

An ARDL approach for income inequality: Case studies for France, Greece, UK and USA

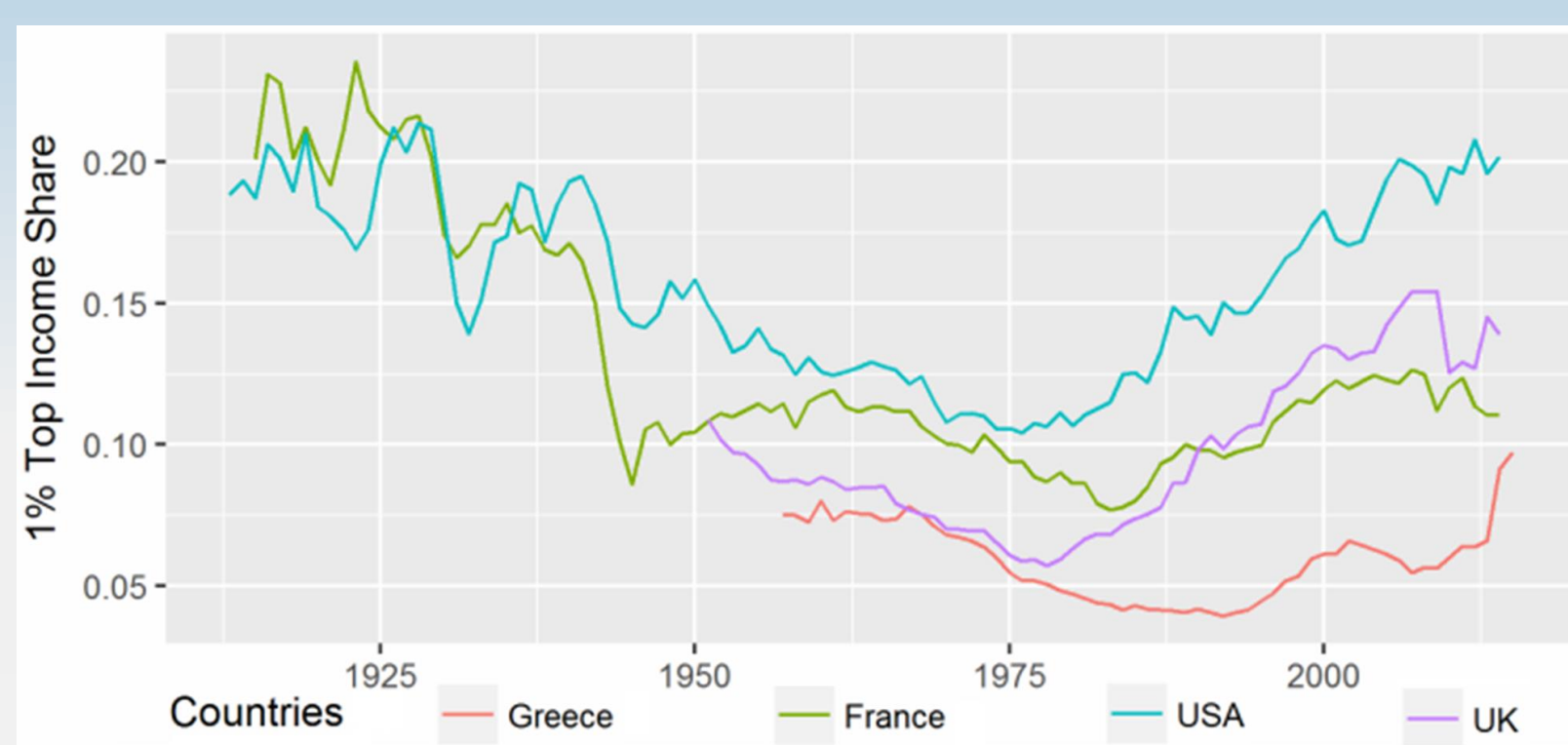
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Introduction

According to the current literature on income inequality, we utilize tax data in order to study top income shares, following the Piketty (2001) methodology.

In this paper we model the 1% top income share using a set of macroeconomic factors for the period 1971-2014. We test for the existence of a long-run relationship between 1%tis and the other macroeconomic factors for the cases of France, Greece, UK and USA using the bounds test for cointegration proposed by Pesaran et al. (2001).



Results

Is there a long-run relationship between the 1% top income share (1%tis) and a set of carefully selected macroeconomic factors?

