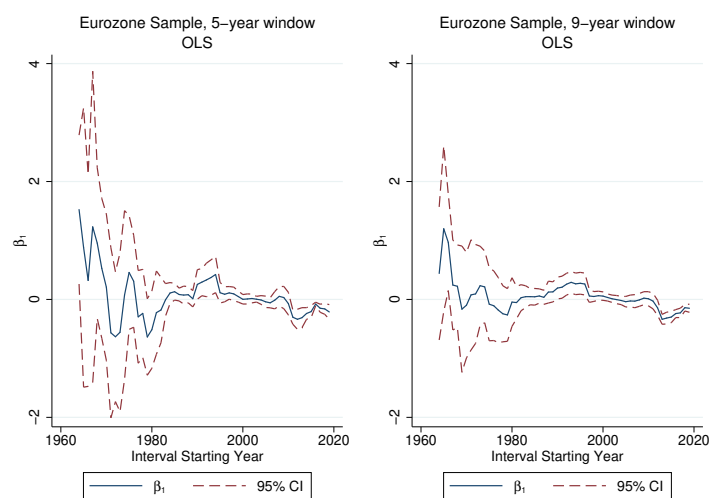
(a) EUROZONE COUNTRIES
 (EXCLUDING HIGH-RISK COUNTRY-YEAR OBSERVATIONS)



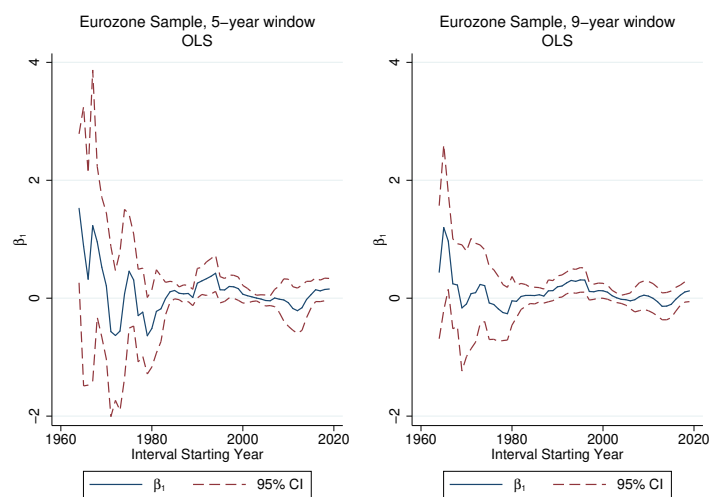
EUROZONE COUNTRIES
 (b) (WHOLE SAMPLE)

Notes: This graph shows the evolution of the coefficient β_1 for rolling-window regressions of maturity on median age for the eurozone countries. The blue line displays the point estimate of the coefficient while the red lines illustrate the 5% coefficient interval. The left panel is with respect to the regressions on a 5-year rolling window while the right panel is with respect to a 9-year rolling window.

Figure A6: EVOLUTION OF REGRESSION COEFFICIENT β_1
 OLS REGRESSION RESULTS FOR SPREAD (EUROZONE COUNTRIES)



(a) EUROZONE COUNTRIES
 (EXCLUDING HIGH-RISK COUNTRY-YEAR OBSERVATIONS)



EUROZONE COUNTRIES
 (b) (WHOLE SAMPLE)

Notes: This graph shows the evolution of the coefficient β_1 for rolling-window regressions of spread on median age for the eurozone countries. The blue line displays the point estimate of the coefficient while the red lines illustrate the 5% coefficient interval. The left panel is with respect to the regressions on a 5-year rolling window while the right panel is with respect to a 9-year rolling window.