Namely:

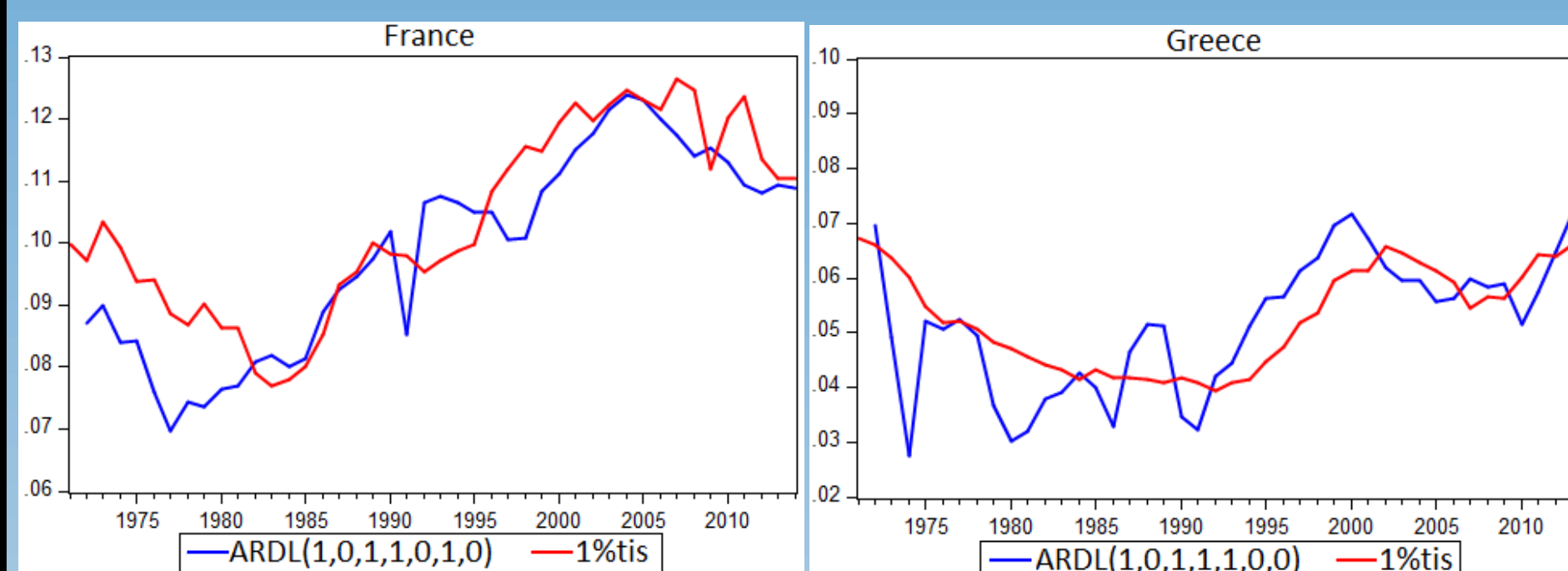
$$1\%tis = f \left(\begin{matrix} \text{credit, education, GDP, inflation,} \\ \text{population growth, trade} \end{matrix} \right)$$

We test the following Null hypothesis for the cases of France, Greece, UK and USA:

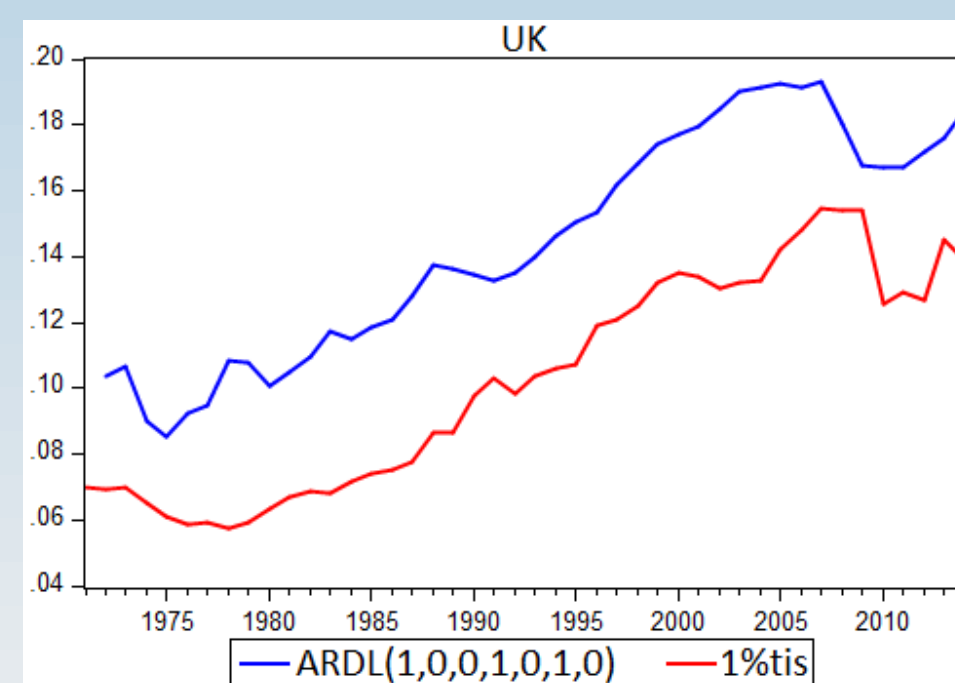
$$H_0: \text{There is no cointegrating relationship}$$

The results from the single-equation bounds test for cointegration are as follows:

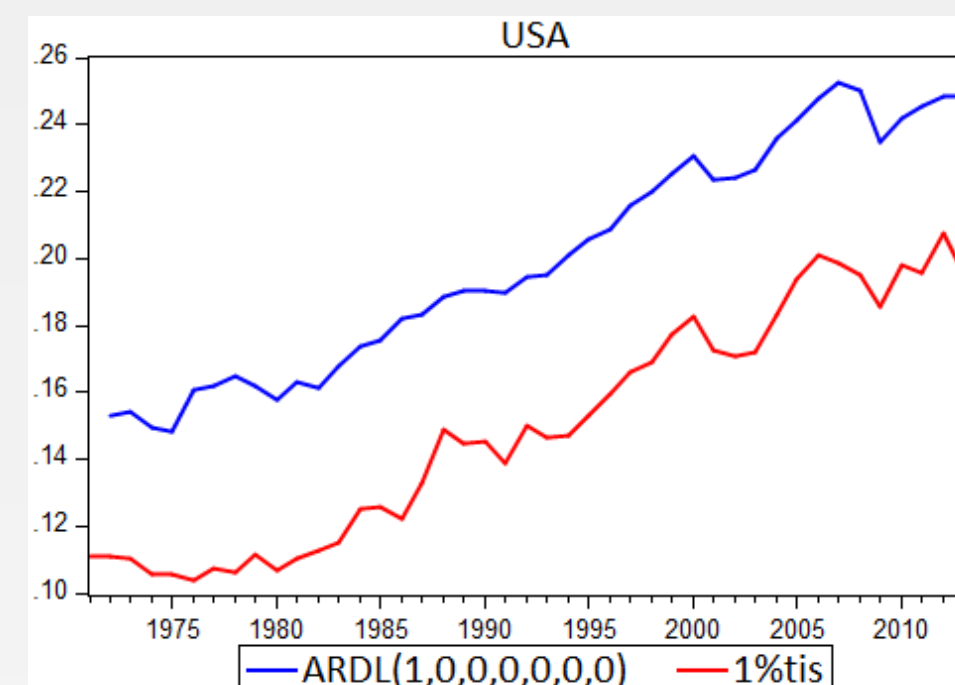
➤ **France and Greece:** There are strong indications suggesting the existence of a long-run relationship. But due to endogeneity problems we can not be sure whether these results are valid or not.



➤ **UK:** The well specified model can not reject the Null hypothesis that a long-run relationship doesn't exist and so the test is inconclusive.



➤ **USA:** The test concludes for the existence of a long-run relationship. But the following graph reveals that this is a degenerate relationship.



Conclusions

We search for the existence of a long-run relationship between the 1% top income share and macroeconomic factors such as: credit, education, GDP, inflation, population growth and trade for the cases of France, Greece, UK and USA.

The results for France and Greece are the same. The test in both cases conclude that there is a long-run relationship. However, analyzing the cointegrating relationships among the system equations we found out that the 1%tis participates in more than one cointegrating relationships. This makes the results from the univariate analysis ambiguous as it assumes that there is no additional information from the other equations.

The unit-root tests suggested that the 1%tis for both UK and USA are trend stationary and thus I(0). So, we knew in advance that a rejection of the Null would be a degenerate relationship rather than a cointegrating one.

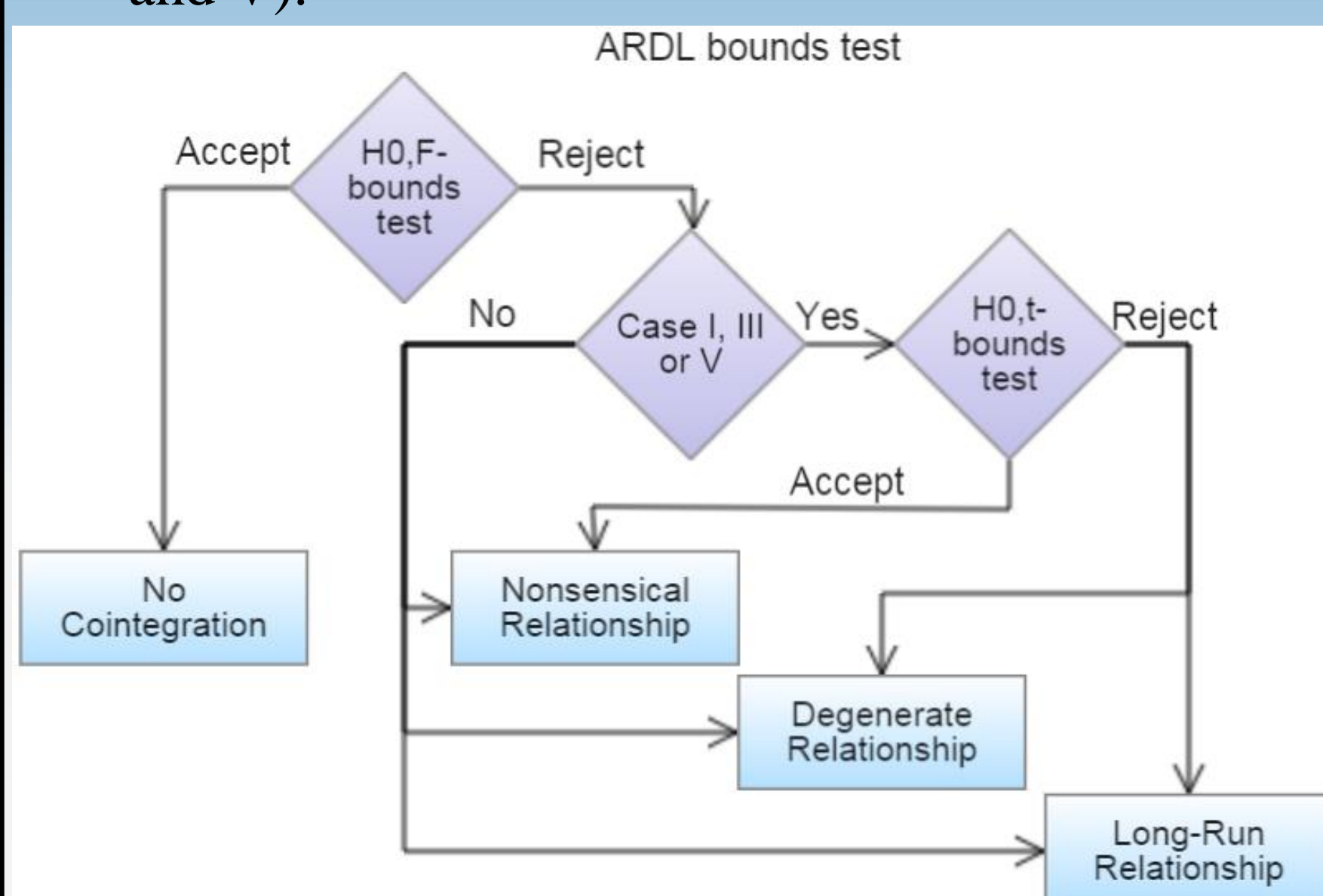
However, we do continue with the test in order to have a better understanding on how the test behaves under situations like this. For the case of USA, the test rejected the Null and as expected, the result was that the relationship is a degenerate one.

In addition, for the case of UK the test is inconclusive and so we are not able to suggest the existence of a long-run relationship. This case could be tricky because a not well specified model leads to rejecting the Null but one has to notice that this is a degenerate relationship.

Methodology

We use the single-equation bounds test for cointegration (Pesaran et al., 2001) that uses the ARDL framework and its corresponding ECM as a platform for the test.

The following flowchart attempts to describe the interpretation of the test results for 5 cases, when trend components are imposed in the long-run equation (Case II and IV) and when they are not (Case I, III and V).



Literature cited

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World Inequality Database: <http://wid.world>

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